

TRADE IN WINTER GRAIN LEGUMES: A SOUTH AUSTRALIAN PERSPECTIVE

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INTRODUCTORY VISION

I was attending a communication seminar recently and remarked to that audience of strangers that I wondered why our Department of Agriculture people with their specialist grain legume knowledge, did not seem to have a team objective around building a grain legume industry. This group of strangers was able to provide me with a "conversation for the possibility" of the grain legume industry.

Their possibilities included:

- A breakthrough in reduction of world hunger.
- A transformation in eating habits and health.
- A transformation of the economy.
- A chain of pulse restaurants around Australia and New Zealand of course.
- A breakthrough in teamwork and ownership of the project promoting the worth of the grain legume industry.
- Promotion grain legume farming systems to environmental groups.

The vision worked, we now have a Departmental team with industry and project goals which I will return to later.

Further, it has rekindled my own grain legume drive after publishing a major report for the Australian Grain Legumes Research Council in March 1988 titled *Supply and Demand Trends, Price Relationships and the Market Potential for Selected Grain Legumes Grown in Australia*.

AREA AND PRODUCTION OF MAJOR WINTER GRAIN LEGUMES IN AUSTRALIA

The growth of the Australian grain legume industry since 1980 has been one of the fastest in the world, rivalled only by France which has had a spectacular

increase in dry pea production. The winter grain legumes to be examined in this paper include lupins, field peas, chickpeas, faba beans and lentils (Table 1).

The area and production of Australian grain legumes exceeded 1 million ha and 1 million t (Table 1) respectively for the first time in 1986-87, when production reached 1.6 million t and the area sown was 1.3 million ha. The area sown in Australia rose by 355 % in the period 1982-83 to 1987-88. Production rose by 624 % during the same period.

However, a high plateau in the wool price and improved wheat prices in the last two years, coupled with grain legume prices which were both volatile and below farmers expectations, in 1988-89, has led to lower Australian lupin and field pea areas in 1989-90 relative to two years ago.

The chickpea area continues to expand from a negligible area in 1982-83 to 87,000 ha in 1989-90.

The faba bean area has declined because of disease problems whilst the lentil area is still very small.

The most significant production increases during the 1980's have been in dry pea (yellow) production in Victoria and South Australia, lupin production on the acid soils of Western Australia, and to a lesser extent, faba bean production in South Australia and more recently in Victoria.

Queensland is the dominant chickpea state but significant increases are occurring in Eastern and South Australia.

In the medium term the rapidly growing wool stockpile in Australia, the probability of a declining wheat price, the promise of a more competitive Australian dollar and the maintenance of relatively profitable prices could lead to further expansion in sowings of grain legumes. There is also a growing awareness of the value of grain legumes in dryland farming systems.

Table 1: The area, total production and average yield of winter grain legumes in Australia 1982-90.

Species	82/83	87/88	88/89	89/90
Area (10³ ha)				
Chickpeas	-	55	70	87
Faba Beans	2	51	50	38
Field Peas	114	442	454	395
Lupins	257	1015	851	898
Production (kt).				
Chickpeas	-	54	89	94
Faba Beans	1	73	63	60
Field Peas	30	487	516	465
Lupins	199	855	933	838
Average yield (t/ha)				
Chickpeas	-	0.98	1.26	0.91
Faba Beans	-	1.43	1.25	1.34
Field Peas	0.27	1.10	1.14	1.24
Lupins	0.78	0.84	1.10	0.93

*Source: Australian Bureau of Agricultural and Resource Economics: *Commodity Statistical Bulletin - November 1987, Crop Report No. 57, 28 November 1989.*

TARGET MARKETS

In the major report three markets were identified as target markets for Australian grain legumes, these were India, the European Economic Community and Australia

There are also a number of niche markets for smaller quantities of specialist food legume varieties at premium prices and a number of other markets for large quantities of feed legumes but at lower prices than the three target markets.

INDIA

The recent lowering of the tariff from 35 % to 10 % on imported grain legumes has again emphasised the fine balance the Indian Government must pursue between keeping prices to the consumer down whilst at the same time encouraging local pulse production.

However, the policy of changing tariffs in either direction to suit political purposes is fraught with difficulty for international marketers trying to develop a consistent export market.

On December 5, Mr Singh, the new Indian Prime Minister announced:

1. A pledge to introduce radical reforms to benefit the country's farmers and poorer sections of the community.
2. At least half of the investment outlays should be channelled to rural areas.

Nevertheless, consumption of pulses in India is expected to double to around 25 million t by the year 2000. To maintain current (relatively low) per caput consumption levels, Indian yields would have to double which, given previous performance, is not likely.

Population growth is still a major problem in India. Although GDP per head is only \$US300 a year, the

Indian economy is one of the fastest growing economies in the world with real GNP growing by 6 % a year. A continuation of this trend is likely to increase the demand for food legumes.

India produces and consumes many different types of grain legumes, but by far the most important is chickpeas. Indian chickpea production fell to 3.6 million t in 1988 due to drought (Table 2). This led to significant exports to India by Australia.

Table 2: Production of grain legumes by type: India: 1986-1988 (10⁶ t).

	1986	1987	1988
Chickpeas	5.8	4.5	3.6
Dry beans	3.1	3.3	3.5
Dry peas	0.4	0.4	0.4
Lentils	0.7	0.7	0.7
Pigeon pea	2.4	2.1*	1.6*
Soya beans	0.9	1.0	1.4
Total	13.3	12.0	11.2

* estimate

Source: *FAO Production Yearbook 42, 1988; Directorate of Economics and Statistics: Ministry of Agriculture and Rural Development: New Delhi*

In 1986, total pulse imports by India from all destinations was 360,000 t. In 1988-89 Australia alone sent 99,000 t of whole peas worth \$A27 million and 97,000 t of chickpeas valued at \$A40 million. Pakistan and Bangladesh were also important chickpea outlets in the same year taking 43,000 t and 11,000 t respectively.

Under the current Indian import policy, importation of pulses is allowed under the open general licensing scheme subject only to Government tariff levels.

Future international trade will depend upon the relative prices of the various grain legumes (Table 3). The Australian dun pea is one of the cheapest and least liked pulses in India, and is used to partially substitute for more expensive chickpeas in the production of pea flour. Chickpeas, pigeon peas, mung beans and lentils are among the favoured legumes and are used as vegetables in prepared meals.

Prices of imported grain legumes reveal some significant price differences among legume types and

range from \$US236 /t for dun pea to \$US541 /t for kabuli chickpeas (see Table 3).

These prices raise the issue of what legume should be grown in New Zealand and Australia to profitably take advantage of these market price discrepancies.

Table 3: Relative prices of imported pulses: India, 17 October 1989.

Legume grain	\$US /t
Australian dun pea (yellow)	236
Chinese mung	310-315
Desi chana	348
Kabuli chickpea 29/30	541
Green mung	295
Hungarian white pea	288
Hungarian green pea	290
Turkish green split pea	337
U.S. No.1 green pea	320

Indian imports of pulses continue to rise. Trade data is available to 1987 and show import volumes rising from 307,000 t in 1985 to 418,000 t in 1987. In 1986 there were 186,000 t of dry bean imports, 74,000 t lentils, 30,000 t chickpea and 70,000 t other legumes. This figure is likely to increase significantly toward the year 2000.

THE EUROPEAN ECONOMIC COMMUNITY

The shortage of protein feed in the early 1970's and the United States embargo on soya bean exports prompted the community to change its regimes for protein feeds to increase its level of self-sufficiency. A policy of supporting the producer price of vegetable protein crops has led to a large increase in their production. At the same time supported European Community cereal prices have decreased the use of cereals in compound feeds in favour of other feedstuffs.

In 1988-89 the European Community-12 used 167 million t of commodities for animal feeding including 83 million t of cereal grain, 42 million t of cereal substitutes and 42 million t of protein products including 4.9 million t of grain legumes.

Low duties on imported non-grain feedstuffs such as

grain legumes and manioc, have made these feedstuffs attractive to feed compounders, resulting in increased import volumes.

Table 4: Total European Community feed imports (10³ t).

	1987	1989*
Feeds with high starch content		
Citrus pellets	1,652	1,700
Fruit residue	347	450
Maize germ meal	2,393	2,500
Molasses	3,467	3,200
Tapioca	6,986	6,700
Sugar beet pulp	553	700
Sweet potato	607	550
Wheat bran	242	250
Sub-total	14,818	14,400
Feeds with high protein content		
Copra meal	1,201	1,000
Corn gluten	4,707	4,700
Cotton seed meal	559	750
Dried distillers' grain	853	750
Feed peas	628	380
Fishmeal	885	790
Groundnut meal	248	350
Linseed meal	482	450
Lupins	320	150
Other oil meals	606	570
Palm kernel meal	1,028	1,100
Rapeseed meal	446	300
Soya bean meal	10,341	9,000
Sunflower seed meal	941	1,000
Sub-total	25,044	23,340
Total	39,862	37,740

* Estimate

Sources: *Eurostat; Nimex; Statistics; Toepfer International*

In 1989, estimated European Community-12 feed imports totalled 37.7 million t including 14.4 million t of high starch feed, mainly tapioca, and 23.3 million t of high protein feed, mainly soya bean meal (Table 4).

Feed pea and lupin imports are relatively minor at 400,000 t and 150,000 t respectively. However, it is the volume and substitutability of products that counts.

Policies which support the producer price of meat, in combination with the availability of cheap feedstuffs, have contributed to increased livestock production, which has in turn increased the demand for livestock feed. However, livestock production in the European Community has stagnated at around 28 million t between 1987 and 1989.

In 1978 European Community support policies were introduced for the production of peas and beans (lupins were added in 1984). Production of peas has risen sharply. In 1982 pea production was 420,000 t. The estimate for 1989 is 3.3 million t (Table 5). Bean production was 780,000 t in 1982 in 1989 it was estimated to be 720,000 t. Lupin production in 1982 is very small (10,000 t).

The minimum producer price paid for peas in 1989 was \$US288 /t and for beans it was \$US267 /t.

Table 5: European Community grain legume production (kt).

Legume	1982	1987	1989
Peas	420	2,270	3,330
Beans	780	1,090	720

Source: *Agra Europe, November 17, 1989.*

A policy introduced in 1988 to reduce budgetary costs will indirectly help exporters to the European Economic Community. If a production limit of 3.5 million t of grain legumes (peas, beans and lupins) is exceeded, support prices will be reduced.

The major features of the support regime for peas, beans and lupins are a minimum grower price for producers and an incorporation aid subsidy for crushers who have paid growers this minimum price. The incorporation aid is intended to make European Community peas, beans and lupins competitive with protein feeds, such as soya bean meal, which are imported at world prices.

In the last three years Australian pea price values were worth in excess of 70% of the soya bean meal price because of the relatively high minimum produce prices paid for cereals in the European Community

The European Economic Community has recently introduced a security deposit scheme, for imports of peas and beans, of 40 ECU/t. The intention is to reduce fraud as European Economic Community crushers are alleged to be claiming an incorporation aid subsidy for imported peas and beans.

AUSTRALIA

The size of the Australian domestic stockfeed market had been rising rapidly in the last few years as increases in poultry and pig production and rising sheep and cattle numbers create more demand for alternative protein sources (Table 6).

Table 6: Australian livestock numbers 1983-1989 (10⁶ head).

	83/84	86/87	88/89
Beef & Dairy Cattle	22.16	23.76	23.00
Sheep	135.10	153.20	161.70
Pigs	2.49	2.55	2.70
Poultry			
Slaughtering	231.20	276.50	295.00

Source: *Australian Bureau of Agricultural and Resource Economics.*

In recent years there has been a greater acceptance of grain legumes in stockfeed rations, particularly peas, and as a consequence, the relatively high price of wheat in 1988-89 and 1989-90 has led to up to 30% of peas being used in stockfeed rations for pigs and poultry.

For sheep and dairy cattle, lupins are cheaper and are perceived as being more easily digestible than for use in poultry and pigs.

The percentage of legume used in Australia will vary from year to year depending on the relative price of wheat and other cereals, meat meal, imported soya bean meal into southern Australia, oilseed meals from an April harvest in northern New South Wales and Queensland whereas the direction of use will also depend on the relative price of food legumes into India and imported soya bean meal into the European Economic Community.

NICHE MARKETS

Dry peas: It is clear that the European and Australian stockfeed markets are indifferent to the type of pea received other than paying a premium for low moisture peas. Premiums are paid for smooth white peas with consistent cotyledon colour for the splitting trade and for green peas to markets such as Columbia, Haiti, India, Peru, the Philippines and Venezuela but in competition with United States in particular.

The food market is not increasing in developed countries and whilst demand is increasing in the Indian sub-continent, peas are not a favoured legume, although green peas are at a premium to yellow peas in India. However, large stocks of green peas in the United States in recent years have led to a downturn in United States producer prices to below the price for yellow peas. There are niches for marrowfat peas into Asia and Europe, maple peas for bird seed and blue peas to developing countries.

Lupins: The hardness of the lupin seed coat reduces the digestibility of whole lupin seed in pig and poultry rations. Dehulling lupin seed to produce kernel meal is an attempt to increase the digestibility and utilize the high fibre of the seed coat but with limited success to date.

Lupins have won great acceptance in sheep and cattle rations and have a promising future in the aquaculture industry - perhaps for the developing New Zealand salmon industry.

Faba beans: There is a considerable demand for green immature beans which can be canned or quick frozen, particularly in the United Kingdom (known as Minden beans).

The beans can be used to produce high protein flour and are frequently used as a foodstuff in North Africa and other parts of the Middle East. Egypt, Italy and Saudi Arabia, have each purchased a ship load of faba beans from Australia in recent years.

There are also small markets for large seeded broad beans in the Middle East.

Chickpeas: Gram or chickpeas are the favourite grain legume of India, Pakistan and Bangladesh. The kabuli type grown mainly in Turkey is favoured around the Mediterranean rim. Turkey is the only major exporter. In 1989 Turkey had its worst drought for 30 years, the price of chickpeas rose to \$US600 /t c.i.f. United Kingdom.

As with faba bean there are possible fresh pea markets for chickpeas.

Vetches: A new variety of vetch, Blanchefleur, has been developed which shows promise not only for livestock feed but as a high protein alternative winter food legume.

Lentils: There is only one major supplier of red cotyledon lentils in the world - Turkey. Canada and the United States concentrate on the production of green lentils. It is a significant market and is a suitable product for the soup, flour, snack, burger and sprout markets.

More product development work is required in the developed world to adopt grain legume products to higher income consumption patterns.

KEY MARKETING ISSUES FOR AUSTRALIA AND NEW ZEALAND

Market access: The stockfeed market for all winter grain legumes is beyond Australia and New Zealand's capacity to supply in the short to medium term provided the European Community market remains open. An issue which may upset this market is the payment by the European Community of an incorporation aid fee to include European Community cereals in their stockfeed rations.

Beyond the three target markets there are a number of newly emerging economies expanding their livestock sectors - Hong Kong, Korea, Malaysia, Singapore, Taiwan, Thailand - which could utilize grain legumes as a highly substitutable product for grain and protein ingredients.

Market systems: Highly volatile prices in the last two seasons due to the imposition of a 35% tariff by India; the United States and Canadian drought followed by a fall in soya bean prices due to a record Brazilian crop; an appreciation of the Australian currency and companies selling short leading to a sharp rise in price has upset farmers in terms of making price predictions and their ability to take a satisfactory market position.

The deregulation of the domestic Australian wheat market and the greater commercial flexibility offered to the Australian Wheat Board has led to the Board offering pool and cash prices for peas in Victoria and South Australia and a pool for lupins and faba beans in South Australia.

The Co-operative Bulk Handling Company in South Australia, which is a grower owned bulk handling co-operative, is offering warehouse facilities for grain

legumes to farmers and end-users for a domestic fee (\$A8.65 /t) and an additional fee if the crop is exported (\$A4.45 /t).

Profitability of grain legume production: In deciding to grow a grain legume crop the farmer must decide on:

- where grain legumes fits into the farm rotation?

Grain legumes provide an excellent break crop from cereal disease, provide stubble grazing as well as being a profitable cash crop. Following cereal crops often give higher yields as a direct consequence of growing grain legumes.

- which grain legume to grow?

The advantage of growing peas is the availability of both the food and feed market. In Australia both faba beans and lupins are currently experiencing significant price discounts (\$A15 and up to \$A50 /t respectively) relative to peas.

Chick pea prices are at least \$A100 /t higher than peas this year but they suffer some yield disadvantages relative to peas.

White and green peas offer a price premium but yield issues are again a factor.

Research and development: Marketing information, product specification or standards, product development, consumer research and product promotion are all issues currently being addressed by both national and state grain legume committees.

The choice of market for each crop, short term price information, food and feed standards, the development of new products for the domestic consumer and the promotion of those products are all critical for future expansion.

NATIONAL, STATE AND DEPARTMENTAL GRAIN LEGUME CONSULTATIVE COMMITTEES

To address the key marketing issues, state and national committees have been formed in Australia. At a national level representatives from all states - Grains Council, State Government, exporters, processors, co-operatives and the Grain Legumes Research Council - bring State issues forward for debate and endorsement by the national committee.

There is no funding for these bodies, but each of the major grain legumes is levied to pay for Grain Legumes Research Council research. The Department of Agriculture in South Australia is currently developing industry and program goals for the next three to five years. The department is heavily involved in grain

legume production and market research with the national pea and lentil breeding programs, whilst the Waite Institute (Adelaide University) has a faba bean program.

THE FUTURE OF THE INDUSTRY

The development of the Australian grain legume industry during the 1980's, particularly in South Australia and Victoria, has given producers many more options for their farm commodity mix.

The benefits of crop rotations with grain legumes, prices received for cash crops and almost unlimited market potential has established the future of the industry on a permanent basis.

Given the current downturn in the fortunes of sheep and wool production it is likely that farmers in southern

Australia will increase grain legume plantings in the medium term.

For New Zealand an immediate target would be to introduce peas to the stockfeed industry and eliminate most of the \$NZ 7.3 million domestic imports of soya bean meal depending on the entry price of peas into computer feed rations for pigs and poultry.

A second target is to explore the possibility of producing full fat soya bean for stockfeed in the North Island and dry beans.

The availability of a large processing facility (Goodman Fielder Wattie) should ensure that a broader range of frozen and canned lines is grown which would create value added income for the New Zealand economy.

The expansion of seed multiplication services for Northern Hemisphere companies has potential.