



Australian Oilseeds Federation

Japanese Edible Soybean Market

Research Study Visit

January 1999

Report of the AOF Soybean Committee

Introduction

The edible soybean industry in Australia has been growing steadily at around 10% per annum over recent years. The domestic market uses around 11,000 tonnes annually for soy flour and a further 5,000 tonnes for soymilk (Including tofu, cheese and tempeh).

From a production perspective, the industry has potential to expand in coming years as new improved varieties, both agronomically and marketability, are released. The industry's potential in Japan is also significant as feedback indicates that Australian beans, and in particular the Bowyer variety, are seen to perform well and have desirable quality characteristics.

The edible soybean market is, however, diverse and product standards vary according to end-use. There is a need to better understand end use requirements and how Australian beans perform.

Quantities of edible beans are also exported, principally to Japan. The uses for soybeans in Asia are varied and include tofu, tempeh, miso, soy sauce, natto and dried bean curd. Unique characteristics are associated with each of these products and with different Asian communities.

The industry has identified that future growth may be constrained by a lack of understanding of future demand trends and quality characteristics demanded by buyers and supplied by Australian beans.

The Australian Oilseeds Federation (AOF) Soybean Committee determined that a market research study should be undertaken to:

- Understand the Australian market segments utilising edible beans and future trends in these segments
- Understand, initially, the Japanese market for edible beans and how Australian product performs, followed by other South East Asian markets
- Communicate the findings to growers and researchers in Australia

The AOF Soybean Committee intends to submit an application, as part of the AOF ODF submission, to GRDC to undertake the study. However, an opportunity arose for Rosemary Richards to travel to Japan in late 1998 and some funds from the existing ODF/GRDC edible bean protect were allocated to undertake market research in Japan as a component of the overall study.

This report represents a summary of the findings from this visit and this will be incorporated into the overall study. The market research visit involved meetings with representatives from:

- Japanese trading houses
- Tofu manufacturers
- Tokyo Tofu Manufacturers Association
- JETRO

Edible Soybeans – Japanese Market

The visit coincided with the International Association of Seed Crushers and thus, there was also an opportunity to meet with a number of the Japanese oilseed crushing companies.

Key Observations

JAPANESE MARKET TRENDS	JAPANESE BUYER NEEDS
<p>The words that characterise the modern Japanese market are:</p> <ul style="list-style-type: none"> ▪ Easy, convenient ▪ Healthy, organic ▪ Competitive <p>Demands from consumers are becoming more diversified, more difficult to predict and to some extent more expensive to service as demand for convenience and freshness is resulting in smaller, more frequent purchases.</p> <p>These consumer drivers are a result of social changes occurring which include:</p> <ul style="list-style-type: none"> ▪ an aging population i.e. estimated that by 2030 there will be more people over the age of 65 than working young people ▪ increase in women working i.e. young women are getting married later, having no or fewer children, working after marriage ▪ less meal preparation in the home i.e. increase in Home Meal Replacement products <p>Health is one of the strongest drivers and alongside this is an increasing demand for organic products.</p>	<p>In order to meet the demands of consumers, the Japanese buyer needs are also changing. Today, Japanese buyers demand from their suppliers:</p> <ul style="list-style-type: none"> ▪ Quality assurance - becoming increasingly important as the incidence of food safety scares increases ▪ Consistency - of product quality and service ▪ Commitment - reliability of supply is critical ▪ Differentiation - all buyers are seeking to differentiate their product offer. Organic is emerging as a key source of differentiation <p>As the market becomes more competitive and given the current economic climate, price is more important in determining choice of supplier. However, the focus on price declines, as the differentiation in suppliers increases.</p>

SOYBEAN USAGE	IMPLICATIONS FOR THE AUSTRALIAN SOYBEAN INDUSTRY
<ul style="list-style-type: none"> ▪ Total soybean usage for food purposes is around 1 million tons annually. Total soybean demand (food and crushing) is around 5 million tons ▪ Tofu, natto and miso are the three major forms of use and usage of beans for these purposes is stable ▪ Tofu accounts for over 50% of food soybean usage ▪ Tofu is consumed everyday by Japanese, whilst natto and miso are more regional foods ▪ The market is becoming increasingly competitive. US and China remain the major suppliers of food soybeans, whilst Canada has increased its market share rapidly in recent years ▪ Quality is important for all three uses, although tofu and natto have the most specific requirements. The traditional tofu manufacturer is a 'craftsperson' and the quality of beans are critical in influencing the taste and style of tofu produced ▪ The tofu sector is undergoing rapid change with development of large scale automated factories, primarily servicing the supermarkets. These factories require long lines of consistent quality product ▪ Distribution of soybeans is still dominated by trading houses and regionally based wholesalers. However, in an attempt to obtain better quality beans, there is some direct contracting between Japanese buyers and US farmers occurring 	<ul style="list-style-type: none"> ▪ Australia is not currently considered a serious supplier given the small quantities of product available. This is particularly an issue for the large tofu and natto factories. As such, Australian product is best suited to the small, family owned tofu manufacturer ▪ Given the small quantities, and consequent need to ship by container, means Australian beans are less competitive in the price sensitive end of the market ▪ Australian beans are perceived to be of good quality and there is a strong interest in Australia developing as an alternative supplier ▪ The quality specifications being pursued by our breeders should result in varieties that meet market requirements. For tofu, large size and high protein are key requirements and for natto, small size and high sugar content are priorities ▪ Organic soybeans form the strongest opportunity for Australia given the price premiums and smaller market. The AOF Soybean Committee should investigate the potential for contract a trial shipment of organic soybeans for the 2000/01 season

Demand for Edible Soybeans in Japan

Total Japanese imports of soybeans is around 5 million tons per year, of which the demand for soybeans for food purposes is around 0.9-1 million tons. This is met almost entirely by imported beans. Given the ability of the Japanese importer to hedge to the commodity (crushing) market, the total supply of beans for food purposes, in any one year, is generally around 1.2-1.3 million tons, ensuring an over supply situation.

The demand for soybeans for food purposes has remained virtually static over the past decade. Beans for tofu account for over 50% of total usage and the three major uses - tofu, natto and miso - account for around 80% of total usage. With the exception of natto, there has been little change in consumption of these products and growth has primarily been in the minor food uses, in particular, soy sauce and protein.

Tofu is consumed everyday in Japan and demand is very stable. Similarly the demand for miso is also relatively stable, however, the origin of beans used in miso manufacture has changed significantly in recent years (see later section).

Demand for natto has increased, largely due to promotion activities. Natto has traditionally been consumed in certain geographic areas, with the consumption starting to emerge in non traditional areas. Despite this, there is evidence that growth has begun to plateau.

Traditional soybean dishes prepared from domestic beans are consumed irregularly and eda-mame has a seasonal demand with imports of frozen product from Taiwan and China consumed in the off-season.

Table 1: Demand of Food Soybeans by Usage in Japan

Year	Tofu/Deep Fried Tofu	Dried tofu	Natto	Miso	Soy sauce tons	Protein	Soy milk	Others	Total
1990	497,000	30,000	107,000	172,000	24,000	37,100	3,400	86,600	957,100
1991	498,000	29,000	108,000	171,000	22,000	40,300	3,100	87,900	959,300
1992	498,000	30,000	108,000	176,000	25,300	40,500	3,100	86,600	967,600
1993	492,000	30,000	109,000	173,000	23,000	41,200	3,000	90,000	961,200
1994	495,000	29,000	107,000	165,000	22,000	41,100	3,200	90,800	953,200
1995	495,000	28,500	108,000	161,800	26,800	42,100	2,900	95,200	960,300
1996	495,000	28,500	109,000	166,300	26,700	41,000	3,100	96,100	964,700
1997	495,000	28,000	110,000	167,000	26,000	42,000	3,200	96,800	968,000

Imports of Edible Soybeans by Japan

The demand for edible soybeans is met almost entirely by imports. Today imports account for around 93.5% of total usage, which is up from 88% ten years ago. This is due to domestic production of soybeans declining, a result of both higher costs of production and changes in Government subsidies that have tended to encourage rice production at the expense of soybeans.

There has also been significant shifts in the supply of food soybeans including:

- Market share held by domestically produced beans has declined from 12% in 1988 to 6.5% in 1997
- China's share has declined from 24% in 1988 to 12% In 1997 due to dissatisfaction with quality of Chinese beans and high prices
- The US has traditionally been the major supplier of soybeans, however, its share has increased from 64% in 1988 to 75% in 1997 as it has captured some of the market share lost by China
- Canada has increased its share significantly in recent years (quantity supplied doubling between 1994 and 1997), as a result of specifically targeting this market
- Australia has emerged as a virtually unknown supplier in 1988 to now supply around 5,000 tons

Table 2: Japanese Imports of Soybean by Origin (tons)

Year	IOM	USA US	Others	Canada	China	Australia	Import Total	Domestic	Total
1988	830,500	38,000	5,000	35,300	296,000	146	1,205,700	158,500	1,364,200
1989	865,000	25,000	10,000	46,800	280,000	584	1,226,800	143,600	1,370,400
1990	800,000	37,000	30,000	44,000	284,000	470	1,195,000	123,800	1,318,000
1991	760,000	40,000	60,000	28,500	279,000	709	1,167,500	100,000	1,267,500
1992	827,000	35,000	70,000	22,600	251,800	1,961	1,215,400	72,200	1,288,600
1993	858,000	32,000	90,000	57,600	190,000	2,876	1,227,600	68,000	1,295,600
1994	780,000	30,000	80,000	36,200	208,000	5,903	1,134,200	18,000	1,152,200
1995	847,000	27,000	120,000	57,700	195,000	2,375	1,246,700	50,000	1,296,700
1996	775,000	25,000	130,000	74,600	158,000	1,899	1,162,600	70,000	1,232,600
1997	750,000	23,000	140,000	80,000	150,000	4,344	1,143,000	80,000	1,223,000

Local beans are the first choice of buyers and perceived to be of the highest quality.

The US is the major supplier of edible beans and have been supplying this market since the late 1950s. The most common bean supplied is the 'I/O/M' soybean - so named because the beans are grown In the Indiana, Ohio and Michigan states in the US. This soybean is suitable for tofu and deep fried tofu. These beans are screened and cleaned and bagged in Japan and sold to specific tofu manufacturers. However, the I/O/M is usually a No.2 grade US soybean - not a premium grade and thus, new varieties of soybeans have been developed which are more suitable for tofu.

These new varieties - the most common are Beeson and Vinton - whilst not of ideal appearance, have a high protein content (38-39% vis a vis 36-37% for IOM types), soluble protein and high sugar content. Japanese imports of these higher priced beans has continually grown over the past decade. These beans are handled as for the IOM type when they reach Japan.

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The US also supplies beans referred to as IP or 'identity preserved'. These are beans that have been grown under contract for the Japanese. They are generally of a specified type and quality and they are cleaned and bagged in the United States and shipped directly to the Japanese users.

Despite the Japanese having imported beans from the United States over a long period, the quality, other than for identity preserved beans, has not totally met the Japanese quality requirements and this has led to the opportunity for new suppliers such as Canada and Australia to enter this market.

China has also been a major supplier of beans to Japan over a long period, in particular, for use in miso and natto. However, in recent years, quality has been variable and price has increased significantly leading to the Japanese buyer moving away from China as a supplier. The major problems have been presence of dark material in the sample and high admixture, in particular, animal excreta and stones. Chinese beans are preferred to the cheaper US beans because they are easier to process and generally better meet quality specifications excluding admixture.

It was also mentioned that some Japanese buyers had imported some 'organic' beans from China but were not satisfied with the standards under which organic beans were grown in China and, as a result, are seeking an alternative supplier.

Both US and Canadian suppliers provide the Japanese buyer with a letter certifying that the product is free of GMO material.

The Japanese buyer satisfaction with soybeans is reflected in the prices paid. Table 3 illustrates prices paid calculated from value and volume of Imports. This includes all imports including beans for crushing. Table 4 is based on research in the market and is not intended to represent actual or current values but rather to illustrate the relativity between soybeans from various suppliers.

Table 3: Price Comparison of Imported Soybeans

Origin	Quantity	CIF price
	(M ton)	(A\$/ton)
USA	3,891,000	459
Brazil	558,600	440
Paraguay	299,800	450
China	166,200	630
Australia	4,344	725
Total	5,056,900	465

Exchange rate x90/A\$

Source Japan Exports and Imports

Table 4: Price Relativity of Edible Soybeans in Japan

Origin	Relativity- Japan = 1	Indicative Price (Y/ton)	Uses
Japan	1	125-150,000	Tofu, natto, miso
China	0.5	60-70,000	Miso (natto/tofu)
Canadian	0.47	59-65,000	Tofu, miso
US	0.25-0.3	30-50,000	Tofu, natto,
Australia	0.7	90,000	Tofu, natto?

Source Interviews with buyers, values are indicative only

Characteristics of Key Market Segments

TOFU

<p>Structure</p>	<p>The structure of the tofu manufacturing sector is changing The traditional tofu manufacturer is a small, generally family owned, craftsman. These manufacturers will generally have a specialty tofu which only they produce in their area. Often the tofu manufacturer will also own one or more small retail outlets in the local markets. There are around of these 1500 tofu manufacturers in Tokyo, but these are declining as the younger generation are less interested in this as a career. Alongside the small traditional tofu manufacturer, a few large scale automated plants are developing which are dominating volume. These new style manufacturers are driven by supermarket demands and are large, factory style operations As the supermarkets increase their position in the Japanese retail sector, the smaller tofu manufacturer is finding it harder to compete.</p> <p>Whilst some of the larger manufacturers will purchase supplies directly, mostly the soybeans are purchased by trading houses who sell to regional wholesalers who, in turn, distribute the product to the many small manufacturers.</p>
<p>Trends</p>	<p>Tastes are changing between generations. Younger people like soft tofu, whilst the older age group prefers the harder tofu.</p>
<p>Requirements</p>	<p>The type of soybean required for tofu is one that has a (in order of importance):</p> <ul style="list-style-type: none"> ▪ high protein content - >37% (43-44% dry basis) and preferably a low oil content ▪ large seed size to improve water absorption - has a 100 seed weight of 20 grams or more and a minimum diameter of 6.3-7.0 mm ▪ high germination (>95%) - necessary to produce hard tofu and provide a strong taste ▪ light hilum and attractive appearance, round shape ▪ thin hull and firm without cracks or breaks <p>Beans should not be heat damaged</p> <p>Whilst specifications are important, the tofu manufacturer will generally require a sample i.e. e. specifications are not sufficient and each manufacturer has its own specifications/ requirements.</p> <p>The new large factory style manufacturers require large quantities of consistent lines of product They are less concerned with quality and tend to purchase IOM type beans. Uniformity is critical.</p>
<p>Suppliers</p>	<p>The domestic soybean is preferred as bigger than US/Canadian beans and thus, easy to soak but expensive.</p> <p>The Canadian No. 1 bean is increasing its share as it has a very high protein which is suited to tofu manufacture.</p>

NATO

Structure	Natto manufacturers are generally large to middle sized plants and regionally based.
Trends	Natto is a regional dish and thus, has tended to be consumed in particular geographic areas
Requirements	<p>The type of soybean required for natto is one that has a (in order of importance);</p> <ul style="list-style-type: none"> ▪ high sugar content (>5.5% or 24-25%) - speeds up fermentation process A high carbohydrate and ammo acid content (protein) promotes yeast and enhances taste ▪ small seed Size - maximum diameter of 5.5 mm The small seed is preferred by consumers as it is easier to chew ▪ light colored hilum and preferably have a round shape
Suppliers	<p>Few suppliers have a bean directly suitable for natto, but rather beans are imported in bulk and screened to obtain the smaller beans, with the larger beans allocated to the tofu market. It was indicated that the Japanese would pay a premium for a smaller bean that does not need to be screened.</p> <p>China has been the preferred supplier, but Chinese beans now too expensive and buyers have switched to US and Canadian beans.</p>

MISO

Structure	Miso manufacturers are generally middle sized companies and, like natto manufacturers, regionally based.
Requirements	<p>The ideal miso bean is a mix of tofu and natto quality specifications. The type of soybean required for natto is one that has a (in order of importance)'. </p> <ul style="list-style-type: none"> ▪ large seed size ▪ high protein ▪ high sugar content ▪ light hilum soybean, with a thin hull that is not cracked
Suppliers	<p>Chinese beans have been the traditional choice of miso manufacturers, but prices are now too high and supply and quality not reliable. Appearance of Chinese beans is seen to have deteriorated with presence of dark material and increase in contamination by stones and animal excreta</p> <p>Miso manufacturers have tended to switch to Canadian beans, but these are not perceived to taste as good as Chinese beans. China has reacted to this by discounting product however not to the same price levels of Canadian and US beans</p>

ORGANIC/NON GMO

The Japanese indicated that they would also like to purchase soybeans grown organically. The key consumer driver is health and Japanese buyers are seeking product that is organic as this is related to safety and healthiness of products in the consumers' mind. The demand for organic soybeans is increasing as local bean production declines. Japan does not currently have a reliable supplier of organic soybeans (Chinese organic standards are not sufficient and appearance of US organic beans is poor) and would be prepared to pay a considerable premium to obtain this. It was indicated that organic soybeans would achieve similar prices to domestically produced beans. Organic beans would need to have their identity preserved and specific transportation arranged to Japan,

The organic market is estimated to be 20-30,000 tons, with considerable growth potential. Tofu is the major segment seeking organic beans but there is an emerging demand amongst natto manufacturers.

The standards of certification for organic are critical and the Japanese are interested in obtaining copies of guidelines for Australian farmers.

GMO (Genetically Modified) soybeans is also emerging as an issue in Japan. Whilst it not seen as an important consumer issue yet, Japanese buyers are demanding guarantees that the material they purchase is 'GMO free'. Thus, US and Canadian suppliers must provide a letter with all shipments certifying that the beans being shipped are free of GMO material.

Implications for Australia

QUANTITY NOT QUALITY IS THE MAJOR LIMITATION

Australia is not currently considered a serious supplier given the small quantities of product available. This is particularly the issue for the large tofu and natto factories who require long lines of consistent product. As such, Australian product is best suited to the small, family owned tofu manufacturer who are most concerned with the quality of beans and purchase in small quantities. As such, they tend to be less price sensitive.

Supplying natto manufacturers is a potential opportunity which could be achieved by either grading beans prior to shipment to separate large beans for the tofu market and small beans for natto or by developing a variety specifically targeted to the natto market.

Australia will need to increase the quantity of beans available for export if it is to build confidence with Japanese buyers as a consistent and reliable supplier.

The need to ship our product in containers, means Australian beans are less competitive in the price sensitive end of the market.

Australian beans are perceived to be of good quality, particularly Bowyer, and there is a strong interest in Australia developing as alternative supplier. The quality specifications being pursued by our breeders should result in varieties that meet market requirements. For tofu, large size and high protein are key requirements and for natto, small size and high sugar content. Dragon is seen as adequate and similar to some US varieties, but in general the seed size is too small to be preferred for tofu manufacture.

BUILD REPUTATION ON ESTABLISHED RELATIONSHIPS

Whilst there is some direct trade occurring with US and Canada farmers and Japanese buyers to obtain quality beans, it is recommended from this study that Australia use the relationships it has established to develop the Japanese market. This particularly critical whilst we have small volumes available. There is a lot of goodwill towards Australia as a supplier and whilst our volumes remain small, the access to the wholesale and distribution network is critical for success in the market.

ORGANIC THE MAJOR OPPORTUNITY

Organic soybeans are the strongest opportunity for Australia given the price premiums. It was estimated that supply of 20-30,000 tons could be immediately and easily handled by Japanese buyers with further potential upside. Whilst in relative terms to overall demand, this may seem a small market, but is 4-6 times current exports to Japan and would see Australia edible bean product double. This market could be worth \$180-270 million.

The AOF Soybean Committee should investigate the potential for contract a trial shipment of organic soybeans for the 2000/01 season.