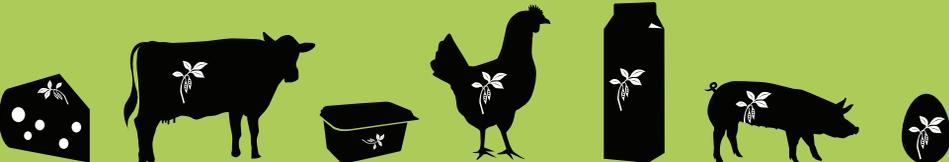


# SOY BAROMETER 2009



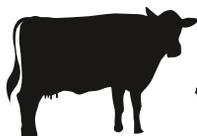
# THE SECRET LIFE OF SOY

This publication was originally designed for the Dutch public. Following several requests it has now been translated into English. We hope that the information provided will also prove insightful and interesting for an international audience.



1

KILO CHEESE



1

KILO BEEF



1

KILO MARGARINE



1

KILO CHICKEN



1

LITER MILK



1

KILO PORK



1

EGG



250

GRAMS SOY  
PER KILO



310

GRAMS SOY  
PER KILO



114

GRAMS SOY  
PER KILO



619

GRAMS SOY  
PER KILO



28

GRAMS SOY  
PER LITRE



963

GRAMS SOY  
PER KILO



38

GRAMS SOY  
PER EI

# INTRODUCTION

While you wouldn't just buy a bag of soybeans in the supermarket, soy is very much present in your daily shopping basket. In fact, many processed foods contain soybeans – either directly or indirectly processed. **Soybeans** are an essential component of several foods such as soy burgers and soy milk, while **soy meal** is an ingredient of cattle feed, and thus indirectly finds its way into meat, dairy and eggs. **Soybean oil** is used in food, cosmetics, detergents and industrial products, including, increasingly, biodiesel.

Soy production provides income, but has major social-, ecological- and economic consequences in production countries. In 2004, ten Dutch civil society organisations joined forces to form the Dutch Soy Coalition. Its aim is to put the issues surrounding soy on the map and to find solutions by collaborating with other civil society organisations, businesses and governments in producing- and processing countries.

The Dutch Soy Coalition has developed a strategy for the coming five years, based on three R's as the key to change:

The R for **Replacement** is about finding possible alternatives to soy in animal feed, the most common application of soy.

The R for **Reduction** stands for reducing (meat) consumption, as most soy ends up in cattle feed.

The R for **Responsible** relates to improving the way that soy is grown, limiting the most adverse effects for humans and the environment. This publication focuses mainly on the latter strategy.

In recent years, various parties have discussed responsible soy production, several global initiatives and criteria have been developed and standards have been established for responsible soy production. But how much of that soy is actually processed and consumed in the Netherlands? The Dutch Soy Coalition would like to monitor exactly that using the Soy Barometer, which will be published biannually. This year's Soy Barometer is based on data from 2008. Background information can be found in a separate report, which unfortunately is only available in Dutch.

# NEGATIVE EFFECTS OF THE EXPANDING SOY PRODUCTION AREA



## DEFORESTATION

The fast expanding soybean cultivation area contributes to massive deforestation, while healthy ecosystems, such as forests, contain a treasure trove of biodiversity and clean water. Forests also reduce erosion.



## SOIL DEGRADATION

The fertility of soil can degrade as a result of biodiversity loss, increased CO<sub>2</sub> emissions caused by the disappearance of vegetation, the drying out of the soil and erosion by wind and water. Artificial fertilisers are required to compensate.



## LAND CONFLICTS

Large farm enterprises and businesses try to get hold of land by clearing parts of the forest illegally or by dispossessing local communities of their land. Tenants and small communities with no deeds to their land find it hard to fight for their rights.



## FOOD SECURITY

Soybean production puts the local food supply at risk: land that was originally used for the cultivation of corn, rice, oats and beans, is now used for the cultivation of soy, which is largely exported.



## SLAVERY

Forced labour is common in soy farming, because workers are expected to pay back their 'advances'. Employment is seasonal and working conditions are bad.



## GM

Approximately 70% of all soy has been made resistant to the herbicide Round Up through genetic modification (GM). The use of genetically modified soy has led to heated discussions between supporters and opponents.



## PESTICIDES

The use of pesticides and fertilisers contaminate ground and surface water, posing health risks for the population.



## SCALE INCREASES

Small-scale farmers and local communities are often displaced from their land to make room for large-scale soy cultivation.

# SOY IS EVERYWHERE

Soy is an annual plant with an edible bean that delivers high protein and fat yields. The plant grows in temperate, subtropical and tropical climates in the United States, South America (especially South-Central Brazil, Argentina and Paraguay), Asia (especially Central India and Northeast China) and, to a limited extent, in Europe (Italy and Romania).

The most recognisable soy products are food items such as soy milk, soy sauce, tofu and other meat substitutes. Yet only 6% of the soybeans produced worldwide are used for such foods, mainly in Asia. Most soybeans are crushed to produce soybean meal and soybean oil.

The meal that results from pressing, is a highly nutritious ingredient of cattle feed. The main reason that the global demand for soy has shown such a strong increase over the last decades is that more meat, milk and eggs are consumed around the world. Soy meal is also used in noodles, baby food, flour and breakfast cereals. Lecithin, which is extracted from soy flour, is used to keep foods, such as chocolate, soft.

Soybean oil, which is pressed from the soybean, finds its way into foods such as cooking oil, mayonnaise, margarine, sauces, soups and dressings, but also in bakery products, ready meals, (cereal) products, salty snacks, cakes, sweets and ice cream and other desserts. Soybean oil is also used in cosmetics, detergents and industrial products. Soy therefore mainly finds its way into food and feed applications but is increasingly used for biodiesel.

# GLOBAL SOY PRODUCTION 1987 1997 2007

IN 1,000,000 TONS OF SOY BEANS



## TOTAL (INCL OTHER COUNTRIES)

1987	1997	2007
100	144	216

# GLOBAL SOYBEAN TRADE

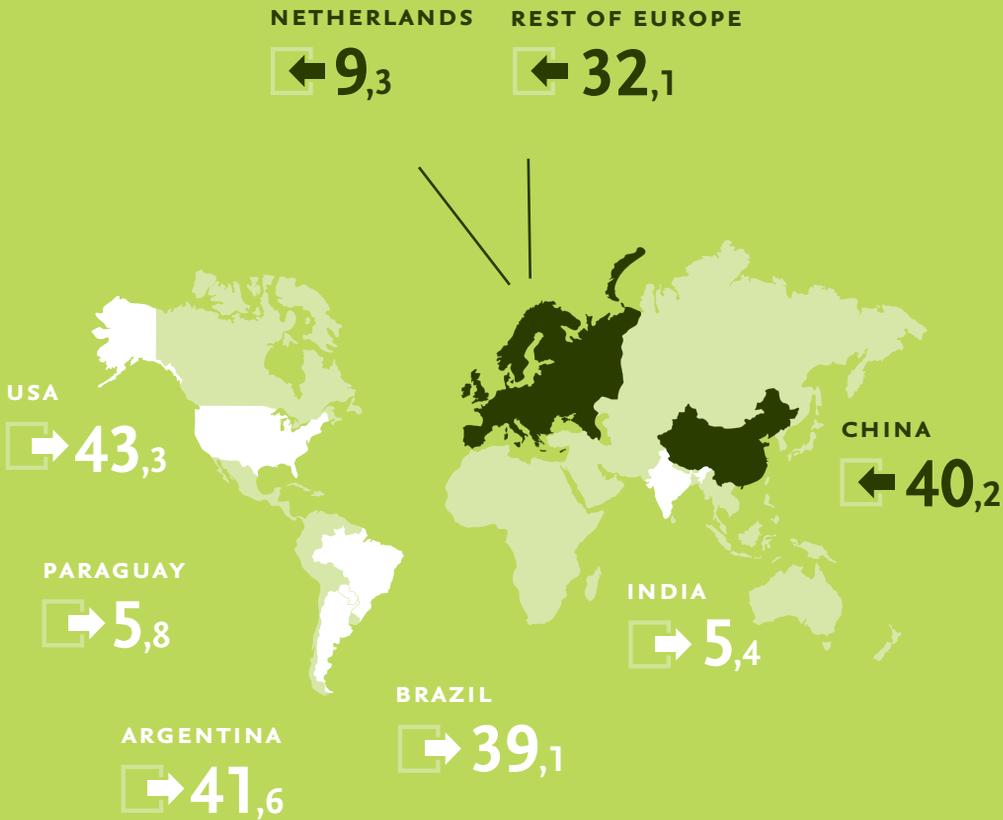
The soy value chain starts with the cultivation of the soybean at both large (50,000 hectares) and very small (1 hectare) farms. The trading and processing of soybeans is dominated worldwide by four multinational companies: Archer Daniel Midlands (ADM), Bunge, Cargill and Louis Dreyfus. The feed industry usually buys soybean meal from the purchasing offices of these and other major traders. The feed is fed to pigs, cattle and chickens by farmers for the production of meat, dairy and eggs. This chain also includes slaughterhouses, dairies and other processors. Soybean meal and -oil are also used in the food and cosmetics industries, in which multinational companies like Unilever, Danone, Procter & Gamble, Kraft and Nestle play a major role.

China and the European Union are the largest importers of soy in the world. In 2008, China accounted for over a quarter of the world's imports, with 40 million tons. The country's economic and demographic development has strongly increased the need for soybean meal (for animal feed) and soybean oil (for baking and frying) in recent years.

With an import of 41 million tons, the EU is number one on the global soybean market. The EU imports a relatively high amount of soybean meal, which is processed for animal feed. The Netherlands accounts for over a fifth of the European soy imports, and is the largest importer of soybeans and soybean meal within the EU. Of all the countries in the world, the Netherlands is the largest importer of soy after China!

# SOY EXPORT & IMPORT WORLDWIDE 2008

IN 1,000,000 TONS OF SOYBEANS, -MEAL AND -OIL



# DUTCH IMPORT

Approximately 22% of European soybean imports pass through the ports of Amsterdam and Rotterdam. The Netherlands is therefore an important link in the European soy value chain – i.e. the part of the chain in which soy is traded and processed. There are two soybean processing plants (crushing plants) in the Netherlands, owned by two of the biggest soy traders in the world: an ADM factory in Rotterdam and a Cargill plant in Amsterdam.

Of the soybeans imported to the Netherlands (3.9 million), some 75% is crushed in these plants and 25% is directly exported, mainly to European countries. Of the available soybean meal and soybean oil in the Netherlands (through direct imports and the crushing of soybeans) 60% is exported, mainly to Germany and Belgium. Poland and the United Kingdom are also major destinations for soybean meal.

The Netherlands imports soybeans mainly from Brazil and the United States. In addition, it imports large quantities of soybean meal, mainly from Argentina and Brazil, and a limited amount of soybean oil from Brazil. The Netherlands' total soy import is 9.27 million tons (including soybeans, soybean flour and -oil). To grow the amount of soy imported by the Netherlands, 32,000 km<sup>2</sup> is needed in the countries of origin - which is comparable to the size of the Netherlands.

## DUTCH IMPORT 2008

IN 1,000 TONS SOYBEANS, -MEAL AND -OIL

## FARM LAND REQUIRED

FOR THE CULTIVATION OF IMPORTED SOY

### NETHERLANDS

IMPORT

9,267



### NETHERLANDS

SURFACE

33,883 KM<sup>2</sup>

FARM LAND REQUIRED

32,000 KM<sup>2</sup>

USA

1,164

PARAGUAY

265

ARGENTINA

2,536

BRAZIL

4,639

OTHER COUNTRIES

663



# SOYBEAN PROCESSING

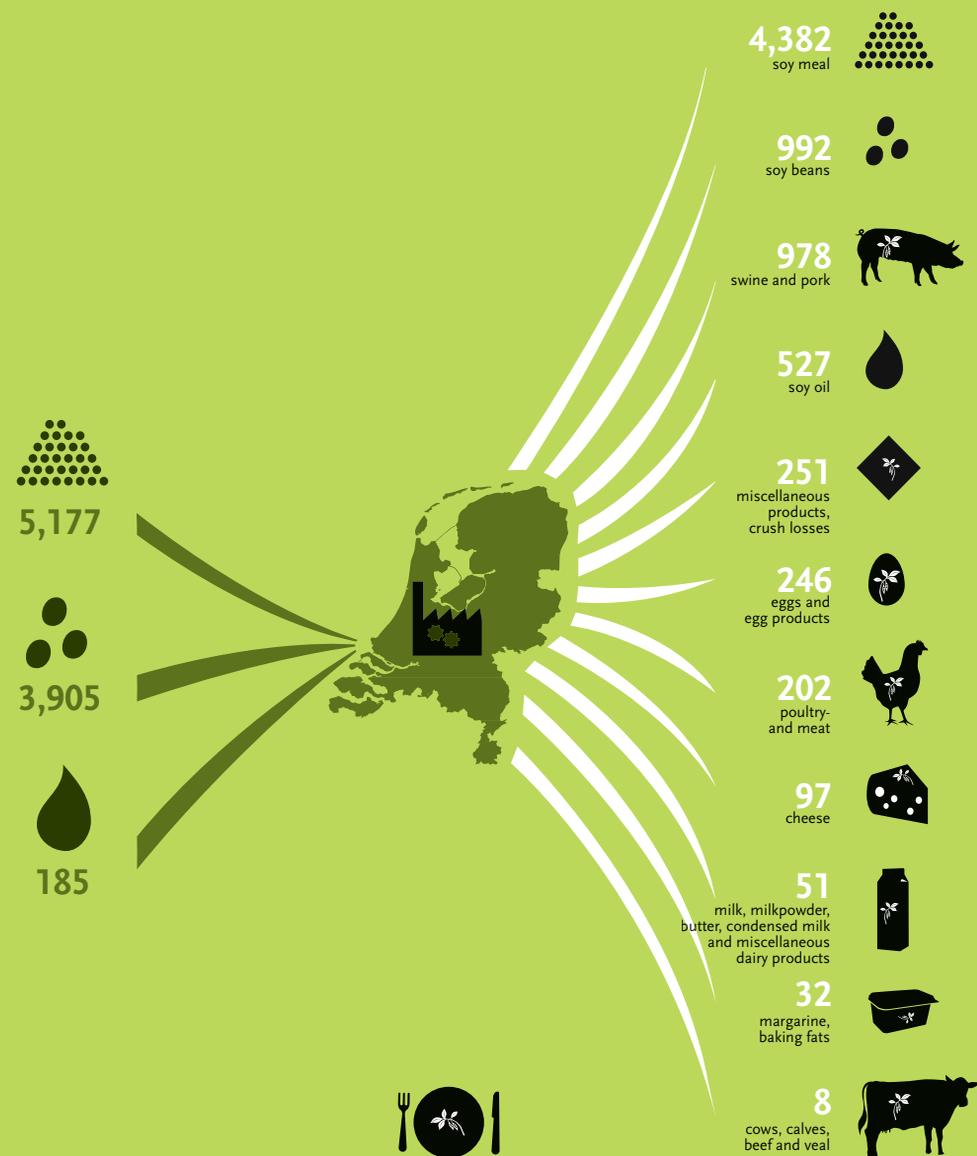
Of the 9.27 million tons of soy imported into the Netherlands, the vast majority is exported again. Much of this involves direct transit, but a large amount of soy is first processed into other products. Soybeans are crushed and converted into soybean meal and -oil. The soybean meal is processed and used in feed to produce meat, dairy and eggs. The products that are created through these processing steps are also largely exported.

In 2008, approximately 7.77 million tons of soy was exported by the Netherlands, either directly or indirectly: 60% without any processing, 4% after crushing into soybean meal and -oil and 20% after processing into animal feed- and food products. This majority of the soy is therefore not consumed in the Netherlands, but in other European countries. Key Dutch export products include soybean meal, pigs, pork, chickens, eggs and chicken.

Some 3.3 million tons of soy (36% of the import) is processed into animal feed and food products, for consumption in the Netherlands and for export. Dutch companies are making money from the transit of soy through the Netherlands and through the processing of soy into animal feed and food products for the domestic and export markets. They are thus responsible for making sure that the soy that passes through their hands is grown in a responsible and sustainable manner.

# SOY FLOWS THROUGH THE NETHERLANDS IN 2008

IN 1,000 TONS OF SOYBEANS, -MEAL AND -OIL



IMPORT

9,267

CONSUMPTION

1,436

EXPORT

7,766

# SOY CONSUMPTION

More than 100 animal feed companies are active in the Netherlands. They produce approximately 13 million tons of animal feed annually, using various raw materials, including soybean meal. The soy content in these feeds range between 10% and 30%, accounting for 2.9 million tons in total. This uses about 95% of the soybean meal available for processing. The pork- and poultry sector are the biggest users of soy – used for the production of pork, chicken and eggs.

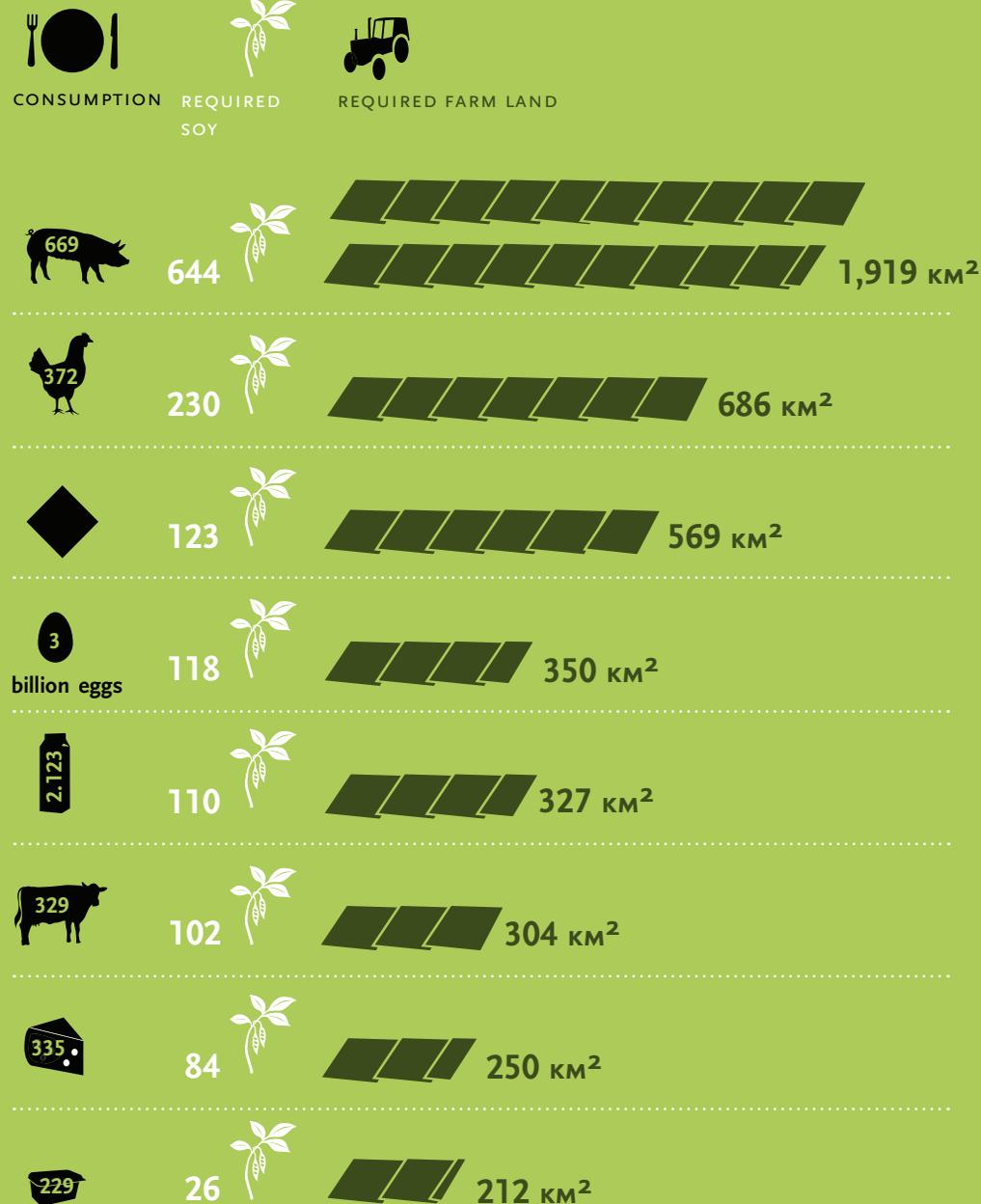
The food industry plays a dual role in the soy value chain. Firstly, soybean oil and soybeans are used directly in various processed foods, and secondly, the food industry plays an important role in processing a large part of Dutch livestock products – meat, eggs and dairy – into many processed products, such as snacks, ready-made meals, soups and bakery products.

Of the soybean oil that is available in the Netherlands, about 39% is processed into margarine and cooking fats, 26% is used in other food products, 27% in animal feed, and 8% in industrial products (like soap, lubricants and biodiesel). Finally, a very small percentage of soybeans are processed into food products like tofu, soy burgers and soy milk (category 'other products').

The Dutch consumption of animal feed and food currently requires 1.44 million tons of soybean meal and -oil. This equates to approximately 1.20 million tons of soybeans. To grow this amount of soy in the countries of origin, an area the size of approximately 4,616 km<sup>2</sup> would be needed. This is roughly equivalent to the size of North-Brabant, the Dutch Province.

# CONSUMPTION IN THE NETHERLANDS & REQUIRED FARM LAND 2008

IN 1,000 TONS



# STANDARDS FOR SUSTAINABLE SOY

Civil society organisations' concerns about the effects of the large-scale expansion of soy cultivation have led to the creation of various certifiable standards for responsible soy in recent years. In addition, various networks and discussions have arisen in which government organisations, businesses and civil society organisations have participated. Programmes have also been developed at Dutch companies, often in collaboration with civil society organisations, aimed at buying soy that is certified according to one or more of the following standards for responsible soy:

**Organic** soybean growers rely on the regulations for organic farming. Organic farmers may not use chemical pesticides, fertilisers or genetically modified organisms. To reduce disease they should use alternative methods and crop rotation.

**EcoSocial** is a new hallmark developed by **the Instituto Biodinâmico for Rural Development (IBD)** in Brazil. In addition to organic farming criteria, Fairtrade criteria have also been included within this system.

The idea of the **Fairtrade/Max Havelaar** standard is that honest prices and other favourable trading conditions boost the economic strength of small-scale producers and helps social progress and environmental improvement. Member soy farmers may not use genetically modified soy.

The **ProTerra** standard is based on the Basel Criteria for Responsible Soy Production from 2004, which focused mainly on deforestation and land rights. This standard also prohibits the use of genetically modified soy.

The certification for soy that is not genetically modified (**GMO-free**, Hard Identity Preserved) indicates that no genetically modified soy was used in the entire chain. This soy may also be conventionally grown – there are no other social- or environmental criteria associated with this label.

The **Round Table on Responsible Soy, (RTRS)** is an international platform, in which soy producers, traders, processors, banks and civil society organisations work together to develop sustainable criteria for the global cultivation of soybeans. Because the standard has not been fully developed yet, it can not be compared with the other standards in the adjacent table.

## OVERVIEW OF CRITERIA FOR VARIOUS STANDARDS



CRITERIA	ORGANIC	ECOSOCIAL	FAIR TRADE	CGO-FREE	PROTERRA
Socio-economic criteria (Working conditions)	O	✓	✓		✓
Socio-economic criteria (Fair Trade)		✓	✓		
Family farming	O	O	O		
Environmental criteria	✓	✓	O		✓
Organic (Biodynamic) agricultural methods	✓	✓	O		O
No use of genetically modified soy	✓	✓	✓	✓	✓
No conversion of HCVA* and Amazon rainforest			✓		✓
Quantity in the Netherlands in 2008, in tons	<b>11,200</b>	<b>500</b>	<b>0</b>	<b>48,840</b>	<b>72,350</b>
Part of the Netherlands processed responsible soy	<b>8,4%</b>	<b>0,4%</b>	<b>0%</b>	<b>36,8%</b>	<b>54,4%</b>

\*High Conservation Value Areas

O = optional, it is not required for certification

✓ = Certification required

# SOY IN FOOD CHAINS

In this year's Barometer, we tried to pinpoint the portion of responsible and certified soy that was processed, consumed or traded in the Netherlands in 2008.

The Netherlands' major soybean importers - ADM, Bunge, Cargill and Cefetra – provided insufficient data to answer this question in detail. The companies also provided little information about their customers. It is therefore only possible to identify broadly which types of food products soy has been processed into. Discussions with the major slaughterhouses in the Netherlands and a number of food manufacturers did provide some additional information, however. This, combined with available data, allowed us to estimate how much responsible soy is processed in the production chains of a number of product groups.

The most common standards used in the Netherlands are ProTerra and 'GMO-vrij' (GMO-free), i.e. 'not genetically modified'. Within the product groups meat, dairy and eggs, dairy contained the highest percentage of responsible soy: over 5%. Compared with the 3.3 million tons of soy processed into food products in the Netherlands, the average percentage of sustainable soy does not exceed 4% in any of these product groups. An alarmingly low percentage of the soy processed in the Netherlands can therefore be called responsible.

It should be noted that this year's study took 2008 as a baseline measurement, and that the results of a number of programmes that aim to improve soybean cultivation will only be available in time for the next edition of this Barometer.

Examples of companies that used responsible soy in their products in 2008:

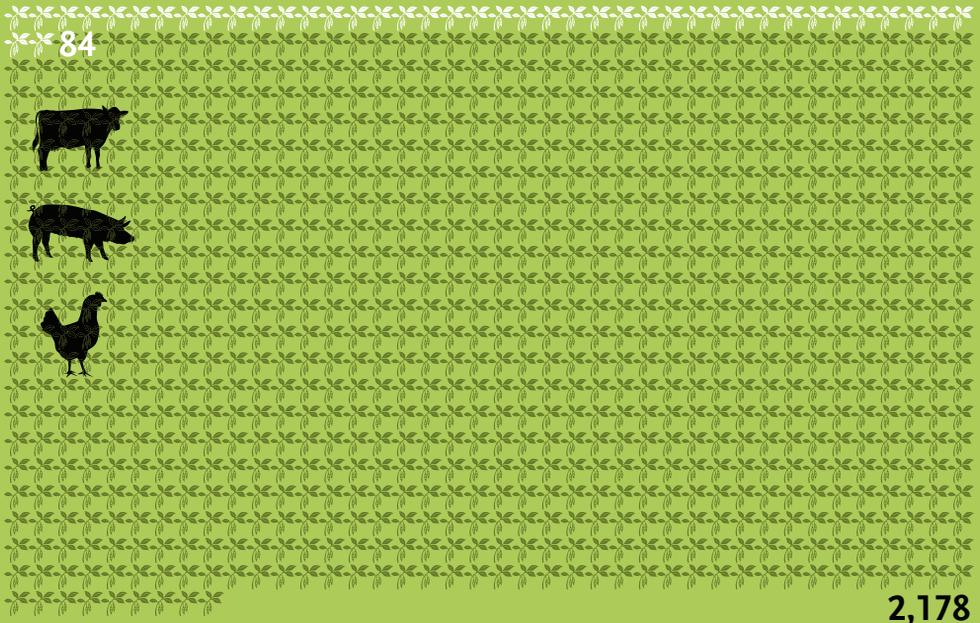
- Organic chicken in supermarkets (Albert Heijn, to name one example)
- Chicken used in European McDonalds restaurants
- Campina brand dairy products
- Guliker and Roodbol 'Zonnebloem' eggs
- Kwetters' '4 Granen' ('four grain') eggs
- Natuurfarm De Boed eggs
- Organic eggs, in general
- Alpro Soya brand soy products
- Provamel brand soy products

The standards that were applied were ProTerra, organic and EcoSocial.

# CERTIFIED SOY IN THE NETHERLANDS 2008

TOTAL SOY REQUIRED FOR CONSUMPTION AND EXPORT

PER PRODUCT GROUP / SHARE OF RESPONSIBLE SOY PER 1,000 TON



# CONCLUSION

Worldwide, some 211.6 million tons of soybeans were harvested in 2008, using a total farming area of 95 million hectares. The United States, Brazil, Argentina and China were the main producing countries, and with the exception of China, also the main exporters. China is not only a major production country, but also the largest importer of soybeans. The European Union accounts for 29% of the world's import of soybeans, -meal and -oil, with the Netherlands making up the largest importer within the European Union.

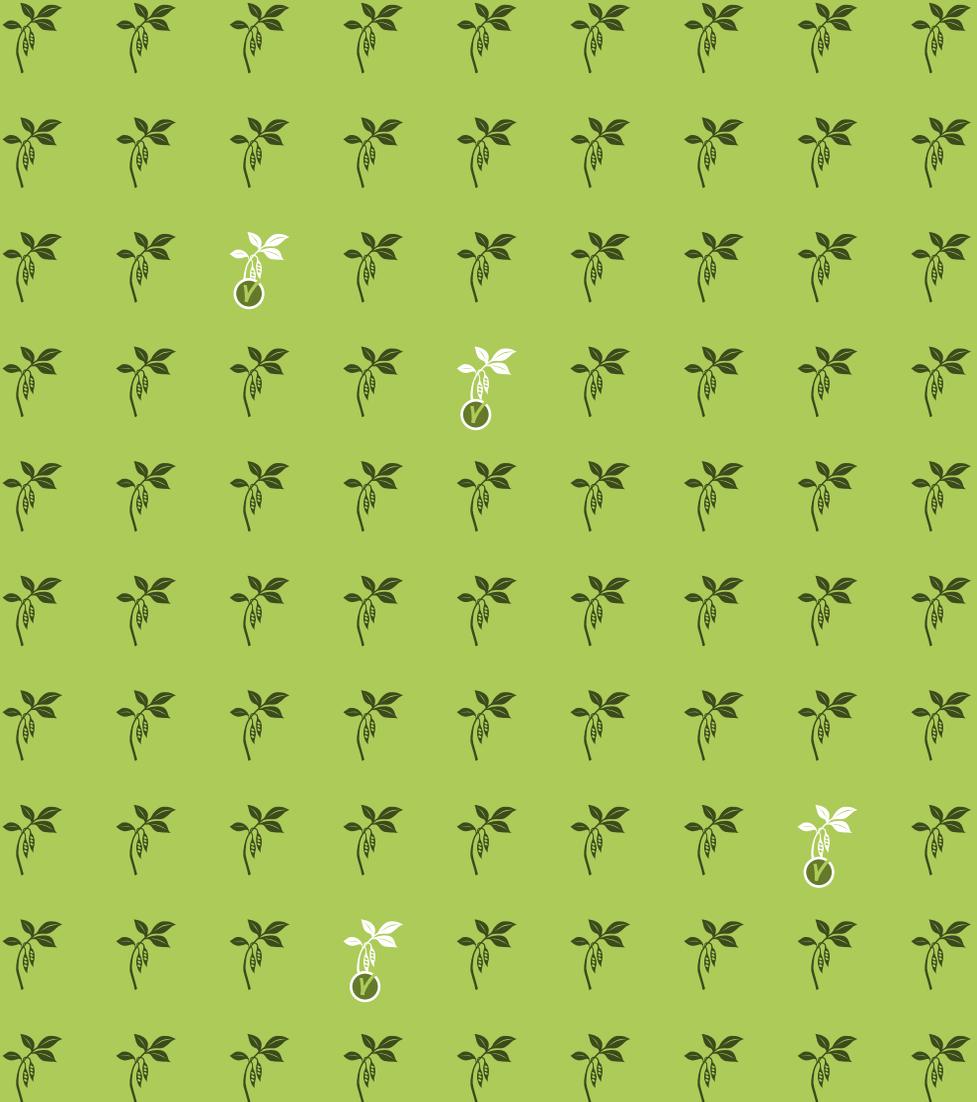
The Netherlands imports soybeans mainly from Brazil, the United States and Argentina. In total, the Netherlands imported 9.27 million tons of soy (beans, meal and oil), some 22% of all European imports. To grow the amount of soy that the Netherlands imported, 32,000 km<sup>2</sup> was needed in the producing countries - roughly the land area of the Netherlands.

For the producing countries, soy cultivation and trade has enormous economic benefits: the export of soybeans is an important foreign currency earner. But in the expanding soy growth area, especially in South America, soy cultivation has caused a number of problems in recent years, including deforestation, with related biodiversity loss, and socio-economic problems for local communities in growth areas, especially in terms of health and food security. Companies in the soy value chain must address these issues. This can be done by reducing the consumption of animal proteins, replacing soy in animal feed with alternatives and improving soybean cultivation methods.

There are at least five standards for responsible soy: organic, EcoSocial, Fairtrade, not genetically modified (GMO-free) and ProTerra. Soybean crops must meet certain criteria before a farmer or farmer cooperative receive a certificate. Such certificates are only issued after verification by an independent party.

# CERTIFIED SOY IN THE NETHERLANDS 2008

4% OF THE 3.3 MILLION TONS OF SOY THAT WAS INCORPORATED IS CERTIFIED



# CONCLUSION

Currently, the share of the world's soybean crop that has been certified according to these standards is minimal, and we must work hard in order to increase this share.

Various parties in the Netherlands have taken the initiative to encourage the cultivation of responsible soy. Civil society organisations have made agreements with companies about the purchase of responsible soy and offer advice.

In 2008, an estimated 133,000 tons of responsible soy was processed in Dutch food chains: more than 70,000 tons ProTerra soy, nearly 50,000 tons non-genetically modified (GMO-free) soy and approximately 12,000 tons of organic and EcoSocial soy. These are estimates, as indicated.

Of the 3.3 million tons of soy that was incorporated into Dutch food chains in 2008 in total - including products for the Dutch market and for export – **only 4% was responsible soy**. The Soy Coalition urges the food industry and its suppliers to indicate how they propose to increase this rate substantially over the next five years.

For further information and calculations see: Soy Barometer 2009, A research report for the Dutch Soy Coalition, Profundo (only available in Dutch), Amsterdam, October 2009. *The most often cited sources in this report:*

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Drukkerij Mostert & van Onderen!

The Dutch Soy Coalition comprises ten Dutch organisations: Both ENDS, Cordaid, Fairfood International, ICCO/ Kerkinactie, IUCN National Committee of the Netherlands, Milieudefensie (Friends of the Earth Netherlands), Oxfam Novib, Solidaridad, Stichting Natuur en Milieu (The Netherlands Society for Nature and Environment) and World Wide Fund for Nature Netherlands

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