

focus on

# FODDER CROPS

Research & Development



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An R&D program managed by the Rural Industries Research and Development Corporation



## At a glance

The Australian fodder industry generates about \$2 billion each year for the national economy, making it similar in size to the barley, sugar and poultry sectors.

Fodder includes hay and silage of all types (pasture, cereal, lucerne, clover and others), as well as chaff (coarsely chopped and dried whole plants), vetch and pelletised feed. Each year about 350,000 Australian farms produce between five and seven million tonnes of hay and two million tonnes of silage. Overall production is concentrated in Victoria and New South Wales, while Western Australia and South Australia lead export hay production.

About 80 to 90 per cent of Australian fodder production is used domestically in the dairy, horse and beef industries, as well as in horticulture for mulches and erosion control. The remaining 10 to 20 per cent is exported, and the export hay industry is worth about \$150 million annually.

Australia is the second largest exporter of hay and hay products – accounting for about 20 per cent of total world exports. A total of 70 per cent of Australia's hay exports are sent to Japan, the world's number one hay importer. South Korea and Taiwan import 25 per cent of Australia's hay exports between them.

With China's per capita consumption of dairy products increasing four-fold in the past decade, its rapidly growing dairy industry represents a potentially significant export market for Australian hay.

## Research and Development

Australian fodder research is funded through a mix of RIRDC funds and a voluntary levy on both domestic and export cereal hays.

The RIRDC Fodder Crops Program invests about \$400,000 annually to research into:

- Breeding new fodder crop varieties – particularly oaten and vetch hay
- Fodder crop disease, nutrition, weed and pest management
- Fodder harvesting, processing and transport technology and policy
- Improved fodder quality – ensuring Australian fodder meets market expectations
- The impact of climate change and potential biosecurity threats on fodder production.

The largest current area of investment is focused on oaten hay breeding.

Major R&D achievements from the past decade include:

- Development and industry-wide adoption of seven improved oat varieties
- Chemical residue checks inserted into the ChemCheck system to support the certification of fodder exports
- Development of a management package for annual ryegrass toxicity – to meet domestic and export market expectations.
- Development of a rapid detection test for annual ryegrass toxicity in hay, resulting in an improved testing turnaround time for exporters, and a reduction in processing costs overall
- Development and testing of microbial inoculants for hay preservation.
- Super conditioning – mechanical crushing of cut hay to increase drying rate and improve hay quality.

## Quick Fact:

As the world's leading hay importer, Japan imports about two million tonnes each year for its dairy and beef feedlot industries, with about half a million tonnes coming from Australia. But while Japan has 1.8 million dairy cows, China has 13 million. And with little readily available homegrown fodder, China's rapidly growing dairy sector represents an enormous opportunity for the Australian export hay industry.

## INDUSTRY CASE STUDY

### New oat varieties from immaculate selection

More than a decade of research and market intelligence sits behind a bale of Australian export hay consumed by dairy cows in Japan today.

While many thousands of oat plants are used in the oaten hay breeding program as progeny each season, only one or two will result in crosses that become new export hay varieties 10 to 12 years later.

“It takes time and many thousands of measurements to breed new oat varieties that will yield well under Australian conditions while also meeting market requirements,” explains Dr Pamela Zwer, principal plant breeder with the National Oat Breeding Program, which focuses on breeding oats for both grain and hay.

The breeding program is the only one in the world to develop oat varieties specifically for hay production, and in doing so plays a major role in differentiating Australia’s hay from that of competitors. Since its establishment in 1997, it has delivered seven new hay varieties, which now hold a significant market share of the oaten hay produced in Australia.

The new varieties have superior yields, disease resistance, leaf and stem colour and feeding quality to their predecessors. They increase the probability of producing first-grade export-quality hay, which can receive an average price premium of about \$70 per tonne over hay sold on the domestic market.

Each year Dr Zwer and her colleagues oversee hundreds of oat crosses in field trials across southern Australia. “Any one of these crosses has the potential to become the next export hay variety,” says Dr Zwer.

“But determining which ones show the most promise for export hay requires sifting through thousands of yield and hay quality measurements each year and keeping only those breeding lines that continue to meet market and agronomic targets.”

Once a new potential export hay variety has been identified, it takes many more years to incorporate all the disease resistance and yield attributes that will ensure it grows and yields well on-farm.

“If a potential hay variety has excellent yields but succumbs to disease then it is not worth pursuing as a commercial variety,” says Dr Zwer.

To assess the capacity of the oat breeding lines to resist disease, the crosses are grown in special disease nurseries located across Australia. “The nurseries enable us to expose the emerging oat varieties to common Australian crop diseases and so that only those with resistance continue on in the breeding program.”

The National Oat Breeding Program works closely with international markets to ensure Australian growers deliver hay with the quality attributes capable of producing high-quality milk and beef. Breeding lines are assessed for their digestibility and fibre, protein and soluble carbohydrate content.

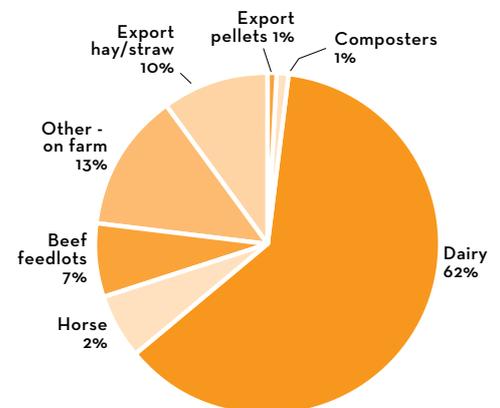
Oat varieties that successfully make it through the decade-long breeding process are then grown on commercial farms to generate bulk seed lots for commercial release.

### Facts and Figures

Australian oaten hay export graph – countries and amount (February 2013)

2012 Export destination (hay)	Total (tonnes)
Japan	377,972
South Korea	149,103
Taiwan	36,380
China	18,810
UAE	4832
Vietnam	4483
Malaysia	1691
Ship & Aircraft Stores	1372
Bahrain	1066
Singapore	986
New Zealand	938
Russian Federation	630
Saudi Arabia	443
Hong Kong	115
Kuwait	103
Thailand	102
Brunei Darussalam	59
Macau	33
United Kingdom	30
Indonesia	17
<b>Total</b>	<b>599,165</b>

Proportion of Australian fodder used domestically or exported.



Source: Australian Fodder Industry Association.

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