Less soy, more legumes

How Europe can feed its animals without destroying the planet

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Friends of the Earth Europe

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Introduction

Globally, the livestock sector is a major user of land for feed and pasture – using 70% of all agricultural land. Livestock production is responsible for 13% of Europe's greenhouse gas (ghg) emissions when the damage caused by land use change is taken into account[1]. While European farmers produce surplus meat and dairy products, Europe is far from self sufficient in food. Only 20% of the animal protein feed currently used in Europe is home-grown and more than 40 million tonnes of crop proteins are imported annually, mainly in the form of soy beans and corn gluten feed[2]. Most of it is produced in South America where it is one of the key drivers of deforestation, rural conflicts, greenhouse gas emissions and biodiversity loss. In vital habitats such as the Amazon and Cerrado in Brazil, 10 million hectares of land are cleared every year to allow Europe to feed its industrially-reared livestock[3].

But protein crops can also be grown in Europe and home-grown crops would have positive environmental and economic effects.

1. Historical development of protein production in Europe

A variety of protein plants, especially legumes have been planted in Europe for decades. Legumes are protein plants that can be used to feed farm animals. Peas, broad beans, lupin, soya (grain legumes), alfalfa, clover, sainfoin (fodder legumes) are all grown in Europe, but production has decreased steadily in the last 20 years. The production of grain legumes currently covers between only 0.5% and 6.5% of arable land in different European countries, whereas the potential of these crops is estimated to be 15-25%[4]. A study shows that while keeping the same production, the change from imported soy to legumes would cause a 41% reduction in soy imports in France[5].

Lower prices for imported protein crops compared to other crops is one of the main reasons for the reduction in cultivation. Several drivers are behind this: trade rules, Common Agricultural Policy (CAP) reforms and reduced demand[6].

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Trade rules have allowed cheaper duty-free imports of oilseeds and protein crops[7]. In addition successive CAP reforms have promoted cereal cultivation in the EU[8] and oilseed rape for biofuels[9, 10]. Because soybean meal is cheap and nutritionally valuable, it is currently the most commonly-used ingredient in animal feeds, representing 72% of the nitrogen supply for pork and poultry. Most is imported from South America where 64% of the production is genetically modified.

The lack of support for home-grown protein crops has led to farmers both losing interest in production and losing the knowledge about how to cultivate them. Breeders have lost interest in developing new varieties, and the machinery for processing and storage has been abandoned. In 2007 there were only five plant breeding programmes for native protein crops in the whole of Europe. European research in this field has also substantially declined reflecting the low demand for seeds and for technical support[11].

Traders in oil and protein crops focus primarily on protein crop imports and show little interest in domestic production[12]. Livestock farmers, and national and regional authorities have forgotten how to create the best combinations for compound feed based on native protein crops or other protein rich by-products from non-protein crops such as rapeseed or potato starch.

1.1 Positive environmental effects of protein production in Europe

Legume production in Europe could have positive effects for European agriculture and the environment.

The extended use of protein crops in crop rotations can reduce the use of chemical nitrogen fertiliser, therefore reducing water pollution problems, since legumes have the ability to fix nitrogen from the atmosphere. With appropriate crop rotations, reduction of the use of nitrogen fertiliser by up to 100kg N per ha per month are possible which can substantially reduce greenhouse gas (ghg) emissions. In terms of causing ghg, the transformation of nitrogen in the soil into nitrous oxide has a 310 times greater global warming potential than CO_2. As the manufacture and transport of fertilisers also result in ghg emissions, their reduction will lead to additional savings[13].

Thirdly annual crop rotation reduces plant diseases, and therefore reduces the need to use pesticides. A higher percentage of protein crops in crop rotation maintains biodiversity, notably benefitting pollinating insects. Later crops also benefit from improved nutrient storage and are healthier. Permanent clover grass mixtures for animal feed and mixtures of cereals and proteins cover soils better and reduce nutrient run-off into groundwater and rivers, also improving soil fertility and structure[14].

The reintroduction of a broader variety of crops to European fields could also help maintain the diversity of seeds.

1.2 Economic benefits for farmers

The reduced use of nitrate fertilisers also saves farmers money. The extended cultivation of legumes can reduce overall production costs. With a global trend towards rising oil prices, costs for agricultural inputs including fuels are also increasing. Crop rotation using protein crops can reduce the amount of fuel used for soil treatment[15], as the content of humus and soil moisture is better preserved and requires less tilling. A recent study by the French Government's Commission on Sustainable Development estimated that the costs for fertiliser use in France could be reduced by up to €100 million per year[16].

From a farmers perspective, the most positive economic benefit is an increased yield for later crops[17].

Polish and French case studies show that using protein crops on the farm, including retaining seeds for planting, allows the producer to save on the transport costs of purchasing protein ingredients. On-farm use and local marketing protect farmers from the volatility of feed prices on the world market.

In Poland a mix of 20-30% protein crops with 70-80% cereals is the largest class of protein crops recorded, followed by sweet lupines. Both are used overwhelmingly as on-farm feed. Between 2004 and 2007 such mixes represented more than half of the area classified as under protein crops and thanks to their higher yields, accounted for 64% of the combined output over the same period[18].

Some of the organic associations (e.g. Bioland in Germany) require 50% of the feed to be produced on the farm. Additional feed can be supplied from neighbouring farms but only of organic quality. Farmers cultivate protein crops such as alfalfa, clover grass and grain legumes in extended crop rotations on their farm land which ensures the needed high quality and prevents other problems, for example in dealing with GM-contaminated feed.

1.3 Positive impacts in the South

Implementing changes in the production systems in Europe would reduce Europe's footprint in South America and could contribute to solving the problems caused by intensive soy monocultures in the South. Since 1996, the amount of land needed to produce soy for the European market is roughly equal to the area of deforestation in Brazilian forests. The biggest share of EU soy meal imports in 2006-07 originated from Brazil and Argentina, accounting for 33% of Brazil's harvest and 32% of the harvest in Argentina[19]. A change in the monoculture production would also have positive impacts on smallholder farmers and indigenous communities who have been displaced from their land.

1.4 Soy free dairy and meat production is possible

There is a vast range of examples and experiences in Europe of alternative production systems which are more sustainable on economical, environmental, social and nutritional grounds. Animal production has to be more independent, consume less inputs and develop better agricultural practices.

Uplaender Bauernmolkerei, Germany The "Uplaender Bauernmolkerei" is a dairy in Germany, processing and marketing a range of sixteen organic products. The dairy has already successfully existed for fourteen years. Since June 2005 the dairy has processed milk from conventional farmers using conventional feed materials excluding GM soy and all other GM feed components[20].

One of the biggest dairy companies in Europe, Campina has followed this example. They started a new quality programme in southern Germany which excludes imported soy as a feed component and have been selling the products since October 2008. Fresh cheese and cream were introduced in 2010, alongside milk and yoghurt[21].

KERIXARA, Basque Country, Spain The KERIXARA family dairy has produced farmhouse cheeses for three generations. Eight years ago the farmers decided to stop using soy to feed their 450 sheep. The owner says that they decided not to use soy because it was genetically modified and "the most unpopular crop in the world". They consulted a nutritionist that designed a diet appropriate for the animals, based exclusively on local products. KERIXARA now buys peas and barley from a neighbouring farmer and maize from France. The feed is mixed in their own mill and the farm-made feed provides an important supplement for the sheep which also graze and eat fodder from the farm.

Ethical reasons aside, KERIXARA's experience shows that in economic terms the local option is much more profitable. The mutual trust agreement between the sheep producer and the cereals farmer protects them from the fluctuations on the world market. When cereal prices rose recently, KERIXARA's costs remained the same. The changes to the animal feed and the introduction of other good practice have increased the profit of the farm by 40%.

Neuland, Germany Neuland is an association founded in 1988[22] to develop an independent meat quality programme. Its guidelines include criteria relating to the feeding, transportation, and slaughter of pigs, cattle, sheep, and poultry. It specifies that for their production: all animals must be kept on litter; there are no slatted or mesh grates; year-round open runs are available for all animals; only animal feeds produced domestically are allowed. The import of feed (primarily soya) is not allowed and genetically modified feedstock and breeding are prohibited.

Pea pods.

Bales of alfalfa.

Neuland has succeeded in preserving peasant farms and preventing factory farms from dominating the market. The programme fosters close links between consumers and farmers.

Biofarma Sasov, Czech Republic Biofarma Sasov is a 500 hectare organic farm located in the Bohemian-Moravian Highlands near the city of Jihlava in the Czech Republic focusing on beef and pork production. Established in 1991 and certified fully organic in 1999, it supplies organic meat products to restaurants, shops and directly to consumers throughout the entire country. It is the largest producer of organic pork in the Czech Republic with approximately 800-1000 pigs per year. The farm grows most of its own feed, primarily organic barley, oats and triticale. Peas, vetch and alfalfa are used as a source of protein.

When additional feed crops are needed, they are purchased from neighbouring farms in order to keep costs as low as possible. The feed mixtures are made directly on the farm.

The farm is also experimenting with free-range pork production in conjunction with the Institute of Animal Sciences. Exceptional animal welfare standards are maintained on the farm[23].

Friends of the Earth Europe's demands

- Maintain the existing instruments to support the cultivation of grain proteins and protein forage and introduce new instruments that make cultivating native protein plants on each arable farm mandatory as part of a stricter cross compliance, or as a tool of one of new options to green the CAP. One approach could be mandatory crop rotation with at least 20% legume crops;
- A multi-annual programme to kick start the protein plant breeding sector;
- Embed education, infrastructure and training support to improve the use of native protein crops in compound feed in the rural development funds.
- Additional measures to introduce improved, decentralised facilities for the production of animal feed, based on local and regional crop varieties, the storage of those varieties and seed selection and development;
- Training for farmers on how to best use crop rotation on their farms;
- Top-up payments for extensive livestock fed with locally-produced legumes and an end to the subsidies for industrial production of meat.

1 Tukker, A., Huppes, G., Guinée, J., Heijungs, R., de Koning, A., van Oers, L., and Suh, S,. Geerken, T., Van Holderbeke, M., and Jansen,, B., and P Nielsen, P. (2006). Environmental Impact of Products (EIPRO). Analysis of the life cycle environmental impacts related to the final consumption of the EU-25. Main report IPTS/ESTO project. At http://ec.europa.eu/environment/ipp/pdf/eipro_report.pdf
2 http://www.bll.de/download/positionspapiere/rohstoffversorgung-sichern.pdf (German feed industry: 78 % (44 mio tonnes) of the protein feed used in the EU has to be imported, only 22% is home-grown
3 Soy consumption for feed and fuel in the EU – Friends of the Earth Europe, 2008 http://www.foeeurope.org/agrofuels/FFE/Profundo%20report%20final.pdf
4 GL-Pro, 2005. Guidelines for growing grain legumes in Europe. GL-Pro Concerted Action, p.8
5 French Ministry of Ecology and Sustainable Development (2010). *Environmental and agronomic advantages of a revival of legumes in France*, Le point sur Number 40, January 2010.
6 LMC International (November 2009). Evaluation of measures applied under the Common Agricultural Policy to the protein crop sector.
7 General Tariff and Trade Agreement (GATT) and the Blair House Agreement
8 Ibid, p. 111.
9 Ibid, p. 146
10 For the decline important role played also the ban imposed on the meat and bone meal from 2001 onwards following the BSE ("mad cow disease") crisis, which removed a major complement for protein crops in feed compounding.
11 Ibid, p. 29, p. 84ff
12 LMC International (November 2009). Evaluation of measures applied under the Common Agricultural Policy to the protein crop sector, p. 76
13 French Ministry of Ecology and Sustainable Development (2010). *Environmental and agronomic advantages of a revival of legumes in France*, Le point sur Number 40, January 2010.
14 http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+COMPARL+PE-450.760+01+DOC+PDF+V0//EN&language=EN
15 Nemecek et al (2007). Environmental impacts of introducing grain legumes into European crop rotations, November 2007.
16 This provides a consequent reduction in nitrate fertilisers need, which represent 63% of the chemical fertilizers applied to crops and around 22% of the total energy used on farms; Environmental and agronomic advantages of a revival of legumes in France, Le point sur Number 40, January 2010.
17 LMC International (November 2009). Evaluation of measures applied under the Common Agricultural Policy to the protein crop sector, p. 90
18 Ibid, p. 32; p. 70
19 USDA foreign agricultural service http://www.fas.usda.gov/oilseeds/circular/Current.asp; Product Board for Margarine, Fats and Oils, Soy factsheet 2009 (http://www.mvo.nl/Portals/0/statistiek/nieuws/2009/MVO_Factsheet_Soy_2009.pdf)
20 http://www.meg-sauerland.de/html/gentechnikfreie_milch.html
21 http://www.campina.de/presse/pressemitteilungen/2010/06/landliebe-ohne-gentechnik-erweiterung.aspx
22 Founded by society of five associations, of which today the German Animal Welfare Association (DTschB), Friends of the Earth Germany (BUND) and "Arbeitsgemeinschaft bäuerliche Landwirtschaft" (AbL, Via Campesina Germany).
23 www.biofarma.cz

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Cow feeding on alfalfa.

Friends of the Earth Europe campaigns for sustainable and just societies and for the protection of the environment, unites more than 30 national organisations with thousands of local groups and is part of the world's largest grassroots environmental network, Friends of the Earth International.

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