



Australian Export Grains Innovation Centre

# Australian pulses

Quality, versatility, nutrition

Australian pulses are in demand around the world for their quality, versatility, cleanliness and nutritional attributes.



Department of  
Primary Industries and  
Regional Development



AEGIC is an initiative of the Western Australian State Government and Grains Australia.



## Clean and nutritious

Pulses are an essential dietary component for millions globally due to their high protein and nutritional content. Australian pulses are in demand across the world and include lentil, faba bean, field pea, chickpea, lupin and mung bean.

In Australia, clean growing environments, good crop management and care in handling and processing ensure quality, safe and clean, food-grade pulses for consumers.

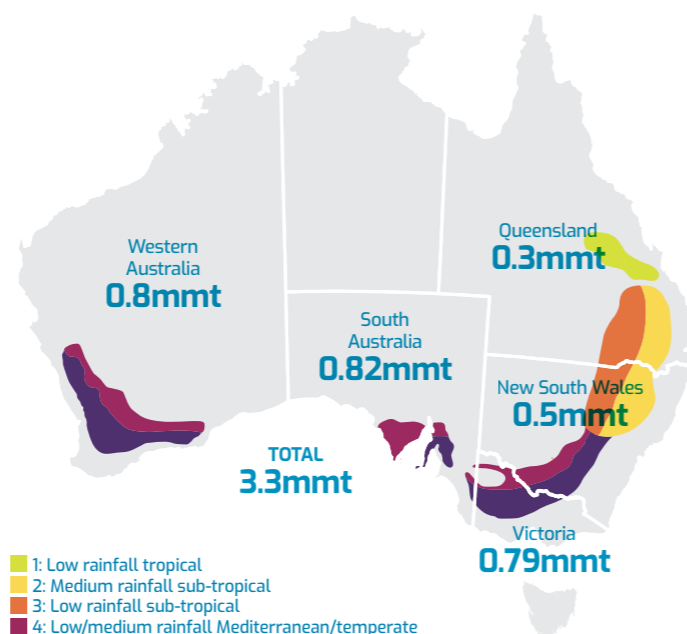
Australian pulses are highly regarded globally for their:

- Consistent high quality
- Versatility
- Low moisture
- Low screenings (cleanliness)
- Nutritional attributes

### Pulse production in Australia

Australian farmers use advanced technology and equipment to produce pulses of the highest quality. Pulses are an important crop in the Australian grains industry, grown throughout the southern and northern regions of the Australian grainbelt. Pulses are grown in crop rotations, with cereals and oilseeds, because of their ability to fix nitrogen into the soil and their contribution to sustainable farming practices.

Australia's diverse agro-climatic zones produce a wide array of high-quality pulse grains. In addition to the major pulse crops listed below, other pulses grown in Australia include adzuki beans, cow peas and black beans, and the grain legume vetch.



Five year average up to 2022-23. Source: ABARES

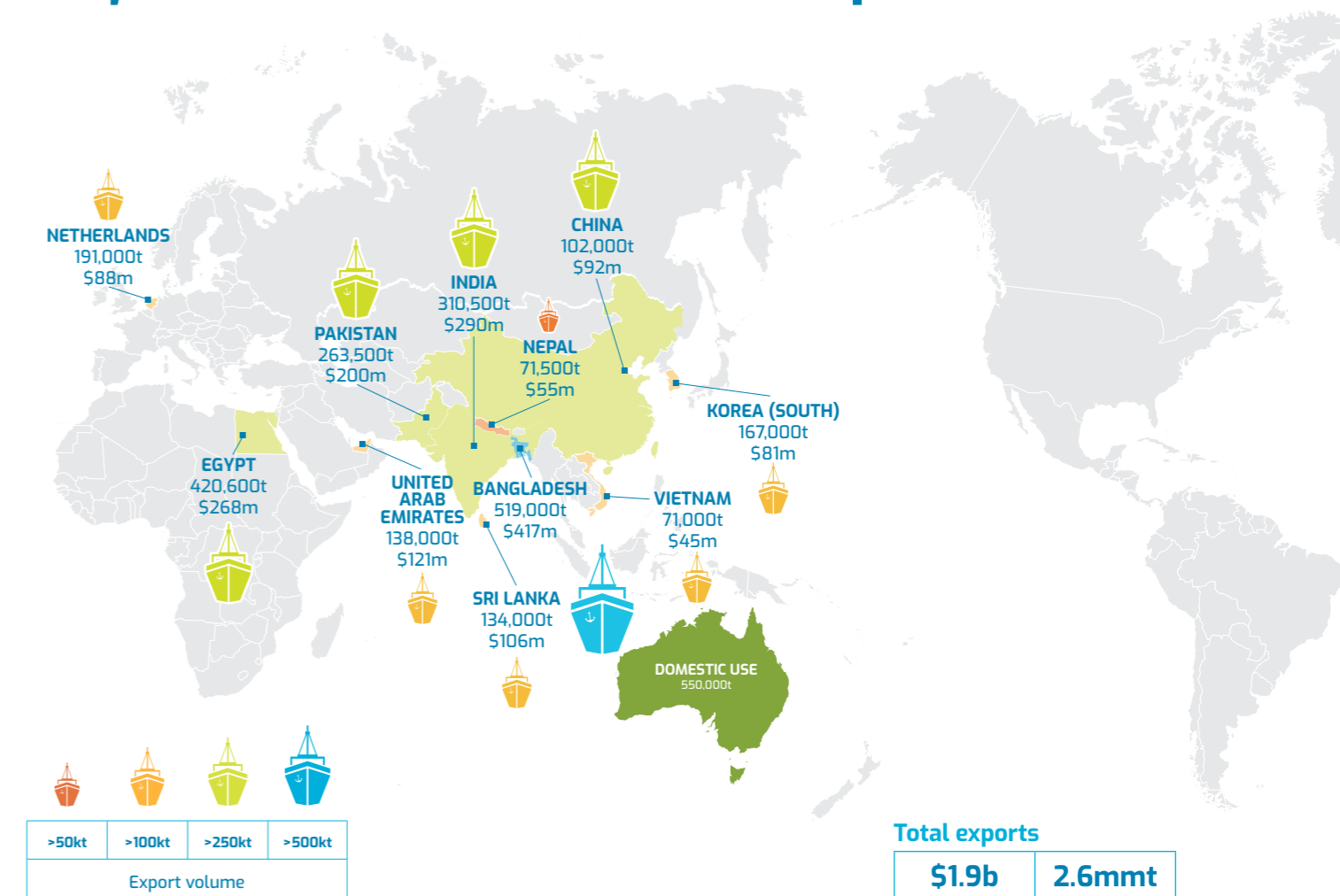
Australia produces an average of over 3 million metric tonnes (mmt) of pulses from more than 2 million hectares. South Australia, Western Australia and Victoria are the largest pulse producing states on average.

Pulses are typically planted during May and grown through the winter months of June, July and August in the northern, southern and western grain production regions of Australia. Harvest takes place during late spring and early summer from September through to January. In the northern regions, production is based around summer dominant rainfall to provide stored soil moisture during winter.

Pulse	Production (t)
Lentils	1.1mmt
Lupins	0.8mmt
Chickpeas	0.65mmt
Faba beans	0.55mmt
Field peas	0.28mmt
<b>TOTAL</b>	<b>3.3mmt</b>

Five year average up to 2022-23. Source: ABARES

## Major markets for Australian pulses



Source: ABS 5 year average (2019-2023). Domestic use data: ABARES. Sources: Disclaimer: pulse trading is fragmented across numerous small to medium sized participants, which sometimes may lead to discrepancies between average price estimates.



**3.1mmt**

of pulses are produced in Australia each year



**80%**

of Australia's total pulse production is exported each year



**50%**

of Australia's pulse exports go to South Asia



# Supporting customers of Australian pulses

Australia invests significantly in the development of pulse crops that meet the quality requirements of international customers.

Public and private plant breeders, agricultural researchers, agronomists and chemists work closely with processors and marketers ensuring the current high quality of Australian pulses is maintained and further improved with new varieties. There are extensive breeding and evaluation sites coordinated nationally and located in the major cropping zones across Australia.

Grains Australia's Pulse Council provides strategic advice to the Grains Australia Board on pulse industry matters including priorities and activities, strategic classification requirements, trade and market access issues, market information, and market education requirements.

AEGIC is conducting innovative research into expanding the use of Australian pulses as a source of plant protein. Using AEGIC's processing methods, pulse protein concentrates made from pulses can be used in many products, including protein powders, plant-based meats, breads, noodles, animal feed pellets and more.

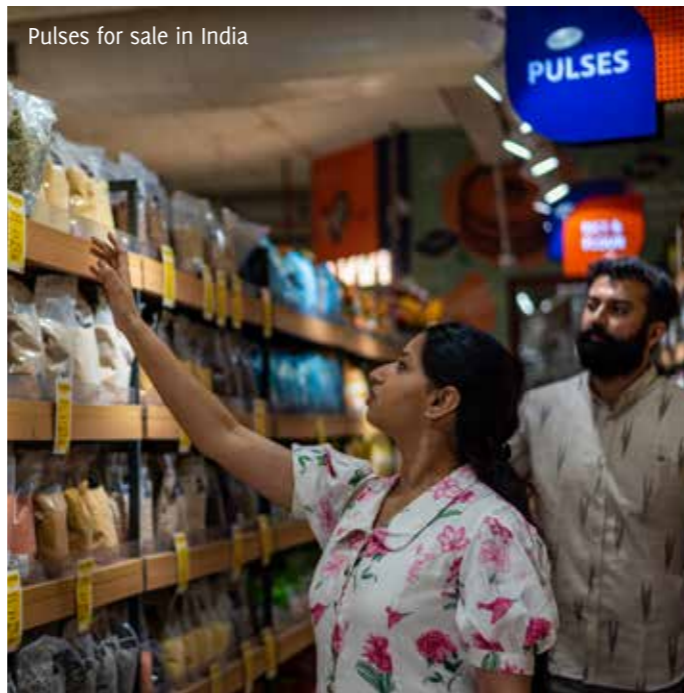
## Classes and standards

The Australian grains industry and grain growers are committed to supplying pulses with high quality, nutritional attributes. Australian pulse standards ensure Australia is held in high regard as one of the cleanest environments in the world, delivering safe food-grade grains. The standards, managed by Grain Trade Australia, cover characteristics such as purity, moisture content, percentage of defective seed, poor colour seed, foreign material and other factors.

Australia's status as a producer of clean food is demonstrated through the National Residue Survey that analyses export grain samples for chemical and environmental contaminants, providing proof of food safe grain.



AEGIC research is expanding the use of pulses for plant protein.



# A snapshot of Australian pulses

## Lupins

20-30%  
of the annual Australian pulse crop



Lupins are an important crop in western and southern Australia. The major lupin crop in Australia is the Australian Sweet Lupin, and the smaller crop Australian Albus Lupin is also grown and exported. Lupins are grown in large regions of Western Australia and the south-east of Australia, where soils are largely sandy and acidic. Australian Sweet Lupin is well adapted to this soil type, whereas all other pulses require more fertile soil types.

Australian Sweet Lupin exports go to South Korea, the Netherlands, Vietnam and Belgium. Australia is the largest supplier of quality, large-seeded Australian Albus Lupin to the Middle East.

Production in Australia focuses on high protein, low alkaloid (bitterness) and improved dehulling efficiency.

Australian Sweet Lupin is recognised as a valuable stockfeed and aquaculture feed source, and consumers are increasingly interested in lupins for food products because of their nutritional value and health benefits. Lupin is attractive for human consumption because the protein and oil is readily digested and seeds have a high dietary fibre content. Lupins can be flaked, milled for flour, split and fermented to produce high-quality tempeh, used as a snack base, or in the production of protein concentrates or fermented sauces. Lupin flour is used in breads, biscuits and pasta, and lupins can also be sprouted for consumption.

Albus lupins have good potential for near-white vegetable-based products because of their low yellow pigment content.



Lupin falafel

Lupins

## Chickpeas

20-35%  
of the annual Australian pulse crop



Chickpeas are grown across Australia and are a particularly important crop in the north of the Australian grain growing region. Average annual production of about 650,000 tonnes focuses mainly on desi types, with limited production of small to large kabuli types. About 90% of chickpeas produced in Australia are exported, with Australia commonly being the biggest global exporter.

Australian production focuses on large uniform grain size, light coloured seed coats, the splitting efficiency and quality of desi chickpeas, and the hydration and cooking characteristics of kabuli chickpeas.

The two types of chickpeas can be distinguished by seed size, shape and colour, each with different markets and end-users:

- **Desi** – small angular seeds, ranging in colour from light brown to brown. They are normally dehulled and split (dhal) and are favoured by the Indian subcontinent.
- **Kabuli** – large round seeds that are white to cream coloured and are almost exclusively used whole. They are preferred in the Mediterranean region.

Chickpeas are widely used in hummus, soups, curries, casseroles, salads and sweets. They are also fried or roasted as snack food, ground for patties, processed into flour (besan), or split to create dhal, and fermented.

Australian chickpeas provide a good source of carbohydrates and protein.



Chickpeas



## Field peas

10-15%

of the annual Australian pulse crop



Field peas are a major Australian pulse crop, with substantial production occurring in South Australia. Production averages around 285,000 tonnes, of which about half is exported. The major export market is the Indian subcontinent and the Middle East for human consumption. Some field peas are also exported to Asia and Europe for both human consumption and stock feed.

Australian field peas are commonly used split for dahl, pre-prepared soups, fermented foods, noodles, snack food, whole for green peas for pies, mushy peas and other dishes, and for sprouts.

Field peas provide a good source of dietary proteins and energy, with a starch content ranging from 30-50%. The fat content is very low, at approximately 1%, while the content of soluble carbohydrate is high.

Australia produces mostly dun type field pea, with some minor production of blue and white types. The major field pea varieties can be divided into four main groups:

- **Dun field peas** – (including Kasper types): suited to human and stockfeed consumption.
- **Blue field peas** – specialised uses such as canning for human consumption.
- **White field peas** – suited to splitting and flour for human consumption.
- **Maple field peas** – suited to stock and bird feed.



Field peas

## Lentils

25-35%

of the annual Australian pulse crop



Australia is a major exporter of high-quality lentils, principally red lentil, and also green and other niche types. Lentils are exported to all parts of the world, particularly the Indian subcontinent, Asia and the Middle East. About 1.1 million tonnes of lentils are produced on average annually mostly in South Australia and Victoria.

Lentils grown in Australia are divided into two groups:

- **Red lentils** are the most common in Australia. Red lentils range in seed size from small to large, and in shape from rounded to lens types. Destination markets differ in their preference to the various sizes and shapes of lentil grain. For example Sri Lanka prefers large; Bangladesh small; and medium sized red lentils often go to India.
- **Green lentils** are also referred to as brown, yellow, Chilean or Continental lentils and have a seed size of medium or large. Traditional green lentil destinations include Algeria, the Americas (Colombia, Mexico, Venezuela, Brazil, Chile) and Europe (Spain, Turkey, Greece, Italy). Green lentils go into the whole seed edible market and as such need to be light in colour with no weather damage. Size is critical.

Lentil breeding programs focus on improving physical seed characteristics and processing qualities. The size, shape and colour of grain, splitting yield and colour of splits in red lentil, and seed coat colour retention and cooking characteristics in green lentil, continues to improve.

Lentils are predominately used for human consumption and have quicker cooking times than other pulses. They are cooked in soups and casseroles, patties and loaves, split for dhal, soups and purees, deep fried as snack foods, and as flour combined with cereal flour to make bread and cakes. Split red lentils are consumed in curries and are boiled to make Indian dahl and lentil soup. Large-seeded green lentils are consumed whole in many traditional Middle Eastern dishes. Lentil flour is used to make pappadams or added to cereal flour to make breads, cakes and baby foods. Immature pods and sprouted seeds may also be eaten as vegetables.



Dahl

Lentil plant

## Faba and broad beans

15-20%

of the annual Australian pulse crop



Faba beans and broad beans belong to the same genus but differ in their growth requirements, markets and end-uses. Faba beans are grown in South Australia, Victoria and New South Wales, with a small production area in Western Australia. About 550,000 tonnes of faba beans are produced annually on average. Broad beans are grown across south-west Victoria and south-east South Australia.

The Australian faba and broad bean industry is among the top five producers in the world. Australia is currently the world's leading exporter of faba beans, supplying a third of faba beans traded internationally.

Faba beans are exported as either whole or split product. They are generally consumed whole, canned, split or milled into flour. Australian producers take pride in targeting uniform seed size, with a lightly coloured buff seed coat, high splitting quality, and good cooking and canning quality.

Broad beans, and some faba beans, are cleaned and graded to size before exporting in bags or containers. Large seeded varieties are often used for human consumption as a green vegetable.

Egypt is the biggest importer of Australian faba bean, followed by Saudi Arabia and the United Arab Emirates. Beans are also exported to southern Europe and South East Asia where they are roasted and used as a snack food. Faba and broad beans are also used for cooking and baking in soups, purees, snack food, breakfast food and gruel. They can be ground to make falafel or tameya and can be sprouted. In China, faba beans are used to make extruded starch products such as vermicelli and sauces.

Faba beans provide a good source of carbohydrate and protein, but low amounts of fats. They also provide the recommended daily allowances of all essential minerals except calcium.



Uruguayan faba bean salad

Faba beans

## Mungbeans

<5%

of the annual Australian pulse crop



Mungbean is grown in the summer-dominant rainfall areas of northern New South Wales and Queensland. Australia primarily produces large seeded shiny green mungbean with a small amount of large dull seeded and small seeded shiny green mungbean being produced, a small amount of black gram (mungo) is also produced. About 95% of mungbeans produced in Australia are exported, predominantly to the Indian subcontinent, Asia and North America.

Breeding programs help ensure maximum quality and productivity under dryland and irrigated, spring and summer growing conditions.

Australian mungbean quality focuses on evenness of seed size, colour and low hard seededness. Bright even colour, varietal purity and size are critical issues for Australian mungbean markets.

Mungbeans are split for dahl, as flour to make noodles, breads, biscuits, cakes and pappadams, cooked in soups and porridge, and fermented in idli and dosa and as sprouts.

Processing and grading in Australia ensures the highest level of food safety is maintained across the industry. Quality assurance systems are in place for improved traceability, with high levels of market confidence. Grain is graded, cleaned, bagged and packed into shipping containers.

This forms part of a unique marketing system for mungbeans in Australia where, under government quarantine regulations, all mungbean destined for export must be cleaned and packaged at a registered mungbean processing establishment. The Australian Mungbean Association outlines the minimum export standards.



Mung beans

# Australian pulses for healthy foods

Pulses are universally recommended as part of a healthy diet and feature prominently in some of the world's healthiest diets and oldest food cultures.

Pulses are nutrient-rich foods; containing dietary fibre, protein, carbohydrates (mostly low glycemic index) as well as phytonutrients, B-group vitamins and minerals such as iron, zinc, calcium and magnesium.

The evidence consistently shows higher intakes of pulses are associated with a reduced risk of obesity and chronic diseases including heart disease, type 2 diabetes and some cancers.

Pulses have huge potential to improve the diets of people and promote the health of populations globally. The Grains & Legumes Nutrition Council (GLNC) is the independent authority on the

nutrition and health benefits of grains and legumes. GLNC operates within Australia and collaborates with partners to promote grains and legumes (pulses) nutrition as part of a balanced diet through evidence-based information.

Popular uses for pulses include canning, split or dahl, noodles, snack foods, fermented foods, flour, soups, curries, casseroles and salads.

AEGIC research into protein concentrate processing will expand the use of Australian pulses for protein powders, plant-based meats, breads, noodles, animal feed pellets and many more products.

## Nutritional information for pulses per 100g raw\*

	Chickpea	Field pea	Lupin	Lentil (green)	Lentil (red)	Faba bean	Mungbean
Energy (kJ)	986	886	1840	968	1550	1680	1800
Protein (g)	13	18	35	14	27	25	26
Fat (g)	3.8	0.8	6	0.4	2.5	1.3	2
Carbohydrate	41	40	10	44	58	57	72
Fibre (g)	17	19	32	8	10	8	12

\*These values should be taken as guidelines only; values can vary with variety, conditions of growth and age of pulse. Source: Pulse Australia (Pulse Australia operations merged into Grains Australia), CSIRO

This publication is supported by the Grains & Legumes Nutrition Council (GLNC).



## Increasing the value of Australian grains

The Australian Export Grains Innovation Centre (AEGIC) is an independent organisation that helps position Australian grain as the preferred choice in international markets.

### AEGIC delivers value by:

- **Understanding** the needs of grain customers.
- **Identifying** and supporting grain market opportunities.
- **Educating** customers on the benefits of Australian grain.
- **Innovating** to develop new solutions and high-value uses.

This helps the Australian grains industry breed, classify, grow and supply grain that markets prefer.

AEGIC's primary beneficiaries are Australian grain growers, but the impact of AEGIC's work spans the whole grains supply chain...



from the grower in Australia, whose grain is valued internationally



to the consumer across the world



who enjoys excellent noodles, baked products and beer made from Australian grain.

More information about the work AEGIC is doing can be found at [aegic.org.au](http://aegic.org.au)



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