AGRICULTURE HISTORY OF SOUTH AUSTRALIA
Recollections of South Australia's Department of Agriculture work and episodes in the agricultural sector

CONTENTS

INTRODUCTION

The following recollections written about South Australia's Department of Agriculture and episodes in the agricultural sector are based mainly on significant photographs in the Department of Primary Industries and Resources, South Australia's pictorial collection that was organised through the Agriculture History Project (2003–06).

The Departments of Primary Industries and Resources, South Australia (PIRSA) and Water Land and Biodiversity Conservation (DWLBC) jointly set up the project in part to preserve photographs relating to agricultural activities in South Australia. Under the direction of the Agriculture History Project Steering Committee, two former employees of the Agriculture Department, Trevor Roberts and Arthur Tideman, spent four years voluntarily working on the former department's photographic collection. The photographs date back to the 1890s. The photographs were scanned, with the originals being stored in archival-standard sleeves and folders. The original photographs will be lodged with State Records, the official repository for State government records in South Australia. The digital copies are available for viewing through SARIG on this website (https://info.pir.sa.gov.au/geoserver/sarig/frameSet.jsp – Information–Photographic Database–Advanced Search).

Retirees and interested individuals were invited to write a description of or reminiscences about some significant photographs. The following personal accounts have been reviewed and edited through the Agriculture History Project Steering Committee.

Millipedes
Peter Bailey

 *Photo no. 103353*

Link to PIRSA photo database
http://apptest.pirsa.sa.gov.au:8668/new/search/BasisSearch/startSearch#here

Black Portuguese millipedes at Port Lincoln, c. 1970.

Such a scene of a mass of dead Portuguese millipedes greeted householders in many South Australian towns and cities in the years following their spread from the point of introduction at Port Lincoln in 1953. Although not considered an agricultural pest, the invasion of this millipede into houses during autumn and spring has caused considerable outcry from householders, particularly in the Adelaide Hills, as often reflected in the pages of Adelaide's *Advertiser* newspaper.

The South Australian government provided funds during the 1980s for Geoff Baker of the CSIRO to investigate biological control methods. After surveys in Portugal, he recommended the importation of a millipede-specific parasitic fly. In 1986 the Minister of Agriculture, Frank Blevins, requested the Department of Agriculture to continue research work on Portuguese millipedes. Thus a well-resourced research program was initiated. Peter Bailey was posted to Lisbon for 2 years and Steven McKillup was appointed to continue research at the Department's Northfield Laboratories.

McKillup found that a rapid decline in millipede populations at a Bridgewater site were in associated with a millipede-specific nematode parasite. He mass reared these nematodes and distributed them to South Australian trouble spots. Since the 1990s, in most places and in most years, these nematodes have reduced the millipede populations to below the 'worry threshold' of most householders. The Portuguese fly, successfully introduced to Australia and released around Adelaide, did not become established. The program also produced scientific information on the reaction of millipedes to light and on factors that influence natural millipede populations in Australia and the Iberian Peninsula.

A Landcare Year and the Decade of Landcare
Ciceley Bungey

 *Photo no. 103884*

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South Australia's Minister of Agriculture, Lynn Arnold, inaugurating the Year of Landcare at Cobblers Creek in northern Adelaide in 1989.

In July 1989Prime Minister Bob Hawke released a much publicized and promoted statement 'Our Country, Our Future'. There was a general recognition that over the preceding 200 years since European settlement began in Australia the environment had been degraded severely.

The Year of Landcare launch in South Australia in 1989 by the State Minister of Agriculture, Lynn Arnold, at a badly degraded site at Cobblers Creek in northern Adelaide raised awareness of the great challenges ahead. Subsequently, with intense lobbying by concerned groups, funding for the year stretched into the Decade of Landcare and beyond. The National Farmers Federation and the Australian Conservation Foundation suggested the Year of Landcare (1990) might evolve into a Decade of Landcare (2000).

Those attending the launch in 1989 included Members of Parliament; representatives of local councils, Soil Boards, Agricultural Bureaus, Women's Agricultural Bureaus, Trees for Life, Greening Australia, the Conservation Council of SA, the Nature Foundation of SA, the Farmers' Federation, The Education Department, the National Parks & Wildlife Department; officers of the Department of Agriculture, and members of the SA Landcare Committee.

In 1991 a Decade of Landcare Plan was launched in South Australia as a component of the National Decade of Landcare Plan. The Landcare program has expanded beyond its initial focus on tree planting. Many field days have been held with Landcare as their theme by Agricultural Bureau branches, Soil Boards and Landcare groups. Within a few years more than 300 community Landcare groups had been formed around the State. Trees for Life and Bushcare groups also had a significant impact.

Of major importance to raising an awareness of the environment has been the involvement of schools at all levels. This awareness should have a lasting effect on the attitude of future generations of Australians. Students have been involved in tree planting projects in particular, so that a current target of 3 000 000 trees being planted in the urban area is anticipated.

In the rural areas of the State the growing recognition of the value of property planning, contour banking, direct seeding, water management and the rehabilitation of watercourses, revegetation and biodiversity have all been the subject of local field days. These topics will continue to be important in changing people's attitudes towards improving the environment.

South Australia's record of success in a range of annual national Landcare awards has acknowledged the dedication to Landcare by groups and individuals. The national Landcare Award night in the Great Hall of Parliament House in Canberra is a significant occasion for those who are honoured.

Levy point quadrant

Peter Gibson

Peter Gibson using a Levy point quadrant to assess pasture composition for sheep grazing rates research, Kangaroo Island, c. 1970.

In 1970 the Department of Agriculture commenced a 5-year pasture evaluation project funded by the Australian Wool Corporation to compare the animal performance of sheep grazing different pasture species over a range of stocking rates. The Research Officer in charge of the experiment, Peter Gibson, used a Levy point quadrant to estimate the botanical composition of the pasture in each treatment.

The quadrant was placed randomly on the pasture at between ten and twenty locations and the needle dropped vertically ten times through the holes across the quadrant. Each pasture species that was touched by the needle down through the sward was recorded. This enabled the researcher to estimate the presence or absence of the key pasture species, including weeds, and hence the botanical composition of the pasture.

What(,) a lousy sheep!
Brian Jefferies

 *Photo no. 105968*

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A lice-infested sheep.

Lice in sheep have been an ongoing management cost for the wool industry. In the pastoral country it is often difficult to get a clean muster. The pastoral fences also do not offer a completely stock-proof barrier to sheep. But it is by careful management and dipping or back lining that lice can be kept under control.

Stock inspectors or animal health advisers come in two categories – one is a policeman and the other is an effective extension officer who trains property owners and encourages them in the control of external parasites.

One of the latter category was Bob Fryar who was based at Cleve at the Eyre Peninsula. He would go to sporting events and establish a good rapport with property owners and managers. So effective was he that at times owners or managers rang him to report a suspected case of lice.

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Sheep lice and their effects on the Australian wool industry
Geoff Norman

The sheep body louse or chewing louse (*Bivocola ovis*) is the species responsible for most infestations of lice on sheep in Australia. The insect is less than 2 mm in length. Infestations come from stray or purchased sheep. Most lice are found near the sheep's skin where they feed on scurf and wool yolk. A heavily infested sheep can carry up to 100 000 lice. They begin to be obvious about 3 months after shearing. The fleece becomes yellow and then brown. Wool is matted and sheep become more difficult to shear. A shearer's daily throughput can be reduced by as much 30%. An irritation is set up and sheep respond by rubbing on fence posts and trees. Fleece weight and quality is reduced and the susceptibility to fly strike is increased.

It is estimated that Australian farmers spend around $27 000 000 annually on chemicals to treat lice. The several methods used are based on the application of chemical pesticides either by dipping the sheep, spraying or pouring the chemical on the animal after shearing. The chemicals used include:

- organophosphates which attack the nervous system of the louse causing paralysis and death;
- insect growth regulators which do not kill adult lice but inhibit the development of eggs; and
- synthetic pyrethroids which attack the nervous system and cause paralysis.

Lice have been found with an in-bred resistance to pyrethroids, so their use is no longer recommended.

During wool processing the scouring of the fleece is necessary. The fallout from this process was usually run into local waterways without a lot of thought being given to the effect of the chemicals involved on the local aquatic environment. Now there is a more vigilant approach to the affect of pesticides on the aquatic environment. In 2007 European authorities are bringing in strict thresholds resulting in most of the chemicals now used for lice control being discontinued.

In 1980 research was begun to develop an alternative to the pesticides being used to control fly strike in sheep. Researchers had earlier stumbled upon a bacterium that was used in the cotton industry. The bacterium, *bacillus thuringiensis* (BT), develops a toxin which, when genetically engineered into the cells of cotton plants, is poisonous to the cotton-devouring caterpillar. As there are thousands of different strains of BT all producing different toxins, it has been a matter of selecting the right strain to develop a toxin to control fly strike.

A similar process is being used to develop an alternative for lice control. A toxin is incorporated into a liquid to be sprayed or poured on to the sheep after shearing. There is no residue problem. The lice (or maggots in the case of fly strike) die soon after coming in contact with the wool. It is hoped to register the product prior to Europe’s clamp down on chemical usage.

Sources

Sheep lice facts (PIRSA)
Sheep body lice (DPI Victoria)
D. Pinnock, ‘Alternative lice control’

Wind erosion
Bill Matheson


Photo no. 105675

Link to PIRSA photo database
http://apptest.pirsa.sa.gov.au:8668/new/search/BasisSearch/startSearch#here

The Murray Plains area suffered a drought in 1967. The impact at Tepko by autumn 1968 is shown here.

There were two major droughts in the Murray Plains district – in 1967 and 1977 – between 1949 and 1999. In October 1967 there was an estimated 8000 ha of drifting or bare land between Murray Bridge and Sedan. The photograph of a scald from Tepko illustrates the seriousness of the problem: in March 1968 the Advisory Committee on Soil Conservation inspected the situation.

Source
W.E. Matheson, 'Across the Plains – The history of the Murray Plains District Soil Conservation Board 1949–1999'.


Photo no. 106878

Link to PIRSA photo database
http://apptest.pirsa.sa.gov.au:8668/new/search/BasisSearch/startSearch#here

Dust storms such as this near Orroroo still occur on the Black Rock and Walloway Plains south and north of Orroroo respectively.

Wind erosion is commonly associated with light sandy soils. However, loamy soils are also susceptible to wind erosion under certain conditions. Overgrazing or overcropping can lead to the breakdown of soil structure making these soils vulnerable to strong winds because of the lack of soil cover, leading to dust storms rather than sand drift.

Source

W.E. Matheson, ‘Central Flinders Ranges Soil Conservation Board District Plan 2003’.

From farm to factory in the South Australian dairying industry
Geoff Norman


Photo no. 106818

Link to PIRSA photo database
http://apptest.pirsa.sa.gov.au:8668/new/search/BasisSearch/startSearch#here

Milk boats on the River Murray.

From the first Australian dairy herd of seven cows milked by Dr John Harris in Ultimo, New South Wales, the dairy industry has waxed and, more recently, waned. In 1957 there were 3 500 000 dairy cows in Australia; by 2005 there were 2 500 000. In South Australia in 1891 there were 80 000 dairy cows. That grew to 174 000 in 1950. In 2006 there were 110 000.

Initially, milk was sent to milk processing factories in cans where it was separated in large milk separators. The advent of the horse-driven cream separator in the late 1800s enabled producers to separate their own milk. One resulting development was the opening up of a pig industry. Milk was separated into cream and milk. The cream was sent to butter factories while the fat-free milk was used as pig food.

In the lower River Murray area cream was transported to the Murray Bridge and Tailem Bend factories by motor launches on the river. The production of cheese, however, required whole milk. From 1919 milk boats transported this to the Murray Bridge cheese factories. The South Australian Farmers Union operated four boats: *Loyalty*, *Progress*, *Co-operation* and *Union*. After Amscol took over Beauchamp's factory, they too ran four boats, including *Civic*, *Hazel* and *Dawn*. Milk and passengers were picked up at landings from Mannum to Wellington.

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An early wagon recycled as a stand for the collection of milk cans.

By 1940 road transport was taking over and farmers built their own milk platforms on their farms. Ideally, platforms were built adjacent to the dairy. But many dairies were not on a road and those farmers were required to build a platform near their farm gate for ease of collection. Milk trucks collected the canned milk from the farm daily (twice per day during summer). Clean empty cans from the previous day were offloaded at the same time.

By the 1960s refrigeration had been introduced to the industry: refrigerated bulk milk vats and tankers thus reduced transport costs.

Sources
Information from Brian Thomson (Dairy Farmers) and Harry Beauchamp (former factory manager)

Parafield Research Centre field days
Errol Polden

 *Photo no. 104709*

Link to PIRSA photo database
http://apptest.pirsa.sa.gov.au:8668/new/search/BasisSearch/startSearch#here

The Parafield Research Centre during a Field Day, 22 November 1969.

The Parafield Poultry Station was established in 1911 on a site that had previously been reserved for use as a cemetery. The older buildings near the centre of the photograph were designed and erected as a railway station and mortuary.

Parafield was highly regarded as an experimental station for the poultry industry. Egg-laying trials and competitions, feeding and housing trials, and demonstrations and breeding programs were conducted there. The emphasis was on egg production and egg quality. Parafield was a major source of purebred poultry stock for South Australia and interstate.

During the 1960s trends in the industry broadened to include chicken meat production. The Centre was substantially upgraded to meet that demand and to improve the facilities for more extensive research work. In this period the Poultry Station was renamed the Parafield Research Centre.

The field day depicted was the second of several such events held with the object of promoting the chicken meat industry. Following a session of informative talks highlighting the results of research work and trials conducted at the centre throughout the year, visitors were provided with a luncheon of barbecued chicken and Barossa Valley wines. The field days became very popular and played a major roll in the development of the multi-million dollar chicken meat industry in South Australia.

The Parafield Research Centre closed late in 1995 when the research facilities and staff were relocated at the Roseworthy Campus of the University of Adelaide.

Myxomatosis in Australia
Ron Sinclair

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Caption ???? – refer to Arthur

The virus responsible for causing the disease myxomatosis was first isolated from European rabbits (*Oryctolagus cuniculus*) in Uruguay in1898. In 1919 a Brazilian scientist, H.B. Aragão, proposed that the virus be used as a biological control for the wild European rabbit in Australia but the Australian government rejected this. Subsequently, Dame Jean MacNamara was instrumental in getting the virus brought to Australia and the first field trials were begun on Wardang Island in South Australia in November 1937. These trials, as well as several others conducted up to 1943, were unsuccessful, primarily because they were in arid areas with no biting insect vectors to spread the disease. MacNamara continued to agitate for further trials in higher rainfall areas and these eventually took place at five sites in the Murray Valley late in 1950. At first it was thought that these trials were also failures but, suddenly, reports of dead rabbits were received from over a wide area and the disease spread rapidly over southeastern Australia.

By 1955 myxomatosis had spread to all areas of Australia where there were rabbits and had brought incalculable benefits to the country. However, within a few years there were signs of genetic resistance developing in rabbits and of a reduced virulence of the virus. In 1966 the European rabbit flea (*Spilopsyllus cuniculi*) was released to aid transmission in areas where mosquitoes were uncommon. It greatly improved the circulation of the virus in parts of southern Australia and initiated protracted winter and spring outbreaks of the disease rather than the short sharp epizootics that had previously occurred in early summer. However, this flea did not survive in the arid zone so the more arid-adapted Spanish rabbit flea (*Xenopsylla cunicularis*) was released in 1993. It became widespread in central Australia shortly before the rabbit haemorrhagic disease (then called the calicivirus) reached those same arid areas, confounding the estimation of the separate effect of the new vector for myxomatosis. Although variable in its impact, myxomatosis still exerts a very important controlling influence on rabbits in Australia.

The Royal Agricultural Hall, Wayville Showgrounds, 1972–74
David Spurling


Photo no.103888

Link to PIRSA photo database
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The Royal Agricultural Hall during the Royal Adelaide Show, late 1970s.

Two things happened in 1972 that resulted in David Spurling becoming the supervisor of the Department of Agriculture’s exhibit in the Royal Agricultural Hall at the annual Royal Adelaide Show at the Wayville Showgrounds. A petrol strike resulted in State government cars being off the road from 28 July to 21 August, except for local running. All country trips were cancelled. Thus he was available to take over from G.K. Robinson (Senior Advisory Officer, who was on study leave in England), the Supervisor of the Department of Agriculture’s Show exhibit in previous years. Peter Angove and Albert Engel had also been previous supervisors.

As a result, David Spurling, an Advisory Officer in the Agricultural Bureau, was given the position of Supervisor, Show Hall in addition to his Bureau work in the office. This meant liaison with the Branch Officers involved, coordinating the construction and assembly of the display, arranging supplies of feed and bedding for the animals involved and generally preparing the hall. During the Show, he had to clean the hall each morning, repair any display damage, ensure sufficient stock was on hand and supervise the rostered staff each day.

The Extension Branch of the Department arranged a Heads of Branch meeting in about May of each year to plan the Departmental display. After the theme had been decided, each branch planned their display and submitted the plan to the Extension Branch which drew up the final layout with the assistance of an advertising agency. The Supervisor was then responsible for liaising with the advertising agency to prepare the display. The agency arranged the construction until 1973 when the Department took more control of the exhibit. I remember the displays being two weeks of hard work prior to the Show and a fairly busy time during it. The usual layout was around the walls with a small central display of some kind.

In 1972 the agency used its own sign writers to do the painting, signs and carpentry. In 1973 and 1974 the Public Buildings Department provided the sign writers, electricians and carpenters. This was a much better arrangement as that department was responsible for the maintenance of the building anyway. And there was more flexibility in producing the display that way. The advertising agency was too rigid and did not allow minor changes as construction showed ways to improve the operation of the display.

The display was mainly static with very little viewer interaction other than normal enquiries. There were the usual handouts of bulletins and other Departmental publications. Some tastings of fruit and dairy products did occur, but at that time these were considered the province of the industry organizations in other pavilions. A few practical demonstrations were used. Slowly, interactive displays were brought in and by 1976 there was more visitor involvement. It was about this time that ‘The Yellow Brick Road’ trail started.

When stock or poultry were in the hall we laid a floor of galvanized iron (flat 6 ft x 4 ft sheets [1.8 m x 1.2 m]) covered with a 6 in. layer of sawdust (the cattle yard took four utility car loads) and finished with a straw cover. The straw was replaced each morning. Damp straw was removed as necessary during the day. The officers on duty maintained water and food. The yard was a steel, portable structure screwed to the floor. The rabbit yard was made of wire netting about 4 ft (1.2 m) high. Poultry were in commercial chicken sheds. Ducklings were used one year. These were one-day old at the beginning of the Show. There was a fibreglass pond for them.

One year we had a cow feeding four calves of differing breeds in a small yard in one comer. The Department’s Dairy Branch was fostering multiple suckling for calves at that time. During that Show we had cause to bring in one of the vets to inspect the cow and one of the calves. He was so quiet and direct in his approach that we received many very good responses from the public who witnessed his time in the yard. One calf was removed during the Show.

Another display was a yard with 12 rabbits. It ended with 11: one rabbit was removed by a member of the public. No one saw it happen.

Horticulture had a display of apple and pear varieties one year. Barry Tugwell had a storage display promoting controlled atmosphere storage.

The Plant Breeding Section had a display of the breeding and development of wheat varieties and how they performed as bread flour. Farming equipment was on display as well.

There was always an Extension Branch counter where bulletins and general information were available. The Departmental officers sometimes liaised with the Rural Youth Movement, especially when their main leaders were in limbo. Rural Youth members did ask for help with their display.

The flags were stolen from the eastern wall of the hall one year. Putting the rope toggles about 10 ft (3 m) up the wall and using a ladder to reach them overcame the problem.

It is not known when the Department took over the hall or when it relinquished it: the Department had it before the ‘Mad Mouse’ ride was built because a departmental vehicle could be parked on that side.

Furrow irrigation
John Steed

 *Photo no. 106629*

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The furrow irrigation of citrus trees growing on a River Murray irrigation area.

Furrow irrigation was the forerunner of the methods used to irrigate citrus in South Australia. Later attempts to replace furrow systems with overhead sprinklers aimed at reducing labour costs, improving irrigation efficiency and reducing seepage problems were superseded when rising river salinity and water restrictions resulted in more changes. The current irrigation method for citrus is based on low-level systems with under-tree sprinklers or drippers to improve distribution, reduce evaporation losses, keep saline water off leaves and save water. These may be automated to varying degrees, depending on the finances available to the farmer.