



# Soybeans for dairy products, a good deal?

The World Trade Organisation (WTO) makes claims for international liberalisation of trade in place of national protectionism. Countries are not autonomous any more; planning of the national economy is subject to international rules applied by the WTO. Even in remote rural areas the world market influences people's lives.

Brazil is the second largest soybean grower in the world, producing around 30 million tons per year. The European Union is the main importer of Brazilian soybean for its extensive dairy industry. In turn the EU exports large amounts of dairy products back to Brazil. In the past five years Brazil has had a negative balance of trade. Soybean is naturally seen as the crop, which can generate extra income for making up the trade deficit.

Specialisation in soybean and dairy is resulting in serious socio-economic and environmental problems in both regions,

and is a good illustration of the "system error" that is inherent to the global system of agriculture. The challenge of implementing sustainable farming systems has become even greater in this context.

Angela Cordeiro, a Brazilian agronomist, was asked by the Swedish Society for Nature Conservation to undertake a study on how European agricultural policy affects Brazilian agriculture and vice versa. The report is being used in SSNC's campaign for sustainable agriculture. This article is based on the report.

## Modernisation of agriculture

The modernisation of agriculture has been promoted by the Brazilian Government, since the 1970's, through the expansion of agricultural area, subsidised credit and educational, research and extension services oriented to promote "modern technologies". This process, aimed basically at the export market, relies on the intensive use

of hybrid seeds, chemical fertilisers, pesticides and mechanisation, and consumes huge amounts of fossil energy.

Southern Brazil, the first part of the country to introduce the Green Revolution, has major problems of soil degradation, particularly on large farms. This is evidence of the negative effects of monocropping and the adoption of an European soil management system, use of chemical fertilisers and heavy machinery, which are not adapted to tropical soils (see Box 1). In the Northeast of Brazil, unsustainable management of irrigation has resulted in increased soil salinity, which at present affects 30% of irrigated areas.

Additionally, unbalanced plant nutrition management has been suggested as the main cause of pests and plant diseases, resulting in increased use of pesticides. Apart from water and soil contamination, the wide use of pesticides has become a health problem in rural areas. Loss of biodiversity is another negative impact of agricultural expansion, with deforestation and replacement of local varieties as main causes.

The liberalisation of the Brazilian economy in the 90's has resulted in further changes in land use.

## Soybean - a foreign exchange earner

Current market theory states that comparative advantage provides better competitiveness on the international market. In the case of agriculture, it means that countries able to produce at the lowest cost are the most competitive. It is assumed that increasing scale is the best way to reduce costs. Geographic expansion of soybean from the South of Brazil to the Cerrado region followed this assumption. Therefore, soybean cultivation is now concentrated on farms larger than 500 ha. This is in contrast to 1985 figures, when medium and small farmers together produced almost 50% of Brazil's soybean production.

On the world market, demand for soybean is based on meat consumption patterns. According to market analysts, an increase in the global demand for meat is expected due to the market liberalisation. Consequently, there will be an increase in demand for soybean meal. Among other competitors, Brazil is in the best position to expand soybean production and potentially increase its market share. Therefore, soybean is seen as the "golden crop" of Brazilian agriculture, receiving special attention from Brazilian agricultural

policies. The equation is simple: the country needs to achieve a favourable balance of trade, and agriculture is one of the main sources of income. Thus, soybean is seen as a foreign exchange earner that can boost the national economy and help the Government fulfil its commitments to the International Monetary Fund.

### Dairy production - loosing out

Dairy production is another dramatic example of the impact of current agricultural policies. While Brazil is the second exporter of soybean and an important source of soybean meal, it is also one of the main importers of dairy products. As a result of opening up of the Brazilian market, liquid milk imports from the EU has risen from 19,435 tons in 1992 to 82,433 tons in 1997, causing serious damage to the domestic dairy sector. After the market deregulation in 1992, the Government did not control milk prices. Imports passed on to the hands of private industries that also took over the domestic dairy industry. With increasing costs of milk production and lowered revenue, many small farms are not able to continue with milk production.

However, milk production is a very important component of small farming. While EU, US and Argentina have 805, 105 and 22 thousand farms incorporating dairy production, Brazil has nearly 1.2 million of them. Around 40% are family farms below 50 ha. Over and above the continuous cash flow provided by milk production, cattle are an important element for the environmental sustainability of small farming. Crop rotation with forage legumes and the use of cattle manure in crops and vegetable production are ways in which animal and crop production coexist in diversified farming systems.

### Hidden subsidies

These models are justified on the apparent competitiveness of soybean production in Brazil and dairy production in the EU. However, this competitiveness is not real as it depends on hidden subsidies, both in Europe and Brazil.

In the case of soybean, the cost does not include negative aspects such as the environmental impact of this crop on Brazilian ecosystems. For instance, the expansion of soybean to the Cerrado region led to deforestation and considerable loss of biodiversity. No mention is made of the cost of energy required for transportation of soybean to the main ports, thousand of kilometres away from the fields. The Government has given fuel subsidies to farmers and provided all types of facilities to make it feasible to grow soybean in the Cerrado. Actually, Brazilian society has paid a high cost to sustain this "false" competitiveness.

On the other side of the Atlantic, European society pays for the high competitiveness of its dairy sector. The low costs of dairy products are sustained by enormous government subsidies, creating a

very artificial situation. Moreover, the intensive production system results in environmental problems, the costs of which are not considered. The high yields associated with artificial low costs disrupt the national production in countries where subsidies do not exist, creating a monopoly in European milk imports.

By analysing these cases it is easy to conclude that the production systems of Brazilian soybean and European dairy are interconnected and that the weaknesses of both systems sustain each other. Recognising this connection gives an idea on the complexity of building sustainable farming systems. However, from another perspective, it also shows the potential for building global alliances between farmers and consumers beyond national borders.

### Fair trade essential

Fair trade is important for food security. Yet, how can fair trade be established, respecting social, environmental, economical and cultural diversity between nations? How can trade be built up so that benefits to developed countries do not imply exploitation of developing countries?

Interchange of experiences between local groups at global level could strengthen capacities for overcoming the technical, financial, cultural, political, and trade barriers to sustainable farming systems. The case of Genetic Modification (GM) is a good example of how local actions can have global influence. The European society reacted negatively to the introduction of this technology, because of possible negative impacts on health and environment. Thus, by refusing to buy GM products, European consumers created a pressure on retailers, which was transferred to food processors and food traders.

At the same time, civil society in Brazil campaigned against GM crops. As a result of European pressure and domestic campaigning, a court decision was taken against GM crops in Brazil until environmental impact studies were carried out. This delay in introducing GM crops to Brazil strengthened the European position.

Soybean for dairy products is portrayed as the type of exchange required in meeting the increasing food needs of a growing world population. But what should not be forgotten is that both soybean and dairy production depend on a natural resource base that is fast degrading due to modern agricultural practices. As such, sustainable farming systems are no more a luxury but a necessity.

#### Adapted from:

Angela Cordeiro. *Sustainable agriculture in the global age: lessons from Brazilian agriculture* Swedish Society of Nature Conservation, ISBN 91 558 661 31. Ordernr. 9132, SSNC, PO Box 4625, SE-11691 Stockholm, Sweden. Fax: +46 8 702 08 55, Email: info@snf.se. Also available on [www.snf.se/pdf/tap-jordbruk-soja-eng.pdf](http://www.snf.se/pdf/tap-jordbruk-soja-eng.pdf)

### Box 1. Ecologisation of soybean production

Can we 'ecologise' soybean monoculture? It seems that soybean monoculture begins with a monoculture of the mind, that is specialisation. We cannot change global politics in a short time, that is if we can change it at all. What can we do, technically, to make soybean production ecologically sound?

The first problem is that the technology being used in Brazil is from a completely different ecosystem, the temperate climate of Europe and USA. As a result, soils degrade and plants perform badly. Instead of building up biological soil life to enhance productivity, more fertiliser, irrigation, herbicides and other chemicals are applied. Ecologically sound management of soils is the basis for sustainable agriculture.

Tropical soils need protection from overheating, rapid drying and rain. This can be provided by closer planting, mulch, zero-tillage, cover crops, intercropping or even shade trees. A large quantity of organic matter is needed annually to recuperate the soil aggregates and the porous system. Soybean furnishes too little straw, decomposes rapidly as it is rich in nitrogen and poor in cellulose, and as such does not contribute to soil aggregation. In order to maintain the structure of the soil, crop rotation with maize, millet, or a similar crop is necessary. After a few years of continuous soybean production, especially when planted under zero-tillage, deleterious rhizo-bacteria including *rhizobios*, appear, and may kill the soybean plants. When alternated with maize, soybean yield increases by 20% already in the first year, and the need for agrochemicals goes down by 50%. When soybean is grown within a full crop rotation, using *soybean - groundnut - maize* in summer and *wheat - fodder turnip - black oats* in winter, there are practically no diseases and yields increase every year. The absence of wind break belts may lower the yields. In rotation with other food and fodder crops soybean does not have to be an anti-ecological and anti-social crop. However, adaptation of soybean varieties to Brazilian soil types and microclimate is still needed.

Bolivian Indians say, "Agriculture is a spiritual - social - material activity, and only when all these three factors are in harmony does she maintain life".

Only oriented towards the material aspect, agriculture will not work, and people will be sick, degenerate and die.

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