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Arthur Tideman had more than twenty years experience as firstly a Soil Conservation Officer, Agronomist and an Administrator in the South Australian Department of Agriculture before he relinquished his position as Chief Agronomist in August 1977 to become Leader of the newly formed Overseas Project Unit designed to facilitate the transfer of agricultural technology to developing countries.

As Leader he assumed management responsibilities for the El Marj project in Libya, negotiated the final stages of the Algerian Contract and acted as project Manager in its early stages at Ksar Chellala. He was involved also in the early stages of the development of projects in Jordan and Iraq and was appointed as an agronomist to the first Australian agricultural science team which developed exchange projects with China after the Cultural Revolution. He organised the visits for delegations of agriculturalists which came to South Australia seeking more information about 'dryland farming' and played a leading role in organising the first International Dryland Farming Congress.

When SALGER Pty Ltd was formed to facilitate these operations on a more independent commercial basis Arthur Tideman returned to the Department's general administration as the Director of the Plant Services Division.

He interrupted these duties to direct the fifth year of the Iraqi project at Ain Kawah and amongst growing threats from the Iran, Iraq war and Kurdish freedom fighting he prepared the Final Report.

He was awarded a Fellow of the Australian Institute of Agricultural Science in May 1990.

He retired from his professional career of nearly forty years during March 1991.

The Medic Fields

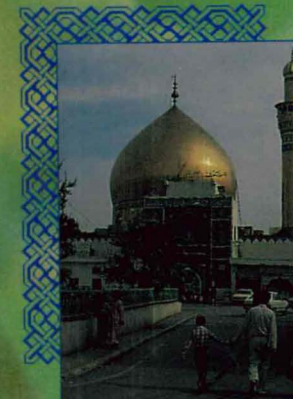
By Arthur Tideman

# The Medic Fields



**A Story of South Australian Agriculturalists working in West Asia and the Mediterranean Basin.**

**By Arthur Tideman**



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First published 1994

SAGRIC International Pty Ltd  
70 Hindmarsh Square, Adelaide  
South Australia

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National Library of Australia  
Cataloguing-in-Publication entry

Tideman, Arthur  
The Medic Fields

ISBN 0 646 19870 X

*Wholly set up and produced in Adelaide, South Australia*  
Design: Peter and Heidi Goeldi Graphic Design  
Editor: Emily Sutherland  
Printing and binding: Openbook Publishers  
Film and colour separations for cover: Imagecolour Pty Ltd

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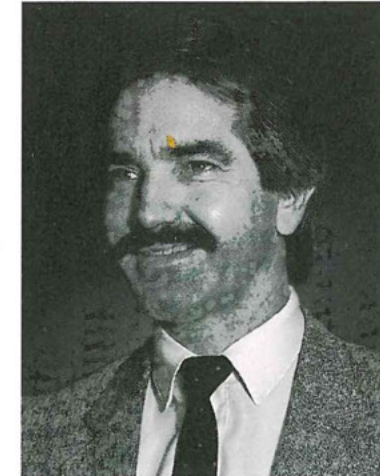
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*One of the main endeavours associated with all the projects conducted by South Australians to improve agricultural productivity and sustainability in countries such as Algeria, Iraq, Jordan and Libya was to encourage the use of medic pastures thereby improving livestock production and providing nitrogen for cereal crops in the rotation.*

*This photograph, taken at the final field-day, in April 1985, at the South Australian Ain Kawah Project in northern Iraq shows Zahir Tahad (left), a Kurdish agricultural worker, demonstrating his knowledge of medics to local farmers.*

## FOREWORD



SAGRIC International Pty Ltd grew from the science, the politics and the practice of agriculture in South Australia.

Having recently completed ten years as the South Australian Government's international implementation and technology transfer company involving five hundred staff years of work in more than forty countries I thought it would be wise to look back to our origins before they became lost as we forge ahead into ever changing endeavours.

I was delighted when Arthur Tideman, recently retired as a Director in the Department of Agriculture, offered to gather the facts and write the story. I knew he had extensive personal experience with the transfer of our agricultural technology to countries surrounding the Mediterranean and to West Asia, but was surprised to learn that this experience goes back twenty-five years and involves many organisations in addition to SAGRIC International.

The staff and I am proud that we can now offer readers these fascinating and very human stories of people interacting in each others interests from widely differing cultures. Like us we believe you will be amazed at the wide ranging endeavours and experiences which largely developed from the inconspicuous medic pasture plants.

This book is a great tribute to those who pioneered our enterprise.

DR GLEN SIMPSON  
Managing Director  
SAGRIC International Pty Ltd  
Adelaide, South Australia

## PREFACE



Many conferences have been held and much has been written by agriculturalists, political analysts, economists and a host of other specialists about the transfer of agricultural technology from southern Australia to West Asia, North Africa and countries in southern Europe with Mediterranean climates.

This publication largely avoids the technical aspects so adequately covered and instead tries to chronicle how this interesting chapter in South Australian history was played out. It dwells on who was involved and why, what happened and when from the beginning until the process was well tested.

It concentrates on the period from the 1930s until the early years of the 1980s. A period of almost fifty years when disparate groups of people, informally, but surprisingly effectively, worked together to benefit South Australia from the oil monies of countries such as Libya and Iraq, by selling South Australian built agricultural machinery, herbage seeds, fencing, livestock and irrigation equipment. But it was not just that. People wanted to offer their practical farming know-how, their scientific and mechanical skills and just themselves for the sake of the challenge, the extra income or sometimes just to escape the affairs at home.

The countries in the old world had newly trained agronomists who had become more and more aware of the success of farming systems in Southern Australia particularly in the face of increasing populations, increasing food shortages and increasing soil degradation. They encouraged their governments to seek help from Australia having become very suspicious of inappropriate agricultural technologies peddled by European countries. Their Governments in turn were prepared to work with Australians whom they regarded as politically acceptable, untainted by powers threatening their newly found nationalisms.

Many people have helped me in the making of this book. It would certainly not have been possible without the continuous encouragement of Glen Simpson, Managing

Director of SAGRIC International an innovative Company which derived its beginning from many of these recorded events.

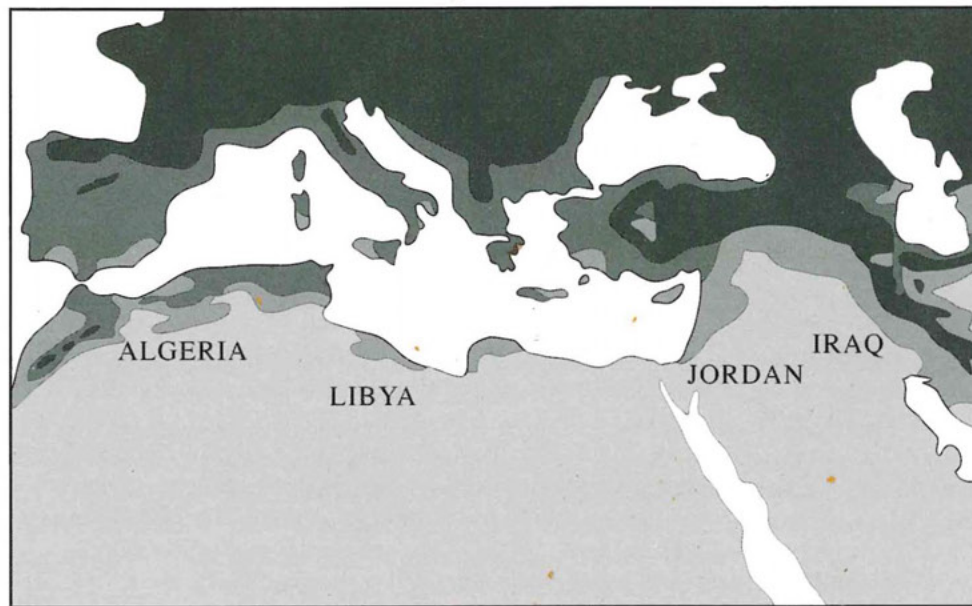
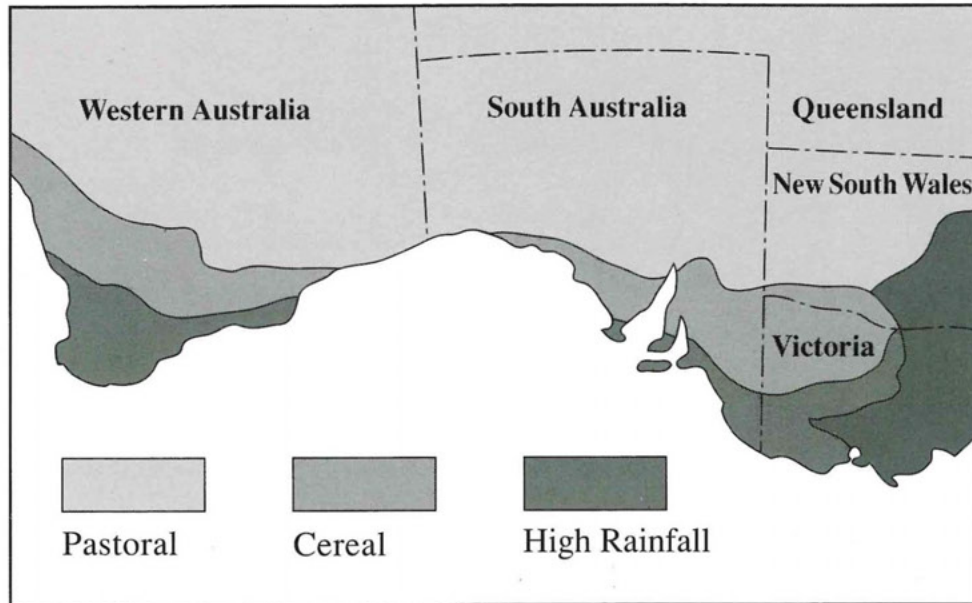
I would also like to thank the staff of SAGRIC International at Hindmarsh Square who readily made available their resources to help me and who gave me unending friendly support.

During the course of gathering information and photographs I interviewed more than forty people, too many for specific mention. While many of their contributions have been identified and acknowledged in the text I would like to add my warm thanks for their kind receptions, often in their homes and their trust in handing me their treasured diaries and letters for reference.

There is certainly scope for much more work to be done on the main topics of this history. The transfer process has continued into the 1990s and while large scale projects have ceased and communication made difficult, if not impossible in some countries by war, insurrection and political instability, many close links have been maintained.

While this story concentrates on the South Australian initiatives and the people involved readers should be aware that equally significant contributions to the transfer of dryland farming techniques were made to North African countries and other regions of the world by Western Australian agriculturalists, farmers and politicians and to a lesser extent those in Victoria and New South Wales. Although rivalry existed it was productive and largely resulted in complementary and supportive efforts in the field.

Arthur Tideman  
Adelaide  
1992



*These maps illustrate matching climates and land-use patterns between areas of southern Australia and countries surrounding the Mediterranean Sea. These shared Mediterranean climates made possible the transfer of agricultural practices and systems.*

*These maps have been adapted from those first published by the South Australian Department of Agriculture and Fisheries in 1976.*

## CHAPTER I

### DRYLAND FARMING – FROM HERE TO THERE

#### INTRODUCTION

Although the excesses of urbanisation had finally dominated South Australian life-styles by the 1970s when the transfer of agricultural technology to West Asia and North African countries reached its peak, most South Australians still had connections on the land and a good general knowledge of how farming was conducted and an appreciation of its associated vagaries.

South Australians were proud of 'our dryland farming system' and when it became general knowledge that we had agricultural links with these regions and had established demonstration farms in some of the countries, people in all walks of life took an added interest in 'the system'. Its implications were discussed in Parliament and taught in schools. We ignored the terms 'rainfed' agriculture used in world-wide literature and saw 'dryland farming' as distinctly ours. We dined out on the images of successful innovation against the odds of a tough climate and ancient geologically worn out soils and we romanced in the media about the help this offered developing countries and the starving world.

When pressed for detail few could say what 'the system' really was and how or why it worked. As 'the system' is the basis of this record it will pay to explain exactly what it is.

#### DRYLAND FARMING IN SOUTH AUSTRALIA – A Flexible Farmer Package

In South Australia and across southern Australia farming in general is carried out within an integrated system of livestock production (mainly sheep) with cereal cropping based on a legume pasture, cereal rotation.

The system is not one and universal but will be varied by a farmer on a paddock basis to suit specific soils, seasonal conditions and economic needs. It may be varied by the wise choice of the legume for the pasture, (a particular medic or a subterranean clover), or by choosing wheat or barley for the cereal. The rotation can be widened from

alternate years to every third year and sometimes even less frequently. On the other hand a more intense cropping phase for two or three successive years can be implemented if the fertility of the soil is thought capable of bearing that strain. In some cases grain legumes can replace the pasture phase.

Because this system is exposed to the harshness of a dryland risky climate, husbandry is critical. (Husbandry is seen as an old fashioned word today but cannot be replaced with any more meaningful word in this case). Innovative South Australian farmers had learned to build the right husbandry practices into their everyday farming. They knew timeliness was paramount. They knew the requirements of seedbed preparation. A firm shallow bed which compacted the soil, with often its short lived moisture content, around the cereal seed to give the best chance for a vigorous germination in competition with weed seeds so eager to germinate first.

Farmers, in conjunction with agricultural machinery manufacturers who frequently had farmers as directors and board members, had modified machinery to achieve the required shallow seed bed and at the same time handle trash on the surface. They knew the benefit of fertilisers and the need to place them in close proximity to the seed when planted. They also knew the weeds and pests and how to combat them with agricultural chemicals if necessary.

Keeping these husbandry requirements and variations in mind the integration of livestock production and cereal farming in southern Australia (the system) can be more clearly understood if we consider the possible sequence of events over a three year period.

Within a fenced off area the soil is cultivated in autumn. With the first suitable rains medic (the annual legume) is sown, fertilised and protected from insect attack as it germinates to form a dense pasture which is grazed down by sheep in early spring to two or three centimetres in height before it is left to recover and seed. The dry pasture which carries high protein medic pods is then grazed over summer.

In the second autumn a cereal crop is sown after the opening rains and harvested in November or December.

In the third year the soil is not cultivated. The paddock, covered with the stubble of the cereal crop, is grazed in summer before the medic pasture germinates with the autumn rains from supplies of 'hard' seeds which have survived the cereal year after setting in the first year. This self sown pasture then provides grazing until late spring when again it must be given a chance to seed freely before another cereal crop is produced.

In summary, farmers in South Australia had on offer to all countries with Mediterranean climates not one permanent system but, as a matter of survival, a flexible package of practices backed by innovative skills, science and commerce.

#### **BY COMPARISON – Farming around the Mediterranean and West Asia**

Down the ages man devised in these regions of West Asia and around the Mediterranean Sea a system of cereal production based on a rotation of one cereal crop followed by a year of no cropping during which natural vegetation (weeds) grew back on to the site. The gap in cropping was essential to give the necessary preparation time with animal power and to use the hot summer months to kill the unwanted vegetation. This 'fallow' period rebuilt the organic matter within the soil and maintained nitrogen levels. Also the

#### **FARMING IN MEDITERRANEAN CLIMATES**

To gain an understanding of many aspects of South Australian agriculture and its significance to other parts of the world the reader needs an understanding of what it means to farm in a Mediterranean climate without irrigation (dryland farming).

The following adaption from CIMMYT's publication (1975), 'The Return of the Medic' gives an insight into its vagaries and the need to spread the risks between grain and livestock incomes.

Areas that have dry summers and mild rainy winters are commonly classified as having Mediterranean climates. Such climates occur in southern Australia, the west coast of the United States of America, Chile, the southern tip of Africa, West Asia and of course around the Mediterranean Sea.

The growing season for plants in a Mediterranean climate is the winter months. Because the temperatures are then cool, the evaporation and transpiration by plants is low. As a result, cereals can be grown with extraordinary light rainfall - as little as 250mm a year.

Although for tourists a Mediterranean climate is synonymous with relaxation and tranquillity, for farmers it is capricious - as often a cruel enemy as a generous friend. In South Australia farmers plant wheat when the first heavy rain fall, usually in May or June. The wheat flowers about September when with luck the danger of frost is past. The harvest occurs in November and December hopefully before searing north winds wither the crops. (The sirocco of the deserts in northern Africa). If the farmer plants late or the winds come early the harvest may be lost.

An additional burden is that every aspect of the rainfall is unstable; the amount that falls from year to year, the dates of onset and the end of the rainy season. Moreover the lower the average rainfall in an area, the more variable are the falls.

The unpredictability of rain, frost and heat let alone the problem of weeds, disease and vermin fill farmers' lives with uncertainty. No wonder they grumble at times!

gentle cultivation of the animal-drawn single furrow ploughs did little harm to the soil structure.

The system was sustainable and would have satisfied most modern day conservationists. Indeed, Australian agronomists were amazed at the general fertility and the excellent structure of some pockets of soil on their Iraqi project site which had received this treatment for tens of decades and had managed to avoid the exploitation of more recent farming developments in the region.

There are some exceptions but in general this traditional sustainable system had collapsed because of pressure for increased production which had been attempted by mechanisation and more frequent cropping.

In many parts of the Mediterranean Region and West Asia farmers are today sowing two cereal crops of wheat or barley in successive years with perhaps a weedy fallow in the third year leaving insufficient organic matter and release of organic nitrogen in a mineralised form to sustain the crops.

This same downward spiral had occurred in South Australia at the turn of the century and forced, as a matter of survival, the innovative cereal - pasture system described above.

Having no resources to build and develop agricultural machinery, the countries in West Asia and particularly Northern Africa, turned to Europe from where agricultural equipment was sold with the expectation that any money spent on mechanisation would bring valuable results.



*Seeding cereal crops by hand was still not uncommon in Mediterranean and West Asian countries when South Australian agricultural machinery companies were promoting sales of their cultivation and seeding equipment in the 1960s and 1970s.*

*This photograph was provided by John Thomas who worked in these countries for John Shearer for many years.*

In northern Europe, where ample soil moisture enables weeds to survive unless completely buried and where cold, saturated soils can make germination impossible it was realised many decades ago that successful cereal growing depended on deep ploughing. This deep cultivation completely inverted and buried the weeds and presented soil on the surface which could easily drain and offer a more friendly seed bed for the crop.

Unfortunately farmers in the developing countries with Mediterranean climates inherited deep ploughing when they turned to mechanisation with European and North American built machinery.

The traditional sustainable system had therefore been replaced by farming methods, aimed to feed the rapidly growing populations, but which were largely failing. The new system of slow and costly deep mechanical ploughing could not offer a seed bed suitable for Mediterranean climates. It failed to control weeds or provide soil organic matter and nitrogen from a resting legume pasture phase and buried any legume seeds which could have produced a pasture in the following year. Deep ploughing is costly. It left a cloddy seed bed which rapidly dried out, particularly with the further cultivation needed to break up the clods. This in turn exposed the soil to serious water erosion and failed to provide a seed bed.

Since the decade of the 1960s and even before, enlightened agriculturalists within these countries saw the need to change. Farming technology across southern Australia, which had grown up from similar problems with similar soils and climate, offered a solution.

#### HISTORY AT A GLANCE

Events which shaped the development of dryland farming in South Australia.

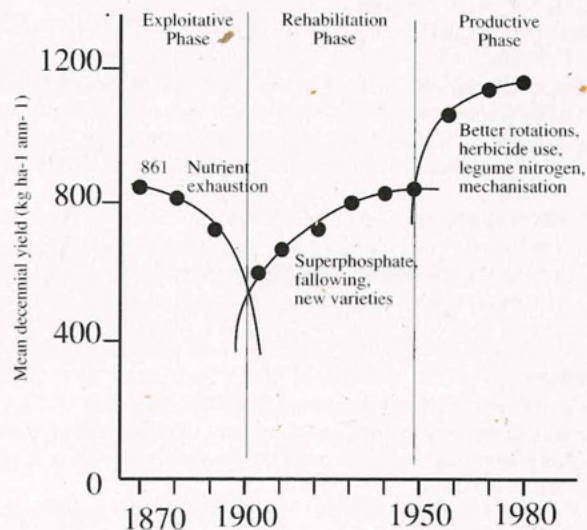
- 1836 From the first days of the new South Australian Colony farmers successfully turned to cereal growing unknowingly relying on the inherent fertility of the soils. The South Australian Wheat Industry dominated Australian production for the next fifty years. In 1890 1.2m hectares were sown, nearly 60% of the total Australian area of wheat.
- 1843 Ridley invented the Stripper. The world's first locomotive grain harvesting machine. The crippling disease of wheat bunt was controlled by John Reynell.
- 1846 The English Corn Laws were repealed thereby removing a twenty-five percent protection tariff on wheat. This opened up assured markets for South Australian wheat.
- 1850s The gold rushes reduced the rate of expansion of dryland wheat production.
- 1874 Mullens developed a method of clearing mallee-covered areas for wheat production. By rolling the scrub, firing the residues the following year and then sowing wheat into the ash, areas for dryland farming in South Australia were cheaply expanded. The process became known as 'mullenising'.
- 1875 From the middle of the 1870s exploitation of the soils began to take noticeable effect culminating by the turn of the century in a crisis for farming with average yields down to 490 kg per ha.
- 1876 The stump-jump plough was invented by R.B. Smith.
- 1881 Professor Custance, the first Principal of Roseworthy College, demonstrated marked response to wheat yields following applications of superphosphate.
- 1888 The Fair Average Quality system for marketing wheat was introduced.
- 1880s Professor Lowrie, then Principal of Roseworthy College began recommending fallowing as a method of preparation for the wheat crop.
- 1892 Superphosphate was first used commercially and drilled with the seed as a standard operation by Messrs Custance, Parsons and Correll Bros of Minlaton.
- 1894 The first harvesters made by H.V. McKay became available. In the same year H.G. Gluyas of Pt Germein made the first big improvement to wheat varieties available in South Australia. He selected Early Gluyas from Wards Prolific. This selection was used until the 1930s.
- 1895 The first deliberate introduction of annual medic seed (*Medicago scutellata*) into Australia.
- 1901 The wheat variety, Federation, was released by William Farrer in NSW.
- 1911 The first Dryland Farming Conference was held in South Australia. It explored the possibility of using the dryland farming technology then developed in the United States of America. This technology was based on two principles later proved false. One, that a dry fine soil surface prevented moisture loss and therefore promoted better crop growth. Two, deep tillage was essential for the intake and retention of water.
- 1924 Tractor power began replacing horse power in South Australian agriculture.
- 1930 The area of wheat sown reached its zenith in South Australia — 1.6 million hectares. Growing concern about the degradation of cropping soils in South Australia.
- 1932 Minimum baking quality standards were adopted by wheat breeders in South Australia.
- 1935 First wheat price stabilisation scheme introduced.
- 1938 First commercial sowings of the barrel medic (*Medicago truncatula*).
- 1948 Sheep with 'ley' pastures began to be widely introduced into South Australian farming systems. The hormone herbicides for selective broad-leaf weed control in cereals became commercially available.

- 1950s This decade saw the development of soil conservation services in South Australia. Also active pasture research commenced, including medic cultivar development.
- 1955 Bulk handling of grain widely established.
- 1958 The South Australian Wheat Industry Research Committee and the Australian Wheat Industry Research Council were formed with special levies on production (1/4 pence per bushel).  
Through these bodies special research programs were made possible which helped to improve all aspects of the dryland farming technology in South Australia including better varieties and disease control.  
Extension grants were later introduced which upgraded the dissemination of farming technology in South Australia.
- 1965 Early post emergent and later, pre-emergent herbicides for use in field crops became commercially available.
- 1970s No-till and reduced tillage systems began to be widely adopted for dryland farming in South Australia. Rotations became more varied with the wider introduction of grain legumes.
- 1974 South Australia began transferring its agricultural technology to countries with Mediterranean climates in West Asia and around the Mediterranean Sea through large scale government to government projects.
- 1980 After a thirty year period of rapidly increasing yields production per hectare began to level off. Farming emphasis on efficiency, sustainability and environmental care. The First International Dryland Farming Congress was held in Adelaide, South Australia.

The following graph prepared originally by Professor Donald at the Waite Agricultural Research Institute in 1963 illustrates the historical development of the dryland farming system in South Australia measured by wheat yield per hectare. The graph in this form has been extracted from a paper presented by D.W. Puckridge and E.D. Carter at the International Congress on Dryland Farming held in Adelaide in 1980.

The three phases of the development can be clearly seen, namely the Exploitative Phase 1836 - 1900, the Rehabilitation Phase 1900 - 1950 and the current Productive Phase.

DIAGRAM I



Australian wheat-yields from 1860 to 1980. Each point indicates the unweighted mean of the annual yields in the preceding decade - from Donald (1963, 1981).

## TECHNOLOGY TRANSFER

When the time came in the late 1960s to actively organise the transfer of the dryland farming system from South Australia on a project basis to West Asia, the countries around the Mediterranean Sea in North Africa and southern Europe, the planners involved on both sides of the world knew that this would be a complex task. It was clearly understood that any decisions would fail if the South Australian's know-how was transferred without adaption and without taking into account the human factor involved, particularly those in the recipient countries.

Unfortunately this complexity was really too hard given the time constraints and the political agendas. Across these regions there was a perceived urgency which precluded preliminary investigations. It was known that adaption of the system would be needed and that there were social and economic barriers but the countries had oil money and wanted self sufficient agriculture. Many elements had coalesced including the political will in South Australia to take advantage of the dryland farming knowledge to support exports. Now was the time to act.

However, when it was all boiled down, the agronomic experts were not really sure if the medics which seemed to offer the basis of the technology to be transferred, could really be made productive. It was argued that the relatively cold winters and the shorter growing seasons would make them inappropriate. Some agronomists with these concerns thought that this basic question was so important that it should be thoroughly researched in the field across these countries before any technique was extended, particularly as there were so many other impediments such as the vast areas of degraded soils now so lacking in organic matter that after each rain they set like concrete preventing adequate medic germination. The shortage of phosphorus in the soils, an essential element for the medics, was also a known problem and there was a question of the availability in the soils of appropriate rhizobia, small bacteria without which the medic plants could not capture their nitrogen supplies.

There were also additional problems, hidden at the time, which would have added to the arguments for more research before transfer. For example, weeds, rodents, starlings and other pests played havoc with the medic establishment in some of the areas later used to demonstrate the South Australian systems.

Other experts had a more pragmatic opinion. They pointed out that the medics are native plant species found growing throughout West Asia and the Mediterranean Regions and they therefore contended that they would naturally succeed if reintroduced with the right help and grazing management. They believed the task of transferring this agricultural knowledge should be tackled by simply demonstrating the systems used in South Australia, leaving research to fine-tune any gaps.

This approach was supported by the farmers who became involved in the transfer process. They could point out that the main elements of the dryland farming system used at home had been largely developed on the farm by farmers themselves. They saw merit in developing a farmer to farmer, face to face operation.

There was of course some merit in each of these views and gradually, as the process of transfer progressed, adaptations were made to the projects by the recipients and by the Australians to get the best of all worlds.

The social and political differences loomed very large indeed and had their real impacts been given the weight deserved, the professional agriculturalists on both sides of

the world would probably never had initiated anything.

For example, farm sizes were generally much smaller (less than 100 ha) than in South Australia, often necessitating the owners to live in the nearest town or village to supplement their incomes, leaving the operations of the farm to a contractor.

More importantly, as outlined at the beginning of this chapter the dryland farming system used in South Australia required the integration of the cropping enterprise with the livestock management, a very uncomfortable undertaking for most land-owners in West Asia and the Mediterranean region where, by tradition, those who owned and managed the livestock were often nomads belonging to different races or at least different families. The cereal farmer would therefore find it very hard indeed to outlay money and time to establish the necessary medic pastures which would initially benefit only the itinerant livestock owners. There was also another constraint, it sometimes took a number of years before cereal yields under a medic-cereal rotation, out yielded production from a fallow-cereal system.

Generous government price intervention for agricultural commodities and resources such as cereals and fertilisers and herbicides also discouraged farmers to change and adopt Australian agricultural ways.

With all these issues in mind the planners on both sides of the equation had to choose, within the extent of the resources available, what might be the best strategies for transferring the technology. Basically they had two choices. To transfer the information to farmers on a piece-meal basis demonstrating specific procedures such as shallow seeding, medic establishment and management on selected farms or undertake large scale whole farm demonstrations where the whole system could be put in place just as it would operate in South Australia.

In the case of the South Australian projects in Libya, Algeria and Iraq, described in later chapters, the choice was initially made to transfer the technology on to large scale areas despite the fact that these did not easily relate to the small surrounding farms. Those who largely influenced these decisions, Jodah in Libya, Doumandji in Algeria, and Marouf in Iraq were well trained, experienced and clever men who opted for the large scale demonstrations because they knew that the extension services in their countries were very limited and because they believed these large projects would give the political clout needed to have the changes adopted.

Mr Ezzaddin, the field director of the 5,000 ha South Australian project at Ain Kawah, in northern Iraq stated to the author when discussing the wisdom of the large scale operation when most surrounding farms were only 15 ha in size. 'The most important thing is to demonstrate to the Government that the South Australian methods can work here and have more economic value than our traditional ways. It would be impossible to measure the advantages on all these little farms some of which only have donkeys and carts. Large sales of good quality wheat from this demonstration site will convince Baghdad more than the existence of medic pastures or any other agronomic arguments. Besides the Government controls the land in this country and if this system works best on large farms then we will make large farms'.

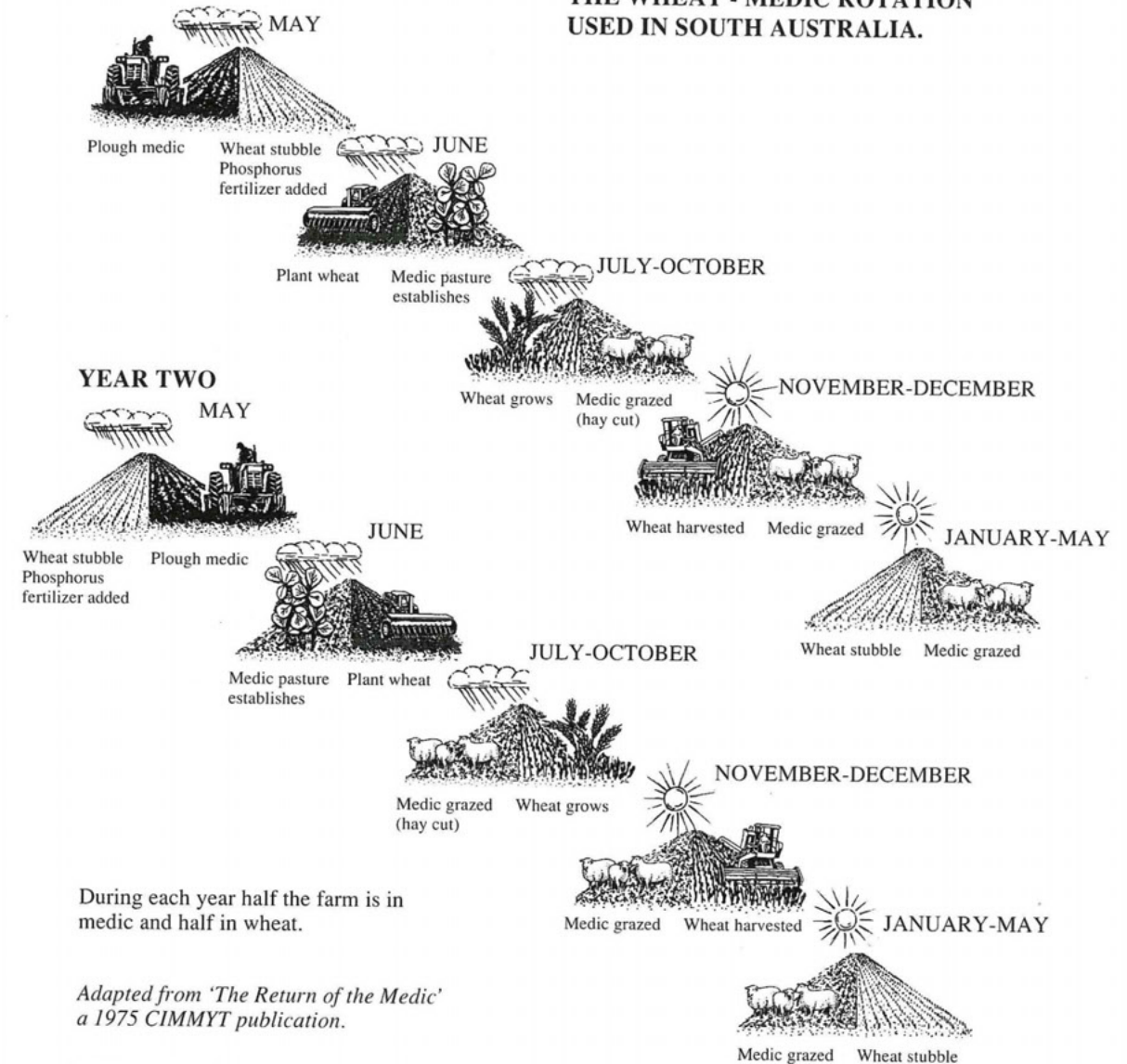
This glimpse of the thinking behind the transfer strategies ignores the human dimensions so easily advocated as an essential consideration by rural sociologists at home. Never-the-less it was the real world for those with a wider vision and knowledge like Ezzaddin who knew that in his country convincing the rulers was a step even more

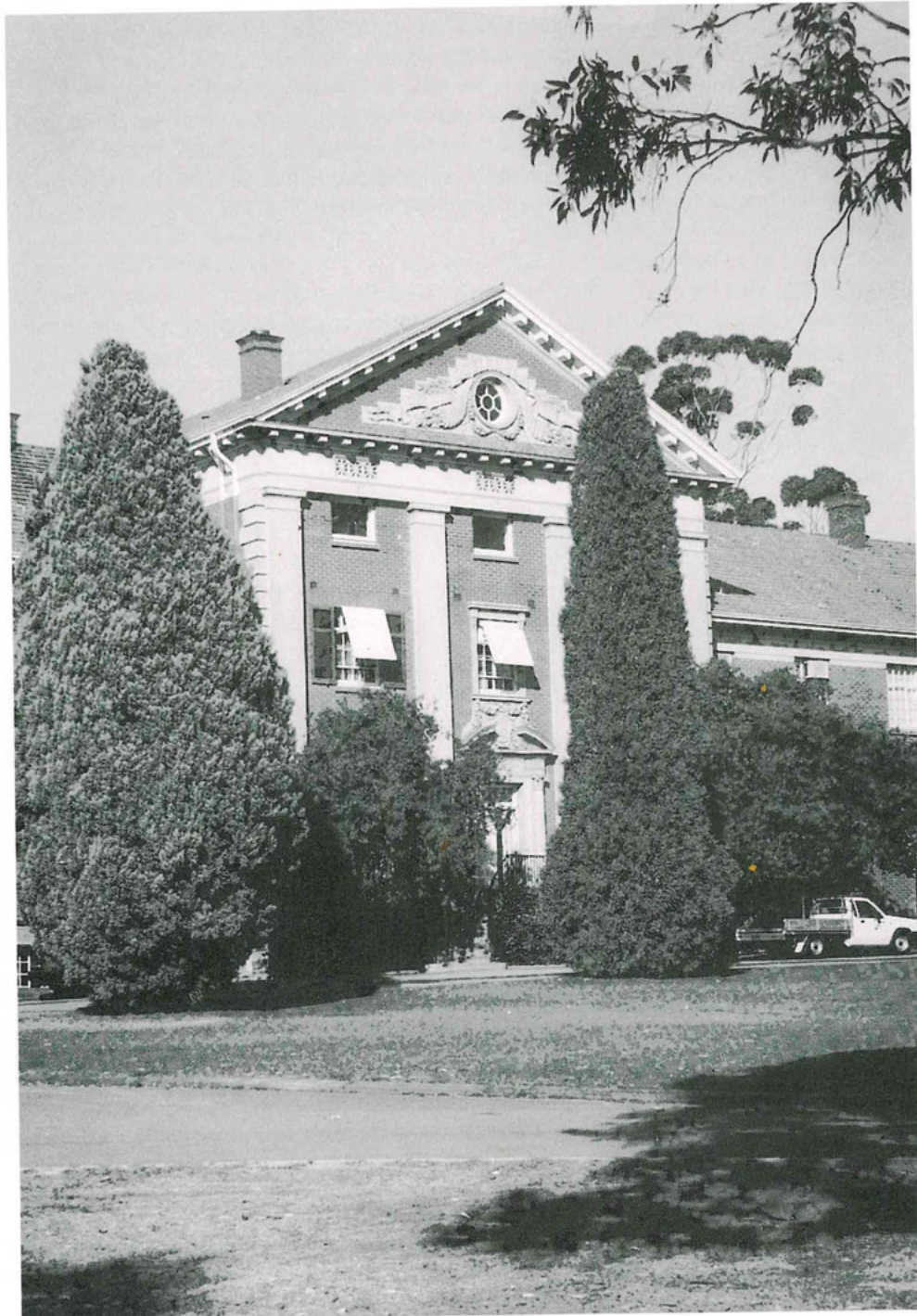
important than convincing the farmers. Ezzaddin was killed by an assassin's bullet, a tragedy leading to the loss of his influence and wider vision for his people.

Before agricultural technology and experience began to flow from South Australia (and also from Western Australia and other parts of our Continent) at this farm-size level there had been a period of more than thirty years during which many people here and in the old world gradually laid the technical foundations and human relationships which eventually coalesced enabling the large scale work to begin. The following chapters tell the story.

YEAR ONE

DIAGRAM II  
THE WHEAT - MEDIC ROTATION  
USED IN SOUTH AUSTRALIA.





*The Waite Agricultural Research Institute - University of Adelaide, South Australia. Researchers working from this Institute have made lasting scientific contributions to dryland farming.*

## CHAPTER II

### ACADEMIC BEGINNINGS

Our noble game of cricket can arguably claim to have provided one of the earliest motives which developed the transfer of agricultural expertise to countries around the Mediterranean and in West Asia.

Those who know the more obvious links such as dryland farming skills, the export dollar or Arab nationalism, may feel the choice of cricket a flippant beginning to an important aspect of South Australian history.

Nevertheless this aspect of the State's agricultural activity saw its first milestone on Friday, 2 March 1925 when a new agricultural science graduate arrived in Adelaide from Melbourne to take up a position of Research Agronomist at the newly founded Waite Agricultural Research Institute. His name was Hugh Christian Trumble, destined to become one of the Institute's most influential professors during his twenty-eight years of service.

He brought with him an intense interest in the turf of the cricket pitch which had developed from his father's prowess as a test cricketer and his own participation in and love of the game.

In 1925 little was known about the complex nature of southern Australian pastures which turned to brown nothingness in summer, so different from the English swards which had fathered the playing turf. Trumble therefore turned his able mind, sharpened by this inherent interest, into the research of the principles which might govern the establishment and management of productive pastures for southern Australia.

Right from the beginning of his career he insisted that research coming under his direction should always work towards practical objectives with immediate benefits to farmers. He tackled the more fundamental lines of research only after they arose naturally in connection with unresolved problems.

Having this philosophy he quickly appreciated the importance of legume pasture species accidentally introduced from the Mediterranean and West Asian countries which he found leading farmers were already exploiting. He also observed that useful species



Professor Hugh Trumble

from these regions were still being accidentally introduced. This led him to campaign and plan for scientific plant introduction missions to these countries as a basis for future pasture improvement.

In 1928 Trumble had his first opportunity to test these assumptions. The Empire Marketing Board was concerned that the French were stealing a march on merino wool production by developing pastures and productive flocks in their north and west African colonies. Trumble was invited to assess those developments, observe pasture research in the United Kingdom and on the way home advise the Board on fostering livestock production in Palestine and the Transjordan which at the time was under British rule.

Everywhere he travelled he constantly compared the rainfall patterns and soil types with those in South Australia. He saw at first hand the herbage species which had

found a place in some of the pastures at home and he became more and more convinced that great value could be gained by further exploiting the genetic resources within these natural pastures under the animals' feet.

As obvious as it may seem today this was a new concept. In Morocco, for example, Trumble found that an American, H. L. Westover, working for the United States Department of Agriculture, had already undertaken four plant collection missions. Adhering to the view that pastures must be harvested and fed, he largely confined his collecting to harvested seeds he found for sale in the souks. Trumble was sure the genetic resources were much broader provided those searching looked into the natural flora, under the feet of the sheep and goats as he said.

It was this concept which became one of the most important elements which created the close ties which developed between agriculturalists in South Australia and these far away regions.

Back at home his scientific colleagues tried to take up the challenge in the 1930s with limited resources by conducting missions using, the herbarium, the desk and the postal services (Trumble's description) which predictably failed. It was not until after the war that the search began in earnest in foreign lands.

By that time Trumble was beginning to turn his attention to advising the Food and Agriculture Organisation of the United Nations (FAO). When he left South Australia in 1953 his colleagues and students knew much about the similarities between plant growth in these two sectors of the world and the possible advantages of exploiting the gene pool of the old world for the betterment of our pastures.

No one at that time contemplated the cultural, social and economic implications of Trumble's innings.

## COLLECTING MEDICAGO GENES

The increasing importance of wool production after the war and the consequent need for more productive pastures gave further emphasis to the need to conduct scientific collection missions recommended by Trumble. Also by then, barrel medic (*Medicago truncatula*) had been commercialised in South Australia and its importance could not be ignored by the leading farmers.

In 1951 Professor Colin Donald who was to replace Trumble at the Waite Agricultural Research Institute made the first deliberate attempt to collect, 'under the feet of the sheep and goats' from most of the countries surrounding the Mediterranean Sea. Cedric Neil-Smith followed in 1954 and then David Symon, Senior Botanist at the Waite Institute, in 1956<sup>1</sup>.

Medicago seed from these missions was distributed to the South Australian Department of Agriculture by the Division of Plant Industry, CSIRO, Canberra which was the National co-ordinating organisation for all plant genetic resources introduced into Australia.

The medic seed allocated to South Australia was used in variety trials established by E. D. Higgs and E. J. Crawford at Corny Point, Booleroo Centre and Wanbi.

Similar seed was tested in Western Australia where the first annual medic cultivar to be developed from these deliberate introductions, Cyprus barrel medic, was released for commercial use in 1959.

In 1956 Crawford was appointed Plant Introduction Officer in the Department of Agriculture and began the task of establishing a resource centre for *Medicago* genetic material at the Parafield Research Centre on the northern edge of Adelaide.

His recognition of the enormous variability in important medic plant characteristics such as seedling vigour, winter herbage production, time of flowering, seed production and seed coat permeability established the need for careful indexing, preservation and further collection.

In 1967 he was able to significantly add to the collection after undertaking a four month field tour of Cyprus, Israel, Italy, Portugal, Spain and Turkey. Ten years later Crawford was able to put another stepping stone in the successful return of the medics to the region when he was seconded to the International Centre for Agricultural Research in Dry Areas (ICARDA) to advise on the evaluation of the *Medicago* projects established in Iraq, Jordan and Syria and to make further collections.

Since 1951 fifty-two scientific collection missions have been undertaken by Australian scientists fulfilling Trumble's wildest dreams. This enormous effort has resulted in the Australian *Medicago* Genetic Resource Centre being established within the South Australian Department of Agriculture where today more than 16,200 accessions have been assembled and preserved under refrigeration.

Over the last two decades approximately six hundred free seed samples have been provided annually to interested scientists in the countries from which the collections were made and elsewhere in the world.

<sup>1</sup> The search was not just confined to the medics and clovers. The Institute under Donald's direction searched for perennial grass species in these regions believing they would offer better stability to southern Australian pastures thereby preventing their degeneration by unpalatable weeds.

TABLE I

CULTIVARS OF ANNUAL MEDICAGO SPECIES COMMERCIALISED IN AUSTRALIA		
Species	Cultivars	Countries of Origin
<i>M. littoralis</i>	Harbinger	Iran
<i>M. littoralis</i>	Harbinger AR	Australia (bred)
<i>M. murex</i>	Zodiac	Sardinia
<i>M. polymorpha</i>	Circle Valley	Australia (naturalised)
<i>M. polymorpha</i>	Serena	Australia (bred)
<i>M. polymorpha</i>	Santiago	Chile
<i>M. rugosa</i>	Paragosa	Portugal
<i>M. rugosa</i>	Paraponto	Italy
<i>M. rugosa</i>	Sapo	Portugal
<i>M. scutellata</i>	Robinson	Australia (naturalised)
<i>M. scutellata</i>	Sava	Unknown
<i>M. scutellata</i>	Kelson	Hungary
<i>M. tornata</i>	Tornafield	Australia (bred)
<i>M. tornata</i>	Rivoli	Morocco
<i>M. truncatula</i>	Ascot	Australia (bred)
<i>M. truncatula</i>	Borong	Tunisia
<i>M. truncatula</i>	Caliph	Australia (bred)
<i>M. truncatula</i>	Cyprus	Cyprus
<i>M. truncatula</i>	Hannaford	Australia (naturalised and selected)
<i>M. truncatula</i>	Jemalong	Australia (naturalised and selected)
<i>M. truncatula</i>	Mogul	Australia (bred)
<i>M. truncatula</i>	Parabinga	Jordan
<i>M. truncatula</i>	Paraggio	Italy
<i>M. truncatula</i>	Sephi	Israel

This table was originally prepared and published by E. Crawford, up-dated by G. Auricht.

These collections contributed towards the development of twenty-four cultivars detailed in Table I. It helped establish a network between scientists and institutions on which the transfer of other agricultural technologies were later based and above all the collections saved the Medicago gene pool which would otherwise have disappeared from the mother countries where intense deep cultivation, grazing, land degradation and the use of herbicides were rapidly destroying the source for ever.

#### MUDDY BOOT TRAINING

In 1973 the Director of the FAO Regional Project on Field Food Crops, Dr Hafiz, who was stationed in Cairo, visited Australia and assessed the appropriateness of Australian agricultural technology for the countries in the region for which he was responsible. His region covered all the developing countries in West Asia and northern Africa.

As a result of his visit Roseworthy Agricultural College staff were invited to develop a course in dryland farming for graduates from Dr Hafiz's region. The then Principal of the Roseworthy Campus, Dr Don Williams, enthusiastically accepted the challenge, realising that it could help the developing countries and support the projects being developed for technology transfer by the Department of Agriculture.



Australian medic collecting missions throughout the Mediterranean Region, over a period of 40 years, have enabled the South Australian Department of Agriculture to establish a Medicago Genetic Resource Centre. This Centre has provided the basis for establishing productive medic pastures world wide. This photograph shows Eric Crawford, who played a leading role in establishing the Centre, collecting medic material near Aleppo in Syria.

Mr Hugh Reimers was appointed course coordinator and was given the task of developing the curriculum with help from the extension specialist at the College, Basil Sheahan. Later, when the course became a reality, three new staff members were appointed to ensure that the overseas students had maximum staff contact.

Dr Hafiz won financial support for the course from Saudi Arabia which promised \$US650,000 over a five year period.

A well directed contribution from the Australian Freedom From Hunger Campaign enabled the additional accommodation to be provided at the College.

Reimers and his colleagues set about developing the curriculum of ten subjects for the twelve-month course. Eighty-four hours were to be devoted to each subject of which fifty-four were set aside for 'muddy boot' practicals and field trips. The subjects covered field crop and pasture production, livestock management with particular emphasis on sheep, farm machinery, agricultural economics, agricultural extension and some broader environmental topics.

After a visit from FAO task force leaders in September 1975, who assessed and accepted the proposed course, a contract between FAO and the College was drawn up to train fifty students between 1976 and 1980. After the course had been successfully held for two years the Australian Development Assistance Bureau (ADAB)<sup>1</sup> agreed to finance students and eventually supported seven, mainly from West Africa.

1. In 1987 The Australian Development Assistance Bureau (ADAB) was changed to the Australian International Development Assistance Bureau (AIDAB).

Both partners to the contract assessed the course in Australia and with students after their return home. There were obvious language difficulties, three out of four students arrived with only poor English and some suffered from the isolation of the campus at Roseworthy 50 km north of Adelaide. They complained about their \$150 per month pocket-money allowance. However all agreed that their training was effective. This undoubtedly was due to the personal care and interest offered by the Principal and staff and the emphasis on practical agriculture.

After visiting a cross section of his students back in their home countries Reimers reported that the course had avoided the higher degree syndrome of developing countries which often placed their people with overseas research qualifications (PhD graduates and Master Degree graduates) in promoted positions of status but who were without practical worth in their communities. He found that the majority of his students, who came from nineteen countries, had gone back to positions of practical influence. Only one student remained in Australia.

All students and there were more than fifty who completed the course, were granted the Diploma in Agriculture (International) or as it finally became known, the Diploma in Agriculture (Dryland Farming Systems). The Diploma was only offered to students from overseas so they were not competing against local students with fluent English in a familiar study and living environment.

At the end of the contract in 1980 the training program stopped. FAO expected the course to become self-funding. The College could not find the resources to continue alone and so this effective academic contribution to the transfer process just faded away. Fortunately the demise of this course did not entirely put an end to agricultural training of students from the regions covered by this review. Short courses at the College, in particular subjects such as sheep production, have been organised and a trickle of self-funded students still study at the campus each year.

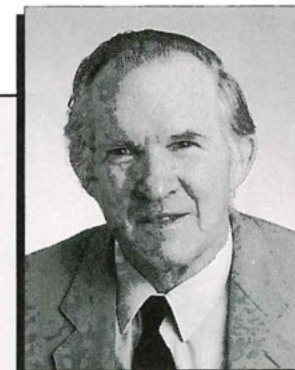
### THE ACADEMIC ROAD

There is no doubt about the leading role played by the Waite Agricultural Research Institute in the transfer of dryland farming skills and knowledge into the developing countries covered by this Review.

Students have come from all the countries surrounding the Mediterranean and from West Asia to undertaken courses and research in the plant, soil and animal sciences offered at the Institute and to be influenced by the very successful wheat, barley and other plant breeding programs.

This academic road was also taken by most South Australians and members of the Department of Agriculture who feature in future chapters. They received their initial training and higher degrees at the Campus. The State was indeed fortunate to have an academic foundation for its farming systems second to none.

While the network between South Australian agriculturalists and their counterparts in the developing countries was spreading and strengthening those with dryland farming hardware to sell were early participants in the transfer process. As the following chapter tells they moved into these countries seeking a share of the oil wealth in exchange for a wide range of sound products such as wheat, pasture seed, agricultural machinery and fences



### A PROFILE — Edward Carter<sup>1</sup>

Edward (Ted) Carter grew up on a farm at Windsor, 60 km north of Adelaide in the Dublin scrub country. He knew what it was like to dryland farm in a fickle environment.

Having graduated from the University of Adelaide with First Class Honours in Agronomy in 1950 Carter was given the task of establishing the new Department of Agriculture Research Centre at Parndana on Kangaroo Island. From that day he gained the reputation of doing everything at the double with great energy and incredible enthusiasm. He still holds all that energy and enthusiasm which has impressed his students and agriculturalists around the world.

He joined the staff of the University of Adelaide in 1960 where he has continued to work at the Waite Agricultural Research Institute Campus. He quickly established a reputation for both his basic and practical knowledge of pasture establishment and management and also livestock production in South Australia.

He entered the international scene undertaking advisory work with the Rockefeller Foundation in South America before he accepted membership of a review mission in 1973 which gave him an opportunity to assess agricultural research and development needs in Algeria, Lebanon, Iran, Iraq, Syria and Tunisia. In this way Carter continued the Waite Institute's already long history in the transfer of agricultural technology from South Australia to these countries.

His initiation proved to be a very important contribution indeed because it established at a formal international level southern Australian dryland farming technology as a part of the research dimensions for the Region.

The 1973 mission in North Africa and West Asia was carried out for the Technical Advisory Committee (TAC) of the United Nations Consultative Group on International Agricultural Research (CGIAR).<sup>2</sup>

At the time the late Sir John Crawford, Vice-Chancellor of the Australian National University, was Chairman of TAC. Australia was therefore in a very strong position to influence the direction of the consultative group.

The mission recommended the formation of an international research centre for dryland farming. In 1976 the recommendation was acted upon by CGIAR and the now famous International Centre for Agricultural Research in Dry Areas (ICARDA) was established at Aleppo in Syria.

Significantly, Carter had to fight hard to ensure that the charter adopted by ICARDA covered research into a farming system involving cropping, pastures and livestock production.

Several of Carter's mission colleagues contended that the needs of the region would be answered if research concentrated on improving barley and other crop yields by repeating what CIMMYT had achieved in Mexico and other parts of the world.

From the South Australian dryland farming experience Carter knew the constraints imposed by the lack of rainfall and that by only concentrating on the cropping phase the potential productivity would not be achieved.

It was five years before these views were finally accepted and an integrated crop-livestock farming system research program at Aleppo was firmly in place.

Ted Carter has maintained a keen interest in ICARDA all its life and with its commitment to the wider research he advocated it has made an excellent contribution to agriculture in the Region.

<sup>1</sup> Edward D. Carter has recently retired as a Senior Lecturer in the Agronomy and Farming Systems Department in the Faculty of Agricultural and Natural Resource Sciences at the University of Adelaide.

<sup>2</sup> CGIAR is sponsored by the World Bank, FAO and UNDP. It is described as an informal voluntary association of donors operating without a legal charter on a basis of a sense of common purpose. CGIAR supports thirteen international research centres with an annual budget totalling about \$ (Aus) 300 million which is provided by more than forty donors.



*Senior Libyan officials visiting the Horwood Bagshaw Agricultural Machinery Plant at Mile End, South Australia, 1974.*

*(left to right) Mr Bashir Jodah, Chairman, Jabel El Akhdar Authority; Mr Ray Henry, Export Manager, Horwood Bagshaw; Secretary to the Libyan Minister of Agriculture; Mr Max Saint, Director, Horwood Bagshaw; the Honourable Abdul Majeed al Gaoud, Minister for Agricultural Development, Libya and Mr Ken Waters, Factory Manager.*

## CHAPTER III

### THE SALES PITCH

#### INTRODUCTION

South Australian agricultural commodities such as wheat and wool have traditionally had strong markets into West Asia and the Mediterranean countries since World War II. The attendant sales services inevitably brought contact between our marketing organisations and the buyers.

Transferring the agricultural technology used to produce these essentials came to be seen by the South Australian Government (and other Australian Governments) as a means of strengthening sales and hopefully of opening up new markets for new products. Some growers in South Australia were not of the same mind, particularly those in the pasture seed industry who believed that it was fine to open up their seed exports to developing countries but to offer, or even to sell the know-how to produce these seeds as a part of the dryland farming package, was going a step too far. It was as good as cutting one's throat.

Opposition voices were loud. Wouldn't these countries become self-sufficient and eventually have no need to purchase our commodities? The answer to such concerns came from the real world of competition where, if we did not market our knowledge, then others, either from within Australia or overseas, would quickly do so.<sup>1</sup>

Long before such concerns were expressed, intrepid South Australian salesmen (and they were all men) moved into these countries with machinery, seeds, fencing and other agriculturally related goods to sell. As these had been developed within the context of the dryland farming system the salesmen inevitably took with them the full story which gave impetus to the transfer process.<sup>2</sup> They realised that if they had the support of agronomic consultants and other specialists they would be more successful and so they paved their way and sometimes paid their way.

<sup>1</sup> As events have turned out political instability in many of the countries to which our dryland farming technology has been transferred has prevented the efficient development of pasture seed production on any large scale so that these concerns have still not become an issue.

<sup>2</sup> It must be emphasised that these developments, while recorded here in the South Australian context were not uniquely South Australian. Equally successful salesmen from other Australian states moved into these markets.

The part played by agronomists, livestock specialists and many others in the transfer of our agricultural knowledge is told in future chapters. But firstly the contributions made so early in the process and so effectively by the pasture seed industry and the agricultural machinery manufacturers and companies involved in fencing, sheds and silo sales need to be recorded.

#### FOR SALE — Pure Medic, Lucerne and Subterranean Clover Seed

By 1960 the South Australian Department of Agriculture had in place a well tried seed certification scheme which ensured that seed, particularly seed used for establishing pastures was genetically pure and met international standards. Special field officers maintained standards by making frequent field inspections. Before the bags were sealed and tagged samples were taken and laboratory-tested to establish the viability of the seed and to identify any weed seeds or foreign matter present. Hence the pasture seed industry in South Australia at that time had its standards right but lacked efficient production and marketing. At the beginning of that decade sales had never been lower. By the end, three events had completely changed it into a multi-million dollar enterprise with sales to twenty countries in South America, Europe, African and West Asia.

Newton Tiver, a senior research officer in the Department at that time studied herbage seed production in America. He saw the potential of irrigated seed production from the largely unused underground water supplies in the South East Region of the State. He undertook research and extension programs with the help of a specialist team which included entomologists and weed scientists.

Encouraged by this support, an association of seed producers was formed. They decided that they would become involved in their own marketing, rather than rely solely on pastoral houses and a few seed companies who were merchandising seed to the disadvantage of market stability and prices which were hurting the growers.

On 15 June 1964 the South Australian Seedgrowers Cooperative Limited (Seedco) was registered by the Association. Anthony Brookman, who owned a property at Meadows, became the first Chairman of the Board and Gordon Brown, an experienced seed grower from Kongal in the South East, was appointed part time manager.

The third factor which turned the industry around was the appointment of a full-time professional manager, Patrick Farnan. He commenced duties as manager in August 1964 having gained his initial experience as Secretary of the Riverina Seedgrowers Cooperative Limited in NSW.

Farnan knew that the cooperative now had an assured supply of top quality medic, subterranean clover, lucerne and grass seeds in a range of cultivars some of which were quite unique. He was ready to take on the world and did so, constantly travelling until he retired in December 1987. He first travelled overseas to Spain and other European countries in 1966 and eventually made thirty-seven international tours on behalf of the cooperative. His largest single sale of 764 tonnes of medic seed was to the Moroccan Government in 1985. Its value was almost \$A1.5m.

Farnan first made his way into Libya six years before the South Australian Demonstration Farm was established and did much to make that project a reality.

He showed incredible persistence. In 1973 he spent all of June and July working under very difficult conditions convincing anyone who would listen that their enormous

agricultural development projects needed sources of sound seed, particularly the medics and that Seedco from far away Australia was the appropriate source and not the nearby Europeans.

Bashir Jodah, the Chairman of the Jabel El Akhdar Development Authority (see Chapter V) and Farnan agreed that after sales-service should be a part of any seed contract. Farnan knew he had a growers organisation behind him which could provide very skilled farmers to work side by side with the new Libyan landowners to ensure that their seed purchases were correctly sown.

Eventually a contract was hammered out for 200 tonnes of medic and oat seed together with a separate service contract to provide four growers to work in Libya from September 1973 for three months.

The team comprised the leader Geoff Treasure, Gordon Brown, Neville Crawford and Geoff Rowett. While they arrived on time the large consignment of seed did not which seriously threatened future business. Luckily the season was very late and good rains followed. The final pastures were excellent.

Having the South Australian farmers to assist them with cultivation and seeding proved very popular with the Libyan farmers (less so with some of the Libyan professional agriculturalists who felt threatened by the well organised, competent team). This proved a vital step in the transfer process; one which was later reinforced by the South Australian Government and which became a part of the El Marj Demonstration Farm Contract (see Chapter V) and future work in other countries.

Similar contracts involving seventy-six appointments (see Appendix IV) were signed with the Authority each year for the next decade and continued after the South Australian Government had completed its contract on the Demonstration Farm. The farmers' contracts underpinned Seedco's continued seed sales and helped the company win two Australian Export Awards during that time.

The following tables extracted from the Australian Bureau of Statistic's records quantify medic and lucerne sales in the three countries where South Australian projects were developed during the 1970s.

TABLE II

Year	Libya		Algeria		Iraq	
	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)	Weight (kg)	Value (\$)
1972 - 73	—	—	10987	6403	—	—
1973 - 74	133599	135 000	—	—	—	—
1974 - 75	711 375	722 000	136 200	166 000	—	—
1975 - 76	—	—	—	—	—	—
1976 - 77	242 000	266 000	331 000	395 000	9 000	6 000
1977 - 78	—	—	650	796	—	—
1978 - 79	120 000	135 811	120 000	136 000	—	—
1979 - 80	160 000	202 829	160 000	203 000	98 640	237 000
Total	1 366 974	1 461 640	758 837	907 199	107 640	243 000

1 Australian Bureau of Statistics Records

## AGRICULTURAL MACHINERY

By the early 1960s countries around the Mediterranean and in West Asia had started to realise that they needed access to agricultural machinery entirely suited to dryland farming and not machinery from Europe which had largely failed them.

Agricultural machinery manufactured in South Australia was tough, able to cope with the usually shallow, stone riddled profiles. It could seed at constant, shallow depths despite uneven soil surfaces, place the fertiliser near the seed in one operation and handle trash.

South Australian companies responded to the developing markets and thereby added a vital link in the transfer of the ley farming system.<sup>2</sup>

Before Mr Ray Henry was appointed Export Manager for Horwood Bagshaw in the early 1960s the Company had relied entirely for its sales on marketing in South Australia and Western Australia.

In 1964 he began working in Africa and the countries around the Mediterranean. He continued a very active sales career in the region until 1979 living in Rome for the last three years.

When he was on his first trip he visited Sudan and was surprised to find an Australian consignment of one hundred unused disc ploughs which had been delivered in the early 1950s. There had been no follow up to the sales and he immediately realised that if Australian companies were to be successful and he found plenty of scope, there would have to be reliable after sales service.

He learnt further valuable principles of export salesmanship when he visited Ceylon, Burma, Thailand and the Philippines and found Japanese sales executives in every corridor and every lift prepared to fly experts to the spot if there was any trouble with goods they had sold.

He realised that Horwood Bagshaw could not do it alone despite the excellent assistance he got wherever he went from the Australian Trade Commissioners. Back at home he therefore encouraged any company who would listen, to join forces to penetrate the markets.

Success came relatively quickly when in 1966 Horwood Bagshaw made the first sales of ploughs, scarifiers and drills built in South Australia to Libya. The order travelled with Seedco's seeds, rock loaders from Bourne at Pine Point, Chamberlain tractors from Western Australia and Lysaght steel.

Encouraged by the success of working together he and other businessmen formed the Australian Farm and Industrial Equipment Manufacturers Association in 1967 (AFIEMA).

At that time headlines in the financial section of the Advertiser announced, "Horwood Bagshaw Exports Leap" and in his report to shareholders the Chairman, Sir Keith Angus confessed that had it not been for exports which had increased by 65% over the previous year the Company's results would have been very poor indeed.

Ray Henry continued to work hard to get South Australian machinery exporters and other firms to work as a consortium. Filling his role as Chairman of AFIEMA he worked to promote Australian machinery and incidentally passed on orders for trailers, bee keeping equipment and even pedal radios which he negotiated during his travels. Sadly,

<sup>3</sup> South Australian companies were not the first to send salesmen into the region. Connor Shea from Victoria for example had made early sales to various countries.

they were rarely taken up by local manufacturers who at that time were finding plenty of business at home and were not prepared to worry about exports.

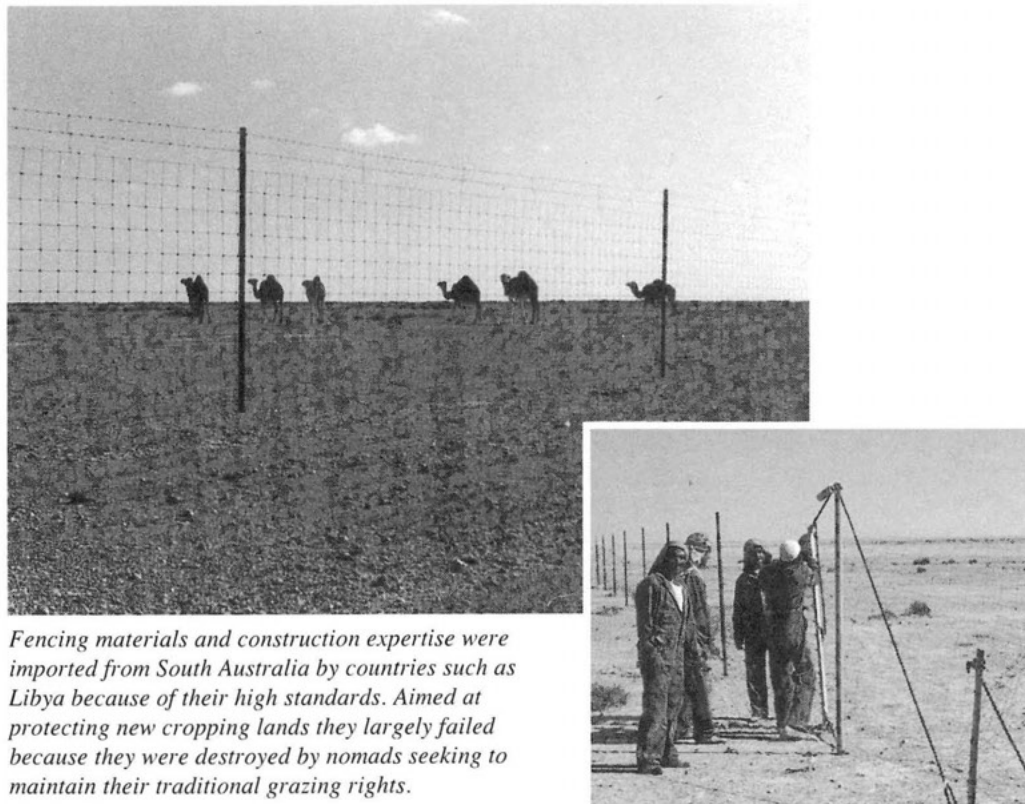
TABLE III

AGRICULTURAL MACHINERY EXPORTS FROM SOUTH AUSTRALIA*							
<u>LIBYA</u>							
	Cultivation Equipment		Seeders		Harvesters		Spare Parts
Year	No	\$	No	\$	No	\$	\$
1971-1972	62	84,317	.....	.....	.....	.....	.....
1973-1974	38	74,000	80	177,000	.....	.....	.....
1975-1976	1531	1,078,000	.....	.....	.....	.....	86,000
1976-1977	3	9,870	.....	.....	2	45,294	168,153
1977-1978	1315	1,053,000	515	1,162,000	.....	.....	30,292
1978-1979	.....	.....	7	108,504	.....	.....	54,960
1979-1980	.....	.....	.....	.....	.....	.....	12,056
1980-1981	.....	.....	.....	.....	.....	.....	174,017
1981-1982	.....	.....	.....	.....	.....	.....	2,497
<b>Total</b>	<b>2949</b>	<b>2,299,187</b>	<b>602</b>	<b>1,447,504</b>	<b>2</b>	<b>45,294</b>	<b>527,975</b>
<u>ALGERIA</u>							
			Seeders				Spare Parts
Year	No	\$	No	\$	No	\$	\$
1978-1979	.....	.....	7	108,514	.....	.....	54,960
1985-1986	.....	.....	50	523,500	.....	.....	10,248
<b>Total</b>	.....	.....	<b>57</b>	<b>632,014</b>	.....	.....	<b>62,208</b>
<u>IRAQ</u>							
	Cultivation Equipment		Seeders				Spare Parts
Year	No	\$	No	\$	No	\$	\$
1978-1979	.....	.....	12	113,576	.....	.....	24,736
1979-1980	52	507,000	15	67,098	.....	.....	92,029
1980-1981	4	33,926	53	772,413	.....	.....	258,411
1981-1982	.....	.....	2	1,751	.....	.....	266
1982-1983	.....	.....	.....	.....	.....	.....	4,481
1983-1984	.....	.....	.....	.....	.....	.....	21,966
1984-1985	.....	.....	1	16,745	.....	.....	3,649
1985-1986	.....	.....	250	3,063,000	.....	.....	113,665
<b>Total</b>	<b>56</b>	<b>540,926</b>	<b>333</b>	<b>4,034,583</b>	.....	.....	<b>519,203</b>

\*Extracted from Australian Bureau of Statistics Records.

In the 1970s, when very large orders for agricultural machinery started to be negotiated AFIEMA fell by the way-side. The individual companies allowed commercial competitiveness to rule. When interviewed in 1991 Henry lamented, 'they lost sight of the future'. 'Because they couldn't plan export marketing strategies and share some of the costs – look at them today. Massey Ferguson where I started working in 1949 just boarded up, Connor Shea, gone. International Harvester, gone. Horwood Bagshaw and John Shearers just a shell of what they were'.

As the 1970s progressed and Horwood Bagshaw's influence in these markets fell away John Shearer Ltd., their South Australian competitors quickly took the lead and made some spectacular sales as table III shows. There is no doubt that the South Australian farm machinery industry, like the seed industry, played a vital role in enabling the dryland farming system to be introduced and tested in the Mediterranean and the countries in West Asia. But since doing so it has largely fallen by the wayside and leaves one wondering how the dryland farming system at home or overseas will cope in the future.



*Fencing materials and construction expertise were imported from South Australia by countries such as Libya because of their high standards. Aimed at protecting new cropping lands they largely failed because they were destroyed by nomads seeking to maintain their traditional grazing rights.*

## FENCING

Selling fences to the countries in the region equates with selling refrigerators to Eskimos.

While fences are an integral and essential part of Australian farming systems they certainly do not fit into the rural and pastoral cultures of communities in countries such as Algeria, Iraq and Libya who were exploring those dryland farming systems. Many centuries ago Allah had decreed that the residues following cropping belong to all who own stock which need grazing.

Never-the-less authorities throughout the region bought thousands of tonnes of fencing from intrepid salesmen such as Cyclone K-M Product's Todd Facey, recognising the need for more controlled farming and, no doubt, in many cases with the added political, economic and social aims of achieving better control of their nomadic populations.

Steven Hinge gives an insight into the fencing projects in Libya. In September 1978 he answered an advertisement in the 'Advertiser' inviting applications for employment to erect fences in Libya. He won a six week contract at \$500 a week, all expenses paid. Within a few weeks he found himself at El Marj where fellow South Australians had established the dryland farming demonstration site.

Confronted with a huge 1,000 tonne stockpile of packaged fencing supplied from Australia the Jabel El Akhdar Authority gave him the responsibility of supervising teams of Sudanese and Tunisian labourers to erect camel proof fences around Wadi El Bab and wadis at Karwuba and Mekhili. The aim was to train teams to erect these fences with the view of segregating grazing areas from newly developed farms.

The camel fences had been designed by Cyclone using 100 mm pig mesh two metres high with a double barb wire along the top and a single wire along the bottom.

Australian fencing supplies had many advantages over these from Europe and other sources. High quality steel and galvanising ensured longer life and orders arrived uniquely packaged for a particular job with wire strainers, gates and everything included. The fences were designed to be erected and strained quickly over long distances with variable size mesh to suit each location. Construction was such that the fences could resist any animals trying to get through but not, of course the nomads who cut them to maintain Allah's gift and gratefully accepted the added bonus of steel suitable for many more appropriate uses. The fences quickly deteriorated in many places.<sup>1</sup>

Hinge returned to Libya in early 1979 as a roaming adviser. Half his salary was paid by the company and half by the development authority. During this period he advised on the proposed 2,500 km fence to enclose an enormous new farm site at Bu Ngem made possible by underground fossil water piped from the south.

The aim to develop proficient construct teams with labour available in Libya failed despite the best of intentions and the Authority turned to contracts which included the erection as well as the supply. Gradually the enthusiasm waned leaving large supplies of fencing materials to deteriorate on the ground.

Steven Hinge was fouled by the propellers of a rescue boat sent to help when he was attempting to save a Libyan from drowning. After this accident he returned to Australia.

<sup>1</sup> At the Ain Kawah Project in Iraq 160 km of fencing completely disappeared within two years despite attempts to protect it by patrols and constant repairs. (see Chapter VII).



*Many consultants covering topics such as extension methods, agricultural economics and animal genetics were employed at all of the South Australian overseas projects to supplement the training of counterpart staff.*

*This photograph captured a group of Kurdish and Iraqi agricultural workers listening to advise from a machinery expert while learning to operate a harvester.*

## CHAPTER IV

### ADVISERS AND CONSULTANTS

#### INTRODUCTION

While the academics and then the salesmen were making their early and unique contributions to the transfer of South Australia's dryland farming technology to the other side of the world there was a third group, the advisers and consultants which appeared in the late 1960s.

This chapter can only focus on the efforts of a few of all those who made significant contributions but they offer an insight into the wide variety of institutions and people involved from South Australia. They indeed made important steps towards the large scale farming demonstrations projects later undertaken first in Libya and later in Algeria, Iraq and Jordan.

#### THE GUIDING LIGHT

Frank Pearson was an 'old school' agronomist widely respected throughout South Australia for his general agricultural knowledge which he had learnt from many seasons. He had an amazing ability to look into the eyes of any one crop growing in the field and see its strengths and weaknesses. Once it was in head he could accurately predict its yield.

As Chief Agronomist in the South Australian Department of Agriculture Pearson wisely tutored his young post-war staff who found it difficult to keep up to his sixteen or eighteen hour days<sup>1</sup> (war injuries made peaceful sleeping impossible for him). He constantly emphasised the requirements of adequate seedbed preparation for cereal crops and pasture establishment and often quoted Daniel Webster who in 1840 in a book titled, 'Remarks on Agriculture' wrote, 'Let use never forget that the cultivation of the earth is the most important labour of man'.

<sup>1</sup> A significant number of his new agronomists such as Dillon, Holden, Bicknell and Prance later played important roles in the overseas projects.

Living by these tenets Pearson responded enthusiastically to an invitation in 1968 to attend a trade fair in Tehran to assist the Australian Farm and Industrial Equipment Manufacturers Association with its exhibition. The Association was based at Industry House in Adelaide and was affiliated with the South Australian Chamber of Commerce and Industry. The Chairman of the Association, Ray Henry, as Export Manager for Horwood Bagshaw Ltd and who featured in the last Chapter persuaded the companies in the Association to pay Pearson's fare.

While in Iran Pearson was quick to realise that poor cereal crop yields were largely the result of the farmers' inability to place the seed on a firm, shallow seedbed in close association with the fertiliser. The author remembers Pearson's report to his staff in the Agronomy Branch when he returned. It was the first time that the possibility of transferring the particular technology was proposed as a means of supporting South Australian machinery sales in the Middle East.

Twelve months later Pearson was invited back to the Region as a consultant by FAO to expound the South Australian dryland farming system. At this time the 'Oregon System' of dryland crop production was also attracting wide interest and Pearson had to face considerable debate. Basically this American system concentrates solely on the production of high yielding cereal crops and does not incorporate a ley pasture legume phase for animal production. The system relies on weed free fallows and high inputs of nitrogenous fertilisers. The Oregon State University, amongst other American institutions, established an office of International Agriculture to service the transfer of their technology.

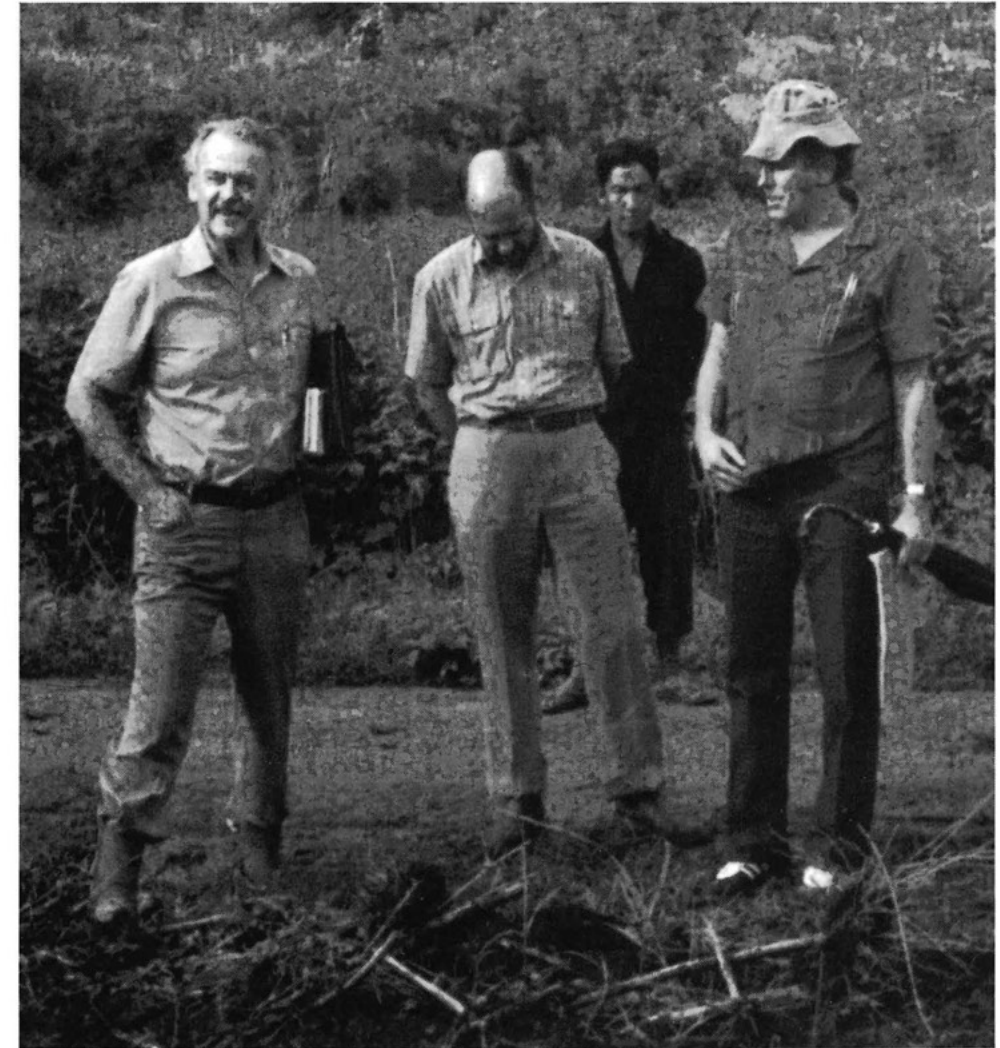
Time has proved that the two systems are largely complementary. For countries such as Turkey with elevated cereal areas and colder winters medics do not do well leaving an important place for the American technology.

Pearson had focused the beam for other consultants to follow. Significantly it was Newton Tiver who held Pearson's position of Chief Agronomist until 1965 who took up the challenge as a private consultant.

#### THE AUSTRALIAN AGRICULTURAL CONSULTING AND MANAGEMENT COMPANY

Hugh Robinson & Co achieved the first transfer of agricultural expertise from South Australia on a project basis to the Mediterranean Region. Twenty years later, operating as AACM International Pty Ltd and still with its Head Office in Adelaide it continues to attract a significant number of overseas projects and has now worked in over thirty countries.

When the Company (registered at the time as Australian Agricultural Consulting and Management Company Pty Ltd, AACM) launched its expertise into the international scene in 1971 it had branch offices throughout Australia. During the previous decade it had provided agricultural management and technical services to properties in all Australian states. By then the company was under the direction of two new owners, Philip Young and Newton Tiver, were both Adelaide University Agricultural Science graduates and 1960 scholarship winners. Young held the Nuffield Farming Scholarship for that year to the United Kingdom and Tiver studied irrigated agriculture in America for twelve months supported by a Harkness Fellowship.



*Newton Tiver (left), as an agronomist and a Director of the South Australian Agricultural Consulting and Management Company, played an important role in the 1970s and 1980s advising developing countries and the World Bank on the management of dryland farming projects in the Mediterranean Region and projects in Asia involving pasture development.*

They had already carved impressive careers; Young in War Service Land Development and property management, Tiver in pasture research and specialised herbage seed production under irrigation. The latter had rapidly risen to become Chief Agronomist in the South Australian Department of Agriculture and had resigned from this position in 1965 to enter into partnership with Young.

In 1970 both Young and Tiver attended the 10th International Grasslands Congress, held on that occasion in Queensland at the Gold Coast. Their expertise and the success of their company throughout the many different Australian environments impressed the

World Bank representatives, Dr Peter Brumby and Dr James Frausen who encouraged their participation in overseas consultancies. As a beginning Dr Brumby later used his influence to include them as members of agricultural investigation missions. Philip Young took up his first assignment as a member of an FAO livestock production mission to the Sudan in 1971. In the following year Tiver went to Nigeria as a member of a World Bank livestock mission. This paved the way for the Company to undertake its first offshore assignment.

While Young and Tiver were quietly feeling their way into the international agricultural consultancy network a series of events, linked to Australian agriculturalists and their technology, was culminating in Portugal and Spain. These laid the foundations for the first significant agricultural project to emanate from South Australia.

Significant quantities of Australian Mt Barker subterranean clover had been sold to these two countries during the previous decade. Most had been produced in NSW and marketed by Dalgetys, the well established Australian pastoral company. Spain in particular had recognised the importance of subterranean clover based pastures and had subsidised imports for some years.

In 1966 Pat Farnan, representing the South Australian Seedgrowers Cooperative Ltd, made his first call to Spain. His personal representation impressed the seed merchants enabling him to capture a large slice of the market particularly by offering seed of the Clare subterranean clover cultivar.

In Portugal the establishment of subterranean clover and lucerne pastures were also being developed, backed by the work at the Elvas Research Centre under the direction of David Crespo who had gained experience in Australia. Farnan was in contact with Crespo and Peodosio Salgueiro, an agronomist, also Australian trained and based in Lisbon.

Despite these developments subterranean clover pastures were not as productive or persistent as they should have been. These shortcomings were recognised by local agriculturalists and the World Bank which was prepared to finance projects to find solutions.

Young and Tiver entered these active networks with their strong South Australian links when they responded to a request from Count Francesco Posser de Andrade who owned nearly 16,000 ha near Palma south of Lisbon. His enterprise was enormous. The property had its own village and police force. One thousand two hundred hectares of rice were sown annually. More than fifty shepherds tended the livestock which included milking the sheep. He also had a share of the cork market.

The Count had read articles in the South Australian Journal of Agriculture on subterranean clover pastures and he was puzzled. Why were his pastures doing so poorly particularly considering that the subterranean clover plant was a natural plant on his property? He appealed to the Department believing their expertise could help him. His request was passed on to AACM who in turn were able to enlist Dennis Muirhead's advice. He had worked in the South Australian Department and was currently the Australian Meat Board's representative in London. He visited the property, confirmed that the problems existed and rightly assessed AACM's ability to deal with them.

Encouraged by Muirhead, Young and Tiver took up the challenge and so the first project work by South Australians commenced in the Mediterranean climates on the other side of the world.

Tiver was quick to note that subterranean clover was happily established on roadsides and rocky areas where it only needed an application of superphosphate fertiliser to flourish. He noted that it was absent from the Count's property simply because seed was lost by deep ploughing and a lack of grazing management to encourage seed set. Moreover there was an establishment problem on the deeper sands which required investigations involving lime, trace elements and seed inoculation. Before many gains resulted in the field from Tiver's solutions, political events in Portugal resulted in the property being carved up and the links in the chain back to South Australia were largely lost.

Having made this start and with experience in the Sudan and Nigeria the Company gained in confidence and quickly moved into new contracts. Tiver next became involved in Spain where he was contracted by the World Bank to improve pasture production in the Andaluca Region in the south-west.

Here the problems were more complex requiring him to establish a series of field trials which isolated molybdenum and other trace element deficiencies and solved nodulation problems. He was well versed in this work having faced almost the same problems and conducted the same trials in the South East of South Australia in the late 1950s and 1960s.

Spanish officers with whom he worked in the various foreign agencies were amazed that he personally could prepare the various treatments and physically apply them in the field (seed and fertiliser mixtures were sometimes prepared with his wife's help, on the floor of their hotel room). Not only that, he harvested the plots and analysed the results. Such practical application of the job was unheard of. After all he was a scientist not a field technician! This ability by the Australians to carry out all aspects of field work won the respect of most counterpart staff but rarely did their example alter local ways and get locals into the field, away from their desks.

Tiver successfully continued this work in Spain for three years. The World Bank was greatly impressed and never hesitated to fly him to Washington when they had need to assess pasture projects or land development contracts.

He later carried out similar work in Portugal in the Alentejo Region and the company located a full time consultant at Eyora for several years.

In 1972 the company began a series of three attempts to gain a stronger presence in North Africa and Iraq which proved costly failures and discouraged any further work in these regions. These failures forced AACM to turn its sights to Asia and other parts of the world.

On the way home from Spain, Tiver, encouraged by the Australian Trade Commission in Malta called to see Bashir Jodah who was consolidating the enormous agricultural development programs east of Benghazi in Libya and who was known to be contemplating the involvement of Australians to provide expertise in dryland farming technology.

Typically Tiver had a long and dispiriting wait before the overworked chairman of the Executive Authority for the Jabel El Akhdar, granted an interview. When it did come Tiver offered to set up a research centre at El Marj. His ideas were enthusiastically received and he left the country believing he had been promised a contract. He worked on his proposal and prepared a detailed submission only to find he was completely ignored when Jodah realised the South Australian Government itself might be interested

and sent off a proposed agreement to the Department of Agriculture in Adelaide which surprised everybody.

In 1976 Young visited Algeria with Messrs Bill Davies (Director, Premiers Department in South Australia) and Peter Barrow (Assistant Director, Department of Agriculture). The purpose was to negotiate a pilot project with the Algerian Government which would lead to the eventual development of a very large area of the Steppe. Despite the set-back in Libya, Young was happy to participate because his company was now a member of a South Australian consortium, Professional Consultants Australia (PCA) which comprised five organisations, Australian Agricultural Consulting and Management Company (AACM), Australian Mineral Development Laboratories, Pak Poy and Associates, the South Australian Government and Woods, Bagot Pty Ltd. The consortium was supposedly committed to coordinating and sharing South Australian quests for overseas projects. Young believed that if the Algerian Government preferred a government-to-government contract then AACM would still be involved.

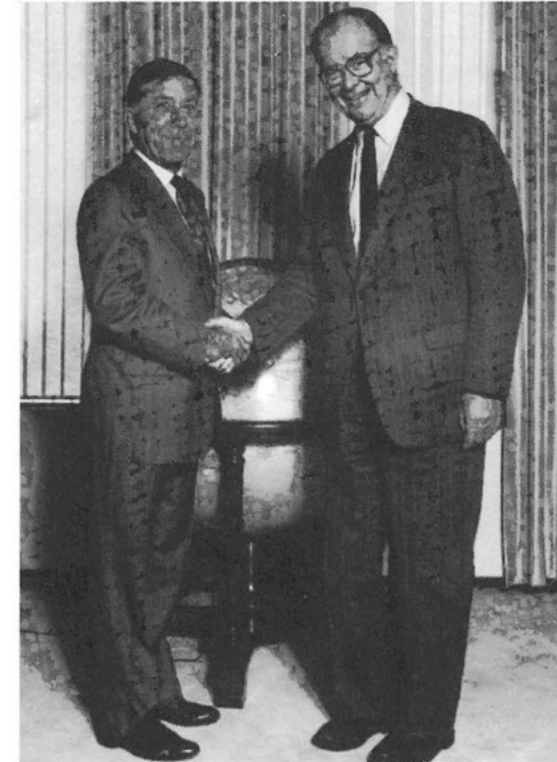
Although many difficulties were revealed during the intense discussions in Algeria, which were supported by the Australian Ambassador, Young was encouraged and enthusiastically participated in followup negotiations with by then a new Director of the Premiers Department Mr Max Scriven and a Senior Project Officer, Terry O'Connell. Young took with him one of his staff, Ian McArthur whom he was grooming as a possible leader for the contract. Again his initiative failed. PCA never really functioned because of the lack of commitment by its members. The project proposal was finalised after strong South Australian Government commitment had been independently made by the then Minister of Agriculture the Honourable Brian Chatterton.

Working alone Phil Young made yet another attempt to gain a significant contract, this time in West Asia. He learnt of a livestock and irrigation project that Iraq wanted to develop and he convinced John Moore from Elders to visit the country with him. Again, not from a calculated position but more by chance the South Australian Government stepped in and AACM was excluded.

AACM believed that it had consistently prepared a lot of ground work on which the South Australian Government was able to build. At home Young protested to anyone who would listen. A question was asked in Parliament by the shadow agriculture spokesman, Lyn Arnold, requesting compensation for AACM but nothing eventuated.

Those involved at the time have their own views on the rights and wrongs of these events however it remains a sad fact that the excellent expertise and experience already available and well tried in AACM was not integrated into the new opportunities for selling South Australian expertise. It meant that those left involved at the South Australian end had to start in each country virtually from the beginning. AACM, one experienced element of the informal but highly developed home based network which had operated from the beginning of the technology transfer process, and which had included academics, salesman consultants and the bureaucrats, fell by the wayside.

Despite these setbacks there was never a lack of work for AACM. The Company maintained a technical staff of about twenty five people during the 1970s. To service the work Tiver spent eight to ten months of each year overseas, leaving Young to manage the day to day business of the office in Adelaide.



*John Doolette receives recognition from Barber Conable, President of the World Bank, after 10 years of service.*

*Initially a research officer in the South Australian Department of Agriculture, Doolette resigned in 1971 to follow an international career. He managed dryland farming projects in many developing countries which utilized aspects of South Australian farming.*

## INTERNATIONAL CONSULTANTS

Consultants working for international organisations and governments have made very significant contributions to the return of medic, the forage legume found so useful in the southern Australian dryland farming systems, to its Mediterranean and West Asia homes.

Dr Keith Finlay, a cereal breeder from the Waite Agricultural Research Institute started an interesting chain of events in this history when he resigned to become Deputy Director of the Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT)<sup>1</sup>, the international centre for maize, wheat, barley and triticale research located outside Mexico City.

Finlay travelled widely in the Mediterranean region in the late 1960s and became impressed at first hand (like many before him, going back to Trumble) by the unexploited potential of the native medics and sub-terranean clover species in these countries. Well aware of the significant improvements these plants had made to agricultural production across southern Australia he used his influence in CIMMYT and his connections in Adelaide to do something about it.

<sup>1</sup> CIMMYT's international work has received financial support from many institutions including government agencies in Canada, Denmark, Germany the United Kingdom and the United States of America. Private institutions have also given strong financial support over the years including the Ford Foundation, the International Bank for Reconstruction and Development, International American Bank, International Development Research Centre, the Rockefeller Foundation, the United Nations Environmental Program and the United Nations Development Program.

Finlay persuaded CIMMYT, using specific funds from the Ford Foundation to hire John Doolette. Doolette was a promising Senior Agronomist in the South Australian Department of Agriculture who had been working on aspects of dryland rotation research for more than ten years. He was given the task of determining the feasibility of returning the medics to farming in north Africa.

Doolette resigned from the Department in 1971 never to work again in Australia. During the following six years he researched the development of crop rotation technology for Tunisia based on the southern Australian model.

In 1977 he joined the International Centre for Agricultural Research in Dry Areas (ICARDA) at Aleppo in Syria as Director of Farming Systems Research. Two years later he moved to the World Bank in Washington from where he advised on the financial inputs necessary to make the transferred medic-based technology acceptable to farmers in the countries where he had previously worked in the field.

At the time of John Doolette's retirement to Florida in 1992 the author discussed with him his twenty year contribution to the medic re-establishment programs in the Mediterranean area and West Asia. He had seen the whole transfer process from southern Australia at the international level and his comments therefore seemed particularly significant.

Doolette, with the wisdom of hindsight can now see that in the beginning he and his colleagues from Australia were too confident, too superior with their dryland farming expertise. 'The basic principles were certainly proved right', Doolette emphasised, 'but not without necessary adjustments. There would have been better acceptance had we listened in the beginning to the traditional farming ways and the reasons for those traditions and taken into account the social and political implications'.

'Life in these countries is too precarious to take a long view on soil fertility build-up and for this reason and the lack of effective local extension officers and investments to 'kick start' the changes needed, relatively little adoption has occurred,' he said. 'That is why I joined the World Bank hoping I could influence the necessary investments. The ley farming system from South Australia does work in the Mediterranean and the Middle East. The potential is certainly there but productive changes will take a long time, just as they did in South Australia'.

In 1973 Finlay engineered another Adelaide consultant, David Saunders, to work for CIMMYT to undertake similar projects in Algeria to that which Doolette was doing in Tunisia. He, too, had cut his teeth in the Department on aspects of medic forage research.

A third scientist from the Department, Dr Philip Cocks, commenced his international role in the late 1970s. His beginning was rather traumatic but thankfully he was left unscarred.

On his first mission he arrived late one night in Algiers expecting to be met by colleagues at the airport. When they failed to arrive he had no alternative but to seek accommodation. He sought the help of a taxi driver who could not speak English. Unbeknown to Cocks there was no accommodation available in Algiers because of a top level Arab summit meeting. The driver, who probably had never celebrated a Christmas, nevertheless thought they had all come at once. Cocks was taken at great expense 50 km through the night to an almost deserted holiday resort at Ziralda. When he arrived after the long bewildering drive Cocks had no idea where he was or why and as

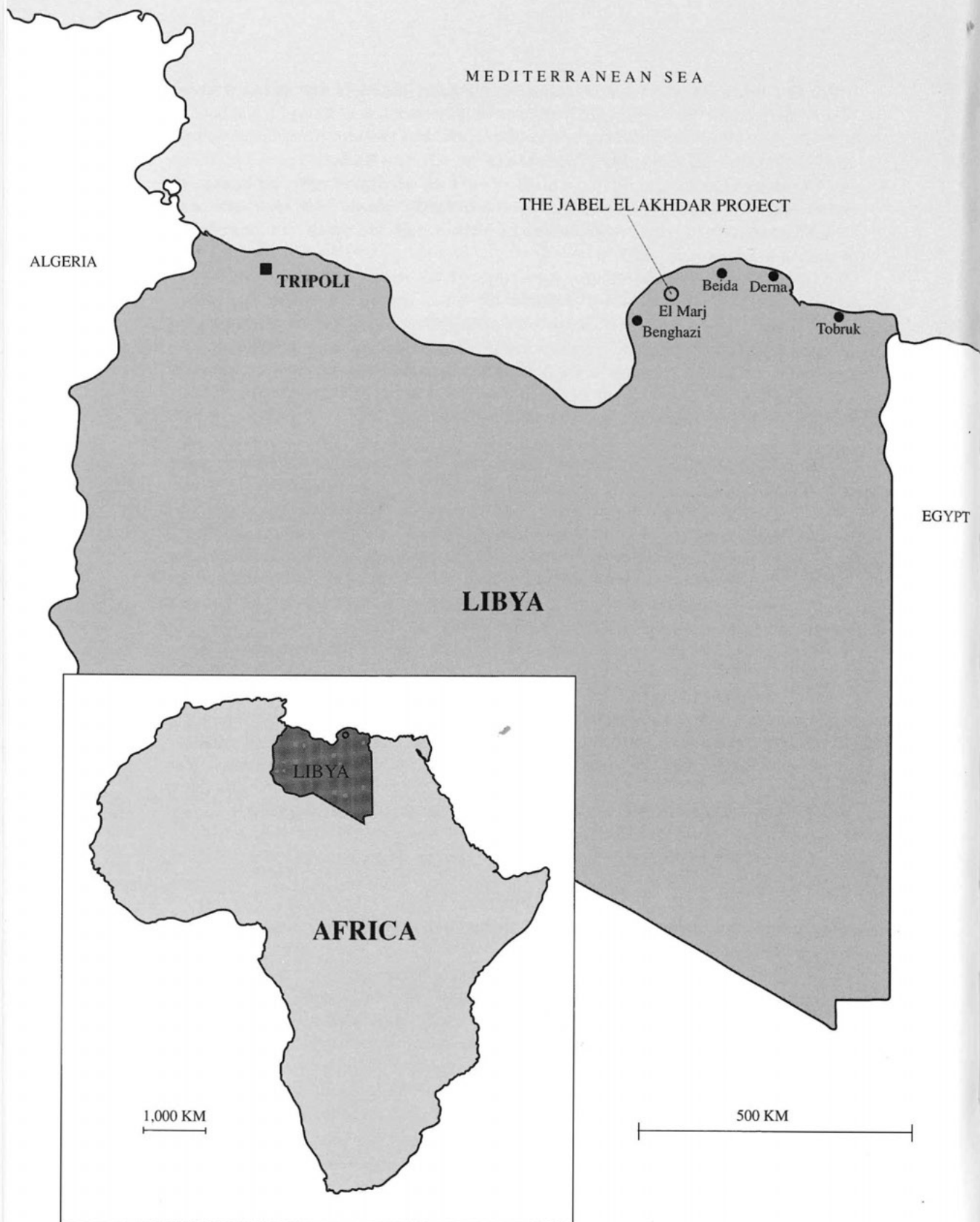
it was by then Friday (the Muslim equivalent of Sunday) he could find no one to assist. Nearly three days later he was finally rescued only to find that all along he had been within 500 metres of the author and other colleagues who had also been forced by lack of accommodation to retreat from Algiers to the same resort for the weekend.

Undeterred Cocks completed the mission and then went on to make increasing contributions to the technical transfer process and finally joined ICARDA from where he introduced a valid short cut method which he had developed in South Australia to evaluate medics and clovers.

The selection of annual legumes for a particular location using traditional methods usually requires ten years or more of field work. Cocks cut the time in half by making use of natural selection in complex mixtures of the legumes. His first step was to select, with some objectivity, as many genotypes as possible, appropriate to the particular environment. These were sown in the field as mixtures and subjected to the normal farming rotation of cereal cropping and grazing. The most persistent genotypes were then selected by measuring seed production, persistence and forage production to enable final selection of the best genotype to be made.

This method was very successfully used at the South Australian Ain Kawah project in northern Iraq.

In the years between, many other specialists from South Australia (sheep and wool experts, economists, soil scientists, extension experts and administrators) found their way to these countries and left their marks as following chapters record. Doolette, Saunders and Cocks made fine contributions and strengthened the chain of the transfer process but they were not alone either amongst South Australians or other Australian consultants who also made significant contributions.



## CHAPTER V

### LIBYA – THE JABEL EL AKHDAR PROJECT

#### BEFORE THE CONTRACT

In March 1973 an official communication was received by the Director of the South Australian Department of Agriculture, Marshal Irving, inviting the establishment of an 'associated farm' in the Jabel El Akhdar (Green Mountains) covering the ancient lands of Cyrenaica in northern Libya. The offer to the Department had come from the Jabel El Akhdar Authority at El Marj and was signed by its Chairman, Bashir Jodah.<sup>1</sup>

Libya was virtually an unknown country to all but a few South Australians. Some had fought across its territory during the terrible North African campaigns of the Second World War, by then a generation past. Others, as intrepid salesmen, had been into the country seeking to gain from the oil dollars.

Certainly few were aware of its rich history moulded by the native Libyans themselves, the Greeks, the Romans, the Byzantines, the Turks, and from 1911 until the Second World War, the Italians. Classical places, such as the Waters of Lethe and the Hesperidian Gardens, abound, their stories subsequently written into English literature by authors including Milton and Shakespeare.

El Marj, 100 km to the north-east from Benghazi, was founded by the Greeks in the sixth century BC and called Barce. It became the centre for very productive Greek farms which covered the fertile Barce plain with its deep 'terra rossa' soils. At last, after twenty-five centuries, the Libyans had their chance and under Jodah's incredibly capable leadership and with ample oil money they had made a grand start.

In Jodah's own words, written in the introduction to his book, 'Harvests in all seasons in the Jabel El Akhdar'.

<sup>1</sup> The author has chosen the English spelling 'Jodah' which was used on translated documents and publicity material printed in Libya. His business card, used when travelling in Australia, spelt his name 'Jodeh'.

#### PROFILE — Bashir Jodah

Bashir Jodah died of cancer in 1983. By then he had been appointed Minister of Agriculture in The Socialist Peoples Libyan Arab Jamahariya. I have constructed this profile using the memories of those who worked with him, my own memories, my diary and his portrait which for many years has held a place amongst those of my family in my study. He said to me on one occasion that I was his 'brother' and he treated me as such. This is the only way I have of acknowledging what I believe was a very genuine attitude towards me. But then, incredibly, he treated all his countrymen with whom he worked as 'his brothers'.

Bashir Jodah was a man of enormous vision with an intellect to match.

His country had suffered and benefited from the impact of many colonial governments. First Greek, then Roman, Byzantines, Arab, Turkish, until Italian from 1911. He aimed, as Chairman of the Executive Authority for the Jabel El Akhdar, to give his people back their happiness and prosperity by transforming the ancient lands of Cyrenaica back to their original 'grain bowl' glory. Above all he wanted to prove that the native Libyan, his people, had survived and could live with the greatest. Sadly they largely failed him, influenced by events not altogether of their making as this Chapter on the Libyan project relates.

His domain covered an area in excess of three million hectares which extended from the city of Benghazi in the west to the Egyptian frontier in the east and from the shores of the Mediterranean in the north to latitude 30° in the south, a distance of 250km. His budget as Chairman of the Jabel El Akhdar Development Authority, exceeded \$US300M annually. Despite these enormous responsibilities he always found time to hear, judge and solve individual problems down to fence-line squabbles. Daily, long queues of his 'brothers' milled around to speak with him. He attended to them personally and individually even if the queue was not done before sun down. He bargained and debated with great skill as successive Australian Team Leaders at El Marj found. Only clear requests and precise reasoning convinced him. Then he acted and usually swiftly. He was equally at home debating issues around his office table at El Marj as he was in the board room of the Department of Agriculture in the centre of Adelaide.

Trevor Dillon, who was once waiting behind Jodah while he negotiated a contract with an Italian salesman for post-hole borers, relates this incident which illustrates Jodah's ability to bargain. The salesman reached the point where his language and thrashing arms failed him. He picked up a piece of paper, wrote something, presumably his price, with a flourish and slapped it on the desk in front of Jodah. Expressionless, Jodah scribbled, picked it up and slapped it back. This process of exchange became faster and faster until the Italian gave in, accepted the offer and left with a long face. Jodah smiled.

Bashir Jodah could speak fluently in five languages, Arabic, English, French, Italian and German. His English extended to fine prose. In his book which he published in 1979, "Harvests in all Seasons in the Jabel El Akhdar" he describes his vision for his land as, 'wonderful scenery, where the dreams of golden crops sleeping on our hills unite with the discovery of new horizons from behind our hills'.



Let me elaborate further from my own experiences of this man of his people. I mentioned his brotherly concerns. When I entered the Benghazi Airport on my way to visit our team in El Marj I found myself standing in the immigration queue immediately behind a German woman who was very apprehensive. I gathered from my school boy German that her husband was already in Benghazi and as a woman travelling alone she would be received in this Islamic country with suspicion. She was also greatly concerned that her documents might not be in order which was understandable because they had to be in Arabic. I had similar concerns.

Her turn came. The official brushed her aside indicating she could not enter the country which provoked a flood of uncontrolled sobbing. Her plight was relayed by other Europeans to her very large husband in the corridor who promptly spread-eagled a number of Libyans and came to her aid. This was helpful to me as my understanding of tearful Germans was of course less than normal German. In the fracas that followed, in which I think I was seen as an accomplice, I was eventually cleared for entry but my form which stated how much money I had brought with me failed to receive the official stamp.

I was in trouble and when I raised the problem with Bashir Jodah he agreed. He promised to help and that same day, despite overwhelming duties, I was presented with a letter and was advised to hand it to the authorities at the airport when I was leaving the country.

When that moment came the absence of the necessary stamp was immediately noticed and the officer became dark indeed. I quickly presented the letter which the official took behind a screen to read. He emerged, the light on his face was most encouraging. He beckoned me through the barrier. I asked what the letter said. He replied, 'Mr Bashir said you were his brother. We have treated you as his brother. He is a good man'.

Bashir Jodah was a family man and a religious man but he was not by any means in the fundamental Islamic order. His spirituality covered us all as the following entry from my diary illustrates.

Thursday, 1st December, 1977

Nobody made appointments to see Bashir Jodah at a particular time. His door was always open to all. Today Ron McNeil (then Team Leader at El Marj) and I decided we would have to finalise outstanding contractual issues with him before I returned to Australia, even if it meant waiting all day.

About 8.00 am we joined the maddening throng outside his office and eventually sat at the end of his huge conference table behind a Bulgarian contingent who had pushed in believing they had higher priority.

Although we couldn't understand a word it was fascinating to watch as Jodah listened to five or six local farmers, and made judgements. These urgent matters attended to, Jodah walked past the Bulgarians with a nod and asked us quietly if we would come with him to the Mosque to pray for rain. We were acutely aware that the season had failed to break. The opening rains were at least six weeks late and the previous season had been a drought with the rainfall only 50% of average. Agricultural work all over the development region was at a stand still. We could talk business on the way.

In the seclusion of his vehicle he explained that weather patterns indicated that rain was probable in a day or so but he thought it was important that his farmers should appeal to Allah for help. He added that he thought this would help strengthen their faith and encourage them to pray, for more important aspects of their lives.

On a concrete pavement at the back of the Mosque about two hundred farmers had gathered in red hats with their shoes discarded in scattered heaps. As Bashir Jodah joined the congregation they formed two lines and faced east. Ron McNeil and I stood near the back uncertain what to do.

We were joined by the Authority's photographer as the cleric faced the worshippers and began his sermon. We were told in a whisper that the 'priest' had chosen 'lively' words from

the Koran to explain that rain is the gift of God which they could not expect to receive from one prayer session. Indeed, he explained that Allah had withheld rain for so long because they had sinned and had not been thoughtful to their brothers. (I wondered if Bashir Jodah had written the sermon).

The cleric then faced the east and commenced a long series of formal prayers to which his male congregation, on their knees, responded at frequent intervals. Led by Bashir Jodah they stood at the required moment, removed their coats and put them on back to front. Then in a squatted position with hands crossed and palms upwards they continued their prayers. Bashir Jodah later told us that these actions symbolised a change. They had promised Allah to change their ways and in return asked for a change in the weather.<sup>1</sup>

Two camels were then sacrificed and the meat distributed to the poor.

The service completed, the men broke ranks and crowded around Jodah who later explained they had mainly asked him about superphosphate deliveries which had been delayed. With pride he added that two years ago they did not know the word superphosphate."

The author

<sup>1</sup> Next day the season broke. Rains flooded the country and during December the Jabel El Akhdar received nearly 250 mm.

'The Executive Authority for Jabel El Akhdar has undertaken to execute complete programs for agricultural development, land reclamation and reconstruction over a vast area, in the Jabel El Akhdar region, totalling nearly three million hectares and extending from the city of Benghazi in the West to the Egyptian frontier in the East, and from the 30° latitude in the South to the shores of the Mediterranean in the North.

'The Authority's programs cover the execution of complete agricultural projects with numerous goals, amongst which: the construction of farms and housing, the building of new roads, the drilling of wells, the building of dams, the development of livestock breeding, and the cultivation of cereals, vegetables and fruit etc. in addition to initiating programs for rural and vocational training'.

'In fact, the Jabel El Akhdar region, like other regions of the Jamahiriya, has been converted into a giant workshop and a gigantic laboratory where experiments involving the most advanced technology are being carried out in the fields of agricultural development, land reclamation and reconstruction'.

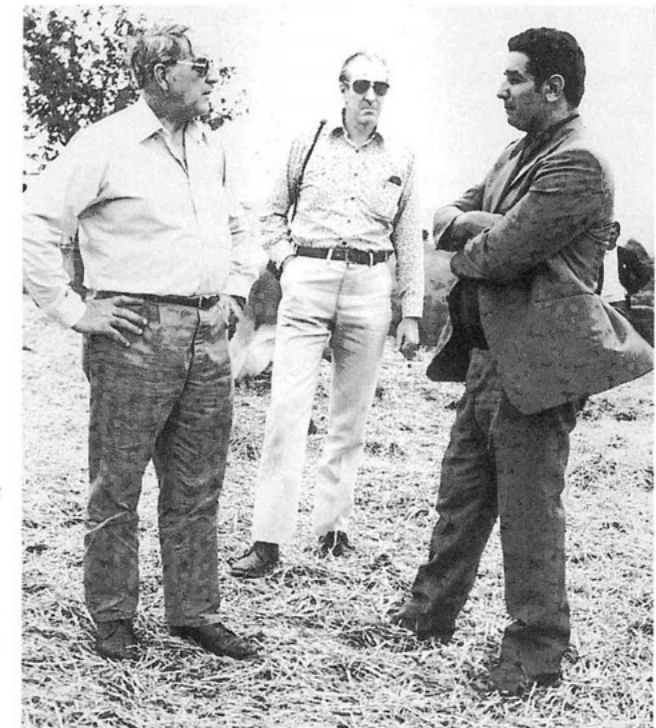
'Right from the outset we have been determined to avail ourselves of the experience of nations ahead of us'.

Significantly, South Australian agricultural expertise was one of the chosen.

The offer took the department's executive by surprise as there had been no previous formal negotiations and the department had not been involved in projects of that kind in the past. The Libyans on their part had not made the offer without a great deal of investigation and planning carried out over six or seven years.

As early as 1966 Bashir Jodah had visited southern Australia to make himself familiar with the agricultural systems, particularly the importance of pasture legumes and the outstanding features of the agricultural machinery in use. He kept a low profile and made no government-to-government contact.

During the months he spent in Australia he also astutely absorbed our culture which enabled him to express a great deal of personal understanding when dealing with those South Australians who later came to serve his purposes in his country.



*The Honourable Tom Casey (left), Minister for Agriculture in South Australia, discusses progress of the demonstration farm at El Marj in Libya with Bashir Jodah (right), Chairman of the Jabel El Akhdar Authority and Peter Barrow, Assistant Director of Agriculture, South Australia, 1975.*

He even gained a keen interest in Australian Rules Football which led him and the South Australian Department of Agriculture into a great deal of effort to ensure that he and the staff at the time in Libya could view a video of the South Australian 1978 finals. He instigated a search throughout Libya for compatible projection equipment.

While in South Australia he was most influenced by Pat Farnan, Manager for Seedco and Ray Henry, Export Manager for Horwood Bagshaw. Both had previously called on Jodah in Libya (See chapter III).

Ray Henry recalls that on this occasion Bashir Jodah visited his home at Lockleys where he quickly made himself a welcome part of the family. In discussions which went late into the night he expressed serious concerns about the agricultural advice that Libya was receiving from the Europeans and particularly the shortcomings of their machinery for Libyan farmers. Henry remembers that he was extremely impressed by the grasp which Jodah already had gained on every aspect of our agriculture.

Between 1966 and 1973 when the Libyans offered to develop a demonstration farm with the South Australians there had been increasing contact mainly through industries and the private sector. However, it was David Ragless, then Senior Seed Production Officer in the Department of Agriculture who significantly influenced the final offer.

Early in 1972 Ragless was released from normal duties to give technical support to the Seedco display at the Trade Fair in Tehran in Iran. The venture was strongly supported by the Australian Trade Commission.

The Trade Fair was a great success. No other agricultural exhibit attracted more attention and after manning the display Ragless toured Iran following up interested

customers. He was also able to take study leave going on to visit Germany, Holland, Switzerland, the United Kingdom, Sardinia, Lebanon, Syria and finally Libya. (Study leave was available to virtually all specialists in the Department in those days reflecting its affluence at that time. Undoubtedly this was a factor which enhanced technology transfer).

On arriving in Tripoli, the equal capital of Libya with Benghazi, Ragless, as a government official, attempted to contact the Agricultural Ministry officials to emphasise the usefulness of South Australian herbage seeds in their environment as he had so successfully done with officials in Iran. He was ignored, so at Pat Farnan's suggestion he went on to Benghazi and sought an audience with Bashir Jodah.

The time was ripe. Jodah cancelled all his commitments for the day and took Ragless on a grand tour of much of the Jabel El Akhdar constantly quizzing him as they went. He had heard the arguments over the years to establish firstly a commercial farm to demonstrate Australian machinery, proposed long ago by Horwood Bagshaw, then a research based farm proposed by Tiver. He asked David Ragless for his suggestions. Having in mind recent management decisions in his department to develop specialist advisers to guide and assist general district agronomists in particular fields such as medic pasture establishment and management. (He actually used the example of Peter Marrett who had become the South Australian department's special fencing adviser. Ironically Marrett applied to serve in Libya in 1976 but was rejected by the Libyans because he did not have a tertiary qualification. It took many months of negotiating before he was allowed to join the team). Ragless suggested the establishment of a demonstration farm using a combination of specialist extension officers from the South Australian Department of Agriculture to train and guide Jodah's staff, and practising farmers to undertake the necessary field operations.

Jodah did not need convincing that the presence of farmers from South Australia was essential. He had already seen the benefits from those he had attracted with the Seedco Contracts (See chapter III).

Unknowingly Ragless had influenced Jodah to finalise his offer. A demonstration farm with specialist agricultural extension officers and farmers it would be. And the South Australian Government would be invited to do a deal.

Having received the Libyan offer the Executive of the Department of Agriculture immediately met and decided to recommend to the Government that negotiations should be initiated in Libya by Peter Barrow, an Assistant Director, who at the time was responsible for the department's plant industry services and their technical support.

The Premier, the Honourable Donald Dunstan, gave enthusiastic support on the basis that his Government's presence in Libya would underpin trade in agricultural machinery and produce which, as Chapter III has related, was already well under way.

Later, when the Federal Government heard of these developments through its agencies, Prime Minister Whitlam wrote to Dunstan requesting South Australia to abandon the venture because of the possible international policy implications. Libya's growing radical activities against the American presence in the Mediterranean was of concern to the Federal Government at the time. The request was ignored. Dunstan argued that the project was a state trade initiative which he could not afford to turn down.

Starting from scratch Barrow set about thoroughly briefing himself before he arrived in Libya late in September 1973. He consulted Max Scriven, Director of the Premiers

Department who offered a wide range of government resources necessary to support the project. Scriven became an enthusiastic supporter of the Agriculture Department's involvement in overseas projects and later, as the South Australian Agent General in London, he gave valuable assistance and support when an enormous quantity of equipment had to be purchased and shipped to Algeria at the beginning of the Ksar Chellala project.

Newton Tiver, a Director of the South Australian agricultural consulting enterprise, Australian Agricultural Consulting and Management Company, generously provided the detailed plan for a research centre in the Jabel El Akhdar that he had negotiated with Jodah which, despite promises to the contrary, was unceremoniously rejected in favour of the government-to-government proposals now under way.

As ever Pat Farnan, Manager of Seedco who already had detailed knowledge of the Libyan scene gave freely of his advice and experience as did the Australian Trade Commission Service in Rome and also Bruce Carnell the Sales Manager of Horwood Bagshaw.

The baton had been passed to the South Australian Government. Barrow had the running. For nearly three weeks he worked in Jodah's shadow completely gaining his confidence.

Before leaving Libya a letter of understanding outlining the result of their negotiations was prepared by Barrow. This has been included in Appendix II. It so clearly outlines the vision they had.

In essence a 1,000 ha demonstration farm would be developed at a site they had selected about three miles from El Marj by South Australian professional agriculturalists and farmers incorporating the dryland farming systems. The theory was that applied research in field crop, pasture management and livestock management would be conducted to 'fine tune' this technology to the particular environment of the Jabel El Akhdar, and that the specialists would extend all their knowledge to Libyan professionals who would in turn provide the technology to new farmers taking up their blocks in the region. The South Australian Department of Agriculture would encourage and facilitate its professional officers to work in Libya but the actual contracts covering salaries and conditions (which were very generous in the eyes of the Libyans) would be made between the Libyan Government and the staff involved. The Department was to have no say. It was this point which eventually caused many problems.

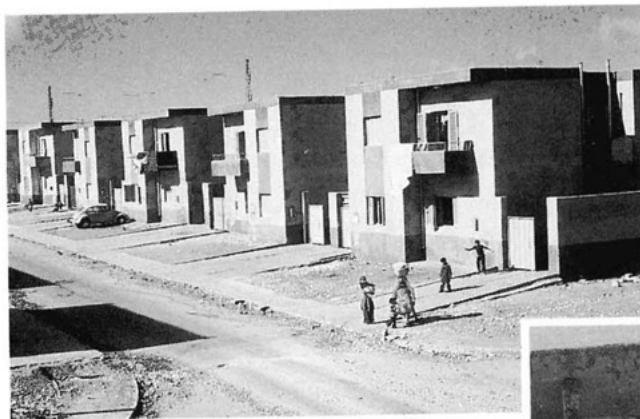
The purposes of the farm were clearly spelled out. These were:

1. Cereal growing, particularly wheat and barley;
2. Pasture improvement;
3. The establishment of sheep and beef cattle enterprises;
4. The establishment of soil conservation techniques including contour cultivation and contour banks;
5. The establishment of surface water storages for livestock;
6. The development of optimum farm management procedures, especially with respect to the rotation of crops and pastures;
7. Definition of techniques for the protection of crops and pastures from losses caused by weeds, diseases, and insect pests;
8. Soil improvement through the use of fertilisers and fertility - building farm practices;

9. The establishment of fencing and other livestock handling facilities such as yards, shearing shed, etc;
10. The selection of farm machinery, vehicles, and equipment for the efficient operation of the property.

Jodah and Barrow intended that the project should commence in June or July 1974 but the provision of accommodation proved difficult. Eventually the first Team Leader, Henry Day and his wife Sally, arrived in Benghazi with the opening rains in November. They were accompanied by the Cereal Agronomist, Trevor Dillon, his wife Valerie and their two young children. Housing was still a problem at El Marj so they were obliged to spend their first month in a hotel in Benghazi requiring long and dangerous 200 km round trips to work. Even then they had to move into temporary flats on the edge of El Marj before they were given more permanent accommodation.

The other five team members and their wives cooled their heels in Adelaide until early January 1975 when they left, trying desperately to avoid losing a season. It was March before the team was adequately housed together in El Marj.



(top) Original accommodation provided for team members and their families at El Marj, Libya.

(centre) Daily living was shared by the South Australians with local families, many of whom had only recently settled from nomadic desert living. A view from Judy and Sam Pfeiffer's living room, 1974.

(bottom) Local flooding temporarily surrounds a typical farm house, provided at the El Marj demonstration site, following extraordinary opening rains, December 1977.

### THE FIRST SEASON AT EL MARJ

Full of great expectations and enthusiasm the South Australians quickly became involved in establishing the 1,000 ha demonstration farm, the site having been selected by Jodah and Barrow eighteen months before and then sown to medic pasture by the South Australian farmers contracted through Seedco. A flock of more than 1,000 Barbary sheep were introduced to eat down the abundant pastures. The owner was most reluctant to remove them before the soil was completely bare as had been his usual practice. However the Australians, knowing the value of allowing a reasonable proportion of the medic burrs to be saved to generate a pasture after the cereal phase, protested vigorously and eventually they were removed.

The season had opened with early heavy rains exceeding 150 mm in December necessitating hurried plantings of extensive trial areas of medic and subterranean clovers all developed and commercially available in Australia.

Cereal variety trials which included locally grown varieties were also established and at the end of the season four Australian varieties proved the most productive. Gambee and Gamenya yielded 2.3 tonnes per hectare, Halberd, 2.2 tonnes per hectare and Gabo, 1.8 tonnes per hectare.

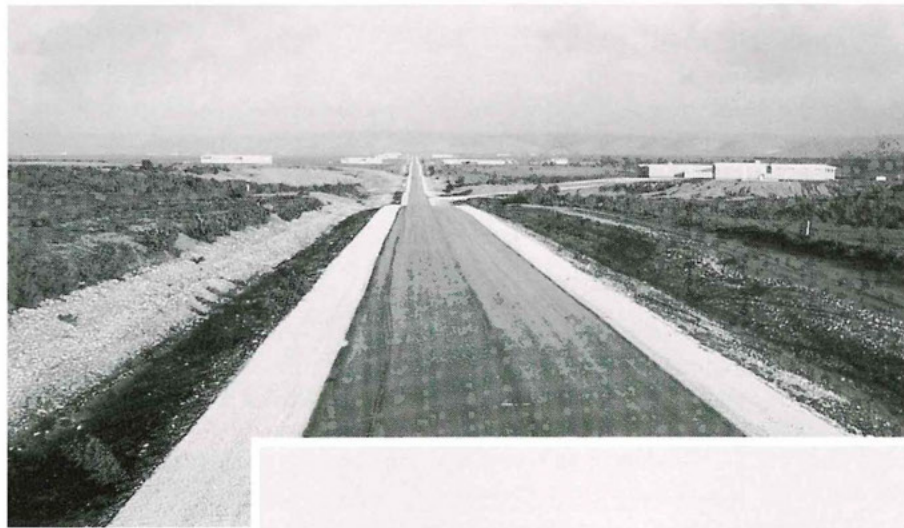
As soon as seeding had been completed the farm area was mapped designating the land-use classes, erosion hazards and fertility levels of the soil. Fence-lines were constructed, sheds erected and machinery purchased. The project had made a good start except that the Jabel El Akhdar Authority (JEAA) had failed to appoint counterpart staff, an omission which was never corrected and which certainly did not help the adoption of the technology offered.

Later in the season the first activities off the El Marj Demonstration Farm commenced. Two farms in the Batta area were selected to demonstrate soil conservation technology and assistance was given with hay making on the Benghazi Plains. Professional Libyan officers working for JEAA were beginning to notice the presence of the Australians and some resented them.

While the demonstration farm was becoming well established, back in the homes in El Marj family life was difficult. The cultural gap, exaggerated by a complete lack of language training, put unexpected pressures on family and neighbour relationships.

The pill-box concrete homes surrounded by high walls gave privacy and in themselves were reasonably comfortable but other aspects of their lives were strange and sometimes threatening. Henry Day recalls the unexpected hostility he provoked from Libyan neighbours when he climbed onto the roof to adjust the plumbing. The Libyan husbands below were fearful that he was 'peeping' on their wives. The Australians, needing to guide expatriates to the flats placed the ubiquitous kangaroo on a prominent gate. Police action removed its subversive presence. Understandable, when one remembers that their nationalism had been supervised by colonial powers for more than 20 centuries.

There was the constant need for the Australian women to show sensitivity to the decorum expected of Libyan women. This restricted their freedom to dress casually and to move easily away from their flats. The resulting cooped-up feeling was further aggravated by the shortage of vehicles. The wives having waited all day for husbands to return from work with the expectation of shopping excursions would often be left disappointed and frustrated.



*(top) A general view of the Jabel El Akhdar development in Libya where the South Australian demonstration farm was located. Note the excellent roads and housing.*

*(centre) Australian agricultural equipment ready for seeding at the Libyan project site.*

*(bottom) Medic variety assessment trials established by Lloyd Blesing on the Benghazi Plains, Libya, 1978.*

Bashir Jodah tried to ease the isolation felt by each family by approving the purchase of quite extravagant Italian furniture and English crockery to add to their comfort in the homes. Unfortunately the supply of floor coverings were not so readily available.

The surrounding streets were covered in dirt and rock strewn to such an extent that newcomers would often not realise that under it all was a perfect bitumen surface. The streets were made even less inviting to the women by gangs of spoilt Libyan boys who expressed their patriotism by abusing the foreign women and occasionally throwing stones.

Food was plentiful. It came and went in unpredictable ways but there was always a reasonable variety including fruit and vegetables.

At first water was in very short supply. Service tanks in each flat could only be filled twice a week but the Australians couldn't really complain because their tanks were double the capacity of the flats occupied by Libyans. The supply gradually improved during the course of the project when new bores were commissioned. Electricity often failed but at least it was connected.

The worst aspect was the isolation in a very different and strange culture and the lack of easy communication with the outside world. The only way that the families could telephone home was to drive a distance of about 100 km to Beida and then wait in a queue to use a public telephone.

The team members and their families, as positively as possible, organised their lives to minimise the pressures around them. Most of the wives each day met during the mornings for morning tea and activities such as table-tennis and took full advantage of the Friday when their husbands did not work to go on picnics to a variety of very pleasant sites such as the ancient ruins of Cyrene and Tolmeita on the Mediterranean coast.

## THE SECOND YEAR

In the second season which again had above average rainfall, the one year medic, one year cereal rotation was established across the demonstration farm, by then fenced into typical Australian paddocks with nostalgic names such as 'echidna', 'magpie', 'euro' and 'emu' which must have puzzled the locals.

Six hundred and sixty Corriedale and Suffolk sheep and thirty two Shorthorn cattle were delivered to the farm from Australia. These were to be used to thoroughly demonstrate Australian livestock management, an aim which failed. The sheep could not adapt to the different diseases and to handle them as we would do in Australia without the cost of shepherds and nightly curfews in corrals proved impossible because of poaching and wild dogs (the fences were regularly cut). Australian staff were involved in some lively late night chases to catch the offenders but the locals won having many centuries start. The sheep were removed at the beginning of the fourth season although the cattle remained.

The farm faced potential disaster when the JEAA forced the agistment of nearly 25,000 sheep before they were distributed to local farmers and other development projects in the region. They arrived in poor condition and many were in lamb. Clever husbandry and planning by the Australians saved most of them.



*A general view of the South Australian Demonstration Farm at El Marj, Libya on the occasion of the visit by President Qaddafi, May 1978.*

That year wheat production across the farm averaged 1.46 tonnes per hectare. Halberd<sup>1</sup> again performed well as the main variety.

Wheat, barley and oat variety experiments were commenced together with fertiliser and time of seeding trials.

### THE THIRD YEAR

The third season, 1976 - 1977, was a drought. The farm received only 58% of the average rainfall of which one third did not fall until late spring after a very dry autumn and winter, far too late for cereals.

This was a difficult period for the team, not only because of the drought but because their Team Leader, Henry Day developed health problems which required surgery in London. There was a five month gap before his position was finally filled in May 1977 by Ron McNeil whose expertise in cattle management and farm management was held in very high regard in South Australia.

Because of the drought no grain was reaped on the farm and pasture growth was very poor although it was encouraging to note that the medic cultivars in general were able to set appreciable quantities of seed ensuring their persistence.

The soil conservation program constructed contour banks over 1,700 ha which covered many new farms in the Sauro and Batta areas. In some places the contour banks followed similar constructions undertaken by the Romans at least sixteen centuries before and which were still visible.

<sup>1</sup> Halberd wheat was bred in South Australia at Roseworthy College by M. Rex Krause. It had a distinctive brown chaffed head with fairly short, strong straw. Released for commercial productions in South Australia five years before it was grown on the demonstration farm in Libya, it had quickly become a popular wheat. Despite sophisticated breeding programs in Australia it retained its position as the most widely grown variety in its home state for 19 years (until 1988). It was capable of wide adaption and always yielded well in droughty, tough conditions. It is interesting to note that, true to form, Halberd was equally at home in Libya.

The team was able in the third season to increase its extension program. Demonstration areas of medic and oats were sown in the Beida District. Three papers were presented by team members at the first National conference on wheat research in Tripoli and agronomy extension groups were established in the Barce Plains and Ferzougha Districts. A field day was also held on a farm at Batta.

These positive initiatives to demonstrate and explain the dryland farming technology across the region were treated half-heartedly by the Libyan professional staff but some of the new Libyan farmers responded with great interest. They adopted the technology offered with enthusiasm and some with surprising skill to the degree that they made very handsome incomes which drew them to the attention of their socialist government, even though they had few ways of spending their new found wealth. Consequently parts of their farms were acquired and given to others.

### THE FOURTH YEAR

Fervent prayers for rain broke the drought in early December 1977, which allowed the fourth season to commence although it became so wet so suddenly that only one seeding day was possible in December. This however did enable the farm to demonstrate the advantages of early seeding. The wheat sown in middle December on the one day that was sufficiently dry out-yielded those sown in January by 20%.

The rains continued and finished 60% above average enabling the farm production for wheat to yield 2.2 tonnes per hectare, barley 3.6 tonnes per hectare and oats 2.0 tonnes per hectare. Again Halberd out yielded all its rivals and produced 2.6 tonnes per hectare over one paddock. As well as providing grazing for the sheep and cattle ten and a half thousand bales of hay were cut.

Under the direction of team members over 7,000 ha were surveyed for contour banks in six different areas in the region before the Australian involvement was finalised. Gavin Young, a Soil Conservaton Officer from Jamestown in South Australia, had also planned and fully redeveloped a farm in the Beida area against great odds having been denied the necessary machinery and technical assistance at every turn. This work was replaced by a farm planning service led by Garry MacPhie who arrived in May 1977. He stayed for three years acting as Team Leader in the final year of the government-to-government agreement.

Initially the farm planning project collected detailed statistics from twelve farms in the Ferzougha district which showed a great disparity in production between farms. Over these farms land capability maps were drawn which detailed various land use classes based on soil fertility, (established in the laboratories of the JEAA) soil depth and the slope of the land. The land use capability maps were used as a basis for management advice sorely needed by some of the new farmers whose production was very poor compared with others on similar land classes.

The Libyan professional agriculturalists continued to give little assistance or encouragement to the South Australian team which battled to extend the technology throughout the Region. Nevertheless a successful field-day was held at the farm which attracted over two hundred and seventy farmers and small field days were held in three other districts. The relevance of these extension activities was reinforced by numerous field trials which by this, the fourth year of the project, had given reasonably firm

recommendations for cereal seeding rates, time of seeding, cereal varieties, fertiliser rates, herbicide treatments and pasture establishment techniques. There was now no doubt that the South Australian team had successfully demonstrated the effectiveness of the cereal/medic rotation in Libya.

During the fourth year, despite the obvious success of the farm operations, there were signs that the shine was starting to wear off the exercise.

The pool of experienced extension officers with specialised knowledge in the particular disciplines needed in Libya had virtually dried up. Regionalisation of the Department's operations in South Australia, had offered management positions rather than appointing replacement extension staff. The post-war boom times in the economy and consequent government services had faded.

Families with children to be educated were becoming more wary as those returning told of the difficulties and there was constant concerns about health and security. Keith Bicknell, the first Pasture Agronomist, had spent five weeks in hospital in Libya with hepatitis. Appointments were seen more and more as positions for the young professional which clashed with the qualifications and long term experience sought by the JEAA.

Policy concerning the department's involvement in overseas commitments was also undergoing change. James McColl was appointed Director General of the Department in August 1976. During his career he had operated as a private consultant in his own firm, J. C. McColl & Associates. He argued that with diminishing funds the Department could no longer afford to provide its management of the contract free of charge to the Libyans.<sup>1</sup> This change in policy was accepted by the Minister of Agriculture, The Honourable Brian Chatterton.

When the details of the Libyan agreement had been negotiated by Jodah and Barrow five years previously the Government was very happy to make an investment and facilitate the exercise without recovering management and other costs because of the promise of enhanced exports.

Pressure was brought to bear on Jodah to change the contract when he visited Adelaide during July 1977 with Mr Ali Ben Ramadan, the Chairman of another large Libyan agricultural development project on the Jiffara Plains near Tripoli which employed a group of Western Australian farmers and advisers.

Jodah was not impressed and refused to negotiate in any way. Returning to the airport he expressed to those in the car bitter disappointment that the future of the project was being jeopardised after enthusiastic initial agreement to the contract by the South Australian Government.

The Government was also coming under pressure from some prominent farmers in South Australia who were finding that the traditional excellent level of free extension services were diminishing. They blamed, with some element of truth, the absence of senior departmental officers in Libya. The fact that the Departmental opportunities overseas were coinciding with cut-backs at home was over-looked. The farming community was reacting to the short-term consequences and those left in Libya felt their much needed support and recognition was no longer available.

<sup>1</sup> At the same time Phil Young, as a member of the South Australian Government team negotiating the Algerian Project was urging the same approach.

## THE FINAL YEARS OF THE AGREEMENT

During the fifth and sixth years of the operation of the demonstration farm in Libya under the government-to-government agreement the seasons remained favourable and wheat production consistently exceeded one tonne per hectare and barley closer to two tonnes. More than 8,000 bales of hay were cut each year.

At the end of 1978, under the direction of the third team leader, Bert Ninnes, the sheep enterprise on the farm finally came to an end. The Barbary sheep which had replaced the Australian Corriedale were removed, management by the Australians and JEAA having failed to stem the poaching and dog attacks despite night folds. The cattle had by then exceeded one hundred head which proved a satisfactory alternative to sheep to maintain the integrated cereal, livestock system.

Australian initiated field days attracted three hundred and ninety farmers in 1979 and a further four hundred and thirty before the administration of the farms was handed over to Seedco staff in July 1980.

In 1978 the Australians started to systematically assess pasture legumes which had been collected from all over Libya and assembled into a seed collection in Tripoli. The Libyan Authorities, with FAO help, initially intended to make a weed collection to assist the better use of herbicides. When it was realised that the Western Australian and South Australian projects were introducing many medic cultivars which would become dispersed throughout the country by stock and natural means and which might contaminate and hide the genetic worth of the natural medic flora, a decision was made to collect the medics instead.

Lloyd Blesing who had extensive experience at the South Australian Plant Introduction Centre at Parafield in the Adelaide northern suburbs was asked to assess the Tripoli collection.

Using whatever facilities he could find, such as potting soils and germinating facilities at the extensive tree nurseries, and assisted daily in the field by his wife Nancy, Blesing set about assessing five hundred and sixty lines of medics.

He set himself a demanding task as each line had to be identified, germinated and then assessed for seed set and productivity by planting in the field (he worked at Benghazi Plains) all the time ensuring that the identity of each line was not lost. Despite failing health he selected 80 of the most promising lines and followed these into the second year.

While no commercially useful new pasture medics resulted, Blesing did isolate some early maturing lines which are now preserved.

In June 1980 the contract ceased. The last Team Leader, Garry MacPhie returned to Australia. The South Australian Minister of Agriculture, The Honourable Ted Chapman announced the conclusion of the project in Parliament and was widely criticised. At home it was still seen as good business. Fortunately for all concerned new horizons were already opening up in Algeria and Iraq.

## NEW MANAGERS — 1980 - 1983

Despite their failure to convince the South Australian Government to continue the contract the Libyan authorities were keen to maintain a continuing South Australian presence. They found an old partner, Seedco, willing to continue the cause. The

cooperative had contracted farmer members to demonstrate their pasture management skills in the Jabel El Akhdar since September 1973 and were prepared to continue the arrangement with the additional responsibility of looking after the farm. As a result three farmers maintained a presence on the demonstration farm from the time the contract concluded until October 1983. Lindon Richter accepted the role as Team Leader at the beginning of this period. He was well experienced having completed two contracts with JEAA. In January 1982 he was replaced by Geoff Lucas.

These were dying years for dryland farming developing in the Jabel El Akhdar. Jodah had departed a sick man to take up the position of Libyan Minister of Agriculture in Tripoli. He valiantly tried to maintain contact with his old Authority now being managed by Mr Khalifa who certainly could not make rapid decisions as Jodah had done in the past.

International hostilities had destabilised Libyan's economy. The huge income from oil was greatly reduced. The budget for the Jabel El Akhdar Authority was halved.

The Australians noticed many emerging undercurrents in the communities around them particularly when the wealthy merchants and those farmers who had done so well using the new dryland farming technology were stripped of their savings down to 2,000 dinars when the money systems changed over night. Sheep became their wealth which made them forget about the integrated Australian farming system. The pipe-line carrying water from Sariv to the coast had been completed which distracted the interests and resources of the JEAA into irrigated horticulture.

The remaining area of the demonstration farm was cut into nine farms and allocated to new owners. Largely left to themselves and without a farm to operate the South Australians had no alternatives but to become extension officers, filling the gaps neglected by the Libyan staff. They spent their time establishing and maintaining demonstration sites throughout the surrounding districts and using them as a basis for field-days. When serious infestation of grain borers threatened the 1983 harvest Lucas organised the aerial spraying of nearly 50,000 ha of cereals.

All South Australian activities in Libya ceased in October 1983. Twenty-eight men and fifteen women had served the demonstration farm over the nine years, supported by seventy two seedgrower contracts, each of which covered the growing season of about three months, for ten years.

#### AN ASSESSMENT

It was time to assess what had been achieved over the years. On completion of the government-to-government contract Garry MacPhie, the last Team Leader submitted a report to the Department. This was followed by an in-depth review conducted by Geoff McLean, an economist in the Department's Policy Unit.

These reports leave no doubt that the demonstration farm at El Marj had successfully presented South Australian agricultural expertise and skills to that area of the world. The South Australians during the life of the farm and the associated medic seed contracts had also widely influenced many hundreds of local farmers. Excellent extension projects had been undertaken despite little help from counterpart staff. There was no doubt that the South Australian technology did work and that if adopted the Libyan farmers and the environment could benefit.

The Jabel El Akhdar Authority also demonstrated to the wider world the advantages of pasture legumes. The leader of the revolution, Muammar Qaddafi, used the centre as a show place for visiting dignitaries from Bulgaria, Cuba, France, Hungary, Poland, Russia and many African countries including Kenya and Tanzania. During May 1979 contingents of senior agriculturalists from Iraq and Jordan visited to gain first hand information before contracting South Australians for similar projects in their own countries.

Qaddafi himself visited the Jabel El Akhdar Authority in May 1978 on the occasion of the appropriation of more than 1,000 farms and a year later, on a memorable occasion for the South Australian staff, he conducted a four hour rural youth rally in the court yard of one of the homes on the farm.

Based on production measurements from the demonstration farm and surrounding Libyan farms and using actual prices obtained in Libya, economic comparisons were made at the end of the day. The traditional Libyan farms growing 70 ha of wheat each year and carrying a flock of 50 ewes grazing stubbles, roadsides and wadis netted returns for the period 1978/79 - 1979/80, of 83 dinars per ha. Using the demonstration system on the South Australian farm they would, by comparison, have sown 35 ha annually leaving 10 ha for hay and 25 for medic grazing to support 105 ewes. That operation, using the transferred technology, would have netted 125 dinars per hectare, a 50% improvement in cash returns.

TABLE V

#### MEDIC RECOMMENDATIONS ESTABLISHED BY THE SOUTH AUSTRALIAN TEAMS WORKING AT THE JABEL AKHDAR 1974 - 1983

1. Medic Cultivars
  - Australian medic cultivars could perform well without nodulation problems. Jemalong and Hannaford barrel medics (*Medicago truncatula*) in areas with rainfall exceeding 320 mm and Cyprus (*M truncatula*) and Harbinger (*M littoralis*) with annual rainfall down to 250 mm.
  - Local ecotypes not commercially available were shown to have the potential to replace the Australian cultivars.
2. Medic Establishment
  - Phosphate fertilisers need to be used.
  - Sow 1cm deep on to a prepared seed bed.
  - Sow early into a dry seed bed.
  - Use 15 kg of seed per hectare unless seeding conditions are very good when the rate can be reduced to 10-12 kg.
3. Medic Management
  - Do not graze until the medic plant have 6-8 leaves.
  - By grazing control the height of the pasture to 3-5 cm.
  - When flowering commences remove all livestock.
  - Graze pasture residues lightly to allow a reservoir of seed to carry over into the next season for the cropping phase.

## CHAPTER VI

### ALGERIA – THE KSAR CHELLALA PROJECT



#### INTRODUCTION

Algeria was still suffering from the aftermath of their war of independence from the French when South Australia became interested in the development of their agricultural economy in the early 1970s.

The French had colonised Algeria in 1830. From that time they had consistently and vigorously maintained their determination to stay forever. Eight years of bloody war which killed ten percent of the Algerian population finally terminated that policy. In 1962 the free Democratic and Popular Republic of Algeria was born.

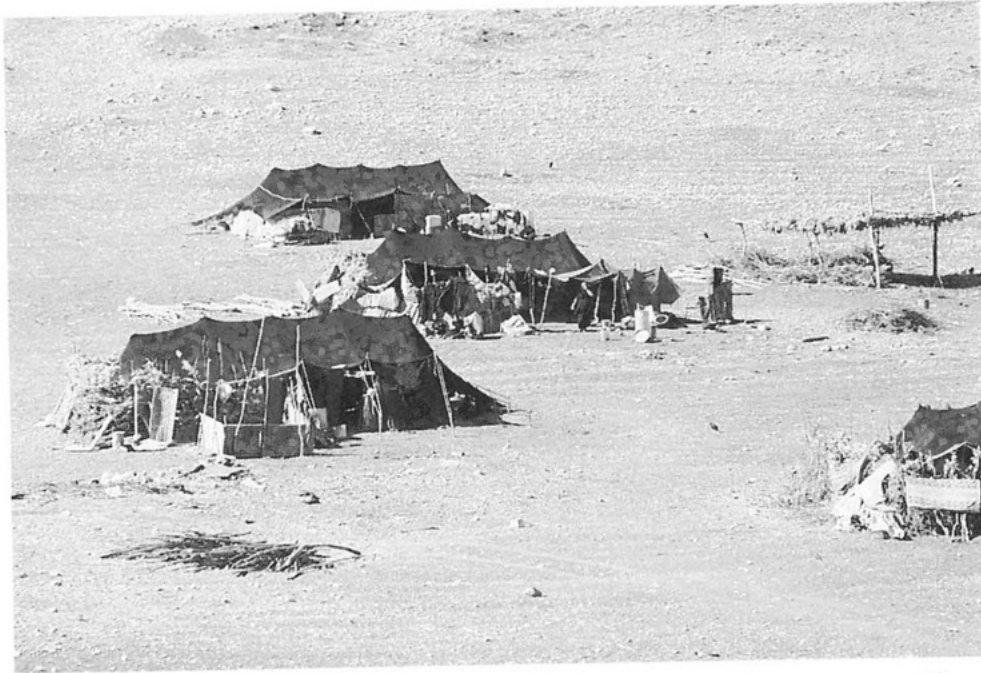
From 1965 until 1978 President Houari Boumediene reshaped Algerian history. He vigorously broke down the parochial loyalties which had been encouraged by the French and authenticated a true Algerian nationalism based on Arab and Islamic roots.

Boumediene knew that his country's new found independence would be aborted if it was not accompanied by social and economic transformation to keep foreign influence to a minimum as they struggled to their feet. At first he concentrated on the development of his country's natural resources and industry. By the late 1960s attention was turned to agricultural development.

The Algerian Steppe, 15 million hectares of seriously overgrazed land which stretched 150 km from north to south between the Atlas Tellein and the Atlas Saharien was pinpointed as one of three regions needing urgent attention. Here, two million people, 600,000 of whom were nomads living in tents, shared the land with eight million sheep.

The poverty of the Saharan grazing lands in summer and the lack of water had developed the ancient social tradition of nomadism and transhumance between the south and areas bordering the northern limits of the Steppe.

With rapidly increasing population and social unrest the Steppe had become very seriously impoverished resulting in massive and unplanned sedentarization around the existing ancient towns, a rapid unrestricted spread of cropping, mainly barley growing and inevitable serious land degradation.



*One long term aim of the Algerian Government's project, serviced by SAGRIC International from Ksar Chellala, was to settle these nomadic Bedouins enabling the Steppe to be revegetated.*

As part of its total policy of agrarian reform the Algerian Government intended to engineer permanent settlement of the entire population around new centres. Social patterns would be radically changed ending the achaba or winter migration. The Government wanted sheep farming in the future to be carried out in the framework of pastoral cooperatives excluding the wealthy absentee sheep owners. Obviously grazing lands would need to be revegetated and farming productivity improved with irrigation and modern dryland farming technology if the government's policy was going to succeed.

At the beginning of the 1970s the South Australian Government and various private companies, anticipating trade based on oil monies, started to show a willingness to become involved

#### **THE ADELAIDE — ALGIERS NETWORK**

Between 1970 and January 1979 when the \$A3m contract was signed in Adelaide for the Ksar Chellala project there was constant interchange between Algerians and South Australians intent on agricultural development.

The South Australian Premier, Donald Dunstan, visited Algiers in April 1978 to promote trade. His Minister of Agriculture, Tom Casey, had previously visited in May 1975. His successor, Minister Brian Chatterton also visited in May 1979 after the Ksar Chellala contract had been signed. When the Liberal Government took office the



*Robert Hodge, a member of the Ksar Chellala Project Team, supervises sheep weighing and health management programs on the Algerian Steppe.*

Minister of Agriculture, Ted Chapman, was quick to follow. Interest at the political level was intense.

In 1970 the FAO organised a tour of their project Team Leaders from northern Africa to study dryland farming technology across southern Australia.<sup>1</sup>

The Algerian representatives on these tours realised that this form of farming had much to offer their own country. On their return home they initiated a series of medic based dryland farming projects across Algeria supported by a research program directed by their Institute de Development des Grandes Cultures. FAO gave constant support and Ted Carter a Senior Lecturer at the Waite Institute, Adelaide, gave field advice.

Glyn Webber, a Senior Agronomist in the South Australian Department of Agriculture, was invited to assess these project in 1974. This began his consultative services in Algeria which have continued for more than fifteen years. Webber encouraged the Algerians, drawing attention to persistent problems associated with deep ploughing and grazing management of the medics.

In 1976 Bakhtri, an Algerian responsible for much of this project work, reported the success of the Australian medic cultivars in many areas of the Algerian cereal zone with altitudes less than 800 metres where they could replace the fallow with high producing nutritive fodder. One grazing experiment showed that lambs had produced double the daily weight gain when grazing medic pasture compared with grazing weedy fallows.

<sup>1</sup> Another tour organised by John Doolette, the CIMMYT leader in Tunisia at the time visited South Australia in August 1973. Senior Tunisian and Algerian agriculturalists were in the party.

But it was not all straight sailing. Bakhtri had learnt, contrary to the impressions he had gained from Australians, that the introduction of the medic - cereal rotation required management changes which would be complex and difficult for his farmers. Cultivation practices, fertiliser applications and seeding time had to be changed and predominantly cereal enterprises had to be integrated with traditionally separate livestock enterprises. It was not easy.

David Saunders, a South Australia Agronomist who had taken up a post with CIMMYT<sup>1</sup> and who had consistently advised the Algerians during this period reviewed the progress five years after Webber's assessment. His report, *Medicago and the Wheat Medicago Rotation in Algeria* gives an insight into the surprising breadth and detail of Algerian research during that period. Over seven hundred Medicago lines had been evaluated for plant type, winter vigour, flowering characteristics and seed yield. Grazing trials, fertiliser trials and medic regeneration trials had all provided invaluable data which proved the productivity of the Australian ley farming system.

When Minister Casey visited Algeria in May 1975 with Peter Barrow, Assistant Director of the South Australian Department of Agriculture, he advised senior Algerian Ministers that South Australia would be interested in a contract to establish a dryland farming demonstration farm similar to the one in progress in Libya.

The Ministry of Agriculture and Agrarian Reform (MARA) responded - yes, they were indeed interested in obtaining South Australian agricultural expertise but not to establish another demonstration site. They wanted instead a presence at three sites on the Steppe to help with the physical implementation of their agrarian policies involving re-vegetation, irrigation and social adjustments.

To further confirm their interest four Algerian Governors of Wilayas<sup>2</sup> in the Steppe Region were dispatched to Australia to assess at first hand the agricultural technology on offer and to further cement the growing ties between the two countries.

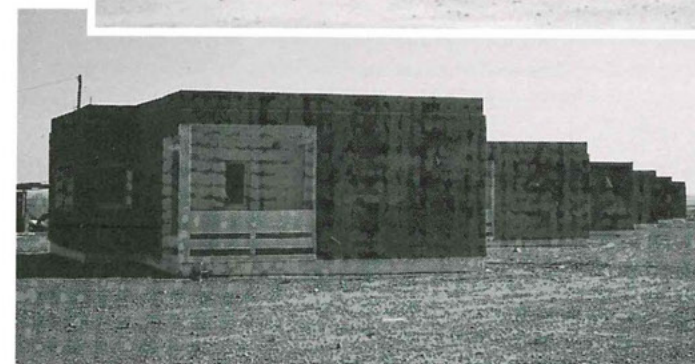
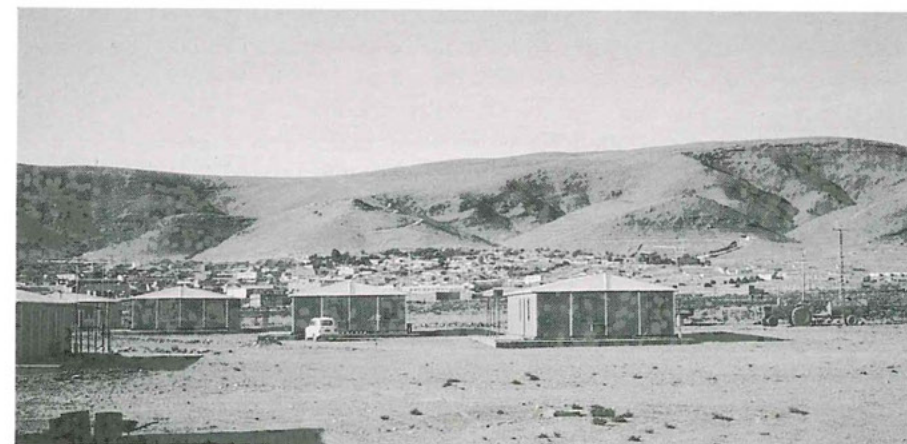
In November 1975 Barrow returned to Algeria to respond to MARA's interest. Government officials escorted him on two excursions to the Steppe Region and suggested that Djelfa could be headquarters for a South Australian team to direct developments.

Barrow's technical knowledge and experience made him very cautious. He appreciated the enormous resources that would need to be marshalled and the human problems. His concerns were reinforced after studying Russian proposals made in 1966 for an irrigation project near Ksar Chellala. The necessary expertise revealed by these studies was not available in South Australia. It needed Australia-wide involvement and he knew that at the time his Department in Adelaide was not ready to handle such broad and demanding work.

However, political pressure for trade and the obvious Algerian confidence in our agricultural expertise overrode his initial technical concerns. He compromised and developed a proposal for a 1,000 hectare Steppe development project based on grazing cooperatives near a small town called Mahdia to the north-west of Ksar Chellala.

<sup>1</sup> Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT) is the international centre for maize, wheat, barley and triticale research located outside Mexico City.

<sup>2</sup> The administrative organisation in Algeria then comprised the State, the Wilaya, the Daira and the Commune. Each Wilaya was governed by a Wali, each Daira and each Commune had a chief, answering to the Ministry of the Interior. Ministries of health, education, agriculture and so on had representatives at the Wilaya headquarters.



(top and centre) Housing for the South Australian team at the project site at Ksar Chellala was unsatisfactory. The Australian managers insisted on Western style prefabricated homes which were provided by Italian contractors. These gave little protection from cold and the hot desert winds.

(bottom) Traditional Algerian housing provided for the counterpart staff and their families was ideal.

The Algerians ignored this offer and with promised funds from the World Bank called international tenders in February 1976 for the development of 850,000 ha across six communes involving complete revegetation for grazing, 5,000 ha of irrigation for summer fodder crops, cereals and vegetables, reforestation and diversification of economic activities for the population. No satisfactory tenders were received.

Undaunted, the Algerian Government gave permission in May 1976 for MARA to develop a project directly with the South Australian Government.

It was a case of the blind leading the blind. MARA had never undertaken such a project before and this proposal was a large step from the demonstration farm experience so ably undertaken by the South Australians in Libya.

Back in Adelaide, Barrow participated in feverish activity to achieve a response to the Algerian initiative. On May 27th 1976 a seminar was held, out of which was created the consortium, Professional Consultants Australia Ltd (PCA) which theoretically could manage the Algerian project with expertise from the private and public sectors.

The consortium never really operated although it brought together the Director of the Premiers Department, Bill Davies, Terry O'Connell, a Senior Project Officer in that department and Philip Young, a Director of the private agricultural consulting company, and Peter Barrow.

By November of that year this group was ready to discuss a contract based on Barrow's manageable concept with the Algerians. They flew to Algiers with the blessing of Premier Dunstan. Meetings were held with Monsieur Nadir Doumandji, the Director of Animal Production, who had been appointed to represent the Algerian Government. The Australian Embassy helpfully facilitated the negotiations.

At the beginning Doumandji expressed his Government's disappointment that South Australia was not interested in the 850,000 ha development project and although he accepted the size and site of the contract offered by the South Australian delegation he kept coming back to Algeria's need for much bigger things to happen. They wanted to see physical development right across the achaba pathways and they talked of even wider developments such as meat processing and reforestation. Furthermore he expressed concern that activities had not commenced and asked for a January 1977 start.<sup>1</sup>

Despite the goodwill of both parties negotiations stretched through 1977, protracted by poor communications, difficulties in negotiating satisfactory housing and vehicles and legal constraints imposed by the Algerian Ministry of Finance which was ultimately responsible for the terms of the contract although they had little interest and no knowledge of its technical details.

The South Australian Premier's visit (J.C. McColl, the Director General of Agriculture assisted the visit) in April 1978 helped to revive the flagging negotiations.

In the meantime the unending toing and froing continued. Messrs Bouarfa, the Secretary General of MARA and Benzaghoul, the Director of Plant Industry visited South Australia to assess the farming systems for themselves.

In May 1978 Glyn Webber returned to Algeria to participate in a series of national agricultural planning meetings and very nearly lost his life when the new Australian

<sup>1</sup> It is interesting at this point to note that the contract was not signed until January 1979, two years after these negotiations. The first Australians arrived at the Project site at Ksar Chellala in November 1979 and when work commenced in March 1980 the housing was still incomplete and counterpart staff had not been appointed. The South Australians at that time had also not assembled their complete team.

Embassy car in which he was travelling collided with a truck, leaving him clutching his precious extension equipment on the roadside.

By this time the South Australian Government, through the Department of Agriculture, was firmly committed to its new policy to compete for overseas agricultural development contracts and not remain limited to facilitating technical support in the interests of trade or simply responding to making technical inputs through international agricultural institutions such as FAO. To facilitate this new commitment an Overseas Project Unit was formed within the Departmental structure. The author, then Chief Agronomist, was seconded from his substantive duties to lead the unit. Initially a Clerical Assistant, Kevin Gogler, and one Project Officer, Chris Heysen were appointed.

#### THE CONTRACT — At Last

During 1978 the Government initiated consortium, PCA, collapsed without having effectively achieved anything. AACM lost its will to be involved leaving the new Overseas Project Unit to continue alone.

In October 1978 progress was at last possible. The author, Chris Heysen and Terry O'Connell, were instructed by the Government to travel to Algiers to obtain an initialled contract. At a special meeting in the Premier's Department they were given complete discretion to negotiate all outstanding issues.

#### THE KSAR CHELLALA CONTRACT

Article One of the Contract of the Ksar Chellala Integrated Steppe Development Project stated:

The aims of this contract are the preparation and detailed planning of an integrated development program for the Ksar Chellala agro-pastoral area situated in the Wilaya of Medea, Djelfa and Tiaret and the implementation of the scheme by the contractor.

To carry out these agreed aims the following programs were set down:

1. Review of prior studies covering water availability for irrigation, the nature and current condition of the grazing lands and previous socio-economic studies.
2. Develop techniques through field research to produce irrigated forage, to re-vegetate the Steppe and improve the health and genetic status of the sheep.
3. Prepare plans and launch an integrated development program for the area.
4. Train Algerian technical personnel.

To attain these objectives the MARA had agreed to supply a project manager with a team of counterpart staff to match the South Australian team, administrative support staff, access to all Algerian government agencies necessary to implement the project and many material resources including housing and office accommodation.

The South Australians for their part agreed to supply a team of sixteen experts and consultants for a total of three hundred and two man months, a fleet of vehicles and spare parts, all the necessary scientific equipment and tertiary training for five Algerian students.

It was estimated that the contract would make a profit of \$490,672 over the three years with additional anticipated spin-offs including the development of a live-sheep trade with Algeria, the sale of 1,500 merino rams, contracts for four animal production specialists and a cooperative medic development project for \$120,000.

The World Bank had agreed to the project and because of its size and complexity set up a special group to advise and assist the operations.

In Algiers the party was met by George Atkin, the First Secretary at the Australian Embassy. The author recalled that occasion in his diary.

*Friday 27 October 1978*

*As we sped into Algiers in a Mercedes with the Australian flag flying I felt overwhelmed by the situation. Here was I on my way to obtain an initialled \$A3M contract. I had never been to the country, never seen the project area, could not speak French or Arabic and had not been involved in the previous negotiations which by then stretched back at least five years. Yet I knew the Algerians wanted access to our agricultural technology. On that basis I felt my presence was justified.*

Before negotiating the final project the South Australians were given the opportunity to visit the proposed project site and administrative compound at Ksar Chellala 300 km south of Algiers. They were alarmed to observe the treeless and grassless site on the edge of the town surrounded by a partly constructed security fence. The only sign of progress was 30 holes dug in preparation for the traditional houses for the counterpart staff. Otherwise there was only a certain pathos, as Terry O'Connell remarked. No water, no electricity and no sign of the prefabricated 'western' houses for the Australians.

On the last day of October all forty six articles in the proposed contract were considered during a solid twelve hour session with Doumandji. At the end of the day the major issues covering the retention of 680,000 dinars for daily allowances, taxation payments, methods of staff payments and details of commencement procedures seemed to be resolved to the South Australian satisfaction. After the long negotiations which were interpreted by Mrs Ferani, she took the South Australian team aside and accused it of being too tough with her compatriots. Several days later the contract was initialled.

Relaxing on the balcony at the El Aurassi Hotel at midnight of that memorable day the team was enjoying the magnificent moon-lit view of Algiers and its harbour when an enormous explosion shattered the silence. It was followed by another twenty deafening reports of a 21 gun salute to herald the 14th Anniversary Day of the Republic. The howling and barking of the local dogs seemed the only response. It was taken by the negotiating team as a good omen. The Ksar Chellala project was off with a bang.

In January 1979 the contract was formally signed in Adelaide by the Deputy Premier, Des Corcoran and the Minister of Agriculture, Brian Chatterton. Doumandji signed on behalf of the Algerian Government. It was an impressive ceremony well publicised by the press.

### CONTRACTUAL PROBLEMS

From the beginning the Ksar Chellala project had many problems. Both partners were to blame although to be fair matters were often outside their immediate control.

The accommodation for the team was planned to Australian standards but at the insistence of the Algerian authorities it was to be provided by an Italian prefabrication company. After nearly twelve months delay the homes had still not materialised. Numerous substitutes were considered by Doumandji. They also did not materialise. The Italian company eventually went insolvent and a contracted replacement never operated. The Algerians were left to improvise and complete the homes as best they could. The structures proved unable to withstand the winds from the deserts and frequently filled with dust and continually rattled.



*The author demonstrating the construction of contour furrows at a demonstration site near Ksar Chellala. Furrowing on the contour was one of the first techniques used to help revegetate the denuded Steppe.*

Water supplies to the site at Ksar Chellala proved much more difficult to provide than the hydrologists had indicated.

Unforeseen legal, taxation, customs and vehicle registration requirements caused delays and frustration.

In Adelaide the provision of a technically competent and stable team proved very difficult and costly to find. Before work settled down in the field two Team Leaders, Read and Spurway, had been appointed but resigned. Glyn Webber then stepped in as a temporary leader until Wal Buddee commenced duties as leader in July 1980. An irrigation engineer satisfactory to the Algerians could not be found until the project was well underway.

The Algerians insisted on carefully examining the curriculum vitae of each specialist before the appointment was finalised. This process often took more than three months.

Despite highly specialised French language training most team members could not attain the standards necessary to report. Expensive translators had to be employed and the Algerians became more and more critical.

During the long leadup to the project commencement Doumandji and the author maintained excellent working relations and a great deal was achieved with simple good will rather than relying entirely on legalities as some other officials in both countries would have liked. The employment of Ray Baronian was an example. Well aware of the administrative difficulties which had arisen in Libya the Overseas Project Unit was prepared to use some of their contract payments to employ a person to get things under way before the official starting date. Baronian arrived in Algiers in August 1978, his accommodation paid by MARA. Despite his long accountancy experience and his

excellent command of French it was more than three months before he was even able to open a bank account for the project.

Despite all the good will in the world and the fact that the technical field work did provide a useful development plan based on sound land-use capability principles and a socio-economic review the legal demands placed on the contract by the Algerians soured relations. This required Dr Patrick Harvey, then a Director in the Department of Agriculture, to undertake two long excursions after the close of the project in 1983 to negotiate final payments. A compromise at the end of the day contained the losses but the anticipated profit and the lucrative flow on projects never eventuated.

### **SALGER PTY LTD**

Once the Ksar Chellala Contract had been initiated in Algeria the Overseas Project Unit in Adelaide was faced with feverish activity assembling the team of specialists and providing for their French language training at a special school near Nice on the southern coast of France.

At the same time a flood of overseas officials were arriving from around the world almost on a weekly basis to explore what South Australian agriculture and associated industries had to offer. There were encouraging signs that projects would develop in China, Iraq, Jordan and Tunisia.

To cope with the growing needs for staff appointments free of public service constraints and the need for quick business based decisions, Cabinet, on the 18th January 1979, gave approval to establish a government based company, Salger Pty Ltd, with the State Treasurer and the Minister of Agriculture as share-holders. The Directors General for Agriculture and Fisheries and Trade and Development were appointed joint Directors of the company. A full-time Manager, Bob Hogarth, was appointed with extensive overseas and management expertise based on an army career. His appointment enabled the author, who had led the day to day operations of the Department's overseas interests, to return to his substantive duties.

As history has proved, this innovative step to establish Salger Pty Ltd enabled the Department of Agriculture's resources and expertise to be opened up to the international consultancy markets.

This process further evolved on September 24, 1981 when Salger Pty Ltd changed its name to SAGRIC International Pty Ltd which broke the ties with the mother earth beginnings in the Department of Agriculture and enabled global contracts to be pursued in disciplines widely diverse from agriculture, such as education and engineering.

### **THE FINAL REPORT**

The Final Report was submitted in French during March 1983 in seven detailed volumes, together with an Executive Summary. It was the combined effort of the Team Manager and the Team Leader, seven permanent staff and their counterparts and twelve consultants who came and went at strategic times.<sup>1</sup>

<sup>1</sup> An Agronomist, Irrigation Agronomist, Irrigation Engineer, Sheep Production Specialist, Pedologist, Economist and a Hydrogeologist were stationed at Ksar Chellala.

The collection of the data, its analysis and recommendations had been a monumental task considering the circumstances and the relatively short terms of the project.

The information covered social and agricultural aspects of the Steppe in great detail and with this had been submitted a comprehensive development plan to achieve the agrarian policies of the Algerian Government right down to the necessary tender documents for the proposed irrigation areas.

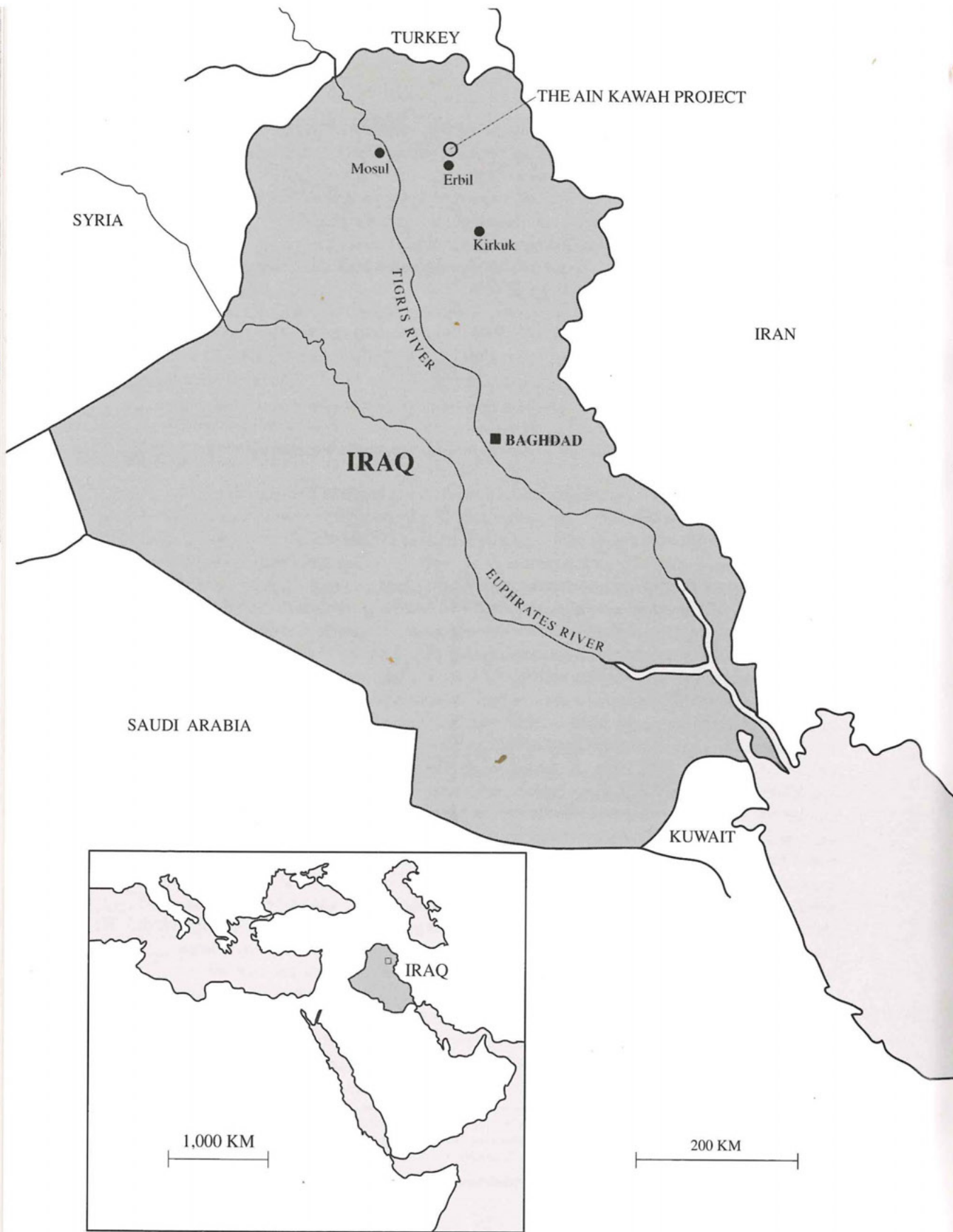
While all of this had largely satisfied the World Bank whose funds were at stake it failed to effectively implement anything of real substance on the ground. Originally it was anticipated by both parties that irrigation works would commence during the second phase of the project and that detailed agronomic research would be in place together with a genetic sheep improvement program across the Steppe. In the time span allowed any substantive implementation proved unrealistic particularly as MARA had to rely on other Algerian government agencies to redirect their construction equipment and manpower away from other national programs. The best that could be done was to propose the formation of a High Commission for Development and suggest its organisation and future management.

This does not imply that nothing was achieved. A novel method of classifying the vegetation and the land-use capability of the various natural regions enabled quantitative estimates to be made of how much forage was being and could be produced on a particular land-use class. Pastoral potential maps were drawn up and on the basis of this data land occupation and use was proposed.<sup>1</sup>

A socio-economic survey was conducted within the rural areas of the project region. This pinpointed the services needed to implement the development plan presented in the report and enable their implementation to be planned and costed. Agricultural extension services were found to be very limited and no effective operating legal structure governing the occupation and use of rural land existed. The Final Report made wide-ranging recommendations to address these deficiencies based on issuing grazing titles for a maximum of one hundred and forty dry sheep equivalents for each family to be organised within Pastoral Units. It was envisaged that in this way the transhumance would gradually be brought under control leaving no place in the society for nomads.

At the more immediate and practical level, sheep management programs were successful. Conducted by Robert Hodge in conjunction with counterpart staff they proved to be worthwhile extension activities. However, more fundamental work to improve the genetic base of the flocks never materialised. Brian Jefferies, the sheep production specialist for the South Australian Department who acted as a consultant during the course of the project recently commented to the author, 'This aim of the project was one step too far advanced. The flocks in the region were decimated from eight million to less than three million each time there was a drought and that was frequent enough. The first need, and that was addressed by the project, was to ensure that the sheep could be fed, then it would have been worthwhile to consider genetic improvement'.

<sup>1</sup> The survey to establish the pastoral maps revealed that two-thirds of the Artemesia dominated Steppe was only producing ten percent of its potential, simple proof that the basic policy developed by the Algerian Government, to improve these lands was well worth pursuing particularly as such large areas were affected. The methodology developed by the team has since been used in other rangeland development projects around the world.



## CHAPTER VII

### IRAQ – THE PROJECT AT AIN KAWAH

#### INTRODUCTION

Much had been learnt in Adelaide from the Libyan and Algerian Projects. The Iraqi contract signed in Baghdad on 14 June 1980 was designed to avoid all the problems experienced in the past and to work to clear-cut objectives on a fully commercial basis.

This time housing and equipment would not be a stumbling block.

Seven ATCO houses equipped to the last spoon would arrive at the site shipped from Adelaide in containers. All the necessary farm equipment, sheds, the workshop, office block, training centre and recreation block, fencing, silos and the swimming pool would likewise travel from Adelaide.

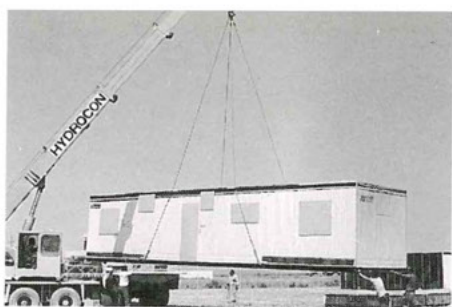
The site had been chosen 15 km north of the ancient city of Erbil on the Fertile Crescent where eight or ten thousand years before man had settled down to begin farming and where he had first learnt to cultivate wheat.

The Iraqi Ministry had taken its responsibilities very seriously. A senior influential director, Mr Ezzaddin Nejmaddin Abdul-Karim, had been appointed together with an excellent counterpart team who had agricultural training and experience.

Steps had been taken to rent the land for the 5,000 ha demonstration farm from the Kurdish village chiefs. Electric power had been supplied to the site and a bore sunk which provided an excellent unlimited water supply.

In Adelaide, the Overseas Project Unit in the Department of Agriculture had grown into SALGER Pty Ltd with a full time General Manager, Bob Hogarth and Overseas Project Manager, Glen Simpson.

Contractual obligations required the supply, over the five year period, of three hundred and fifty eight man months of work involving a full time team leader, farm manager, agronomist, a livestock officer, three farmers and specialist consultants in economics, agronomy, livestock, extension, shearing, machinery and farming. Recruitment was a complex and difficult task, but the team to undertake the first phase of establishing the farm was quickly and effectively put in place. Glyn Webber, who by



*ATCO housing, recreation and office buildings arrived in shipping containers and were assembled by Australian workmen at the Ain Kawah project site, Iraq.*



*A view across the attractively established grounds at the head-quarters of the Ain Kawah project. Extensive lawns, Eucalypt plantations, a swimming pool and flower beds helped make the South Australian project a pleasant site envied by other expatriates in Iraq.*

then had been working for six years on a wide range of overseas projects for the department was appointed the first Project Director.

Nobody anticipated war. During November 1980 the Iranians and Iraqis started fighting. The project was put on hold while the situation was assessed. Foreign Affairs were not happy but after a two month delay work started on the basis that the war zone was 1,000 km away to the south and with the anticipation that the Iraqi war machine would quickly settle the issue.<sup>1</sup>

As the project at Ain Kawah continued, living at the site gradually became more difficult and dangerous and movement outside the compound more restricted.

The Kurdish nationalists, encouraged by the war, took every opportunity to harass the Iraqi Regime in areas surrounding the farm and there was thought to be the risk of kidnapping.

Missiles hit Baghdad where staff were working and during the last year of the project more than 25 air raid warnings were given and Erbil was bombed. Six counterpart staff went to the front and the sight of coffins draped with flags on the packracks of the family cars became more and more frequent. The Kurdish inhabitants of some villages on the farm site disappeared.

Nevertheless there were only rare occasions when these activities worried the Australians. The Iraqis maintained a military presence night and day with a platoon of soldiers and two ancient armoured vehicles. Turkey nests were built around the compound during the last year and manned by soldiers at night. All field operations on the farm were covered by the armoured vehicles and everyone was always under cover well before dark.

The Australian Embassy in Baghdad maintained excellent contact with the farm and frequently assessed the risks with the directors. They also helped maintain evacuation plans.

<sup>1</sup> The war lasted eight years. A million people reportedly lost their lives.

#### **SUMMARY OF EVENTS BETWEEN 1970 AND 1980 WHICH LED TO THE AIN KAWAH CONTRACT BETWEEN THE IRAQI AND SOUTH AUSTRALIAN GOVERNMENTS**

1972 Dr Al Fakhry, then Dean of the Faculty of Agriculture at the Mosul University, spent nearly six months on study leave in Southern Australia. In South Australia he worked with lecturers at the Waite Agricultural Research Institute and with officers in the Department of Agriculture. On his return he developed a series of lectures and research projects aimed at incorporating medics into the farming systems in Northern Iraq.

For a decade he influenced nearly one hundred men and women undergraduates annually. When the author was invited to lecture to his classes in 1977 a great deal of interest was evident in the Southern Australian farming systems. By 1985, when the author last visited Dr Al Fakhry, political instability in the region had brought his teaching and research programs to a halt.

1974 A Director of AACM, Philip Young and a Manager of Elders, the pastoral firm of South Australia, John Moore, visited Baghdad in response to a livestock development consultancy which was on offer by the Iraqi Government. They were assisted by Mehdi Mohammed a professional go-between who arranged contacts with senior Iraqi Government officials for an expected five percent of the contract price. He assisted subsequent South Australian visits until his practice was outlawed by the Iraqi Government in early 1976. Up until that time most business in Baghdad required help from such operators.

Under the auspices of the Scarf foundation<sup>1</sup> the Iraqi Director of Field Crops, Mr Marouf, and Mr Haidar, Director of the Tell Afer Field Station near Mosul. (This field station later became a site for a Western Australian Project) visited South Australia between the 21 and 24 March. Believing they could obtain better help in their search for assistance to transfer the dryland farming system to their country than the Scarf Foundation could offer they secretly sought advice in South Australia from Elders, AACM and the South Australian Department of Agriculture.

The South Australian Government quickly responded by sending Agricultural Minister, Tom Casey, to Baghdad in May. He was assisted by John Tidswell, the Director of the South Australian Meat Corporation and Peter Barrow, Assistant Director of Agriculture.

With Mr Marouf they visited Tell Afer and other field stations in the north of Iraq and discussed the possibilities of establishing a demonstration farm.

John Shearer Ltd exhibited three machines at the Baghdad Trade Fair during September. A 20 Row Seed Drill, a Scarifier and a Field Span Cultivator. A subsequent Iraqi government assessment reported that they were not suitable for Iraqi agriculture. In the following ten years John Shearer sold about \$(Aus)5m worth of agricultural machinery in that country.

During November Messrs Young and Giles, AACM, and Barrow submitted a preliminary dryland farming demonstration proposal, called the Mosul Project, to Ministry officials in Baghdad. They were advised that while the Government planned to develop large agricultural areas in Northern Iraq centred on Mosul and Erbil they had not decided how to use outside expertise.

<sup>1</sup> The Frank and Nahida Scarf Memorial Foundation based in Sydney championed the Arab cause, particularly the Palestinian Organisation (PLO) during this period. In February 1975 the Australian Government refused entry to a PLO delegation. Reuben Scarf, Chairman of the Foundation, warned the South Australian Premier, Don Dunstan, that this action threatened the future of the Libyan Project at El Marj and trade links with other Arab countries.

1976 In the early days of 1976 numerous meetings were held in Adelaide between AACM, Elders GM and the Department of Agriculture to further develop the Mosul Project. A detailed project, A Survey of Rangeland Improvement Work in the Semi-arid Areas of Iraq was submitted to Mr Hussain Al Tikriti, Director General of Rangelands in the Iraqi Ministry when he visited Adelaide with other officials between 19 February and 3 March.

In August, when the Minister of Agriculture and Agrarian Reform, Dr Hassan Juma visited, a further project proposal titled, A Study Proposal for the Rain-fed Agricultural Dryland Project in North Iraq, was submitted.

In September, Seedco mounted its first exhibition at the Baghdad Trade Fair.

1977 More than a year having elapsed without any response to the two proposals, the author, then leader of the South Australian Department of Agriculture Overseas Project Unit, visited Iraq during November. His program was facilitated by John Graves, the Australian Trade Commissioner in Baghdad.

Tideman found that the Agricultural Ministry was still very interested in obtaining South Australian expertise but they were not interested in the proposals before them. They wanted a research station in the north to be manned by Australian scientists. Tideman argued that a great deal of scientific soil and plant research had already been undertaken and put the case for the establishment of a 1,000 ha demonstration farm involving counterpart Ministry officers and practical farmers. He also advised the Ministry to send observers to the South Australian Demonstration Farm in Libya. A contingent of five Iraqi agriculturalists subsequently visited that site on 8 May 1979.

These proposals were formally forwarded to the Iraqi Government by Minister Chatterton.

At this time Arabic versions of the brochure 'Ley Farming in South Australia', the booklet 'Farming Systems in South Australia' and the film produced by the South Australian Film Corporation and the Department of Agriculture, 'Food from the Reluctant Earth' were distributed to the universities, the Ministry and the various technical centres in the northern governorates.

1979 The visit by the Iraqis to the El Marj site in Libya on 8 May turned the course of events and led to the acceptance of the demonstration farm model offered by the South Australians. They reported subsequently that they were particularly impressed by the contributions being made at the El Marj site by two farmers, Sam Pfeiffer and Don Wood.

Later that month Agricultural Minister Brian Chatterton, with assistance from Dr Don Plowman, an officer seconded to the Overseas Project Unit in Adelaide, visited Baghdad to again reinforce South Australia's commitment to be involved.

During August 1979, Max Jongebloed (Seedco), established six 2 hectare demonstration sites across northern Iraq, using South Australian medic seed. Seedco and AACM were still hopeful of getting a slice of the contract which now seemed to be materialising. This was not to be. The politics of the day required government-to-government contracts and by then it was government policy that the Department of Agriculture should compete for agricultural contracts in its own right.

During September the Federal Minister for Special Trade (Mr Garland) visited Baghdad and on his return advised the South Australian and Western Australian Governments that Iraq was now ready to write agricultural development contracts. South Australia immediately responded by sending, a technical team led by Plowman to Baghdad in December to negotiate all the details of a 1,000 ha demonstration farm. Their task was extremely complex because they had to develop the agreement taking into account Iraqi Government legal and administration requirements and even shipping schedules. The task was made even more difficult because the Iraq Government insisted that farming operations be extended over 5,000 ha.

1980 Plowman and Simpson, from the Overseas Project Unit in South Australia, finalised the technical aspects of the proposed contract with Iraqi officials during further complex negotiations in February. The Iraqi Minister of Trade, Mr Hassan Ali, visited South Australia in March to establish government-to-government contact and to finalise details of the contract.

On 10 June 1980 Premier Tonkin announced to the South Australian Parliament that a contract for \$US 9,500,000 would be signed with the Iraqi Government for the development over a five year period of a demonstration farm at Ain Kawah just north of Erbil. Within the contract the supply of agricultural machinery and housing had been included at a cost of approximately \$US3M.

To placate the growing concern by South Australian farmers that resources to service such contracts were being diverted from their needs Premier Tonkin assured Parliament the funds from the project would be used to offset Department of Agriculture staff temporarily absent.

The contract was signed in Baghdad by the Minister of Agriculture, Ted Chapman, on 14 June. He was so anxious to gain the contract that he was half way around the world before formalities were finalised with Baghdad.



*A field-day at the Ain Kawah project site for Iraqi agricultural workers and leading farmers led by Dr Ali, Director of Agriculture, Baghdad.*



*Harvest time at Ain Kawah. Note the armoured vehicle guarding the site (top left corner) and the horse and cart ready for the villagers to collect the straw.*



*The Farm Manager, Geoff Lucas, directs the counterpart staff during the 1984 seeding operations at Ain Kawah.*

#### **THE FIRST PHASE 1980-1982**

Despite the war Webber's energetic leadership and solid support from the Iraqi Ministry, the farmers federation, the administrators in Erbil and the village chiefs, brought quick results.

Webber recalls the excitement and confusion of the early days. On one occasion thirty container loaded trucks arrived at the Ain Kawah village. They all wanted to be unloaded at once and in the haste some containers were opened without custom clearance which later caused unending problems.

By the end of the second year, all of the construction phase had been completed including the shearing shed and compound at Baharaka about 10 km north of the Ain Kawah headquarters.

Half the farm had been enclosed with a boundary fence by July 1982. Nine months later sixty-five man days were spent re-erecting large sections which the villagers had removed. Despite this set back the Australian team and the counterparts were determined to fulfil the contract and by August of 1982 all the boundary and internal fences were completed - about 160 km. Six months later the boundary fence had been cut at forty nine sites and almost one third had been removed. The decision was made then to abandon fencing altogether which of course prevented the controlled integration of sheep into the farming system. An essential element of the program had been lost.

When Glyn Webber returned to the project for a brief visit in November 1984 there was not one shred of the original fences left except those around the grazing trial on the edge of the Ain Kawah compound which were guarded by the soldiers and electricity.

Webber returned from a visit of the farm absolutely flabbergasted. He tackled Sabir one of the counterpart staff.

'Sabir what have you done with all the fences?', demanded Webber.

'Gone to the mountains Mr Glyn'.

'What in the devil are they doing in the mountains?'

'Growing tomatoes, Mr Glyn, - growing tomatoes'.

By the end of the second season 2,120 tonnes of grain had been harvested from 1,400 ha, 915 ha of medic pasture had been sown and 100 tonnes of hay stored.

During the last week of Webber's term in September 1982, when Peter Barrow had arrived to take over the reigns the project received its first serious set-back. During the night the peshmerga and the local garrison protecting the compound exchanged automatic rifle fire. An armoured personnel carrier rammed the perimeter fence and gave chase, but like the farm fencing the culprits disappeared into the mountains. Fortunately, although bullets flew around the compound, nobody was hurt.

Next morning, there was swift reaction from all quarters to abandon the contract. However prominent leaders in the community promised that it would never happen again and it didn't although skirmishes were frequent enough nearby.

Management at home decided that it would be wise to recall wives who had children in the camp. This caused only minimum disruption as only two families were involved and the husbands were able to stay.

#### **THE SECOND PHASE 1983-1984**

Peter Barrow, the new Australian Director set about consolidating the farming operation and firmly establishing the comprehensive research program necessary to adapt the South Australian technology to the specific requirements of that environment.

Considering the weather conditions which followed (there were periods of severe frost in 1982-1983 and then the following season proved to be the worst drought for fifty years) and the general constraints of working in the region, the applied research program proved spectacularly successful. Over the period of the five years of the contract more than seventy field trials were conducted with emphasis on selecting better adapted Medicago species and associated Rhizobium than those available in South Australia. Fertiliser, seeding technology, herbicide use, pasture management and cereal variety selection were also researched.

Unfortunately at the beginning of this second phase the livestock program had been overrun by an estimated 6,000 sheep walked in along their traditional paths. These paths had been kept open by the removal of the farm fences. The project's flock of Hamadani sheep was replaced by the Ministry with Karradi sheep which was a further setback. Nevertheless a grazing trial was established which at the end of the project indicated that at least 2.5 ewes per hectare could be satisfactorily carried using the South Australian system.



*Three of the contingent of as many as 24 soldiers detailed to guard the South Australians and the headquarters of the Ain Kawah project.*



*Mr Ezzaddin, the Iraqi Director of the Ain Kawah Project in northern Iraq examines a medic pasture with the first South Australian Team Leader, Mr Glyn Webber.*

*Mr Ezzaddin was tragically murdered while faithfully carrying out his duties nine months before the Project was successfully completed.*

### THE FINAL SEASON 1985

The author became the project's Director during September 1984.

Excellent rains fell in early November and by the end of the growing season 550 mm of rain had been received. Experience gained in the previous years enabled 2,500 ha of wheat to be sown in a twenty-one day period despite the security restrictions and the dwindling counterpart work force resulting from war enlistments. (The three wives on the site stepped in and helped to keep the seeders rolling).

In February 1985 tragedy struck. Mr Ezzaddin was shot early one morning while driving in Erbil to pick up the faithful counterpart staff. The shocked Australian staff were immediately evacuated to Baghdad on the Australian Ambassador's recommendation fearing that it was some unknown form of reprisal against the Project. That proved not to be. His death was the result of a family feud. Mr Nariman Tofeq Tahir became the new Director but could not fill the gap in leadership.

The harvest commenced in the last week of May one hundred days after the emerging crops had been covered in 10 cm of snow. Despite seven machines being available it ground on in very hot weather for nine weeks. Every day the temperature exceeded 40°C and on some days reached 48°C. Despite the trying conditions the team

work involving the counterparts and additional farmer-help from Adelaide was superb. In all 4,350 tonnes of wheat was harvested from 2,475 ha, an average yield of 1.7 tonnes per ha. In terms of the Iraqi economy it was worth a fortune.

During this final phase the extension program was expanded and future strategies planned with the help of Dr Shahir Sudad, Lecturer in Agricultural Extension at the Baghdad University Groups of agriculturalists from the Ministry and students from institutions throughout the north came to watch and study every major operation, as they had done in previous years. Many were women in up-market western dress inappropriate in the dust and mud as equally were the men who came in their best black suits.

An impressive field day, run by the counterpart staff, was held on the farm at Ain Kawah in April 1985. All the senior personnel of the Ministry attended together with university staff and dignitaries from the region. The South Australian Minister of Agriculture, Frank Blevins represented the South Australian Government.

The first Iraqi National Agricultural Science Conference was held in Baghdad on 24 November 1985. It attracted scientists from throughout the Arab world and the Director of the Ain Kawah Project and Deputy, Rod Reeve, together with senior counterpart staff were invited to attend to give papers on the research carried out.

Looked down upon as tribesmen from the north Messrs Kareny, Sadiq, and Simco were nervous and uncomfortable amongst the elite but their well rehearsed presentations impressed the conference and the project left its mark.<sup>1</sup>

Despite these attempts to consolidate the understanding and use of the South Australian technology one could not overlook the fact that the local peasant farmers were still on the side-lines overawed by the project operations with no alternative but to cut the fences and glean the fields as the headers went by.

### TABLE VI

#### THE AIN KAWAH FARM OBJECTIVES 1980 - 1985

- To demonstrate the application of the integrated dryland farming system and to assess its potential contribution to agriculture in Northern Iraq.
- To increase the production of cereal crops through the use of legume based pastures in the cropping rotation.
- To increase the production of livestock in the cereal zone by replacing existing cropping techniques with the ley farming system.
- To increase the efficiency of production of both cereal crops and livestock through the use of improved dryland farming methods.
- To give agricultural engineers, farmers and farm managers an understanding of the principles of managing a legume based cereal - livestock system in order to achieve significant adoption of this system in the northern rainfed cereal areas.

<sup>1</sup> More than 50 scientific papers were prepared jointly with counterpart staff during the five year project and many were presented in a form ready for publication in Iraqi scientific journals.

## A SUMMARY

The benefits of a wheat, medic pasture rotation and associated seedbed preparation, weed control and Rhizobium technology were successfully demonstrated at the 5,000 ha project site at Ain Kawah.

After two cycles of the rotation the average wheat yield was 1.7 tonnes per hectare compared with 0.8 tonnes achieved in the same season by the local farmers.

Observations also established that 2.5 ewes per hectare could be simultaneously supported by that rotation, provided hay was conserved in the better years. Incidentally, it was also shown that lamb growth rates could be increased by 20% if the local farmers used white barley instead of the traditional black barley.

To achieve these results it was shown on the demonstration farm that the first cultivation for the wheat crop should be at a depth of 6-10 cm and then sown at 4-6 cm as soon as possible after the opening rains using 75 kg of seed per hectare and 50 kg of total soluble phosphate fertiliser in the furrows and 100 kg per hectare of urea (nitrogen) broadcast.

To establish the medic the seed needed to be lime pelleted and inoculated with a Rhizobium strain (WSM244) which was found to be the most effective for that area increasing herbage yields by 50%.

The best medic pastures were achieved with a mixture of three cultivars, Jemalong, Circle Valley and Snail sown in early October into moist soil and using 12 kg of seed per hectare at a depth of 2 cm.

Five Medicago strains were found which proved better than the available Australian cultivars listed above. As a result of this adaptive work on the farm it was recommended that two medics *Medicago rotata* (SA 8189) and *Medicago polymorpha* (SA 2598) should be developed for commercial seed production for the region.<sup>1</sup>

Weed control using herbicides was shown to be essential. Fifteen different chemicals were tested and a mixture of Hoegrass(R) and Brominal - M(R) was found most suitable for the weed infestations.

Economic analysis of surrounding farms compared with the results from the project showed that farmers could double their incomes provided they were given finance to change in the first year. Wheat available for sale could increase by 130% and livestock numbers by 120%.

This technology and the resulting benefits were developed with twenty Iraqi agriculturalist employed in the northern region, thirteen of whom worked at the site for more than four years. At the end of the project this team was fully capable of maintaining teaching and further adapting the technology.

<sup>1</sup> A seed production specialist from South Australia, Malcolm Lewis, worked at the farm for three months after the main work had been completed to take this production one step forward by helping the counterparts to harvest and clean medic seed.

## IN MEMORY

The violent deaths of two senior members of the Agricultural Ministry reflected the turmoil surrounding the project. This insert serves as a small tribute to the willing and skilled services they gave to the adoption of dryland farming technology for the betterment of their country.

To Mr Ezzaddin Nejmaddin Abdul-Karim his country was Iraq. He served as Iraq's Director of the project for more than four years. For Dr Zahir Hamad Tahad, Deputy Director of Agriculture for the region, it was for the betterment of his Kurdish 'country'.

Mr Ezzaddin was a professional agriculturalist who had trained at the University of Baghdad. Before the Project at Ain Kawah became established he visited South Australia and saw at first hand what dryland farming could produce if the right technology was adopted. He took up his task as Director, never wavering from the view that it could be made to work in his country despite some serious doubts from fellow professionals.

A dour aloof Muslim he patrolled the office block and the field sites with few words for anyone, constantly fingering his worry beads. With fatherly discipline he treated his staff, many of whom were quite senior and experienced men, as young sons, and tried to extend the same paternalism to the Australians. Always mindful of their welfare and the welfare of the Australians he used his considerable influence and standing in the community to keep the site protected and supplied with meat and eggs even when unavailable to the general community.

There is no doubt that the success of the project was largely due to Mr Ezzaddin despite the war and surrounding insurrection.

He was cut down by gun fire while setting out to pick up his staff from their homes and take them to the project site early one morning in February 1985. A task he constantly performed despite the necessity to leave home at 5.30 am. He was the victim of a family feud in which he had had no direct part.

The South Australians erected a memorial to Mr Ezzaddin in the simple garden near the administration block and made a generous contribution to assist with the further education of his children. Mrs Ezzaddin had had little contact with foreigners. Now, heavily veiled she received the gift in her lounge, with obvious pride. Virtually the only decorations on the walls of their simple home were Australian souvenirs.

Dr Zahir was a well qualified agriculturalist who had studied as a postgraduate student in America and the Netherlands. As Deputy Director of Agriculture for the region, centred at Erbil, he welcomed the South Australian Project at Ain Kawah and did much to assist its establishment.

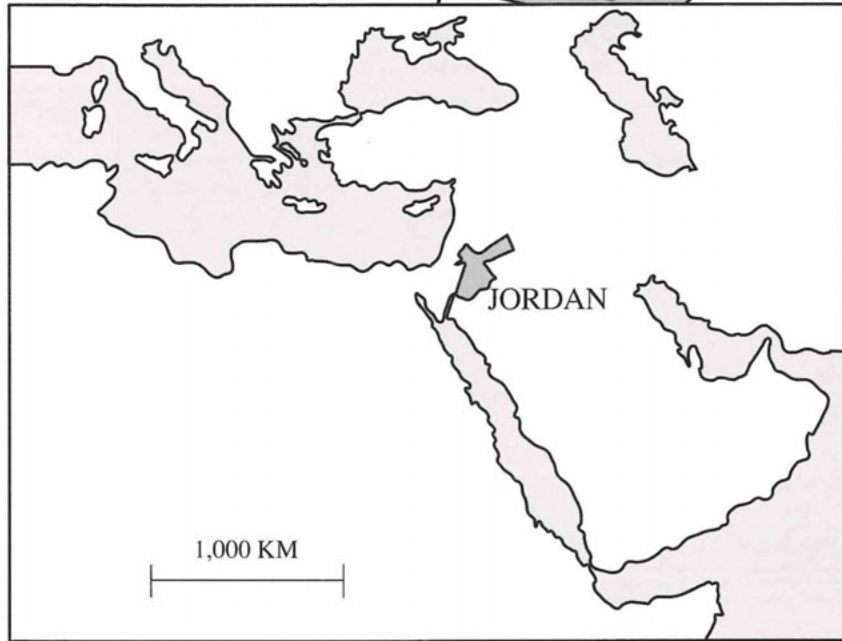
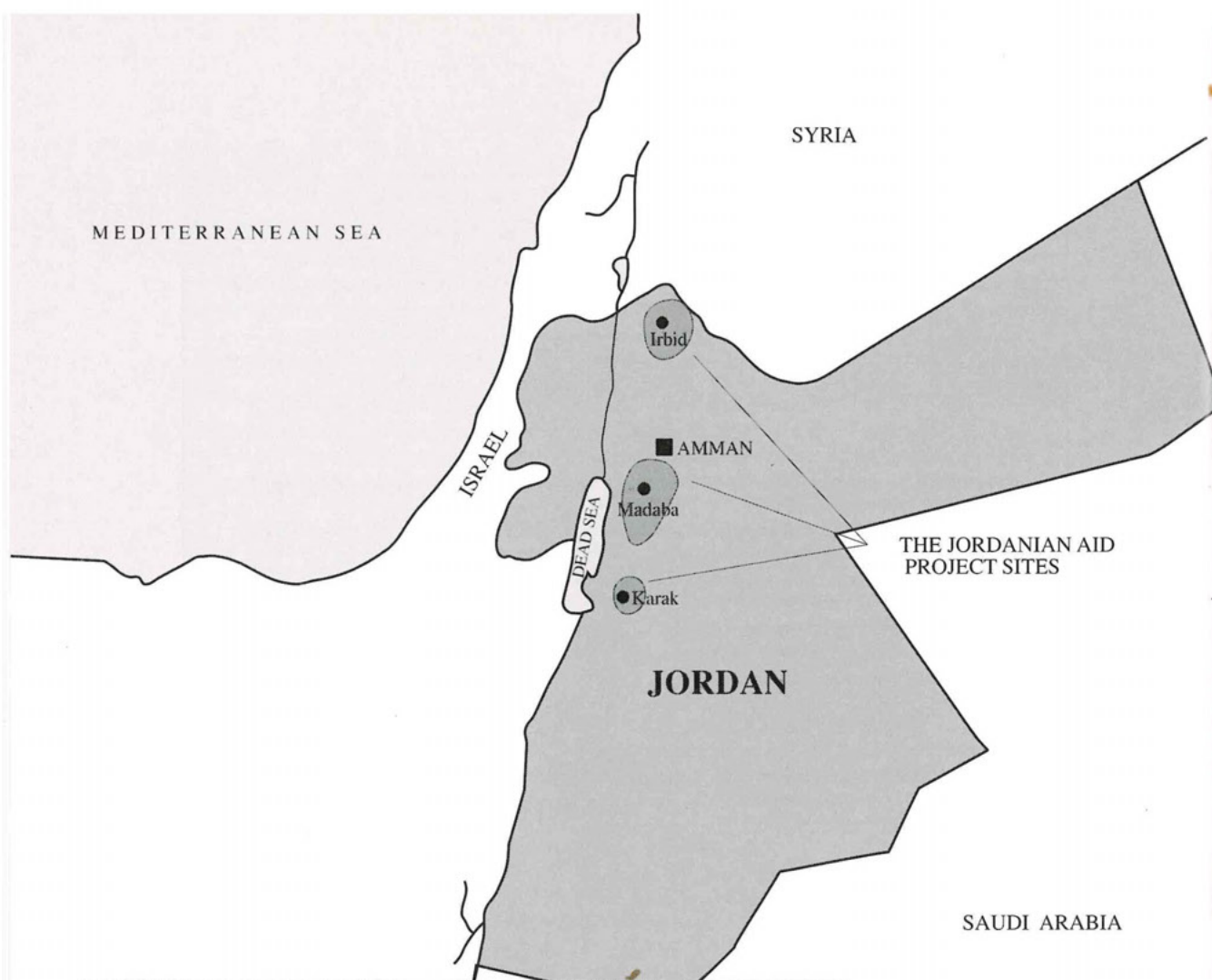
Above all he was a proud Kurd who was constantly attempting to bring the plight of his people to the attention of the world.

At the final field-day held at the project site during April 1985 and well publicised on television Zahir attended, conspicuously dressed in his colourful national costume. To make a point, as he remarked in an aside to the author. All the other senior officials attended in suits or army uniforms.

When he visited the project compound, sometimes with his delightful wife and four children during the last months of the contract in 1985, it became increasingly obvious that the Iraqi authorities were becoming less and less tolerant of his behaviour. He was demoted to a minor position 60 km from his home and the family harassed, forcing them to flee over the mountains to Kurdish friends in Erbil, Iran.

A friend later wrote: Zahir Hamad Tahad went back to Iraq in July 1988 after an amnesty declared by the so called Revolutionary Command Council. Unfortunately Zahir believed that. As soon as he arrived in Iraq he was arrested and after a while was executed. His wife and children were imprisoned in Abu Graib Prison since then and their fate is unknown.

Possibly other counterpart staff have also perished in the wars that have followed, taking with them their knowledge and skills of dryland farming.



## CHAPTER VIII

### JORDANIAN AID

#### INTRODUCTION

In June 1979 Chris Heysen had completed his first field study for the Australian Development Assistance Bureau (ADAB)<sup>1</sup> on the feasibility of introducing South Australian farming technology to the cereal zone in Jordan. He was convinced that at last the pitfalls of the other projects, now being undertaken by the newly formed South Australian Government company, Salger Pty Ltd, could be avoided.

Firstly, the Federal Government in Australia was prepared to fund the project as a part of its overseas aid program. This would largely avoid the complex contractual issues which had extended the preliminary negotiations of the Algerian and Iraqi projects for many years before they became operational. Writing formal contracts acceptable to both Governments had greatly added to the costs and often soured relationships as time went by.

While agricultural aid programs had sometimes lacked commitment and accountability (why look a gift horse in the mouth?) Heysen was confident that this would not be the case in Jordan because, through Hassan Nabulsi, the Chairman of the Jordanian Cooperative Organisation, he already had a guarantee that individual farmers from the grassroots would be involved in the transfer process on their commercial terms.

Thirdly, he had enthusiastic support from many other quarters in the country including the Crown, the Jordanian Ministry of Agriculture and the University. Minister Chatterton had also visited Jordan while the feasibility study was in progress and had given valuable advice and support which greatly impressed the Jordanian authorities.

Heysen proposed that the basic aim of the project should be to introduce a legume fodder crop into the fallow phase of the rotation used in the cereal belt.

He suggested that this should be achieved on a number of small privately owned sites in the Madaba and Karak districts where, under tuition from South Australians, the new rotation would be introduced while the farmers continued their commercial

<sup>1</sup> Towards the end of this project (1987) ADAB was changed to The Australian International Development Assistance Bureau (AIDAB).

operations. Aid would be limited to the provision of inputs not used in their traditional farming such as medic seed, fertilisers, fencing and the use of Australian agricultural machinery. The farmers would be expected to provide the tractor and the labour for seeding and harvesting.

The cooperative, who employed extension agronomists and technical officers would support the Australian team and ensure that all farmer members would be aware of developments, both good and bad.

ADAB accepted Heysen's basis for the aid program and gave Salger Pty Ltd approval to conduct a project design mission which was undertaken by Heysen, Bull and Pike in March 1980. This mission further strengthened the network between the Jordanians and the South Australians and more clearly defined the social hurdles that would be associated with the transfer of the dryland farming technology. Detailed cost estimates of the project were made and Pike submitted an economic analysis of what could be expected.

Before recording further progress of this project it is interesting to consider the circumstances of its relatively trouble free birth in the wider historical context.

### ROYAL INTEREST

In 1977, when South Australia officially made contact with the Jordanian Government to explore the possibilities of transferring the dryland farming technology to this land of adversity, the Kingdom was celebrating the silver jubilee of the reign of His Majesty King Hussein.

King Hussein, a direct descendant of the Prophet Mohammed, ascended the Hashemite throne as a teenager on August 11, 1952, following the tragic assassination of his grandfather, King Abdullah.

In the following twenty five years, out of struggle and turmoil, King Hussein developed a unique relationship with his people persuading them that they could embrace modern technology without sacrificing their spiritual heritage.

By 1977 the King and the Jordanian Government had laid the foundations to modernise their failing agricultural production. During visits to Australia by the King and Crown Prince Hassan, appeals had been made for special help to revive production which at that time left a shortfall requiring imports which were costing about \$US250m annually.

The Crown Prince and his Excellency the Minister of Agriculture, Mr Salah Juma, impressed by what they had seen during their visit to South Australia, issued an invitation to the South Australian Government to send an adviser.

In response to the Jordanian request the author was asked to call to Amman after visiting the Libyan Project and making contact with the Iraqi Government.

On Sunday 3 December, 1977 the Jordanian Agricultural Ministry turned out in full force to discuss what could be offered and how relevant it might be. They were a dispirited bunch. American, European and FAO experts had been coming and going for years telling them what to do and what not to do and now an Australian expert was being pushed on to them by the Crown. As they pointed out, options for improvement were limited indeed when 85% of the farmers had less than 5 hectares each to farm and three quarters of the land area of the Kingdom received less than 200 mm of rainfall.

Despite doubts within the Ministry every endeavour was made to thoroughly brief the writer who was taken to all the agricultural regions and the major agricultural research centres by Dr Zulkifl Ghosheh, Chief of the Division of Research and Extension in the Ministry.

While considerable progress was evident in the production of summer vegetable crops, irrigation technology and the construction of soil conservation structures, the problems associated with deep ploughing, poor seedbed preparation and bare fallows, common throughout the whole region, were all too evident.

The visit ensured that the Ministry and all relevant divisions and research centres were well supplied with a wide range of technical information to support the South Australian technology. Perhaps more importantly the same information was made available to the Jordanian Cooperative Organisation which had more intimate contact with the farmers on a daily basis than the Ministry.

This visit closely followed a visit by Dr E.G. Hallsworth, Chairman of the Land Resource Laboratory, CSIRO who had responded to an invitation from the Jordanians made to the Australian Federal Government to assess scientific cooperation.

The Report to the Crown Prince (supported by Hallsworth) was tentative as no Australian aid funds had been specifically earmarked to help the Jordanians improve their dryland farming. It was suggested that from the experience gained in Libya a demonstration farm might be considered which should be supported by a low-key medic breeding and selection program to find more suitable lines than possibly Australia had to offer.

When the author returned to Jordan at the end of the following year with Chris Heysen who had been appointed Project Officer in the Departments Overseas Project Unit, considerable background work had been accomplished by ADAB and \$A150,000 had been earmarked for a feasibility study to determine the details of a dryland farming technology transfer program.

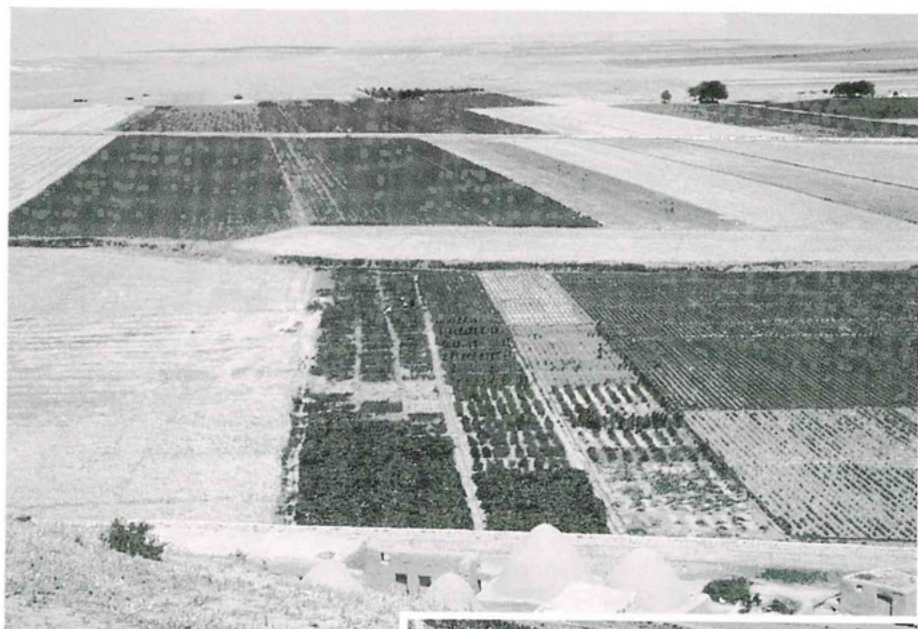
On arrival Heysen and the author faced an unexpected meeting of the Jordanian Planning Council who had mistakenly believed (following the Hallsworth visit) that they were a senior Australian Government delegation responding to their requests for a major scientific aid program including training of their scientists at Australian Universities and the coordination of multi-million dollar projects to be financed by the World Bank and Arab organisations.

This mistake proved fortuitous. The Council, grateful for small mercies, gave the prospects of exploring the use of South Australian dryland farming technology their undivided attention.

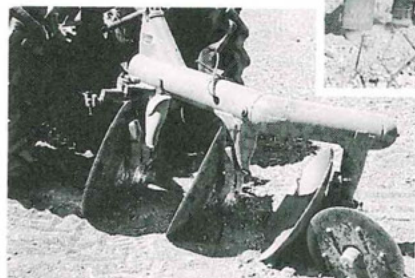
Accepted and understood at that level foundations were laid which led to quick action and established a confidence which over the following decade continued to underline the transfer process. This helped to ensure success at a level not achieved in the other countries.

The Jordan Times and national television, poised to detail generous Australian aid, hid their disappointment and used their time and space to promote South Australian agricultural technology.

During this visit Tideman and Heysen were also able to forge a close link with Mr Hassan Nabulsi, the Managing Director of the Jordanian Cooperative Organisation, during a dinner and evening in his home.



*Land fragmentation. A social barrier to the introduction of Australian dryland farming technology in countries around the Mediterranean Sea and in West Asia*



*Crude ploughing with donkeys and wooden ploughs contrast with tractor drawn disc implements. These photographs, taken in Jordan during the Australian aid programme serviced by SAGRIC International, illustrate the technical barriers to the preparation of firm, shallow seed-beds necessary to achieve maximum cereal production under dryland conditions.*

## **JORDAN — PHASE I**

As Heysen had predicted the project was to prove highly successful in achieving the overall aim. It led to a decade of Australian agricultural influence in Jordan which has substantially increased the prospects of achieving overall increased productivity in the cereal zone in a more sustainable environment based on sound land-use principles. The attitude of the farmers is gradually changing from thinking only in terms of short term risk minimisation to profit maximisation over time.

Based in Amman the Project commenced in November 1980 with David Harvey, an Economist from the South Australian Department of Agriculture, as Team Leader. He was supported by Barry Bull, an agronomist with considerable medic knowledge and a skilled farmer from Kangaroo island, Tim Peckover.

At the time political instability in the region was at one of its often repeated peaks. War between Iraq and Iran was threatening the commencement of the project at Ain Kawah and the problems between Jordan and Syria prevented Barry Bull's family from joining him. This delayed starting the field work with the opening of the season but in many ways it was a blessing in disguise. It gave the team an opportunity to plan the field operations with their willing counterparts (a vital link denied to the South Australian teams at El Marj and Ksar Chellala) and to be involved in the selection of cooperating farmers.

With no preconceived contractual arrangements to follow, Harvey and his team were able to maintain a great deal of flexibility and embark on a philosophy of low-key cooperation rather than up-front direction or interference.

Twelve farmers were selected who were prepared to incorporate the Australian technology into their farming system while continuing to farm commercially. They would assess whether the changes were worthwhile.

In the first season the project concentrated on the cereal phase of the rotation as this of course was the farmers primary concern for cash returns.

The cooperating farmers were given access to Shearer seeders from South Australia which evenly placed the cereal seed on a firm seedbed in close proximity to the fertiliser. This technique ensured better yields.

The team was soon confronted with an unexpected barrier which prevented wider adoption of this technology. Few tractors available in Jordan were fitted with the necessary hydraulic system to operate the Australian seeders.

The problem was particularly acute because most Jordanian farmers in the cereal zone rented their machinery requirements from national cooperative stations. One had been established at Madaba and the other at Ramtha to upgrade the availability and maintenance of farm machinery. These centres had concentrated on three-point linkage and disc ploughs for deep tillage. Harvey's team had to turn around and try to get these specialist centres to change; a change which they did not happily accept.

There were two other barriers to the adoption of the aid program. With the short growing season, low rainfall and relatively cold winters much of the Jordanian cereal belt presented difficulties for medic establishment although a series of variety trials did establish that snail medic (*Medicago scutellata*) could fulfil a valuable role in the rotation provided it could be protected from the universal grazing rights which tradition offered the livestock owners. Therefore, as was the case in all the projects undertaken by the South Australians, fencing became an issue and a barrier to the South Australian technology.

Harvey and his team and the counterpart staff realised that whatever technology they transferred it had to work without relying on fences. They therefore adapted the program in two ways. The cooperating farmers were supplied with sufficient fencing to enclose only half of their farms. This enabled the impact of fencing on the farming system to be demonstrated without entirely discarding the old traditions based on the universal grazing rights of the community.

Common grazing outside the fences naturally discouraged the farmer from putting his resources into their establishment. These areas were also invariably not grazed until the herbage was dry which discouraged the medic from setting adequate seed for re-establishment of the pasture in the next non-cropping phase and allowed competitive weeds to set seed unrestrained.

The fence protected pastures yielded well and on occasions the cooperating farmers were able to sell the grazing rights to interested flock owners who still shepherd their stock within the fences to ensure they grazed the proportion for which they had paid.

The other change introduced by the South Australian team to help overcome the social and technical problems associated with fencing was their emphasis on the introduction of other legumes into the rotation such as chickpeas, lentils and vetches.

Vetches (*Vicia* spp), as the basis of a sown forage crop which would not be claimed for communal grazing offered a particularly useful solution. *Vicia ervilia* sown with barley in the 250 mm rainfall zone and *Vicia salvia* with wheat above 300 mm.

It was found that wheat was the better component in the forage crop because the local farmers frequently allowed the forage to mature before it was utilised. This allowed the cereal to shed on to the ground and if it was barley, it contaminated the following wheat crop.

These recommendations were gradually improved upon. Other *Vicia* species were identified in variety trials at the Government research centres at Ramtha, M'Shagar and Rabba. It was found that these mixed well with oats, rather than wheat, as the cereal component in the forage crop. The ratio of legumes to cereal was increased to three to one and management strategies to avoid the contamination problems were examined.<sup>1</sup>

By the end of 1983, (the first phase was due to be completed in July 1984) despite a drought, there was considerable field evidence that southern Australian tillage methods for cereals and the emphasis of legumes in the rotation had economic advantages. Should the potential demonstrated be fully realised the team estimated that cereal production could be increased on average by 30,000 tonnes per annum and lamb carcass production by up to 92,000 per annum. This offered considerable benefits to Jordan which was then importing between 40% and 60% of its cereal and meat requirements.

A pathway for the adoption of these new developments by the general farming community had however not been established and there was still the need for further adaption, particularly the selection of more reliable *Medicago* and *Vicia* species for the Jordanian environment.

A case was therefore resubmitted to ADAB by the Jordanian Government and SAGRIC International Pty Ltd to progress the program into a second phase.

<sup>1</sup> This technology was taken back to South Australia resulting in the introduction of useful vetch varieties into the farming system during the 1980s. It provided an unexpected spin-off from this overseas project.

## THE SECOND AND THIRD PHASES

The second phase which commenced after a six month gap while new administrative details were negotiated commenced at the beginning of 1985 and continued for three years. Led by Chris Heysen, the field program concentrated on legume forage production and its utilisation by livestock. Extension programs with farmer participation were emphasised.

The project continued through a final two year extension program with Rod Reeve as leader until 1991. A South Australian agricultural presence had by then been operating in the country for eleven years involving aid worth more than \$A6m.

During this last phase a comprehensive manual was published, 'A Manual of Integrated Cereal/Livestock Farming Systems in Jordan' which was printed in Arabic and English. It embodied all the recommendations which had emanated from the field work.

## AN ASSESSMENT

The bottom line, the economics of the system, was closely studied on the Jordanian farms over the 1980 decade. The results of data from over 50 farms in the cereal belt during that period showed that total farm profits increased by around 40%. Some farmers had doubled their profits. While cereal yields usually declined by ten or twenty percent following the establishment year of the forage crop compared to cereals after fallow, the added income in the next year from the livestock resulted in an increase of 40% in total farm profit over the two year cycle.

A four year rotation trial conducted at Ramtha in northern Jordan using the farming technology introduced from Australia gave a detailed analysis of the above claims. Taken from SAGRIC International's 1989 Annual Report of the Jordan Australian Dryland Farming Project it can be summarised in table VII.

TABLE VII

ECONOMIC SUMMARY - NET RETURN IN JD/DUNUM <sup>1</sup>					
Rainfall (mm)	165	297	311	148	230
Treatment	1985/86	1986/87	1987/88	1988/89	Mean
Grazed forage / barley	-2.42	13.43	10.11	-0.40	5.18
Fallow / barley	-1.82	6.13	9.05	0.04	3.35
Hay forage / barley	-2.43	12.79	3.79	-0.50	3.41

<sup>1</sup> The average of each rotation and the reverse of each treatment listed. For example, fallow barley and barley fallow were included in each year.

The assessment of this long and successful project would be incomplete without recording that its performance led to SAGRIC International being invited to tender for the Lower Zarqa River Basin Project which was won in 1986. This sophisticated land use planning and soil conservation project over a three year period added further South Australian technical inputs to Jordanian agriculture.



*Mrs Nancy Blesing preparing medic seed samples for variety testing in the field in Libya. She was one of the few lucky women who found employment while living on project sites with their husbands.*



*Wives of team members working at the overseas projects were often able to forge close links with counterpart staff and their families. Sabir, a Kurdish agricultural staff member and his wife were photographed when they called to the Ain Kawah site to show off her traditional clothes, 1985.*

## CHAPTER IX

### THE WOMEN – WORKING ONLY FOR LOVE

#### INTRODUCTION – NEW PIONEERS

The early agricultural history of South Australia was dominated by the pioneering spirit of the country women. This spirit of concern, patience and resourcefulness was inherited by the women who partnered the men who took our agricultural knowledge back to the old world, particularly those women who lived, often for two or three years, at the project sites in Libya, Algeria, Iraq and more recently Jordan. They literally made these exercises possible.

While the men were preoccupied with their daily endeavours their partners were often left in very threatening surroundings to provide the home, the meal, the child care, the work for love. The medic fields had no heroes only heroines.

Nearly fifty women went overseas during the various phases of technology transfer recorded in these chapters. The majority were born and bred on farms in South Australia and consequently had a good working knowledge of the dryland farming system and the day to day work in which their menfolk were involved. Some had been housewives all their lives. Others, mainly the younger women, had work experience at home as teachers, nurses and office administrators. Few had travelled outside of Australia and when they left they had no appreciation of what was ahead of them.

Looking back, now for at least a decade for most of these women, they cherish the experiences they gained which changed their lives and in some cases the lives of their children for ever. They gained self-fulfilment, new friends and a different depth of living from their participation in the different cultures.

It is true to say that in most cases the foreign authorities appreciated and recognised their presence and their worth to the projects more than the administrators at home who knew they had to be on site for their husbands' sake but did not really want to face the responsibilities of having them there, responsibilities made difficult by the tyranny of distance. That says much for the women's willingness to become totally immersed in the scenes around them. Perhaps that assessment of the South Australian managers is unkind

and it can be argued that those at home did their best. The lot of the women who went overseas on these projects would certainly have been better if women had helped negotiate and make some of the initial decision about the terms and conditions of the contracts and the hardware sent from Australia.

#### PROFILE — Madeline Bicknell

Just after Christmas 1974 Madeline Bicknell was busily preparing to leave for Libya as a member of the South Australian team about to establish the demonstration farm within the Jabel Akhdar Agricultural Development Program at El Karj. With her husband Keith, an agronomist, and four other couples they had at last received instructions to go, having waited for nearly three months for their final notice.

In her haste she tripped and fell in the street breaking her ankle in three places.

'I had never travelled overseas before', she related to me when I explored her memories of sixteen years ago in their comfortable home at Murray Bridge.

'Despite being trussed up in plaster from my big toe to the top of my thigh I was determined to go. I wasn't going to miss my first chance to travel and besides I wanted to support Keith'.

'In those days overseas travel was so rare for Departmental Officers that a large contingent of Keith's work colleagues were at the airport to see us off. I remember they all thought I was mad to go and now I know the risks I took, with complications and the problems I faced, I have to agree. I remember that one of my first problems was that I couldn't use the toilet on the plane. I couldn't shut the door! They had to clear the toilet block and guard both entrances while I left the door open.'

'When I eventually reached the airport terminal at Benghazi I was left alone sitting in a passage-way for nearly half the night while the men tried to complete the entry documents in Arabic. I had my leg propped on my baggage and all this protruded into the confined walk-way. Every soldier, every passenger that went past had the potential to knock my leg. For security reasons Keith couldn't come back to me and, being a woman, no Libyan was free to handle me into a safer position.'

Once Madeline reached the Hotel in Benghazi her comforts were much better cared for, particularly after she had by chance received attention by an American orthopaedic surgeon who had come to Libya to assist the development of treatment units.

They spent six long weeks in Benghazi waiting for their flats to become available while the team went back and forth to the project site each day.

Bashir Jodah also personally took responsibility for her needs and made all the resources he possibly could available to her.

I asked if she was ever fearful for their safety while in Libya. She mentioned the every day hazards on the roads from fast and erratic driving, and being a foreign women she was sometimes threatened from stoning by young teenage Arab boys who roamed the streets. She learnt to live with these. What did worry her was the unknown, the secret police.

'I remember how frightened I was when we received an unwelcome call when they insisted we remove every trace of a map of Australia we had drawn on the front gate to guide expatriates and visitors to find us in streets which had no obvious land-marks.' (Incidentally the Bicknells were in their flat several weeks before they realised that the roadway that went past was bituminised. Dirt and rubble completely hid the surface).

'I was also frightened when Lex Walker, a Director of the South Australian Department of Agriculture, was visiting with his wife and he was accosted by the police after taking a photograph in the souk. His camera was confiscated, the film developed and later returned minus a photograph of a bridge which didn't matter because we could buy the same scene on a postcard.'

The Bicknells faced their greatest test during their twenty-seven months contract in Libya when Keith became ill with a serious attack of hepatitis. He was put in hospital for five weeks

and as the food was unsuitable Madeline had to smuggle it to him each day. Wisely, the authorities prevented the locals from taking food into the hospital although soft drinks were permitted. A guard inspected Madeline's offered bag, containing the drink at the door each time she visited, unaware of Keith's meals hidden in her bosom.

'I went in looking like Sabrina and came out like Twiggy', was Madeline's western appraisal of her feat.

Despite the physical problems and frustrations Madeline believes the project was a success and a great degree of that success was due to the women. 'We provided the support our men-folk needed and more than that: we had sufficient knowledge of the technical issues involved to help them maintain a balanced perspective of the major tasks.'

#### A LETTER HOME FROM LIBYA

Because the Libyan Project at El Marj was surrounded by enormous development activities which attracted many expatriate families from around the world the women who went from South Australia to the site enjoyed relative freedom to move and integrate compared with subsequent projects.

For the first four years of the project the South Australian team lived in blocks of flats surrounded by identical dwellings for the Libyans. The women therefore constantly found themselves check by jowl with Muslim housewives and their children.

Despite their relative freedom to mix and shop and travel they constantly felt the need for one another's support which they achieved by participating at morning tea parties when they exchanged news from home, practised crafts and played table tennis.

For some who had their children on site the burden of their education, feeding and amusement was a heavy load indeed.

Six of the fifteen women who lived at El Marj found formal employment. Judy Pfeiffer, an experienced infant school teacher from Moorook south of the River Murray near Barmera and who was in her middle forties was one of those. Catapulted into Libya, she arrived during May 1976 when her farmer husband, Graham (known to all as Sam) contracted to work on the farm at El Marj.

The Pfeiffer's flat in El Marj was isolated from their Australian colleagues and this gave Judy, who was home alone during the day, a unique opportunity to mix with the surrounding local mothers who were struggling to adjust from desert tent living to managing their western-style homes. When Judy arrived she found that many local mothers were each morning still toileting their numerous children (averaging five in a family) in their traditional ways by fully using the surrounding spaces which added to the pre-school chaos and the suburban smells.

Her outgoing nature and tolerance of these surroundings soon established her acceptance by the locals who were happy to involve her in the multiple kissing routines at the tea parties and weddings to which she, and sometimes Sam, were invited.



After she had lived in Libya for a year expatriate parents (Australians, Bulgarians, Germans, Indians, Pakistanis, Poles and British) met to establish an international school. They invited Judy and Loy McNeil (wife of the leader of the Australian team) to be teachers.

After a review of the needs of the school in terms of buildings and teachers the parents agreed to fund the project and as a start all students would be given a two month intensive course in English to establish the agreed common language.

Judy sat listening with great interest anticipating a return to her profession in two or three months. In a letter home, dated 10 July 1977, Judy recalled the events which followed.

*Through all this Bashir Jodeh' had sat deep in thought only contributing a comment here and there, when all of a sudden, in that silence which falls when everyone has said their say and they await the summing up, he spoke of his plan. To him, it appeared, the school lacked two basic things - a building, and money to pay teachers to begin the preliminary English course so he had a plan to solve both these problems, at the same time helping his own school 'The Jabel Akhdar Extension School for Girls'. Up to this moment none of us even knew of the existence of such a school and before we could inquire he said, 'I will employ your three teachers and they can teach for two hours every morning in my school. In return you can have free use of my school for two hours every afternoon and these three teachers will be paid by me for the two months required for your basic English course'.*

*This offer was applauded as generous by the parents and even we teachers had to admit it sounded good. I eventually found my voice and said, 'when would you require us to start, assuming we accepted the idea?'*

*"Tomorrow morning, I will meet you at the school and you can start straight away".*

*After a rather restless night we duly arrived at the school at 9.00 am and had our questions ready for Jodeh. He took us on a tour of the school explaining as we walked that the idea of this school was to educate selected girls in the finer points of serving, cooking, health and hygiene, mothercraft, knitting and needlework, traffic rules and regulations, etiquette required in western style living, car and tractor driving, first aid, and when they were ready, to send them to live for two months with the families of the newly settled farmers where they would attempt to pass on as much knowledge as possible to the farmer's wife to help her to adapt to her new environment as a house dweller and part of 'the new Libya'. If not able to successfully adapt herself, she (the wife) would at least gain some understanding of the kind of life ahead for her daughters and in some little way prepare them for their future role 'out of the Barakau and four walls of home'. As we toured we saw evidence of progress in all but the cooking section although we were shown a modern kitchen fully stacked from new electric stove, deep freeze and canopied exhaust fan down to table cutlery and cake tins.*

*Back in the office we asked the all important question 'How does he see us fitting into his scheme of things?' We soon found out!! Initially, his idea is for us to extend the girls very basic High School English into a workable conversational style to enable them to extend their own knowledge by being able to talk with English speaking expatriates.*

<sup>1</sup> Bashir Jodeh was chairman of the Jabel El Akhdar Authority which had contracted the South Australians to establish the farmer at El Marj.

*Wonderful! good idea! marvellous! good thinking! But how does he expect us - both infant trained with no experience of teaching anyone older than 8 years - to cope with a class of 15 girls 12 to 20 years old? 'easy' says he nonchalantly "but if you want to make sure come with me!" Obeying the command, once more slightly dazed, we follow him to the doorway of a classroom previously visited during a lesson in Mothercraft. Opening the door he pushed me gently in front of him saying "Go in and teach these girls for 1/4 of an hour and see how you go! Frantically remembering the hours of programming and planning, preparation and research which preceded any lesson I ever taught in Australia. I gazed around at the brown and black faces staring at me and was encouraged by a tentative smile or two - whether smiles of welcome or humour I'll never know and at that moment didn't want to know - cleared my throat and said "Good Morning girls, my name is Mrs Pfeiffer and I am here to help you improve your conversational English", and nearly fainted with relief as I heard a chorus of "Good Morning Mrs" followed by 15 varieties of Pfeiffer!!*

*I smiled, they smiled and so began 15 minutes of questions and answers as I attempted to find out their names, the extent of their previous English instruction and to establish some kind of rapport with these eager students who have willingly accepted the responsibility of shouldering a sizeable part of their countrys' future. I had no time to spare a thought for Loy whom I presume suffered a similar fate to me in another classroom and was surprised to see Jodeh come in quietly to observe my progress and inform me "time is up". Back once again in the office he said "See? Its easy isn't it?" Interpreting our shaking heads as nods of assent he continued. 'You can follow any leads you like to encourage discussion. Mrs Pfeiffer on Wednesday you can show them how to cook an Australian meal all the time instructing them in English and they can serve it to their friends'. The one meal I thought of was goose - cooked! - as mine would be if I didn't shove that bulldozer back on its rollers!! Somehow I managed to pull myself together and become very businesslike asking questions like 'How much money? How do I get to school each day? How do I get out of here now before I commit myself to something I can't handle? When do I start?'*

*Eventually I agreed to giving it a 2 weeks trial, on an hourly payment basis. Jodeh has told the girls and us that not one word of Arabic is to be used during our sessions so perhaps our years of infant teaching may be a blessing in disguise as we have had plenty of experience at reducing information to a very simple form of basic English.*

#### TO JAN AND ALAN PULLMAN — A SON

The day Jan Pullman knew she was pregnant her husband told her that he had been chosen to go to Libya as a Livestock Specialist at the South Australian Demonstration Farm. When, quite naturally, she expressed her concern he had a simple answer, 'Women are having babies all over the world'.

Naively they went, only realising their real problems when they saw the desperate conditions of the hospitals in Benghazi where they lived while waiting for accommodation at El Marj. They decided that Jan would have to return to Australia for the birth of her baby.

However, as the months went by, they found an Egyptian gynaecologist in the hospital at El Marj. He gave them a great deal of confidence despite his advice, after it

was too late for Jan to go home, that the child would need to be delivered by caesarean section. Tim was born on the 5 May, 1975 the only child to be delivered overseas to parents involved in the agricultural projects.

Looking back Jan and Alan realise they took risks but they now feel they were probably no greater than had they been living at home at Parndana on Kangaroo Island. Certainly the days after the birth were tough with unfamiliar food and the fact that Alan was barred from the hospital (as were all males) except for fleeting glimpses.

Today both Jan and Alan are thankful for the standard of child-birth care she was given and the wonderful support of the Australian team members. But even more memorable to them both was the respect and concern shown by the Libyans. In the streets they stopped their hassles and respected her space. In the hotel where they lived in Benghazi and in the shops of El Marj she was always offered the biggest oranges, the best of the food available. As Jan has said on many occasions, 'as a pregnant woman in Libya I was made to feel very special'.



*These Kurdish girls had walked 8 km in 40°C heat to glean wheat variety research plots after harvest on the South Australian Project, 1985.*

### THE INNER CIRCLES

The women who supported their partners in Algeria and Iraq were less able to integrate into the wider communities compared with those previously described in Libya. Nevertheless with good will and patience they found their compensations by being in close proximity to the day to day operations.

In particular they developed close relationships with the counterpart staff, their wives and children who usually offered to share their culture through invitations to meals and other family activities. They were also able to turn their attention to assisting the actual projects (in most cases without pay or favour).

Chris Davis found herself with her husband, Terry, the Irrigation Agronomist, in Algeria in November 1979 with a van and no where to live. The commencement of the project had been delayed because the housing had not been completed at the project site at Ksar Chellala.

Chris had an excellent command of French having just completed a course with her husband at a special French language academy near Nice.

She happily adjusted to the task of assisting her husband and the small group of Australians she found around her who were trying to get the project off the ground. She acted as translator, negotiator, bookkeeper, recorder and driver and resourcefully lived in often very poor accommodation for nearly four months.

When the time at last came for Chris and her husband to take up their residence in the project compound on the edge of Ksar Chellala she was well placed to help integrate the two cultures suddenly thrown together. One of her first tasks was to attend the International Womens Day celebrations as one of the star guests; a radical celebration for that part of the world. She later taught in the local school.

The project site at Ain Kawah, 15 km north of Erbil, in Northern Iraq, was probably the most demanding of all for the fourteen women who lived in residence during the five year period of the project. This was because their movements were restricted by the unhappy political and military environment in the towns and villages around them. If they went shopping soldiers usually followed along.

Erica Hancock, wife of the Livestock Research Officer, Bruce, spent more than two years at the site and liked the life so much that she happily later went to the Jordanian Project.

Erica used her farming family background and graduate training at Roseworthy Agricultural College to give almost daily unpaid assistance with the livestock research projects. When the work program in the field was particularly busy during the latter months of 1984 she and other wives present effectively managed the tractors and seeding machinery to relieve the male drivers and to fill in the gaps, activities which certainly did not go unnoticed by the counterpart staff.

While the men were at work the wives at Ain Kawah constantly attended the large expanse of lawns and the gardens which surrounded the homes, the office block and the recreation centre. The gardens with flowers and vegetables flourished in the deep fertile crescent soils and with the unlimited high quality water supply. The eucalypt plantations quickly grew and reached 10 metres in height by the end of the project giving the whole compound a neat, home from home setting and a pleasing green expanse, certainly not common in the northern Iraq summer.

This work had its rewards as it attracted many friendly and interesting expatriates (Danes, Irish, Germans and British) who were delighted to leave the heat and dust and noise of Baghdad and enjoy this Australian 'country-club' which offered them hospitality in the recreation centre and accommodation in the single quarters surrounded by such pleasant gardens and a swimming pool.

Unfortunately this record does not do justice to the many unnamed women who laboured for love and left behind their goodwill and concerns long remembered by the counterpart families many of whom dearly wished to escape to Australia away from their troubled worlds.



## CHAPTER X

### THE ADELAIDE CONNECTION

#### INTRODUCTION

Many South Australians were involved in many different ways associated with the various aspects of the transfer of this agricultural technology before there was any need for formal Government administration to focus the activities.

Adelaide was small enough to maintain relatively easily communications between the parties which dealt with situations as they arose. An effective network developed so that people in the private sector could support one another when it came to overseas representation, to arranging shipments or to manning trade displays. Various Government agencies stepped in (especially the Department of Agriculture) if technical support was needed or if visitors who had come to the state for first hand knowledge of the agricultural system needed government recognition.

The network also involved academics, especially those at the Waite Agricultural Institute and farmers' organisations such as the Agricultural Bureau whose members were always ready to take an active part in training tours or on-farm training for those from the region who were sent out to gain first hand knowledge by their governments or by international agricultural organisations such as FAO.

The media were also involved. The press and radio constantly kept the wider community informed such as the feature article, *Injecting Life Into The Desert* which appeared in the *Saturday Review* in the 'Advertiser' in December 1978. Reporter Folley gave praise to 'the dryland farming techniques which are helping to transform the agriculture in many Middle East countries'. Simplistically the article claimed that the people from private enterprise and government officials involved, 'have recognised, appreciated and been sensitive to cultural differences. Only benefits can come from that', concluded Folley.

## THE OVERSEAS PROJECT UNIT

When Brian Chatterton was appointed Minister of Agriculture in the Dunstan Government in June 1975 he immediately set about using his influence to upgrade the government's commitment to the state's overseas agricultural initiatives. Although the previous Minister, Tom Casey, had enthusiastically toured the region, he had seen his role as one of reacting to rather than initiating events.

Chatterton took a day to day interest in all the aspects including the field work for which he was technically trained. This 'interference' was sometimes resented by his advisers. He travelled widely and helped to quickly advance the cause for the projects which were rapidly developing in Algeria, China, Jordan and Libya and tried to initiate others in Morocco, Syria and Tunisia.

When the Director of Agriculture, James McColl, recommended that a special unit be formed in the department to provide a focus for overseas work and to deal initially with the financial and staffing needs of the Ksar Chellala project in Algeria in the wake of the collapse of Professional Consultants Australia Ltd. Minister Chatterton gave ready support.

On Monday 2 October 1978 the Overseas Project Unit commenced its operations with the author as its Director and with three temporary staff. The Unit was to service Salger Pty Ltd, a Government sponsored company which had been formed at the recommendation of the Director General for Trade and Development and approved by Premier Dunstan in Cabinet during the previous week.

The Unit had a difficult and sometimes stormy passage until and beyond the appointment of Bob Hogarth, its first permanent Director. The workload often taxed the capacity of the staff with many new skills to be mastered in international finance and insurance, finding suitable staff members and arranging their travel, dealing with the many senior visitors and the aspects of the projects which involved sometimes complex dealings with Foreign Affairs or the Department of Trade.

History must record the enormous contributions made to the Unit and later to the organisations which replaced it by the administrative staff. Untried officers such as Kevin Gogler rapidly adapted to a whole new set of duties which even tested long experienced officers such as Tom Chiles, Terry O'Connell and Ray Baronian. Baronian worked virtually alone in Algiers for six months before the Ksar Chellala project could begin.

Bob Asser is another who gave outstanding service as an administrative officer in the early days and fifteen years later still does so in SAGRIC International. With unending good humour he has kept the books, negotiated and despatched orders for millions of dollars of equipment to fulfil the contracts, attended to hundreds of difficult personal requests from families overseas, arranged programs for visitors from around the world and attended to their welfare. He has been an ambassador for South Australian agricultural projects around the world.

He tells the story of an assignment he was given by the Director of the Iraqi project at Ain Kawah, Glyn Webber. The site had an excellent bore, but no water supply because the electric cable between the pump and the transformer had never been put in place by the Iraqi contractor and the electricity authority had never connected the transformer to the supply. In desperation Asser was asked to perform the miracle by Webber who knew that he had considerable electrical knowledge.

With Kasrow Abdulla, one of the counterpart staff, they set off to the nearest city, Erbil and went to the electric supply authority which gave them the specifications of the cable in arabic on a crumbled piece of paper. Kasrow then drove from one electrical firm to another showing the piece of paper without success. During their wanderings an idle youth who had hung around them with many other curious bystanders, overheard their requirements, jumped into the utility with them and directed them to a vacant space on the edge of the city where the crucial cable was stored on huge reels. The uncle of the youth sold them the required length and with no fuss Kasrow set off for home only to make a brief stop on the way at a depot of the electricity authority. From there a man followed in another vehicle with a ladder and by dexterous use of a stick made the vital connection of the high tension overhead wires to the project transformer. Thus the essentials, a 400 volt power supply and the required cabling was provided and water gushed from the bore. Bob Asser was a hero with his fellow Australians. Webber was astounded and full of praise. The electrician never owned up that he really did not know what was going on all day and had in no way influenced the outcome and has lived in that glory until the day this publication is read.

Asser's life, tending the needs of South Australian's complex influence on agriculture in these regions certainly was not always a breeze as the author can testify having witnessed his unending patience and skill in finalising the company's telephone account in Baghdad when he came to close down the Ain Kawah project.

### A SAMPLE OF THE WORK AT HOME

#### The First Six Months - Overseas project Unit (November 1978 - May 1979)

The Overseas Project Unit commenced operating with temporary staff and a Project Officer, Chris Heysen late in October 1978. Its major tasks in the first six months give an insight into the enormous international interest in the South Australian dryland farming system at that time.

- Arrangements were made for the reception of senior officials, Messrs Doumandji and Kauoh from Algeria and the signing of the Ksar Chellala contract in January 1979. Subsequently interviews were conducted and appointments were made for the seven staff required to fulfil the contract. (Some appointments were not finalised for more than twelve months).
- Field visits and detailed briefings were arranged for three Australian Ambassadors, Brook (Algeria), Truscott (Syria) and Woodard (China).
- Briefings and field visits were also arranged for Mr Hristomanon, Minister of Agriculture for Yugoslavia and agricultural consultants from Germany and Saudi Arabia.
- Four senior officials from the Australia Department of Foreign Affairs were briefed on the details of dryland farming.
- A contract was won for Chris Heysen to undertake a feasibility study for the establishment of a demonstration farm in Jordan.
- A proposal was submitted for an FAO agricultural project in China.
- Meetings were held with departmental staff around South Australia to inform them of the developments occurring in the transfer of agricultural technology to other countries.
- Meetings were held to inform and co-ordinate overseas technology transfer projects between Australian States.
- Salger Pty Ltd was established with the Overseas Project Unit its technical resource.

With insufficient staff to complete the enormous final harvest of 5,000 ha of cereals Bob, after brief instruction by a farm adviser with the unlikely name of Robin Hood manned an open Massey Ferguson harvester in 40-50°C heat while others at least worked in some comfort in machines with cabins. He kept up this contribution for more than five weeks, then remained behind alone to close the files and negotiate final payments while the country literally degenerated into anarchy around him as the Kurdish insurrection and the war with Iran wore deeper and deeper into the Iraqi regime's powers.

#### ADELAIDE PROMOTIONS

A number of unique initiatives were taken at home to promote the transfer of the dryland farming systems to overseas countries. No expense seemed too great.

In 1976 the Department of Agriculture, with assistance from the Trade and Development Division in the Premier's Department, published an impressive booklet compiled by three specialists, Cocks, Jefferies and Webber, titled, Farming Systems in South Australia. It comprehensively covered technology and skills employed by dryland farmers and graziers in South Australia and used the operations of specific farmers to illustrate the text. It was designed to assist salesmen and consultants and the various missions and Trade Commission officers to promote the available expertise.

Two cheaper bulletins followed, 'Ley farming in South Australia' and 'The Libyan Story'.

Many hundreds of these publications and subsequent French, Arabic and Chinese versions were distributed around the world.

Encouraged by their very favourable reception an illustrated booklet, Pasture Seeds from South Australia followed in 1977 and finally in 1979 Livestock From South Australia was issued.

This impressive library was supplemented by a 20-minute film, Food From the Reluctant Earth which was professionally produced with French and Arabic translations by the South Australian Film Corporation. Between its release in 1978 and 1980 nearly one hundred copies (eleven in French and eighteen in Arabic) were sold or distributed free to overseas universities, government agencies and international organisations.

Encouraged by the success of the overseas programs, the society of professional agriculturalists, Agricultural Technologists of Australia believed an international focus should be provided in Adelaide by mounting the first dryland farming congress. It took little effort to persuade the government to be involved.

The first planning meeting which was chaired by McColl, the Director of Agriculture was held on the 5 February 1979. Everyone in attendance thought the idea had great merit and that a Congress would be timely in view of the overseas work already underway. However nobody wanted to commit him or herself personally as organiser because of the obvious enormous workload. It was thought that such a congress could well attract four hundred international delegates from possibly forty different countries.

Planning became more enthusiastic when it was decided to contract Ray Taylor and Associates to facilitate the event.

The Playhouse at the Adelaide Festival Theatre Centre was booked and the date set for Monday 25 August 1980.

McColl and later the author, canvassed the Congress amongst senior officials of FAO at the Rome headquarters, where active support was promised. Dr Bommer, Assistant Director General in the Organisation, agreed to give the keynote address. Mr De Brichambaut, Deputy Director of FAO's Investment Centre also agreed to present a paper.

Technical sessions were planned to highlight the application of Australian dryland farming principles compared with systems in other parts of the world. World class speakers were obtained to lead sessions covering the inter-relations of the soil with plants and animals and socio-economic factors in dryland farming. Ample time was allowed for the interchange of ideas and scientific knowledge and elaborate field tours were planned to take delegates into the field within the State and right across southern Australia.

During the initial planning of the Congress Minister for Agriculture, Brian Chatterton, took a keen personal interest and used his authority to obtain added government resources when needed. A year before the event, Labour lost government leaving the new Minister, Ted Chapman to run with the cause which he tried to do with equal enthusiasm.

When everything was finally in place Chapman made a statement in the House of Assembly announcing the Congress. He extolled its virtues and importance in view of current media predictions that there would be serious food shortages causing world wide unrest by the year 2,000. While outlining the details of the opening ceremony to be performed by Premier Tonkin, Don Hopgood, the Member for Baudin and a keen musician interjected and asked the Minister if he had organised a band. 'No', he said, 'but it deserves it.'

This led to the Hava Nageda Affair. A band was hastily hired to entertain the delegates with westernised versions of melodies representing most of the Nations as the Premier later described the entertainment.

In the House of Assembly on the day following the opening of the Congress Brian Chatterton claimed that the ceremony had been reduced to an embarrassing fiasco because a Jewish tune followed by the Israeli National song, the Hava Nageda, had been played without Arab or Chinese tunes. This concern was subsequently aired in 'The Australian' together with wild claims that the turkey offered at the opening smorgasborg dinner was in fact pork. The debate continued for a month.

Oblivious to this local politicising the Congress got down to its business but it was not the success hoped for. Only one hundred or so delegates attended from overseas and the Government was left to find a \$70,000 deficit. The tyranny of distance and deteriorating economic times took its toll.

Many delegates failed to present their papers in a suitable form for publishing and by the time they had been gathered from around the world and edited it was nearly three years before the proceedings were distributed. Nevertheless that final publication became an excellent technical reference for Australian dryland farming systems and probably in itself justified the whole exercise.

SOMETHING FISHY See Page 30

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# SA-LIBYA PACT

by WILLIAM RESCHKE

The South Australian Government has signed an agreement to help Libya spend \$1,000 million on agricultural development.

## Triumph for local expertise

The North African republic will spend \$100 million a year for 10 years under guidance by top experts from Adelaide.

It will be in the charge of a South Australian officer of the department with assistants also drawn from our department. But in the long term huge benefits are seen from Libyan needs for large quantities of seeds, tillage, sowing and harvesting machinery. The Government sees great benefit to city and country in the partnership with the African Republic.

## \$200,000 DEAL

The South Australian agricultural machinery maker, John Shearer and his firm will ship out to Libya \$200,000 worth of machinery.



ABOVE: Libya's Agricultural Development Minister, H. E. Engineer Abdul Majid Al Gaud. Below: Howard Bagshaw, director, Mr. T. M. Soint.



He said it was part of machinery shipments for which arrangements had been made in Adelaide by the Libyan Government officials. Howard Bagshaw, director of the firm, said the firm will ship out to Libya \$200,000 worth of machinery.

WESTERN FARMER AND GRAZIER, June 13, 1985

### Machinery and products

## Shearer signs Iraq

JOHN Shearer last week went to the top of the list of Australian agricultural manufacturers supplying equipment to the Middle East market. Shearer's effort is a \$3.25 million contract to supply seeding and tillage equipment to Iraq. The contract involves the supply of 250 seed drills to be shipped to Iraq in July and August in October. The order was finalised by Shearer marketing director Bruce Grey who said Iraq now would have 450,000ha a week. The order is to be distributed to private seed drillers in the Iraqi Ministry of Agriculture. The total cropping area was 2.5 million ha which was sown to cereals. The Iraqi Ministry of Agriculture used 60-600mm rain-

# FARMER

PROGRESSIVE RURAL WEEK

Registered at the G.P.O., Adelaide, for transmission by post as a newspaper.

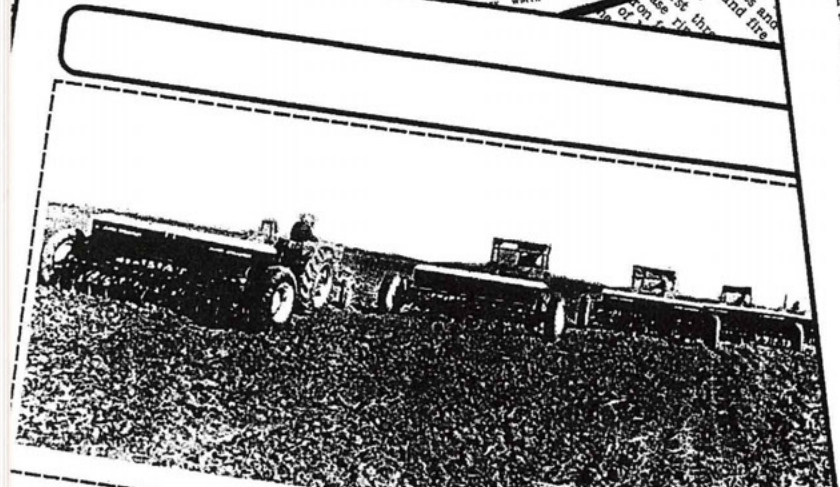
THURSDAY, MAY 18th, 1987

No. 2192

## Iraqi seed drill contract

Adelaide-based agricultural machinery manufacturer, John Shearer Ltd, has won a \$3.25 million contract to supply seeding and tillage equipment to Iraq.

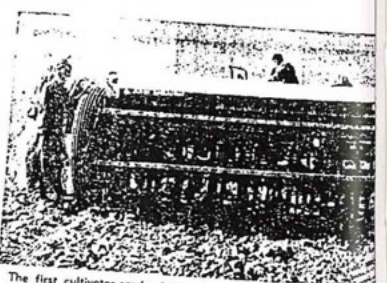
Announcing this today, the SA Premier, John Bannon, said the contract to supply 250 seed drills was an excellent example of a South Australian company leading the way in the face of fierce international competition. "The Government applauds John Shearer Ltd for this outstanding achievement. The company has maintained the highest standards of excellence in manufacturing and marketing in the industry for many years."



John Shearer drills at work in Iraq.

SA firm in \$1 1/2m. Libya

Trade O



The first cultivator-seeder being demonstrated in Iraq by John Shearer in 1975. This Sheareromatic combine is now superseded by the current model.

## \$3m AGRICULTURE PLANT SALE

JOHN SHEARER LIMITED, makers of agricultural machinery in Adelaide, has announced a sale of surplus machinery in Adelaide.

## CHAPTER XI

## GOOD FOR ALL OR GOOD FOR NONE

### INTRODUCTION

This record commenced at the beginning of South Australia's venture into dryland farming development on the other side of the world and concludes at the end of fifty years. By then all of the knowledge of the day had been transferred and tested in one way or another, but its influence, if measured by the operation of large scale projects, was on the wane. Adoption was almost non existent and remains so to this day.

With the wisdom of hindsight, we can blame political instability, wars, insurrections and poverty in the countries involved. What can really be said about the achievements of all those years of involvement? Who benefited and how?

It is tedious indeed to search for these answers in the administrative documents and reports of the time. Assessments of the day made by two authors who at the time made their judgements from able observations but who were not involved in the day to day operations seem to be more appropriate.

The Honourable Brian Chatterton, twice Minister for Agriculture in South Australia when the transfer of dryland farming technology was at its height, frequently reported to the South Australian Parliament.

His interests were in the land and in humanitarian aspects rather than for immediate cold cash export enhancements. He strongly contended that advantages to be gained from South Australian dryland farming would only become a reality if farmers were involved face to face as donors and recipients. This was not to exclude agronomists and other specialists whom he agreed had a role in adapting the technology.

He was not alone in this thinking. The Board of Seedco, who were all farmers, certainly agreed. They mounted extraordinary programs in Libya to ensure that medic pastures and many other aspects of the dryland farming systems were demonstrated by their growers with land-owners at El Marj. As a result this area initially made quite

1 The Honourable Brian Chatterton was Minister for Agriculture in South Australia from June 1975 until September 1979. He again served briefly in that portfolio from November 1982 until April 1983.

spectacular productivity gains causing the Libyan Government to halve the acreages of some properties.

Scientists in the South Australian Department of Agriculture who were involved in extension programs also agreed and facilitated farmer participation where ever possible.

The second author, Dr Robert Springborg, working at the Macquarie University in New South Wales compiled A Critical Assessment of the Transfer of Australian Dryland Agricultural Technology to the Middle East in 1984 after studying the politics, economics and agriculture of the region over the previous decade. At that time he contended that the process of transfer was failing because the countries involved wanted 'quick fixes' which the South Australian dry farming system could not provide (soil fertility build-up is a slow and technically demanding process). He also contended that the impatience had in some countries been increased by unrealistic expectations of the system stimulated by over enthusiastic Australian claims. He went on to predict that future adoption of what he believed was very relevant technology was in jeopardy because of the social, economic and political conditions.

Time has proved Springborg right but this gives no consolation to the South Australians involved who could not influence those factors.

Springborg also suggested that the system needed to be geared down to suit the much smaller farms and to be made manageable by the often absentee landowners in the region. He believed that this could be achieved if it was recognised that extensive mechanisation, a feature of the South Australian model, was not necessarily an essential element (A suggestion found hard to accept back in Adelaide because increased machinery sales were a possible lucrative part of the transfer agenda). The basic essential element, he correctly argued, was the establishment of legume based pastures.

The return of the medics to the regions as recognised useful pasture plants proved to be the outstanding and most important benefit that can now be claimed as an outcome of the attempts to establish the dryland farming system.

### GAINS FOR SOUTH AUSTRALIANS

The South Australian dryland farming venture on the other side of the world began as a scientific exercise in search of better pasture species for South Australia. It grew with seed, agricultural machinery and other associated export drives and finished as a multi-million dollar sale of farming and agricultural technology expertise.

In Algeria, Iraq and Libya aid was never an issue. Contrary to the understanding of many at the time commerce drove the process.<sup>1</sup> These countries had their pride, their oil monies or loans and knew that on a commercial basis they could buy what they wanted, call the tune and only pay for performance.

The dream of unlimited wealth from exports of a wide range of South Australian products which would be generated by these projects raised expectations and excitement which found voice in the Parliament and newspaper headlines. They rarely materialised.

Parliament warmly welcomed an announcement on 22 September 1981 by Agricultural Minister Chapman that the Iraqis had invited South Australia to tender for 16,000 tonnes of lamb, 36,000 tonnes of boneless beef, 18,000 tonnes of bone-in-beef,

<sup>1</sup> The later project in Jordan was part of the Australian Aid Program.



*South Australian Premier, Donald Dunstan, enthusiastically supported overseas agricultural projects anticipating the creation of extensive trade in machinery, seeds and livestock. This photograph was taken at a farewell ceremony in Libya after his visit to support the demonstration farm, 1978.*

106,000 tonnes of apples, 50,000 tonnes of oranges, 5,500 tonnes of lemons, 7,000 tonnes of mandarins and 5,000 tonnes of fish. He claimed this was a consequence of the project at Ain Kawah. The tender was never fulfilled.

Evidence of the limited export income won by South Australia from its direct involvements in the projects in Libya, Algeria and Iraq can be found in the Australian Bureau of Statistics records (see Table III).

These show that during the sixteen year period when these projects were being developed and undertaken a total of 3,005 tillage and 992 seeding machines were exported with spare parts. The total of these sales barely exceeded \$(A)10m. A figure far short of the hundred of millions fore shadowed in the newspaper headlines.<sup>1</sup>

In his report to the South Australian Department of Agriculture in 1982 McLean recorded that Cyclone K-M Products Pty Ltd had estimated that fencing and shed sales to Libya in the six year period 1974-80 while the demonstration farm was in operation approached \$(A)20m but not all of this was shipped from South Australia. Cyclone representatives who had been involved at that time recorded their belief that the South Australian Government's participation in Libya had greatly boosted trade for the company by improving accessibility to the decision makers in Libya and by encouraging the overall farm development programs which involved fence construction.

A more positive picture emerges if export sales from South Australia are assessed across the whole region influenced by the promotion of the dryland farming technology. Between 1970 and 1986 John Shearer Pty Ltd sold \$(A)30m worth of tillage and seeding equipment to ten countries.<sup>2</sup>

<sup>1</sup> In order of export values: Iraq, Libya, Iran, Algeria, Egypt, Jordan, Saudi Arabia, Syria, Tunisia and Morocco.

<sup>2</sup> Incidentally, in the same period, with far less effort, 2,698 units of the same range of agricultural machinery and spare parts were exported from South Australia to South Africa for a total of \$(Aus)10.43 million.

**A SUMMARY OF THE AGRICULTURAL SKILLS AND TECHNOLOGY TRANSFERRED BY SOUTH AUSTRALIANS TO COUNTRIES SURROUNDING THE MEDITERRANEAN SEA AND IN WEST ASIA<sup>1</sup>**

The skills and the technology transferred were used at the time by progressive South Australian farmers. Those listed below were transferred during the period covered by this review and certainly most actively between 1970 and 1985 when the large scale demonstration projects were being carried out.

1. The establishment and management of cereal crops (wheat, barley and oats). The time, depth and rate of sowing into a shallow, firm seedbed.
2. The establishment and management of pastures. The seeding time, seeding rates and depth of seeding. The legume cultivars most suitable. Lime pelleting and inoculation of the legume pasture seed.
3. Management necessary to integrate sheep and to a lesser extent, cattle, into the cropping system.
4. Selection and adaption procedures necessary to determine the best genetic forms of the various medic and subterranean clover species for particular locations.
5. Weed control using pre- and post-emergent herbicides. Procedures necessary to determine the best herbicide for a particular weed pattern.
6. The operation, maintenance and calibration of South Australian manufactured cultivation, seeding, harvesting and spraying equipment.
7. Fertiliser use and placement in cereal crops.
8. Soil conservation management including engineering structures necessary to protect the soil.
9. Techniques of soil fertility and soil structure measurement.
10. Shearing skills
11. Fence construction and management.
12. Herbage seed production including harvesting and seed cleaning.
13. Economic assessment of farming operations including record keeping.
14. Dissemination of information to farmers. Demonstration techniques. Video production and group meeting skills.

<sup>1</sup> It is not claimed that all the components of the skills and technology transferred as a part of the dryland farming system originated in South Australia or that this process was uniquely a South Australia operation. Western Australia, for example, made its own very important contribution.

Seedco, during the same period, exported more than \$(Aus)15m of herbage seed (medics, subterranean clover and lucerne) to that region. Major buyers were Algeria, Iran, Iraq, Italy, Libya, Morocco, Portugal, Saudi Arabia and Tunisia.

Personal gains were very considerable and recognised and appreciated by everyone who participated. When the cultures met in common endeavour there was much to exchange and learn. The family strengths of the peoples in the Region set an example which most South Australians admired.

The agricultural specialists had to farm again. The farmers who went to the various projects had to learn to teach their skills. Lives were given new and wider meanings.

There was also usually considerable financial gain. Most were able to save a yearly income and see much of the world as a bonus. Those who were resident at a project site for a year were able to take two or three holidays to Europe or the Mediterranean islands.

**THE REGIONAL GAINS**

Recent events in these troubled parts of the world have masked and in some places destroyed the gains shown to be available from dryland farming technology transferred from South Australia.

The array of technology offered was vast as the list within this chapter details. Not all was appropriate but most offered immediate gains. Counterpart staff and many farmers stretching across more than a dozen countries became convinced of the possible increased productivity available from the cereal, pasture legume rotation compared with traditional fallow rotations. But the translation into widespread, sustainable and productive farming in these countries is still awaited. The reticence of farmers, the problems of economic, social and political change still block the way. And who can say that this slowness, aggravated by war and unstable governments, is a measure of failure? It took two generations in South Australia before improved fertility and production were attained and the process is still going on.

One should keep in mind the story of events on Merngenia Station 40 km north of Peterborough in South Australia which has been used as a demonstration site on many occasions for visitors-in-training from these countries. This 200-250 mm rainfall station country was denuded of vegetation by overgrazing and rabbits so that by the 1940's vast areas were reduced to bare clay and no vegetation.

The Burford family set about revegetating the property in 1954 when the author assisted with the survey and construction of contour furrows, the first step to regain plant cover. With educated, one owner management, with trained extension officers calling three or four times a year to help and encourage, with stable governments and communications it still took more than thirty years before the property had revegetated. What can one therefore expect from those revegetation processes transferred to the countries in North Africa and West Asia?

One gain remains which is keeping the process alive. The medic plant has been successfully re-established and demonstrated as a useful plant in the countries where it truly belongs. The best cultivars have been selected and thousands of hectares sown. The prominence and usefulness of these plants in the farming system can never be forgotten again leaving the potential there for sustainable agricultural production which could satisfy their populations.

On the last day of the South Australian project at Ain Kawah in Iraq. Sabir, a hard working and faithful Kurdish counterpart staff member said:

'For five years I have worked and thought like an Australian. What can I do now?'

Some readers will find a measure of failure in Sabir's plea; others a measure of success of this great South Australian venture into dryland farming on the other side of the world.

Time is left to tell.

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## APPENDIX II

### THE JABEL EL AKHDAR DEMONSTRATION FARM FIRST LETTER OF UNDERSTANDING

SOUTH AUSTRALIAN DEPARTMENT OF AGRICULTURE

Box 1671, G.P.O.  
Adelaide, 5001  
South Australia

Sayed Bashir Jodeh,  
Chairman  
Jebel El-Akhdar Authority  
P.O. Box 14, El-Marj  
Libyan Arab Republic

Dear Sir

As the result of my visit to the Jebel Akhdar Project and my discussions with you it is appropriate that I should now set down in detail my understanding of the present state of negotiations reached between the Project and the South Australian Department of Agriculture with respect to the development of a demonstration farm on the 1,000 hectares of land at the designated site near El-Marj.

#### 1. THE ESTABLISHMENT OF A DEMONSTRATION FARM

It is agreed that it is desirable that the 1000 hectare area set aside for the purpose should be developed as a cereal-livestock mixed farm to be managed and operated in accordance with practices which have been shown to be effective on similar areas in South Australia.

In addition to being a pilot farm to test the general application Australian methods to the Jebel Akhdar region, the property should also service as a research centre for determining the optimum agricultural and livestock management procedures for the Jebel Akhdar climatic, soil and biotic environment, and as a demonstration farm to demonstrate these procedures to staff members of the Jebel Akhdar Project and to farmers.

It is agreed that suitably experienced and qualified Australians should be appointed to the main management, technical specialist, and farm assistance positions on the property, and it is recognised that the successful establishment of this venture will depend initially on the success or otherwise, of the South Australian Department of Agriculture in inducing suitable Australian staff to accept employment with the Jebel Akhdar Development Authority. I give my assurance that the

Department will make every endeavour to recruit suitable staff for the project, but it must be recognised that this may present difficulties.

The establishment of this demonstration farm is seen as an initial step in what could possibly, in the future, become a wider field of association between the Libyan Arab Republic and Australian Agricultural Organisations. Other fields of Co-operation could include the following:

- Assistance in the development of research and extension programs in other regions under the control of the Jebel Akhdar Development Authority.
- Involvement in other agricultural development programs in the Libyan Arab Republic.
- The training in Australia of specialist officers by the South Australian Department of Agriculture.
- The possible establishment of closer ties with the University of Adelaide Faculty of Agricultural and Science at the Waite Agricultural Institute, and with appropriate Divisions of C.S.I.R.O.
- Increased two-way trade between the two countries.

## 2. THE PURPOSES OF THE EL-MARJ DEMONSTRATION FARM

The forms of agricultural activity to be undertaken on the demonstration farm would be as follows:

- Cereal growing, particularly wheat and barley.
- Pasture improvement.
- The establishment of sheep and beef cattle enterprises.
- The establishment of soil conservation techniques including contour cultivation and contour banks where necessary.
- The establishment of surface water storage for livestock.
- The development of optimum farm management procedures, especially with respect to the rotation of crops and pastures.
- Definition of techniques for the protection of crops and pastures from losses caused by weeds, diseases, and insect pests.
- Soil improvement through the use of fertilisers and fertility-building farm practices.
- The establishment of fencing and other livestock handling facilities such as yards, shearing shed, etc.
- The selection of farm machinery, vehicles and equipment for the efficient operation of the property.

## 3. THE STATUS OF THE EL-MARJ DEMONSTRATION FARM

The demonstration farm would be an autonomous unit of the Jebel Akhdar Development Authority. All staff would be under the control of the Officer-in-Charge who would be answerable to the Chairman of the Jebel Akhdar Development Authority.

All management decisions in relation to the operation of the demonstration farm project would be the responsibility of the Officer-in-Charge.

The Officer-in-Charge would have authority to sign cheques for the purchase of essential equipment and materials.

It is recognised that specialist officer staff may work off the centre on certain research and extension programs. These activities would be arranged in conjunction with the Chairman of the Jebel Akhdar Development Authority, but the demonstration farm would have first call on the time of all staff for the conduct of essential duties on the farm.

## 4. FINANCING OF THE EL-MARJ DEMONSTRATION FARM

- All salaries of staff employed on the demonstration farm would be paid directly by the Jebel Akhdar Development Authority.
- All costs for capital expenditure and normal running expenses would be paid from an annual budgetary allowance made available by the Jebel Akhdar Development Authority specifically for this purpose. Such expenditure would be determined by the Officer-in-Charge in accordance with an annual budget which has been prepared by the Officer-in-Charge and agreed upon by the Jebel Akhdar Development Authority. There would be provision for expenditure in excess of the annual budgetary allowance, with the approval of the Chairman of the Authority, in cases of necessity.

- All cash returns from the sale of produce from the demonstration farm would be credited to the account of the demonstration farm project.

## 5. THE SOUTH AUSTRALIAN DEPARTMENT OF AGRICULTURE IN RELATION TO THE EL-MARJ DEMONSTRATION FARM

- The South Australian Department of Agriculture would release, on secondment, members of its salaried professional staff who wish to accept employment under contract for fixed periods by the Jebel Akhdar Development Authority. It is understood that, at this stage, the total period for involvement of Australian staff in the El Marj Demonstration Farm is intended to be three years.
- The South Australian Department of Agriculture will provide an advisory service to the demonstration farm in specialised technical subjects where this becomes necessary. Such a service would be provided by correspondence, but would otherwise be similar to that provided for Research Centres operated by the Department in South Australia. In addition, I am prepared to seek approval for a senior officer of the Department to visit the demonstration farm for a period of up to three weeks each year, to act as a consultant to the demonstration farm project, and to maintain and build up liaison between the Jebel Akhdar Development Authority and the South Australian Department of Agriculture. If approved, such consulting service would be provided at no cost to the Jebel Akhdar Development Authority except return air travel expenses and accommodation.
- The South Australian Department of Agriculture would act as a recruiting agent for the Jebel Akhdar Development Authority in Australia, to attempt to engage suitable staff for employment by the Authority. Such service would be provided at no cost to the Authority.
- The South Australian Department of Agriculture would act as purchasing agent for the Jebel Akhdar Development Authority for the purchase of equipment and material on the account of the El-Marj Demonstration Farm.
- I am prepared to seek approval for the South Australian Department of Agriculture to provide training for selected specialist officers of the Jebel Akhdar Development Authority for periods of up to one year. This would be by attachment to specialist sections of the Department, but with arrangements made for some time to be spent with other agricultural organisations, and possibly with primary producers. If such training is approved it would be necessary for Jebel Akhdar Development Authority to pay salaries, travel expenses to and from Adelaide, South Australia, accommodation expenses in Adelaide, and interstate travel expenses in Australia if any interstate travelling is undertaken.

## 6. STAFF REQUIREMENTS FOR THE EL-MARJ DEMONSTRATION FARM

It is agreed that, ideally, the following Australian staff should be employed on the demonstration farm:

- Officer-in-Charge: To be responsible to the Chairman, Jebel Akhdar Development Authority, for overall management of the demonstration farm, including financial budgeting, farm development, crop and livestock programs, staff supervision, and the development of experimental programs.
- Cereal Specialist: To be responsible to the Officer-in-Charge for the development and supervision of cereal research necessary for the successful development of crop programs on the demonstration farm and in the Jebel Akhdar Project area generally.
- Pasture Specialist: To be responsible to the Officer-in-Charge for the development and supervision of pasture improvement research necessary for the successful establishment of pasture for integrated crop-livestock farming on the demonstration farm and in the Jebel Akhdar area generally.
- Livestock Specialist: To be responsible to the Officer-in-Charge for the development and supervision of sheep and beef cattle research for the successful development of livestock enterprises on the demonstration farm and in the Jebel Akhdar Project area generally.
- Soil and Water Conservation Specialist: To be responsible to the Officer-in-Charge for the planning of soil conservation and water storage programs on the demonstration farm, and for development of techniques applicable to the Jebel Akhdar Project area generally.
- Farm Assistants (Two): To be responsible to the Officer-in-Charge for the conduct of filed

operations associated with the crop and livestock programs, and with the experimental programs. These Officers should be experienced young farmers from the South Australian wheat-sheep zone.

It is recognised that it may not be possible to recruit all of the Australian staff listed above for employment in 1974. The demonstration farm can be successfully established, however, with a lesser number of Australian staff. It is quite possible, also, that certain of the specialist fields of work can be combined together and be successfully performed by one officer.

In addition to the above Australian staff, it is desirable that the following Libyan staff be appointed to the demonstration farm:

- Counterpart Specialist Staff: One Libyan Trainee Specialist should be appointed to work with each of the Australian Specialist. These officers would thus gain experience in their particular specialist fields, and would take over this work after the initial three year period of employment of Australian Specialists on the project.
- Farm Labourers: It may be necessary to employ two Libyan farm labourers to assist with field operations and the experimental programs. These appointments would not be made until the Officer-in-Charge considered such assistance to be necessary.
- Clerical Assistance: It is possible that some clerical and typing assistance may be necessary for the successful operation of the demonstration farm. Such appointment would not be made unless the Officer-in-Charge considered such assistance necessary.

#### 7. CONDITIONS OF EMPLOYMENT OF AUSTRALIAN STAFF

- Employment of Australian Staff would be on the basis of a contract between the Jebel Akhdar Development Authority and the individual employee. The South Australian Department of Agriculture would act for both parties in the negotiation of contracts. There would be no formal employment contract between the Jebel Akhdar Development Authority and the Department of Agriculture.
- Australian Staff would be employed under contract for a period of one year. Contracts could be extended on an annual basis, by negotiation, if desired. The South Australian Department of Agriculture will seek replacement staff on behalf of the Jebel Akhdar Development Authority in cases where contracts were not renewed.
- The Jebel Akhdar Development Authority would pay return air travel expenses and baggage transport costs from Australia for each employee and his wife and family.
- Married employees would be housed in modern rent free flats or small villas in El Marj. These flats or small villas would be fully furnished, with water and electricity supplied free of charge. Single men would be housed in a group under similar conditions.
- Each employee would be provided with an official car for transport to and from the demonstration farm, and for other official duties in connection with his employment. Permission would be provided for employees to use such cars for private travel (shopping, visiting etc.).
- No education allowance would be payable to employees with children requiring education in residential colleges in Australia or Europe. It is understood that there is no English-speaking school in El Marj.
- One months recreation leave per year, with return air fares paid to a European country, would be provided for all employees who renew their employment contract for a further year.
- Salaries payable to Australian employees would be negotiated between the Jebel Akhdar Development Authority and the employee, in accordance with qualifications and experience. The South Australian Department of Agriculture would act for both parties in such negotiations.
- Ideally, Australian employees should commence work at El Marj in the April-May period in 1974. I have some doubts as to whether all negotiations relating to contracts of employment, secondment from the South Australian Department of Agriculture and travel arrangements can be finalised by that time, but I will use that time as a target date in all future discussions.

#### 8. WORK PROGRAMS ON THE DESIGNATED SITE FOR THE EL-MARJ DEMONSTRATION FARM FOR THE CURRENT (1973-74) SEASON

Although a decision to proceed with the establishment of the El Marj Demonstration Farm with Australian involvement cannot be finally made until an Australian agriculturalist has agreed to accept the position of Officer-in-Charge of the project, there are certain activities which should be carried out during the current season:

- No more of the designated area should be deep ploughed.
- The whole area should be sown to annual medic pastures in 1973, using ample phosphate fertiliser, and Australian methods of soil preparation, sowing and weed and insect control.
- If necessary, road construction through the 1,000 hectare property may proceed, but it is important that the property be not subdivided into more than two separate pieces of land by roads.  
After a decision is made to definitely proceed with the establishment of the project, the area should be fenced by the Jebel Akhdar Development Authority along all boundaries including both sides of any road which may be constructed through the property. When this occurs it will be possible for the Officer-in-Charge designate to specify, by correspondence, the type of fence which should be erected, with materials which are already available at the Jebel Akhdar Project.
- A gate into the property should be located at the nearest appropriate point to El Marj on the main bitumen road which passes the property. A second entrance gate should be provided if the property is divided into two separate areas by road construction.

#### 9. CONCLUSION

I wish to express my thanks to you, on behalf of the South Australian Department of Agriculture, for your invitation to participate in the joint venture outlined above, and for having provided the opportunity for me to make a detailed examination of the project.

It is my conclusion that the development of the designated 1,000 hectare property as an "Australian" demonstration farm is feasible, and that it should prove of great benefit to the Jebel Akhdar Development Project, firstly as a demonstration, and secondly, through the activities of its staff in research and the provision of basic information for extension program.

The successful establishment of the project now depends primarily on our ability to recruit Australian staff to carry out the project.

Yours faithfully,

(P.M. BARROW)  
ASSISTANT DIRECTOR OF AGRICULTURE  
(TECHNICAL AND INDUSTRY)  
SOUTH AUSTRALIAN DEPARTMENT OF AGRICULTURE

APPENDIX III

**THE FIRST GOVERNMENT TO GOVERNMENT  
AGREEMENT FOR THE TRANSFER OF SOUTH  
AUSTRALIAN AGRICULTURAL TECHNOLOGY TO  
THE 'OLD WORLD'**

**LIBYAN ARAB REPUBLIC COUNCIL FOR AGRICULTURAL DEVELOPMENT  
EXECUTIVE AUTHORITY FOR JABEL EL**

**AGREEMENT FOR PILOT FARM**

APPENDIX

- (1) SCOPE OF SERVICES
- (2) TERMS OF EMPLOYMENT OF STAFF
- (3) MODEL CONTRACT WITH EXPERT

June 1974

**LIBYAN ARAB REPUBLIC  
COUNCIL FOR AGRICULTURAL DEVELOPMENT  
EXECUTIVE AUTHORITY FOR JABEL EL AKHDAR**

**AGREEMENT**

Dated the            day of June, 1974

For the Development of a Demonstration Farm near El Marj, Libyan Arab Republic. Between His Excellency Abdul Majeed al Gaoud, Minister of Agricultural Development in the Government of Libya on behalf of the Government of Libya, hereinafter called "the Minister" as

..... FIRST PARTY

and Donald Allan Dunstan, Premier of the State of South Australia on behalf of the Government of the said State, hereinafter called "the Premier" as

..... SECOND PARTY

**PREAMBLE**

Whereas the Executive Authority for Jabel El Akhdar, El Marj, Libyan Arab Republic, hereinafter referred to as "the authority" intends to develop a Demonstration Farm on 1000 Hectares near El Marj, to be developed as a cereal livestock mixed farm to be managed and operated in accordance with the practices which have been shown to be effective on similar areas in South Australia and based upon the very good relations and the co-operation between the Libyan Arab Republic and the Government of South Australia, and WHEREAS the Authority had exchanged correspondence with the South Australian Department of Agriculture (hereinafter referred to as "the Department" during the last year in this connection AND WHEREAS Mr Peter Barrow, Assistant Director of the Department visited the Authority during October, 1973 and participated in the investigations which showed that the development of an Australian type Pilot Farm is feasible AND WHEREAS he also participated in the selection of the site, setting up of the plan for establishment of the said farm and submitted a report thereon.

Now acting on the Law No. 146/92/72 for the establishing of the Council of Agricultural Development and its Executive Authorities and on the Regulation of Tenders, negotiations and purchase by direct order issued by the Resolution of the Council of Agricultural Development No. 3/92/72, and acting on the financial declaration for covering the cost of the Development of the Pilot Farm from the Budget allocations, the Jabel El Project agreement is now concluded with the Department in accordance with the following provisions:-

**ARTICLE (1)**

The aforestated preamble and the Appendices to this agreement shall be considered integral parts of this agreement.

**ARTICLE (2)**

This agreement shall be valid for one year from the date of signatures and shall be extended yearly unless either of the two parties informs the other party, at least two months before the date of expiry of the agreement, of his wish not to extend the same.

### ARTICLE (3)

There are no financial obligations between the two parties in connection with this agreement, as the employment of the Australian staff made available by the Department shall be on the basis of direct contract between the Authority and the individual employee.

All services performed by the Department as per Article (6) hereinbelow shall be free of charge to the Authority.

The Authority shall finance and directly pay all costs in connection with its duties as per Article (5) hereinbelow.

### ARTICLE (4)

#### STATUS OF THE DEMONSTRATION FARM:

The Demonstration Farm shall be an autonomous unit of the Authority. All staff shall be under the control of the Officer-in-Charge who shall be answerable to the Chairman of the Authority.

All management decisions in relation to the operation of the Demonstration Farm project shall be the responsibility of the Officer-in-Charge.

The Officer-in-Charge shall have authority to issue orders for the purchase of essential equipment and materials.

The other Experts may also work from the Demonstration Farm on certain research and extension programs. These activities shall be arranged in conjunction with the Chairman of the Authority, but the Demonstration Farm shall have first call on the time of all staff for the conduct of essential duties on the farm.

### ARTICLE (5)

#### DUTIES OF THE AUTHORITY:

1. All salaries of staff employed on the Demonstration Farm shall be paid directly by the Authority.
2. All costs for capital expenditure and normal running expenses shall be paid from an annual budgetary allowance made available by the Authority specifically for this purpose. Such expenditure shall be determined by the Officer-in-Charge in accordance with an annual budget which has been prepared by the Officer-in-Charge and agreed upon by the Authority. Expenditure in excess of the annual budgetary allowance with the approval of the Chairman of the Authority will be possible in cases of necessity.
3. All cash returns from the sale of produce from the Demonstration Farm will be credited to the account of the Demonstration Farm Project.
4. Detailed financial records of all Demonstration Farm business transactions shall be kept. These will form the basis, at a later stage, for a full financial analysis of the Demonstration Farm Project.

### ARTICLE NO. (6)

#### DUTIES OF THE DEPARTMENT OF AGRICULTURE:

1. The Department will make available members of its salaried professional staff who wish to accept employment under Contract for periods by the Authority. It is understood that, at this stage, the total period for involvement of Australian staff in the El Marj Demonstration Farm is intended to be three years.
2. The Department will provide an advisory service to the Demonstration Farm in specialised technical subjects where this becomes necessary. Such a service will be provided for Research

Centres operated by the Department in South Australia. A Senior Officer of the Department will visit the Demonstration Farm for a period of up to three weeks each year, to act as a Consultant to the Demonstration Farm Project, and to maintain and build up liaison between the authority and the Department. Such consulting service will be provided at no cost to the Authority except return air travel expenses and accommodation.

3. The Department will act as a recruiting agent for the Authority in Australia, to attempt to engage suitable staff for employment by the Authority. Such service will be provided at no cost to the Authority.
4. The Department will act as purchasing agent for the Authority for the purchase of equipment and material on the account of the El Marj Demonstration Farm.
5. The Department will provide training for selected specialist officers of the Authority for a period of up to one year. This will be by attachment to specialist sections of the Department, and by arrangement the spending of time with other agricultural organisations, and possibly with primary producers. The Authority will pay salaries, travel expenses to and from Adelaide, South Australia, accommodation expenses in South Australia and interstate travel and accommodation expenses in Australia if any interstate travelling is undertaken. Travelling expenses in South Australia will be paid by the Department.

### ARTICLE NO. (7)

#### DEMONSTRATION FARM AS INITIAL STEP FOR FUTURE CO-OPERATION:

The establishment of this Demonstration Farm shall be planned as an initial step in what could possibly, in the future, become a wider field of association between the Libyan Arab Republic and Australian agricultural organisations. The following fields of co-operation are foreseen.

1. Assistance in the development of research and extension programs in other regions under the control of the Authority.
2. Involvement in other Agricultural Development Programs in the Libyan Arab Republic.
3. The training in Australia of Specialist Officers by the Department.
4. The possible establishment of closer ties with the University of Adelaide Faculty of Agricultural Science at the Waite Agricultural Research Institute, and with appropriate Divisions of the Commonwealth Scientific and Industrial Research Organisation.
5. Increased two-way trade between the two Countries.

In witness whereof the parties hereto have affixed their signatures:

**LIBYAN ARAB REPUBLIC  
COUNCIL FOR AGRICULTURAL DEVELOPMENT  
EXECUTIVE AUTHORITY FOR JABEL EL AKHDAR  
EL MARJ**

**APPENDIX (1) TO AGREEMENT**

**I. SCOPE OF SERVICES:**

Establishment of a Demonstration Farm on 1,000 Hectares area set aside for the purpose to be developed as a cereal livestock mixed farm to be managed and operated in accordance with practices which have been shown to be effective on similar areas in South Australia.

In addition to being a Pilot Farm to test the general application of Australian methods to the Jabel Area, the property should also service as a research centre for determining the optimum agricultural and livestock management procedures for the Jabel El climatic, soil and biotic environment, and as a demonstration farm to demonstrate these procedures to staff members of the Jabel El Project and to farmers.

It has been agreed between the two parties that suitably experienced and qualified Australian Experts should be appointed to the main management, technical specialist, and farm assistance positions on the property, and it is recognised that the successful establishment of this venture will depend initially on the success or otherwise, of the Department in inducing suitable Australian staff to accept employment with the Authority. The Department shall make every endeavour to recruit suitable staff for the Project.

**II THE PURPOSES OF THE DEMONSTRATION FARM**

The following agricultural activities shall be undertaken on the Demonstration Farm:

1. Cereal growing, particularly wheat and barley.
2. Pasture improvement.
3. The establishment of sheep and beef cattle enterprises.
4. The establishment of soil conservation techniques including contour cultivation and contour banks where necessary.
5. The establishment of surface water storages for livestock.
6. The development of optimum farm management procedures, especially with respect to the rotation of crops and pastures.
7. Definition of techniques for the protection of crops and pastures from losses caused by weeds, diseases, and insect pests.
8. Soil improvement through the use of fertilisers and fertility building farm practices.
9. The establishment of fencing and other livestock handling facilities such as yards and shearing shed.
10. The selection of farm machinery, vehicles and equipment for the efficient operation of the property.

In brief the Pilot Farm shall not only serve for demonstration purposes, but also shall provide basic information for extension programs and shall also provide a suitable field for the authority's staff to conduct research work.

**III AUSTRALIAN EXPERTS**

It is agreed that the following Australian staff will be employed on the Demonstration Farm:-

**1. OFFICER-IN-CHARGE:**

To be responsible to the Chairman of the Authority, for overall management of the Demonstration Farm, including financial budgeting, farm development, crop and livestock programs, staff supervision, and the development of experimental programs.

**2. CEREAL SPECIALIST:**

To be responsible to the Officer-in-Charge for the development and supervision of cereal research necessary for the successful development of crop programs on the Demonstration Farm and in the Jabel El Akhdar Project area generally.

**3. PASTURE SPECIALIST:**

To be responsible to the Officer-in-Charge for the development and supervision of pasture improvement research necessary for the successful establishment of pastures for integrated crop livestock farming on the Demonstration Farm and in the Jabel El Akhdar areas generally.

**4. LIVESTOCK SPECIALIST:**

To be responsible to the Officer-in-Charge for the development and supervision of sheep and beef cattle research for the successful development of livestock enterprises on the Demonstration Farm and in the Jabel El Akhdar Project area generally.

**5. SOIL AND WATER CONSERVATION SPECIALIST:**

To be responsible to the Officer-in-Charge for the planning of soil conservation and water storage programs on the Demonstration Farm, and for the development of techniques applicable to the Jabel El Akhdar Project area generally.

**6. FARM ASSISTANTS (TWO):**

To be responsible to the Officer-in-Charge for the conduct to field operations associated with the crop and livestock programs, and with the experimental programs. These officers should preferably be experienced young farmers from the South Australian Wheat-Sheep Zone.

It has been agreed that in case difficulties are encountered in making available the full number of Experts, some of the specialist fields of work can be combined together and performed by one Expert.

**IV AUTHORITY'S STAFF**

In addition to the above Australian staff, it is desirable that the following Libyan staff be appointed to the Demonstration Farm:

**1. COUNTERPART SPECIALIST STAFF:**

One Libyan Trainee Specialist should be appointed to work with each of the Australian Specialists. These Officers would thus gain experience in their particular specialist fields, and would take over this work after the initial three years period of employment of Australian Specialists on the Project.

**2. FARM LABOURERS:**

Two Libyan farm labourers to assist with field operations and the experimental programs shall be appointed upon request of the Officer-in-Charge.

**3. CLERICAL ASSISTANCE:**

Clerical and typing assistance which may be necessary for the successful operation of the Demonstration Farm will be made upon request of the Officer-in-Charge.

LIBYAN ARAB REPUBLIC  
COUNCIL FOR AGRICULTURAL DEVELOPMENT  
EXECUTIVE AUTHORITY FOR JABEL EL AKHDAR

APPENDIX (2) TO AGREEMENT

TERMS OF EMPLOYMENT OF AUSTRALIAN STAFF

I. GENERAL

It has been agreed that any of the following staff shall be made available by the Department for direct employment by Contracts between the Authority and each individual Expert, upon the request of the Authority one month ahead of the date of departure of the expert. The terms of such Contract is attached (Appendix 3).

The staff shall be employed under Contract for a period of one year. Contracts may be extended on an annual basis by negotiation, if desired. The Department will seek replacement staff on behalf of the Authority in cases where Contracts are not renewed.

II REMUNERATION OF STAFF

The following annual salaries shall be paid by the Authority to the Staff in accordance with the terms and provisions of the Contract (Appendix):-

- |  |                                  |
|--|----------------------------------|
| 1. Officer in Charge:                      | \$ Australian \$17,000 per annum |
| 2. Cereal Specialist:                      | \$ Australian \$15,000 per annum |
| 3. Pasture Specialist:                     | \$ Australian \$15,000 per annum |
| 4. Livestock Specialist:                   | \$ Australian \$15,000 per annum |
| 5. Soil and Water Conservation Specialist: | \$ Australian \$15,000 per annum |
| 6. Farm Assistants:                        | \$ Australian \$ 8,000 per annum |

III OTHER FACILITIES

1. The Authority will pay for return air tickets (Tourist Class) from Australia for each Expert and his wife and family, excess luggage up to 20 kgm per person and personal and luggage insurance while in transit.
2. Married Experts will be housed in modern rent free flats or small villas in El Marj. These flats or small villas will be fully furnished, with water and electricity supplied free of charge. Single men will be housed in a group under similar conditions.
3. The staff will be provided with official cars for transport to and from the Demonstration Farm, and for other official duties in connection with their employment. Permission may be provided for Experts to use such cars for private travel, shopping, visiting, etc.
4. No education allowance will be payable to Experts with children requiring education in residential colleges in Australia or Europe, or elsewhere.
5. One months recreation leave per year, with return air fare paid to a European Country, will be provided for each Expert, his wife and family temporarily resident in Libya, who renews his employment Contract for any subsequent year after the first.
6. Medical treatment for the Expert and his family in the Libyan Arab Government Hospitals will be provided.

The salaries will be paid monthly in Libyan Dinars after deduction of the taxes and insurance according to the Libyan Law. Each Expert will have the right to transfer up to (90%) Ninety Percent of his salary to any convertible currency abroad.

LIBYAN ARAB REPUBLIC  
COUNCIL FOR AGRICULTURAL DEVELOPMENT  
EXECUTIVE AUTHORITY FOR JABEL EL AKHDAR  
EL MARJ

APPENDIX NO (3) TO AGREEMENT  
MODEL CONTRACT  
FOR EMPLOYMENT OF AUSTRALIAN EXPERT

In accordance with the agreement between the Minister of Agricultural Development, Libyan Arab Republic and the Premier of the State of South Australia dated the \_\_\_\_\_ day of \_\_\_\_\_ 1974 for making available the services of necessary experts for the development of a Demonstration Farm near El Marj.

The Contract is concluded between:

1. The Executive Authority for Jabel El Area, El Marj, Libyan Arab Republic, represented by Mr. Bashir Joudeh, Chairman of the Executive Authority, hereinafter referred to as "the authority", as ..... FIRST PARTY and
2. \_\_\_\_\_ of \_\_\_\_\_ hereinafter referred to as "the Expert" as .....SECOND PARTY.

ARTICLE (1)

The Expert shall join the Executive Authority for Jabel El Area for one year starting on day of \_\_\_\_\_ 19 . The service can be extended for another year by signing of another but similar contract between the two parties before the expiry of the Contracted year.

ARTICLE (2)

The Authority will pay the Expert a yearly remuneration of LD. \_\_\_\_\_ (divided into equal monthly payments) starting from the date of his starting service in the Libyan Arab Republic until the date of completion of the service. The salary will be paid monthly in Libyan dinars after deduction of the taxes and insurances according to the Libyan Law. The Expert will have the right to transfer upto (90%) Ninety percent of this salary to any convertible currency abroad.

ARTICLE (3)

The Authority will cover the costs of a Tourist Class Air Ticket and 20 Kilogrammes excess luggage on the route \_\_\_\_\_ Benghazi and back to \_\_\_\_\_ for the Expert. The departure of the Expert will take place after receiving the Air Tickets from the Authority. The Authority will also cover the costs of Tourist Class return Air Tickets for the wife and children of the Expert, excess luggage up to 20 kg per person and costs of personnel and luggage insurance while in transit.

ARTICLE (4)

The Authority will provide free of charge:-

- (a) Accommodation in a suitable house, adequately furnished , with water, electricity and a refrigerator will be made available rent free during the Expert's stay in Libyan Arab Republic. Married Experts will be housed in separate flats or villas. Single Experts will be housed in group flats.
- (b) The Expert will be provided with an official car for travel to and from the working sites. Such car will be provided for use of the Expert for private travel upon permission of the Chairman of the Authority.
- (c) Medical treatment for the Expert and his family will be provided in Libyan Arab Republic Government Hospitals and Clinics.

ARTICLE (5)

The Expert will be replaced on the Authority's request. In this case, the travel expenses for his repatriation and his replacement will be borne by the Authority.

ARTICLE (6)

The Expert shall observe the regulations and instructions issued by the Authority and in particular shall be required to perform his duties with diligence and loyalty. The Expert shall not take advantage of his official position for his private interest. Furthermore the Expert shall exercise secrecy in all confidential matters which may have come to his notice in the course of his official duties; and such obligation to secrecy shall be maintained throughout the period of his service as well as thereafter.

ARTICLE (7)

In case the Expert will extend his employment for a second year he will be granted during the second year of employment one months leave with free return Air Tickets (tourist class) for himself and his family resident in Libya to any European country. The same leave shall be given if he extends his service for a third year.

ARTICLE (8)

For any item not covered by this Contract the provisions of the Contract between the Minister of Agricultural Development, Libyan Arab Republic and the Premier of the State of South Australia referred to in the preamble to this Contract shall apply.

ARTICLE (9)

The Expert shall also be subject to all Laws, Regulations and Decrees for Government officials provided they do not contradict the provisions of this Contract; and he will not be entitled to any benefits unless specified in this Contract.

The provisions of this Contract shall be interpreted in view of the Libyan Laws and any dispute between the two parties in this connection shall be referred to the competent Libyan Court.

FIRST PARTY  
(BASHIR JOUDEH)  
CHAIRMAN  
EXECUTIVE AUTHORITY  
FOR JABEL EL AKHDAR  
EL MARJ, L.A.R.

SECOND PARTY

APPENDIX IV

**STAFF MEMBERS WHO WORKED ON THE SOUTH AUSTRALIAN PROJECTS AT EL MARJ (LIBYA) KSAR CHELLALA (ALGERIA) AIN KAWAH (IRAQ) AND AMMAN (JORDAN)**

**LIBYAN PROJECT PERSONNEL (November 1974 to June 1980)**

Agreement to establish project signed in June 1974

NAME	POSITION		PERIOD OF SERVICE IN LIBYA
Trevor Dillion	Cereal Agronomist		Nov 1974 to June 1976
Henry Day	Team Leader		Nov 1974 to Nov 1976
Allan Pullman	Livestock Production Officer		Jan 1975 to Jan 1976
Bill Kelly	N Experienced Farmer		Jan 1975 to Jan 1977
Keith Bicknell	Pasture Agronomist		Jan 1975 to Apr 1977
Jack Blencowe	Soil Conservation Officer		Jan 1975 to Mar 1978
John Riggs	Experienced Farmer		Jan 1975 to Mar 1978
Gavin Young	Soil Conservation Officer		Apr 1976 to May 1977
Maurice Hayes	N Shearing Instructor		May 1976 to May 1977
Graham Pfeiffer	N Experienced Farmer		May 1976 to July 1979
Peter Marrett	Pasture Agronomist		Aug 1976 to Aug 1977
Lloyd Blesing	Field Technician	(M.R.)	April 1977 to Dec 1979
Ron McNeil	Team Leader		May 1977 to May 1978
Garry MacPhie	Leader Farm Planning Unit		May 1977 to June 1979
Tim Prance	Agronomist		Aug 1977 to Aug 1979
Richard Pocock	N Field Technician	(A.D.F.)	May 1978 to Dec 1978
Bert Nannes	Team Leader		May 1978 to June 1979
Roy Short	Field Technician	(F.P.U.)	July 1978 to May 1979
Don Woods	N Field Technician	(A.D.F.)	July 1978 to Nov 1979
Steve Manoel	N Field Technician	(F.P.U.)	July 1979 to June 1980
Richard Pocock	N Field Technician	(F.P.U.)	Jan 1979 to June 1979
Brian Ashton	Field Technician	(F.M.)	Feb 1979 to June 1980
Garry MacPhie	Team Leader		July 1979 to June 1980

A.D.F. – Australian Demonstration Farm      F.M. – Farm Management  
 F.P.U. – Farm Planning Unit                      N – Not Employed by the S.A.  
 M.R. – Medic Research                                      Department of Agriculture

**SEEDCO FARMERS CONTRACTED TO WORK IN LIBYA  
(3 MONTHS PERIOD)**

1973 Gordon Brown Neville Crawford Geoff Treasure Geoff Rowett	1978 Mark Crocker Ray Elleway Bob Hahn Glen Petterson Glyn Philby Trevor Polkinghorne Tony Sawyers Tim Schwarz Geoff Simmons Ross Weedon	1981 Lyall Arthur Glen Gosling Peter Leane Tim Lehmann Peter Michelmore Glanville Moore
1974 Barrie Williams Clem Obst Gordon Brown John Dunkin	1979 Michael Beare Jeff Elleway Ivan Elson Peter Faint Brian Klemm David Masters Bob McDonald Bod Moore Chris Price Bob Rankine Ken Reichstein Greg Schmaal Max Schmidt Peter Spencer Mark Weedon	
1975 Ken Schultz Geoff Rowett Murray I'Anson Clem Obst		
1976 John Dunkin Michael Phillis Geoff Treasure Bill Collins		
1977 Chris Clarke Mark Crocker Rod Davies John Dunkin Clem Obst Warren Polglase Lindon Richter Neville Sharpe Ken Schultz Perry Will David Wishart		
	1980 Glen Gosling Noel Heinrich Rex Kobelt Robert McEwin Rowan Michell Glanville Moore Lindon Richter	
		<b>Two Year Contract</b> 1978-1980 Lindon Richter
		<b>Demonstration Farm</b> 1981-1983 Andrew Birkfeld Ronald Dunn Geoff Lucas Alan McMahan Peter McMahan Lindon Richter

**AUSTRALIAN STAFF BASED IN IRAQ**

POSITION	NAME	PERIOD OF SERVICE
Project Director	G.D. Webber	Oct 1980-Dec 1982
	P.M. Barrow	Oct 1982-Sept 1984
Farm Managers	A.F. Tideman	Sept 1984-Sept 1985
	A.P. Denyer	Oct 1980-Aug 1982
	J.R. Pearce	Aug 1982-Feb 1984
Agronomists	G.A. Lucas	Mar 1984-Sept 1985
	P.C. Mobbs	Aug 1981-Aug 1983
Livestock Officers	R.C. Reeve	Aug 1983-Aug 1985
	P.M. Carr	Oct 1981-Oct 1983
Farm Advisers (i) Livestock (ii) Agronomy (iii) Mechanic	B.L. Hancock	Oct 1983-July 1985
	A.R. Mack	Dec 1980-Aug 1983
	R.K. Hood	Aug 1983-Sept 1985
	J.R. Pearce	Mar 1981-Aug 1982
	R.W. Garske	July 1982-Apr 1984
Specialist Consultant	R.K. McEwin	Aug 1981-Sept 1983
	P.C. Whitfield	Sept 1983-Aug 1985
Agronomist	P.S. Cocks	1981, 1982, 1983
Livestock	P.M. Carr	1981
	E.A. Dunstan	1983, 1985
Economist	G.C. Trengrove	1984, 1985
Shearing	L.M. Kluge	1983
Extension	J.C. Potter	1984
Farm Advisers (Short Term)	K.M. McCallum	Oct-Dec 1981
	J.W. Bettess	Sept-Dec 1982
	G.A. Lucas	Oct-Dec 1983
Farm Advisers (Other)	D. Blazey	Aug 1981
	K. Koppel	May-June 1982
	P. Pieterston	April-May 1985
	G. Gross	Mar-Sept 1982
Administrators	P. Mathews	July 1980-May 1981
	T. Childs	Feb 1982-Sept 1982
	R. Asser	1981, 1983, 1985

**IRAQ STAFF**

Staff members who served for more than twelve months at the Project site

Mr Ezzaddin Nejmaddin Abdul-Karim	- Director Nov 1980-Feb 1985
Mr Nariman Tofeq Thair	- Director Feb 1985-Aug 1985
Mr Fuad Shmun Hirmiz	
Mr Jomard Mustafa Abdul-Razak	
Mr Kareny Hussain Perdawed	
Mr Kasrow Kareny Abdulla	
Mr Mohamed Bako Jader	
Mr Mohtasam Mohamad Aziz	
Mr Quasim Ali Sadik	
Mr Sabir Ahmad Mustafa	
Mr Sadiq Abdul-Rahman	
Mr Saifaddin Hasan Yousif	
Mr Simco Abdulla Shamsadin	

**AUSTRALIAN STAFF BASED AT KSAR CHELLALA (ALGERIA) - 1979 - 1983**

POSITION	NAME	PERIOD OF SERVICE
Team Leader	D.W. Spurway	1979 - 1980
	G.D. Webber	1980 Temporary appointment
Administrator	W.F. Buddee	1980 - 1983
	R. Baronian	1970 - 1980
Economist	R. Inglis	1980 - 1982
Hydrogeologist	X. Sibenaler	1980 - 1981
	P. Winecup	1980 - 1981
Irrigation Agronomist	T. Davis	1979 - 1982
Irrigation Engineer	C. Steeley	1981 - 1982
Livestock Officer (Sheep Production)	R. Hodge	1980 - 1982
	Dr. I. Grierson	1980 - 1982
Pedologist	C. Jacobsen	1980 - 1982
Agrostologist		

**ALGERIAN STAFF**

Project Director	Mohammedi Salah
Agrostologists	Tireche Tayeb
	Bensaad Kada
Livestock Officers	Abbaei Mohamed
	Ramoul Nour-Eddine
Irrigation Engineers	Degbouja Kouider
	Boumehti Yahia
Pedologist	Badrane Saad
Hydrogeologist	Degbouja Kouida
	Boumehti Yahia

**AUSTRALIAN STAFF WHO SERVED ON THE JORDAN, AUSTRALIAN DRYLAND FARMING PROJECT AMMAN - 1980 - 1989**

POSITION	PERSON	PERIOD OF SERVICE
<b>PHASE I</b>		
Team Leader	D. Harvey	1980 - 1984
Agronomist	B. Bull	1980 - 1984
Farm Management Adviser	T. Peckover	1980 - 1984
<b>PHASE II</b>		
Team Leader	C. Heysen	1985 - 1987
Agronomist	P. Tow	1985 - 1987
Forage Livestock Adviser	S. McArthur	1985 - 1987
Farm Management Advisers	J. Pearce	1985 - 1986
	G. Heading	1986 - 1987
<b>PHASE III</b>		
Team Leader	R. Reeve	1988 - 1990
Forage Livestock Adviser	B. Hancock	1988 - 1991
Farm Management Adviser	G. Heading	1988 - 1991

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