Pulses

The main pulses are peas, beans, chickpeas and lupins.

Pulse marketing

Australia produces approximately 450,000 tonnes of field peas, mainly in Victoria and South Australia. About half the production is used for stockfeed in Australia, and the remainder is exported, mostly for human consumption.

The production and marketing of faba beans is similar to that of field peas.

Chickpeas are a high value crop which is used almost entirely for human consumption. Chickpea production has risen to a 5-year average of 177,000 tonnes per year, mainly in Victoria and New South Wales.

Trading is unrestricted in field peas and chickpeas.

Pulse Australia is a Company created to promote the production and marketing of high quality pulses:

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Pulse standards

A *Pulse Quality Management Guide* has been produced by Agriculture Western Australia:

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Pulse Australia follows the NACMA standards for field peas, chickpeas and faba beans. A list of the NACMA standards (q) and typical standards for field peas, chickpeas and faba beans (q) are given in the section, Standards and inspection.

Seed size, uniformity, number of broken seeds and good colour are important marketing factors for pulses. Large, uniform seeds are preferred, as variation in seed size can cause processing problems. Consumers have low tolerance levels for discoloured seed caused by disease etc. Split, chipped, broken or insect damaged seed must be kept to a minimum. Splitting can be caused by rough handling, handling too frequently, or if grain is too dry.

Pulse storage

Dry peas must be handled carefully to prevent breakage. Receival moisture content for field peas and chickpeas are shown in the following table.

	NACMA standard	**Bulk handling company**
Field peas	**12.5–14.5 % moisture content**	**12 % maximum moisture content**

Chickpeas	**13 % maximum moisture content**	**13 % maximum moisture content**

Recent research (*Farming Ahead*, vol. 81, pp. 63–64) suggests that the quality of field peas is optimised if harvested at 15% moisture content. At this level of moisture content there is less field mould, less breakage and better germination than if harvested later. However, peas with higher moisture content do not store well at higher temperatures, and early harvested peas need to be kept in aerated storage and/or dried. Peas should be stored at 20°C, but very dry peas can be stored at higher temperatures.

The main storage pests of legumes are called bruchids and are a separate species from cereal pests. There is a low occurrence of bruchids in the temperate regions of Australia, and infestation in exported legumes is generally caused by the presence of cereal pests.

The pea weevil (*Bruchus pisorum*) occurs quite frequently but is not a storage pest and does not multiply in stored peas. It should be controlled by fumigation of seed peas soon after harvest.

Apart from the pea weevil, infestation in field peas is generally due to the presence of admixed grain containing grain pests such as *Tribolium castaneum*, *Rhyzopertha dominica* and *Oryzaephilus surinamensis*. In field peas these pests are usually controlled by fumigation with methyl bromide or by the SIROFLO phosphine technique.

In Queensland the bruchids *Callosobruchus phaseoli* and *C. maculatus* are major pests of stored mung beans, and *Acanthoscelides obtectus* is a major pest of navy beans. Pyrethroids (e.g. deltamethrin) have been shown to be effective against bruchids on these crops, but the market prefers mung beans and navy beans to be residue-free.

Only deltamethrin has an international (Codex) MRL (1 mg/kg) for dried peas, beans and lentils. There are Australian MRLs for dichlorvos on lentils, soyabeans and peanuts (see table in Approved compounds), but the compound is only registered for use on cereals. The National Grain Legume Consultative Committee has been firmly opposed to the use of protectants and the Victorian field pea industry has depended on methyl bromide and phosphine. There is also a concern that the Industry should be protected by extraneous MRLs, as the mixing and handling of many small lots of pulses creates a high risk of residues being found.

Pulse hygiene

Fungal damage and the occurrence of mycotoxins is not such a major issue in pulses as in cereals. Pulses which have become obviously mouldy in storage may contain large levels of aflatoxin and must be discarded or analysed before being used for animal feed.

The black spot disease in field peas can be avoided by wide rotation and by not planting infected seed and not planting into infected soil. (Strategies for control of black spot, and advice on rotations, resistant varieties, seed treatments and other matters are given in a GRDC Research Update, GR130.) Chickpeas are prone to a number of diseases such as *Botrytis* and *Ascochyta* blight but these are not associated with any toxins. Strategies for pest and disease control are given in a GRDC Advisory leaflet, GR122 dated June 1998. Weed seed tolerances for stockfeeds are similar to the tolerances set for wheat. The tolerances in the Pulse Australia standards are given in **Pulse Australia weed seed tolerances** q.

Lupin marketing

Lupins are grown predominantly in Western Australia, but smaller amounts are grown in the South Eastern States. Most production is used for stockfeed, but *Albus* lupins are being exported to the Indian subcontinent for human consumption. Trade in lupins is free, but the Grain Pool controls exports in Western Australia.

Lupin storage

The maximum moisture for receival of lupins is 13%. Recent research (Cassells & Armstrong 1998) suggests that if the storage temperature is above 20°C, the lupin moisture content should be 12 % maximum.

Lupin hygiene

The main hygiene issue is the presence of the toxigenic fungus, *Phomopsis leptostromiformis*. This fungus causes phomopsis stem blight and produces the liver toxin phomopsin which is dangerous to sheep. There is an Australian standard of 5 *u*g/kg (ppb) of phomopsin in human foodstuffs (q).

For more information see *Grain Legume Handbook*, 6th edn, which is available from:

Grain Legume Handbook
PO Box 90
Riverton SA 5412
Fax (08) 8528 5310
Cost $50 ($47.50 in South Australia) (1998 prices).