La quinzième conférence internationale sur le tournesol

Oilseed economics and agricultural policies

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Résumé : La 15e conférence internationale sur le tournesol a réuni, du 13 au 15 juin 2000, 400 participants venus de 33 pays au Centre des congrès Pierre-Baudis de Toulouse. Outre la France, les grands pays producteurs de tournesol étaient bien représentés : Argentine, Espagne, États-Unis, Roumanie, Italie... L'objectif de cette conférence était de faire le point sur cette production, depuis l'économie jusqu'aux biotechnologies et de permettre aux chercheurs de présenter leurs derniers travaux et de confronter et de discuter leurs résultats. L'Association française des corps gras (AFECG) s'était associée à cette manifestation dans le cadre de sa Journée de printemps, en prenant en charge les sessions Économie et Technologie dont sont reproduites ci-jointes plusieurs conférences. Les séances plénières des deux journées suivantes ont été centrées sur les thèmes « Agronomie et Environnement » et « Génétique, Sélection et Biotechnologie ». Dix-sept ateliers ont été organisés à partir des présentations par posters. Ils ont donné l'occasion aux participants d'approfondir les réflexions autour de sujets tels que les technologies de transformation, les nouveaux usages, la conduite des cultures, l'amélioration de la productivité, la qualité de l'huile, la protection phytosanitaire sous ses aspects génétiques et chimiques, les biotechnologies appliquées à l'amélioration génétique. OCL publiera dans ses prochaines livraisons un compte rendu plus détaillé de cette conférence ainsi que plusieurs interventions pleinières*. * Les actes de la conférence sont disponibles. Contacter :

Summary: This paper provides an overview of the world oilseed economy with an emphasis on sunflower seed, a summary of the market outlook to 2006 for the major oilseeds, and a discussion of some of the key agricultural policies shaping this outlook.

Keywords: sunflower seed, oilseed economics, oilseed policies, market outlook.

ARTICLE

Oilseed production and marketing are largely determined by technical factors (e.g. yield of marketable product per hectare) and economic factors (e.g. market returns, prices of competing products) rather than by policy measures by governments. This is in contrast to agricultural commodities such as dairy products, rice and sugar where policy measures - particularly high tariffs - play a major economic role through their impact on national and international price determination. While by no means totally free from government interventions, the functioning of the international oilseeds market in terms of size, structure and performance is a good example of the market forces at work in an international agricultural commodity market. The strong growth of the world oilseed

economy has reduced the need for direct government intervention. This growth is partly due to the large role that science has played in developing both the supply and demand for oilseeds and oilseed products. Also, oilseed production has not been handicapped by a heritage of earlier production systems such as those for wet rice production or dairying in mountainous regions in Japan or Switzerland, respectively. Good growing conditions in the USA for the main oilseed - soyabeans - provided an incentive to the political leadership in the USA to foster a world wide reduction in trade barriers to oilseeds through the GATT/WTO process. This relative absence of trade barriers has greatly contributed to the dynamism that is characteristic of the world oilseed economy.

Overview of oilseed economy

Price formation takes place in large inter-related markets

Within what is traditionally known as the oilseed "complex" (because of the large number of inter-related products) sunflower seed plays a modest role and its basic economics and price determination are very similar to other major oilseeds like soyabeans and rapeseed. Prices for the oilseeds from sunflowers are determined by supply and demand factors affecting the markets for vegetable oil and protein meal. These two markets for the basic constituents of oilseeds - oil and protein meals - are large and expanding. Their size is not known with precision for a variety of reasons, notably the degree of substitution within the sector. For oils, this includes substitutability between oils and with related products such as dairy fat, and for oilmeals not only substitutability with other oilmeals but also with products in the related and much larger market for cereals for animal feedingstuffs. Clearly, oilseed and oilseed product prices are formed in markets that are much larger than what actually enters world trade - because at the basic commodity stage (but not necessarily at the product stage) oilseeds often enter national markets duty free. In other words, the size of the market in which international oilseed prices are determined consists of the sum of world trade and of those national markets without import barriers due to government measures. Since oilseeds can generally enter duty free into some of the world's largest "national" markets such as the EU, Japan and the USA, the world oilseed economy is large and this has advantages in terms of spreading risks due to events likely to shock prices such as crop failures.

Sunflower seed has retained a modest share in expanding world markets

The share held by sunflower seed in the various markets for oilseeds, oils and oilmeals - as measured by tonnage produced - has remained relatively unchanged and modest. Typically, it is the third or fourth most important source of oil or meal *(tables 1* and *2).* The share held in the world oilseed market has remained at about 9-10%; similarly about 11-13% in the oil market and about 6-7% in the meal market. Such a broad approach to summarising production developments can miss pertinent economic detail. In the last two decades palm oil has emerged as a major factor in price determination in the vegetable oil market, particularly in view of a technical feature - the high yield of oil per hectare. So though the market share of sunflower seed has not changed, the price determination processes have changed due to factors such as the competitiveness of palm oil.

Production expansion is not as fast as that of rapeseed

Sunflower seed has shared in the expansion of the world oilseed economy which is primarily driven by the requirement for oilmeals for livestock feed needed to meet the demand for foodstuffs derived

from livestock. Production of oilmeals (as measured by weight) is more than twice that that of vegetable oils. The world production of the 10 major oilseeds in the last twenty years has expanded at an annual rate of about 3.3% while the production of sunflower seed has expanded at about 3.1% *(table 1)*. As just over half of the world's production of oilseeds consists of soyabeans - an oilseed with a high oilmeal content - the overall growth rate for world production of oilseeds is only a partial indicator of the performance of sunflower seed on world markets. Relative to a more comparable oilseed such as rapeseed which has a higher oil content, the performance of sunflower seed has been more modest. Rapeseed production grew in the same period at an annual rate about 7.5%, more than double that for sunflowerseed.

A similar picture emerges from the data on vegetable oil production *(table 3)*. This market is again primarily driven by household requirements for foodstuffs. World vegetable oil production has grown by about 4.3% whereas that of rapeseed and sunflower seed oils has grown by 7.4 and 3.1% respectively. At the beginning of the 1980's oil production from rapeseed and thay from sunflower seed were broadly similar, at over 5 million tons but by the end of the century oil production from rapeseed was nearly 40 percent higher than that from sunflower seed.

Major actors

World sunflower seed production has increased from an average of 15.7 million tons in the first half of the 1980's to 25.5 million tons in 1996-2000 (Oil World). Except in China and the EU, production has expanded in all regions, especially Argentina, Romania, Russia, South Africa, Ukraine, and the USA. During the three seasons 1996/1997-1998/1999, nine countries produced more than a million tons and their shares of world production were as follows: Argentina, 24%; EU 15% (mostly France and Spain at about 5% each); USA, 8%; China, 5%; India, 5% and Romania, 4%. If during this period world sunflower seed production was valued at world import prices the total value of annual production was in the range $7.1-$7.6 billion. About a third of world sunflower seed production takes place in OECD member countries - mostly due to production in the EU and USA.

Oil yields per hectare

The valuation of the oil component of most oilseeds is subject to a varying degree of pricing pressure from the main alternative source of vegetable oils - palm oil. The major share of receipts from rapeseed and sunflower production is from the oil component and the prices of these oils usually follow that of palm oil; though in the EU sunflower seed oil usually has premium over soyabean or palm oil. While oil yields per hectare for each oilseed vary a great deal between countries and regions, the basic productivity of the oil palm is a significant economic feature. Palm has an oil yield of about of 4 t/ha, whereas in EU conditions, rapeseed (assuming a 40% oil content and a gross yield of 3 t/ha) has an oil yield of about 1.2 t/ha and sunflower seed (assuming a 35% oil content and a gross yield of 1.6 t/ha) has an oil yield of 0.6 t/ha. Put another way, one hectare of oil palm can meet the vegetable oil needs of 133 people compared with 40 people from one hectare of rapeseed and 19 people from one hectare of sunflowers (assuming 30 kg per head annual oil consumption in the European Union). In practice, the economic role of sunflower production on a farm is more complicated, notably by ecology and joint production features. As a good rotational crop with deep roots it can tap water and nutrients not available to other annual crops, so it can have a strong comparative advantage as part of a rotation.

Growing diversification in utilisation

A general feature of the oil component of the oilseed economy is the growing diversification of products as there is an interesting mixture of science, economic forces and changes in consumer needs underway. In OECD countries concerns about health as well as the development of new traits in rapeseed and sunflower are bringing new opportunities for product differentiation in the oil market and creating added-value compared with commodity marketing the basic oil. The household market for vegetable oils (mostly for cooking and salads) is developing a variety of differentiation characteristics. These include the processing system (mechanical/hydrogenation, e.g. mechanical as used for oils from rapeseed and sunflower seed) as opposed to solvent-based processing (as used for soyabean oil). Another differentiation is being based on fat content (and related to this, the possible future labelling requirements by type of fat and by genetic modification (GM)). At present, unlike the case of rapeseed and soyabeans there are no GM varieties in production.

Price premiums in some markets

The "healthy" image of sunflower seed oil in some markets has lead to a price premium over alternatives such as soyabean oil and palm oil. The fat content of sunflowerseed oil, particularly some of the new varieties such as NuSun, appears to provide a comparative advantage over rapeseed. A high oleic acid (monounsaturated fat) content and low saturated fat profile is believed to lower cholesterol and the risk of coronary heart disease. In the USA, in 1999, about 15% of the total oilseed sunflower area was seeded to NuSun hybrids, which have an oleic acid content of about 65% compared to those of the traditional sunflower oil (16%), rapeseed/canola oil (61%), and soyabean oil (23%). US producers have been receiving a premium of about US$11 a ton and are expected to adopt such varieties on 45% of the sunflower seed acreage in 2000-2001. In North America, the confectionary varieties of sunflower seed which are mainly used in the expanding snack food industry in and to a lesser extent for bird seeds also have a substantial premium. In Canada, this premium was $95/t 1997-1998 in and $200/t in 1998/1999.

This premium, notably in the EU, while variable - in 1999, it was about US$80 a ton compared with soyabean oil and US$72 a ton compared with palm oil - has averaged about 9% over soyabean oil and 26% over palm oil since 1989.

EU dominates the import trade

While trade in sunflower seed and sunflower seed products has continued to expand in line with the increase in production, the share of production that enters world trade as oilseed continues to be modest - about 15% - similar to the situation for rapeseed but less than that for soyabeans where about 25% of production enters world trade. World imports of sunflower seed have averaged about 3.3 million tons over the last three seasons. The major importer is the EU - accounting for about 70%. Trade in oil in the last three seasons has averaged 3.1 million tons and 70% has come from Argentina which supplies numerous countries, with India, Turkey, Iran, Mexico, Egypt, Algeria and the EU among the larger importers. Most the meal is used in the countries where it is produced, the exports are equivalent to about 30% of the production. Again Argentina accounts for over half of these and the EU is the major importer - accounting for nearly half.

Market outlook to 2006

The regular provision of a consensual and plausible medium term outlook has become part of the OECD role in promoting analysis and discussion of agricultural policy reform. As a forward looking and quantitative approach can help to provide insights into current and alternative policies, the Secretariat is at the centre of a process of international market outlook data collection, analysis and discussion. To ensure both internal consistency of projections from various sources for 15 inter-related commodities and to have a capability to generate scenarios around the outlook baseline, a large econometric model known as *Aglink* is used. The results are published annually in the *OECD Agricultural Outlook*. As the oilseed sector is modelled partly in an aggregated manner, the three main oilseeds (soyabeans, rapeseed and sunflower seed) and their products (oils and meals) are considered as totals: so, while palm oil is separately identified, the three individual oilseeds and their products are not.

Key assumptions

Forecasts typically involve assumptions about economic factors (mainly economic growth rates, population and exchange rates) and policy considerations (income support, tariffs) *(table 4)*. Usually, these assumptions reflect expectations about what is reasonably likely to occur - such as the continuation of announced policies or the use of population or economic growth forecasts made by the appropriate specialist agencies.

The current outlook for oilseeds is unusually dependant on the assumptions about policies, notably in the US, the major producer and exporter of soyabeans. Not only is the current legislation due to expire in 2002, but it is not working as originally expected, as the market situation has turned out to be weaker than envisaged when the legislation was drawn up; so some of the policy measures have become an unexpected market distortion. Our projections assumed that a key incentive price for US farmers - the loan rate for soyabeans - would be reduced in 2001 and remain during the projection period at US$181 per ton. Similarly, we were unable to take account of a variety of other policy unknowns, such as the outcome of the review of EU cereal policy changes in 2003 or the possible accession of China to the WTO.

Main projection results

* A gradual recovery in prices is expected. Markets are forecast to recover from the current cyclical trough, induced by oversupply and the accumulation of stocks. Prices of soyabeans imported into Europe averaged $264 per ton during the years 1994-1998, but fell to a low $195 per ton in 1999. As market balance is gradually restored by the continued growth in demand, and moderate production gains are accompanied by a reduction in stocks, international prices are expected to rise slowly and reach about $240 per ton by 2005 *(figures 1* and *2)*.

* The slow production response to low prices is likely to restrain the recovery in prices. Productivity improvements and currency depreciations, notably affecting soyabean supplies from South America and palm oil supplies from South East Asia, are contributing to weakening the impact of low market

prices on producers. There is a similar effect on producer incentives in the USA where policies cushion the impact on producers when prices are low. The total production of the three main oilseeds (soyabean, rapeseed and sunflower seed) is expected to increase by over 3% a year or nearly 7 million tons a year.

* The combination of lower prices and income and population growth is expected to fuel a vigourous expansion of the world oilseed economy. Most oilmeal consumption is in the developed countries and though consumption is expanding rapidly in developing countries the indications are that the historical pattern of increases in world oilmeal use of around 3-4% a year will persist.

* Much of the growth in consumption is expected to be met by imports, notably in Asia. This should benefit continued growth of oilseed exports from Australia, Brazil, and the United States as well as that of oilmeal exports by Argentina.

Key issues

* Market liberalisation and devaluation have improved the competitiveness of Brazilian soyabean production and in view of the potential to expand production capacity these reforms are putting pressure on producers and government support regimes in other oilseed exporting countries.

* Oilseed and oilseed product markets are being increasingly exposed to risks of disruption as the more recent major importers like China and India are re-examining their import and domestic production policies. Future demand could be strengthened by new policies affecting human health and animal welfare.

* The impact of US support policies seems transitory, though much will depend after 2002 on policy choices made in forthcoming legislation.

Competitiveness of supplies from South America and South East Asia

Investments in research and infrastructure have reduced the production costs of oilseed and oilseed products worldwide. Efficient soyabean farmers in Argentina are reported to have total costs, including transport to an export port, of around $125-135 per ton. Palm oil production is not land-intensive and inflation adjusted production costs during 1951-1991 are reported to have declined by an annual average of 2.6%. The comparative advantage of Brazil in soyabean production, though hampered by internal transport and fertiliser costs, has been enhanced by a series of policy reforms, notably the devaluation in January 1999 and a series of micro-economic reforms (infrastructure privatisation) as well as specific de-regulation measures in the oilseed sector. Such developments, in view of the availability of land on which to expand production, suggest a medium term future of ample supplies at competitive prices.

Prospects for international demand are becoming increasingly policy-dependent

As the rate of increase in the consumption of livestock products is slowing down in the increasingly mature markets in OECD countries, the prospects for demand are increasingly to be found in developing countries, where, in most cases, policies shape import requirements. Currently, meat and dairy product consumption in OECD countries creates an indirect demand per head for about 73 kg of oilmeals. This requirement is continuing to expand, partly in response to strong exports to non-

OECD countries where the apparent indirect requirement for oilmeals per head is low (about 10 kg). Indicative of the growing dependence of the oilseed complex on policy choices in major importing countries is the case of China, the world's largest growth market for oilseed and products. Consumption per head of vegetable oils increased from 2.1 kg in 1995/1996 to 13.1 kg in 2000-2001. About 9 million tons of the forecast growth in world oilmeal consumption of 22 million tons is expected to be in China, the world's largest meat producer. Our forecasts suggest China will overtake Japan as the second largest importer of oilseeds. But the experience of the rapeseed market is not re-assuring. A cut in the import quota for vegetable oil contributed to an increase in rapeseed imports from 0.1 million tones in 1996-1997 to about 2.7 million tons in 1998-1999 - the largest single trade factor in a world import market of only about 6.7 million tons.

US policies probably more a short-term rather than a long-term distortion

Currently the 355,000 soyabean farmers in the US are responding to a mix of relative market prices (notably for maize) and government programmes. The fall in world prices has triggered payments covering most of the production and as the US produce nearly half the world's soyabean crop, the specific policy measures affecting soyabeans (marketing loan gains and loan deficiency payments) affect world prices. We estimated that the withdrawal of such payments would initially lead to lower US soyabean output (- 5%) and increased output of maize (+ 2%) and wheat (+ 1%). Initially, world prices of soyabeans would be 6-7% higher and maize prices 3% lower, though these effects would be eroded by 2004, as markets adjust. As world prices recover and exceed the loan rate, the payments are expected to come to an end *(figure 3)*.

Economic policy reforms will impact on the market outlook

Any attempt at a more in-depth review of the policies affecting the outlook must start with the recognition that not only there are numerous policies affecting prices and investment in the oilseeds and oilseed product sector, but that systematic information about many of them and their impacts is still lacking. There are perhaps three broad categories of relevant policies, - economic, agricultural, and agricultural trade policies - and a general category that includes social, rural and environmental policies. There has possibly been a lack of appreciation of the importance of economic policy reforms by observers from within the agricultural sector who, understandably, first look at the policies that directly affect them - the agricultural policies - as partly summarised by producer support estimates *(table 4)*. While there are direct economic policy links to the oilseed sector - through, for example, the price of credit as agriculture is a credit - intensive industry, or through currency fluctuations affecting prices received or paid - the indirect influences are important. Much of the impetus behind the acceleration in supplies from Argentina, Brazil, Indonesia, and Malaysia as well as the increases in imports by China and India reflect pressures from macro-economic policy makers determined to improve general economic performance through increased exports or lower food prices.

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Illustrations

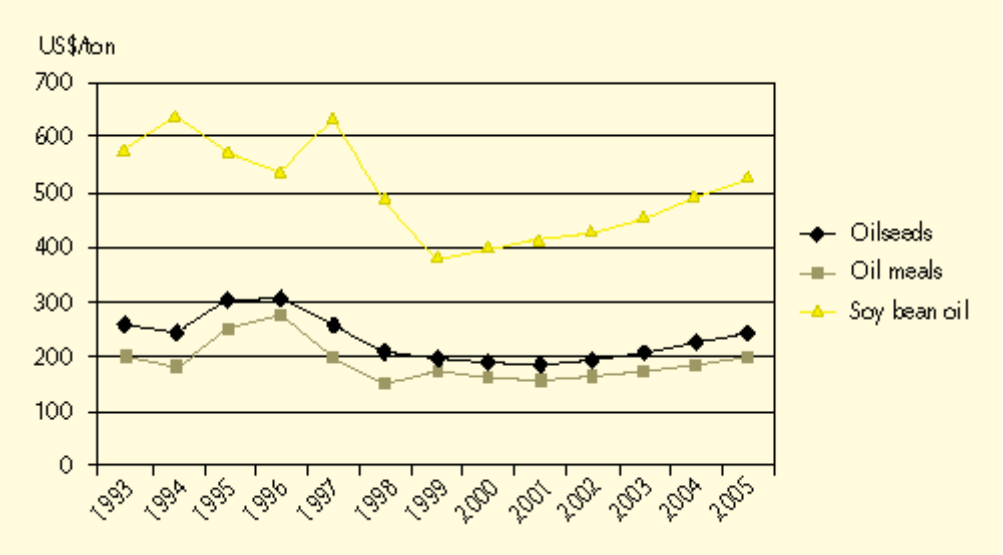

Figure 1. *Strengthening demand to increase oilseed prices.*

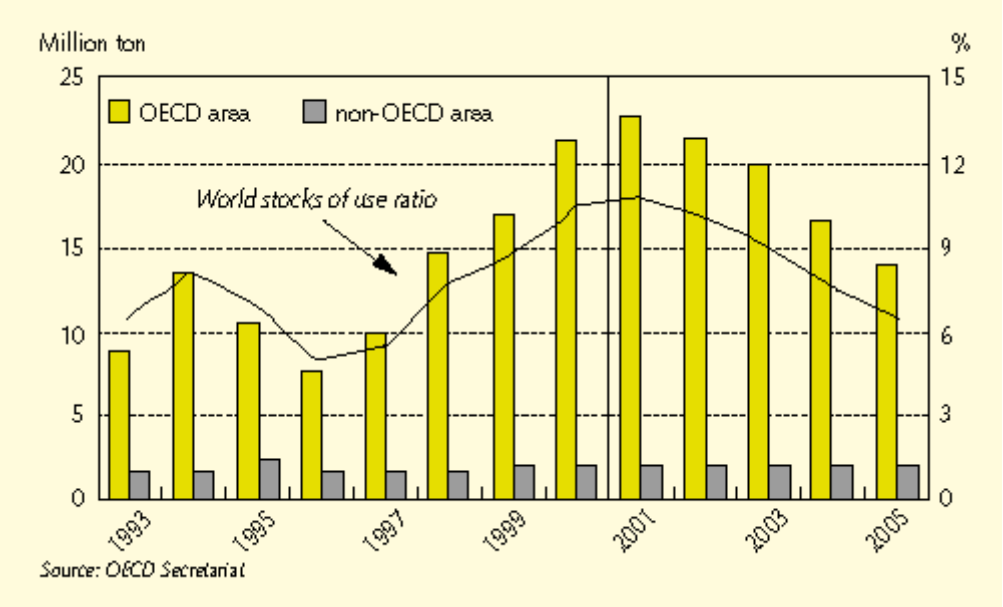

Figure 2. *World oilseed stocks to fall.*

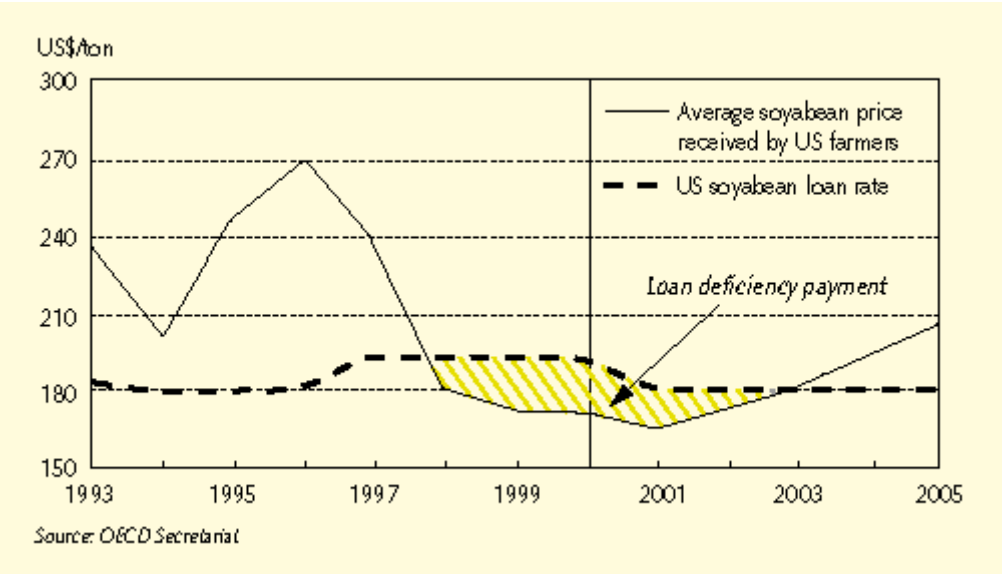

Figure 3. *US loan deficiency payments for soyabeans to decline.*

(Million tons)	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005 (forecast)
10 major oilseeds	170.3	202.8	232.3	278.7	319.4
Soyabeans	87.5	100.7	116.8	146.1	167.1
as % of total	51%	50%	50%	52%	52%
Rapeseed	14.1	21.3	27.3	35.2	42.6
as % of total	8%	11%	12%	13%	13%
Sunflower seed	15.7	20.5	22.4	25.5	29.9
as % of total	9%	10%	10%	9%	9%
Above 3 as % of 10 major oilseeds	69 %	70%	72%	74%	78%

Table 1. *World oilseed production.*
Source: Oil World.

Notes: 10 major oilseeds also includes cottonseed, groundnuts, sesameseed, palm kernel, copra, linseed, and castorseed.

(Million tons)	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005 (forecast)
12 major oilmeals	110.7	131.0	151.0	182.0	210.0
Soyabeans	59.6	67.2	78.6	100	116
as % of total	54%	51%	52%	55%	55%
Cottonseed meal	12.3	13.7	15.0	15.6	17.4
as % of total	11%	11%	10%	9%	8%
Rapeseed	8.3	12.0	15.3	19.6	23.7
as % of total	8%	9%	10%	11%	11%
Sunflower seed	6.9	8.7	9.6	10.8	12.6
as % of total	6%	7%	6%	6%	6%
Above 4 as % of total 12	79%	78%	78%	80%	81%

Table 2. *World oilmeal production.*
Source: Oil World.

Notes: 10 major oilmeals also includes meals from groundnuts, sesameseed, maizegem, maizegluten, palmkernels copra, linseed, and fish meal.

(Million tons)	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005 (forecast)
13 major oils	44.2	55.3	66.6	82.0	98.6
Palm oil	5.9	9.2	13.4	17.9	23.5
as % of total	13%	17%	20%	22%	24%
Soyabean oil	13.6	15.3	17.9	22.8	26.5
as % of total	31%	28%	27%	28%	27%
Rapeseed	5.1	7.5	9.7	12.6	15.5
as % of total	12%	14%	15%	15%	16%
Sunflower seed	5.6	7.3	8.0	9.1	10.8
as % of total	13%	13%	12%	11%	14%
Above 4 as % of 13 major	68%	71%	74%	75%	77%

Table 3. *World vegetable oil production.*
Source: Oil World.

Notes: 13 major oils includes also oils from cottonseed, groundnuts, sesameseed, maize, olive-tree, palm-tree, palmkernels, coconuts, linseed, castorseed.

	1990	1992	1994	1996	1998	1999
Australia						
Support $A mn	6	9	18	19	42	55
Unit PSE A$/t	18	28	40	20	19	23
PSE %	6	9	12	6	5	8
Canada						
Support $C mn	296	358	283	267	332	323
Unit PSE $C/t	65	67	30	37	32	29
PSE %	22	21	8	9	10	10
EU						
Support ECU mn	6,028	5,045	2,980	3,110	3,020	2,461
Unit PSE ECU/t	541	455	267	264	229	169
PSE %	74	72	52	53	46	46
Hungary						
Support Ft mn	1,268	- 2,723	- 1,887	1,428	1,197	15,370
Unit PSE Ft/t	1,855	- 3,560	- 2,828	1,645	1,667	1,847
PSE %	12	- 25	11	4	3	29
Poland						
Support Zl mn	- 34	30	160	96	143	202
Unit PSE Zl/t	- 28	40	211	214	130	184
PSE %	- 20	16	32	24	14	23
USA						
Support $US mn	715	686	838	786	2,299	4,244
Unit PSE $/t	14	12	12	12	31	58
PSE %	6	5	6	4	15	25
OECD oilseeds						
Total $US mn	9,690	8,453	5,321	5v588	6,433	7,730
Average PSE %	38	33	21	19	23	29
OECD maize						
Total $US mn	10,107	12,221	10,332	6,410	11,102	11,675
Average PSE %	29	32	26	15	29	32
OECD wheat						
Total $US mn	19,202	20,116	20,434	17,972	22,430	21,483
Average PSE %	41	43	45	29	45	48

Table 4. *Producer subsidy estimates for oilseeds.*
Source: OECD.