

Frustrated crushers hope biodiesel programme leads to better times

The withdrawal of tax on exports of raw soybeans has shifted Brazilian exports from meals to soybeans and left the crushing industry with overcapacities. Brazilian crushers hope that the government's plans to add a steadily increasing amount of vegetable oil to diesel fuel will be the salvation of the crushing industry.

By Patrick Knight

Brazil plans to start adding some vegetable oil to diesel fuel in the near future, and soy is the leading candidate for this. Despite this, the crushing industry in Brazil remains depressed. While the amount of soy grown in Brazil has more than doubled in the past decade, the crush has increased by less than 50%. While exports of beans have increased fivefold since 1996, meal exports have increased by little more than 10% in the same time, those of soy oil by even less than that.

For various reasons, Brazil has become the world's leading source of unprocessed beans. Most of these are crushed in mills built in the past few years in the two parts of the world where most of the customers for beans are concentrated: Europe and more recently in Asia. The present export pattern is fairly recent. In the early 1990's, three quarters of the soy exported by Brazil was in the form of either oil or meal, and only 25% was exported in unprocessed bean form. Since then the proportions have inverted. Until 1996, most of Brazil's commodities were sub-

Abolishing tax on exports of soybeans caused an overcapacity in the Brazilian soybean crushing. Will there be a major shift from soybeans for feed to soybeans for biodiesel to save the crushing industry? (Photo: ARS, Scott Bauer)



ject to export taxes aimed at maximising revenues for producing regions. This encouraged the export of processed beans. In a move designed to get more

money into farmer's pockets, and so encourage them to increase plantings, taxes on bean exports were removed in that year.

Supporters of this move point to the surge in the amount of soybeans which has been planted since then, and to the fast growth in the amount of beans being exported, to vindicate the change in the law. They also point out that large new crushing plants have been built in major importing countries such as China. As a result, such countries want to import beans and crush them themselves, rather than buy higher priced meal.

Critics support bean tax

Critics of the new tax regime, such as Cesar Borges, vice-president of Brazil's fifth largest crushing company, Caramaru, and one time president of the Association of Oilseed Exporters, Abiove, points out that neighbouring Argentina, which now produces about half as much soy as Brazil, continues to tax beans more heavily than meal. As a result, Argentina now exports more meal than its larger neighbour.

Had Brazil continued to tax beans exports, claims Borges, soy complex exports would have earned Brazil \$8 billion more than they have during in the past ten years. The crushing industry has been saved from an even worse fate by the fact that the amount of meal consumed on the domestic market has almost doubled since the tax regime was changed.

Spurred by fast growth in Brazil's poultry, pork and dairy industries, the amount of meal needed on the domestic market has increased from just over 5 mt, to more than 9 mt since the mid 1990's. About 0.5 mt more meal is now needed on the domestic market each year.

The amount of soy oil used for cooking has grown fast as well, as 90% of all the cooking oil consumed in Brazil continues to be soy.

Export, export, export

Brazil is now the world's leading exporter of chicken meat and is set to export more than 2.5 mt this year. It is fast becoming a leading exporter of pork as well, while dairy produce exports earned more than imports of butter and cheese cost for the first time ever last year.

Spurred by the series of outbreaks of Avian flu in several Asian countries, notably China, Thailand and Indonesia, the amount of chicken meat exported by Brazil has grown by close to 25% in each of the past two years. Output is set to grow by nearly as much



Many countries invest in biodiesel. In Germany biodiesel is free of tax and is offered at a lower price than the oil derived product. The Germans, however, use rapeseed as a basic raw material. (Photo: Chemsite)

this year as well.

Back in the 1990's, the crushers, four of which, Bunge and Born, Cargill, ADM and Dreyfus are responsible for two thirds of the total, had anticipating the crush growing at the same pace as the crop did. To meet the anticipated increase, they had built sufficient capacity to process 127,000 tonnes of beans a day. This meant there was up to 50% spare capacity in the late 1990's, most of the excess being in the south of the country. Soy was first planted in the three southern states of Brazil in the late 1950's, after seeds suitable for the semi-tropical climate and local soil conditions had been developed. Most of the research was carried out by the government financed Brazilian Agriculture Research Company, Embrapa.

Moving north

The majority of the country's crushing mills were built in Brazil's three southernmost states as well, most of them about 200 km inland from the main soy exporting ports, Paranagua and Rio Grande do Sul. But as demand continued to grow, new varieties able to do well in the centre west of the country, pre-

Raw materials

viously regarded as of little use apart for grazing cattle, were developed. With huge new tracts of land opening up, soy has moved west and north in the past two decades.

Almost two thirds of Brazil's soy is now grown in areas first planted to the crop less than 20 years ago. During the 1990's, the crushing capacity in the states of the south has fell from 71,000 tonnes a day, to about 50,000 tonnes a day now. Several relatively small mills have been closed down; some to be re-assembled further north or west.

At the same time, the crushing capacity in the centre west region, where half of all Brazil's soy is now produced, has increased from about 6,000 tonnes a day to close to 50,000 tonnes a day. As well as in the centre west, new mills have been built in the north-easterly state of Bahia, and also much further north in the state of Piauí. Output continues to grow extremely fast in the north, where there is still great potential for future expansion.

Larger crushers

If the total crushing capacity has increased little in the past few years, major changes have occurred in the size of mills. Despite the fact that very few brand new mills have been built, capacity has been increased at many, making the average mill much larger than before. Cargill, for example, now operates a 5,000 tonnes day giant in Mato Grosso state. In the mid 1990's the few plants big enough to process more than 3,000 tonnes a day, between them only handled about 9,000 tonnes of beans a day. Now

plants of this size can between them handle close to 30,000 tonnes a day.

As a result, the share of the crush processed at these very large mills has increased from 8% to 20%. On the other hand, plants with single capacities to process between 1,500 - 3,000 tonnes a day now handle only about 45,000 tonnes a day, compared with 60,000 tonnes in 1998. The end result of all this change is that spare capacity does not exceed 20%.

In the past, mills used to work flat out during the harvest period, which runs from February to July. Many closed down during the rest of the year, as the supply of beans for processing fell to almost nothing. With beans now coming onto the market all the year round, most mills now operate non-stop. Some only halt for maintenance every 18 months, rather than once a year as they previously did.

Higher crushing costs

For various reasons, it still costs considerably more to crush a tonne of beans in Brazil, and equally importantly costs more to get the beans or meal to ports, than in neighbouring Argentina. To crush a tonne of beans in Brazil costs about \$12, compared with only \$7 per tonne in Argentina, where mills are both larger, and much more modern than those in Brazil. Virtually all of the mills in Argentina have been built on the banks of the river Parana and they incorporate ship loading facilities. To reach them, beans have to travel an average of 330 km from the farms where they are grown.

Most of Brazil's crushing mills, on the other hand, are located about 330 km from ports, while beans travel an average of about 600 km from farms to reach them. As a result, while it costs about \$12.50 to get each tonne of soy to a port in Argentina, it costs \$21 to do so in Brazil.

With most of Argentina's soy being pumped directly from mills into the holds of ships, it costs only \$2 to load a tonne of soy onto a vessel in Argentina. This compares with the \$6 per tonne loading costs in Brazil. Because Brazil's ports are in deeper water than those of Argentina, however, and they are two or three days less sailing time from most importing countries, shipping costs from Brazil are lower than those from Argentina. This reduces the total cost gap to little more than \$10 per tonne in Argentina's favour.

The situation will improve for Brazil as existing railways are improved and new ones built, and as more waterways are made navigable. But all this will

Production, crushing, export and domestic demand for soy (million tonnes)

Year	Production	Crush		Domestic use	Exports		
	bean	meal	oil		beans	meal	oil
1996	23.2	3.9	20.1	11.2	1.1	5.4	2.7
1997	26.2	8.3	18.9	10.0	1.4	5.4	2.7
1998	31.4	9.2	21.8	10.4	1.4	5.9	2.8
1999	30.8	8.9	21.6	10.4	1.1	6.3	2.9
2000	32.3	11.5	21.6	9.4	1.4	6.8	3.0
2001	38.4	15.7	22.8	10.8	1.8	7.2	3.0
2002	41.9	16.0	25.8	12.8	2.4	7.6	3.1
2003	51.6	20.5	27.8	13.8	2.5	7.9	3.2
2004	50.1	19.3	29.2	14.1	2.5	8.6	3.2
2005	51.7	20.0	29.2	13.7	2.5	9.1	3.2

Source :: Association of Oilseed Crushers, Abiove

take some time to achieve. As soy moves steadily further west and north, more beans and meal are now being shipped from ports in the northeast and north than in the past. This trend, which will reduce transport time even further, will continue to intensify.

Hopes for biodiesel

In common with all the crushers, Borges hopes that the government's plans to add a steadily increasing amount of vegetable oil to diesel fuel will be the salvation of the crushing industry in Brazil. In what is initially a voluntary scheme, 2% of vegetable oil can now be added to diesel fuel. Because of Brazil's overwhelming reliance on road transport and the huge distances trucks travel in the continental country, almost 40% of all the products used in the country is diesel fuel. At the moment, about 10% of this diesel is imported, at a considerable cost each year, and the programme aims to reduce imports and save money.

The principal reason for the government deciding to back the biodiesel programme is social and political, however. The left orientated administration headed by president Luis Ignacio da Silva, wants to set up schemes, which will employ tens, if not hundreds of thousands of small farmers. This is an attempt to ensure that they remain in the countryside, rather than move to the increasingly crowded cities, where few jobs are available.

For this to happen, most of the vegetable oil needed to make biodiesel would ideally be made from manpower intensive plants such as palm, castor, and babaçu oils, as well as a wide range of more exotic plants, which have high oil content. Relatively small amounts of such oils, invariably more valuable than soy oil, are now produced in Brazil. To increase out-

put of these oils by the amount needed, large amounts of capital will be needed, and take several years to achieve, as most of the alternatives to soy are much slower growing.

Improve production per hectare

Only about 600 kg of soy oil is produced per hectare of land, compared with up to 1.700 kg of castor, and four tonnes of palm oil. This means well over a million more hectares of land would be needed to produce enough soy oil to add 2% to diesel. Many millions more would be needed to produce enough to add the 5% or even 10% anticipated at a later stage.

Although it now costs far more to produce a litre of soy oil than a litre of diesel, the crushers say productivity could be increased and costs reduced. Although they do not admit it, they are anxious for the programme to get off the ground during this government, so as to reach a point where it will become difficult to abandon. Despite the fact that many analysts are critical of the high cost of a programme the government is pushing largely for the political impact it may have.

The oilseed crushers suggest there could be parallels with Brazil's hugely successful alcohol programme. Only about 4,000 litres of alcohol could be produced from one hectare of land in the mid 1970's, when the government established Brazil's ambitious "pro-alcohol" programme. But huge increases in productivity mean that 7,000 litres can now be obtained from a hectare of land. One thing the crushers do not like to discuss, however, is what might happen to all the extra meal, which would be produced. ●