

National Breeding Programs

Oat and Vetch

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SARDI leads Australia's National Oat Breeding Program, developing milling oats and oaten hay varieties suited to the southern region of Australia.

The objectives of the program are to deliver high yield potential oat varieties for South Australia, Western Australia and south-eastern Australia with enhanced grain quality, disease resistance and drought tolerance.

Health benefits

Demand for milling oat continues to increase with the nutritional benefits of the grain and the development of new food products using oat.

The healthy benefits of the grain are an important consideration for companies producing food products from oat.

Demand for milling oat is increasing on average by 5% each year, and this demand is driven by national and Chinese consumer drivers for the health benefits derived from oats.

Industry partners

The National Oat Breeding Program at SARDI collaborates with Uncle Tobys Company to develop a healthier oat variety – including improved beta-glucan content in the grain to help reduce blood cholesterol levels. Oat products also have the potential to be marketed as a gluten-free alternative.

The program is funded by the Grains Research and Development Corporation (GRDC), South Australian Grain Industry Trust (SAGIT), Rural Industries Research and Development Corporation (RIRDC), the Uncle Tobys Company, Department of Agriculture and Food Western Australia (DAFWA), and commercial partners AEXCO and Heritage Seeds.

Hay exports

The nutritional value of oaten hay is also in demand in dairy and beef cattle markets in Japan, South Korea, China, Taiwan, the Middle East and elsewhere in South East Asia. South Australia exports about 200,000 tonnes of oat hay produced from SARDI oat varieties, with Australia exporting up to 700,000 tonnes a year. SARDI oaten hay varieties have been developed with improved early vigour, disease resistance, and hay quality in a range of maturities. The oat breeding program is also developing varieties with agricultural benefits such as a disease break crop option for cereal farming systems and varieties with improved drought tolerance.

Principal Oat Breeder

Dr Pamela Zwer leads a research team focused on improving oat varieties for grain and hay yield potential, disease resistance, and hay and grain quality for Western Australia, South Australia, Victoria, and southern New South Wales.

Plant scientist Dr Zwer obtained a PhD in genetics from the University of California, Davis and science degrees in horticulture and crop science from Michigan State University, USA. She has led the National Oat Breeding Program at SARDI for almost 20 years.



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National Vetch Breeding Program

Vetch is becoming a more important pulse crop in southern Australia because of its ability to fix nitrogen and grow on alkaline soils where medics have failed to persist. It also has potential to provide nutritious hay and grain for livestock.

Vetch variety development for Australia, as part of a national vetch breeding program, focuses on grain production for livestock, hay and grazing and green manure.

The vetch breeding unit is committed to:

- releasing vetch varieties with improved disease resistance
- improving grain and hay production
- breeding varieties suitable for a wider range of Australian environments
- developing varieties with lower levels of cyano-glycoside in the grain for livestock.

Basic research and agronomic work is also an important part of establishing a new crop.

Since 1992, the National Vetch Breeding Program has released five vetch varieties - four from common vetch (*Vicia sativa* species) and one from woolly pod vetch (*V. villosa* species).

Key research objectives

- Reductions of grain toxin and include common vetch grain for animal feed,
- Plant palatability for grazing, hay and silage for common and woolly pod vetches
- Breeding for disease resistance
- Adoption to low rainfall areas
- Seed softness
- Herbicide tolerance for different *Vicia* species
- Assessment of new *Vicia* species for adoption in Australian farming crop rotations
- Improvement of soil fertility by nitrogen fixation and yield increase in following crops

Vetch Hay: Hay production is an important end use for vetch. Vetch hay variety development focuses on the following:

- adaptation to a wider range of Australian environments
- improving disease resistance and agronomic traits
- improving pasture, hay and green manure yield
- compatibility with sown cereals
- low alkaloid content in foliage
- adaptability to grazing

Hay is richer in protein than all cereals, medics and even lucerne. World demand for hay feed has been growing rapidly and is predicted to double in the next 10-15 years. Development of vetch suitable for pasture and hay/silage will ensure growers are able to capitalise on this new market and develop a high profit return for vetch as a fodder crop.

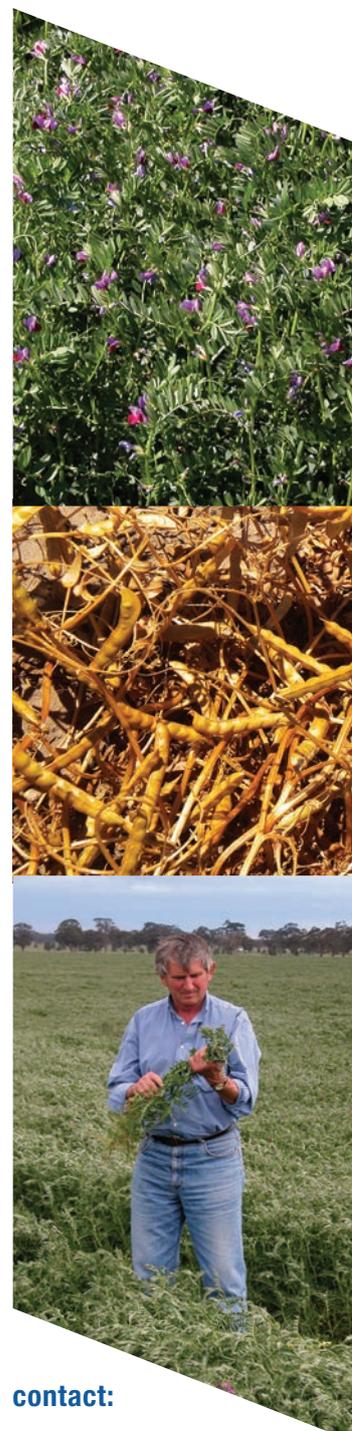
Collaborations

The National Vetch Breeding Program has support from the GRDC, RIRDC, SA Government, SARDI and Heritage Seeds. We collaborate with researchers interstate and overseas in Spain, Greece, Russia, Serbia, the USA and Italy, to source germplasm for frost tolerance and disease resistance.

Principal Vetch Breeder

Rade Matic (pictured right) has expertise in developing vetch breeding priorities and variety assessments.

He manages sowing and harvesting trials and provides information on new and existing vetch varieties in consultation with researchers, farmers and industry.



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