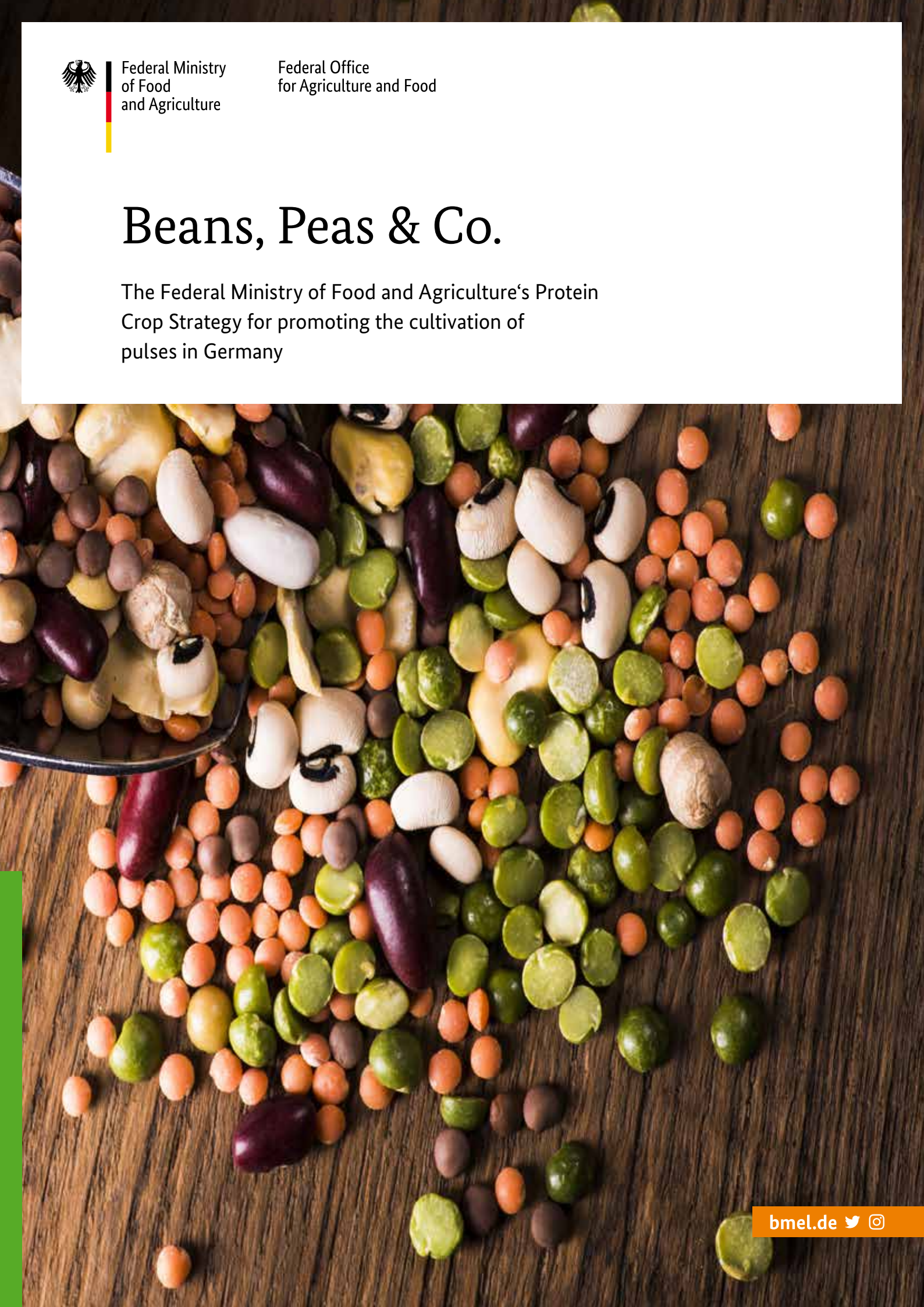
Federal Ministry
of Food
and Agriculture

Federal Office
for Agriculture and Food

Beans, Peas & Co.

The Federal Ministry of Food and Agriculture's Protein Crop Strategy for promoting the cultivation of pulses in Germany



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Welcoming address

Dear Readers,

Pulses such as beans, peas & co. are essential components of a sustainable agricultural sector. These plants are able to bind nitrogen from the air and use it as a nutrient, thereby saving CO2 and reducing the use of fossil fuels. In addition to that, pulses improve soil fertility and allow strict crop rotations to be relaxed, while their flowers provide food for insects. By virtue of their high protein content, pulses also supply both humans and animals with valuable protein.

To expand the domestic cultivation of pulses, the Federal Ministry of Food and Agriculture (BMEL) published the Protein Crop Strategy in 2012. The Strategy focusses on research into potential innovations and the transfer of knowledge into practice.

Currently, the greatest increase in added value for pulses is being achieved in the food industry. The demand for plant proteins is rising steadily so that projections regarding further developments are very positive. Due to their special ingredients, pulses constitute a promising raw material for the development of innovative food products, opening up new sales channels.

This brochure is designed to give you information on the Strategy's background, objectives and measures. It provides you with an overview of what has been achieved since the publication of the Strategy and what the BMEL activities will focus on in the future.

Yours,

Julia Klöckner
Federal Minister of Food and Agriculture

Content

The BMEL's Protein Crop Strategy

Expanding crop rotations in Germany and Europe to include more plants, in particular legumes (known botanically as pulses), is an important part of making agriculture more sustainable. The aim is to assist agriculture by conserving and developing pulses themselves, knowledge about cultivating them, and ways of processing and using them. This is why the Federal Ministry of Food and Agriculture (BMEL) developed and published the Protein Crop Strategy in December 2012. The coalition parties also stated in their coalition agreement for the 19th legislative term that the Protein Crop Strategy should be reinforced.

Excerpt from the coalition agreement (page 85)

"We want to improve the attractiveness of the cultivation of protein crops as part of the further development of the Protein Crop Strategy."

The BMEL's Protein Crop Strategy aims, while giving due regard to the underlying international conditions, to reduce the competitive disadvantages of domestic protein crops (legumes such as broad beans, peas and lupins, as well as clover, alfalfa and vetch), fill research gaps, and test and implement the necessary measures in practice.

One notable feature of legumes is that they can, via rhizobia bacteria on their roots, bind atmospheric nitrogen and produce high-quality protein. This protein can be used both for human consumption and also for animal feed. Legumes also enrich the soil with nutrients and improve soil fertility. These crops thus make a particular contribution towards environmentally sound and resource-conserving land management.

The Strategy's goal is to support the cultivation of legumes in Germany, which has dropped significantly over the last years, and expand the area of land under legumes. The aim is to strengthen both supply and demand for domestically produced legumes. The focus is on both conventional and organic farming.

Promoting the cultivation

Improving resource conservation

The Protein Crop Strategy also aims to achieve the following:

- improve ecosystem services and resource conservation;
- strengthen regional value chains;
- increase the protein supply from domestic production and improve this supply through non-GMO protein crops (the cultivation of genetically modified legumes is not permitted in Germany).

The Protein Crop Strategy is thus a key component of more sustainable agriculture. It was therefore integrated into the German Sustainable Development Strategy to contribute to sustainability goal number two of the United Nations - SDG 2: "End hunger, promote sustainable agriculture". In addition to that, the Protein Crop Strategy is enshrined in the Strategy for the Future of Organic Farming (ZöL). Organic farmers have a growing demand for organically produced protein feed. The ZöL establishes that targeted measures are necessary in order to close the „protein gap" in the organic feed sector. Measures under the Protein Crop Strategy explicitly include organic farming and also aim to improve the supply of domestically-produced organic protein feed. Since legislation requires organic farmers to use a higher percentage of regionally produced feedingstuffs, the extension of domestic production is of special importance for this form of land management.

The Strategy contains a raft of suitable measures to encourage farmers to cultivate and use legumes in addition to cereals and oilseeds. Efforts were undertaken in 2012 to make the framework in the Common Agricultural Policy more favourable for the cultivation of legumes. A number of other European and national instruments are also being used, such as the provision of support funds to promote suitable research projects.

In this respect,

- research into legumes;
- projects focusing on demonstrating opportunities along the entire value chain from cultivation to use; and
- CAP measures, in particular for land-management methods conducive to climate stewardship and environmental protection from the 1st pillar and the agri-environment-climate measures from the 2nd pillar

play a central role.

Even if, supported by the instruments of the Protein Crop Strategy, the production of legumes in Germany and Europe can be expanded in the medium term, it is to be expected that the German processing industry will continue to depend heavily on soya imports from South and North America. For the Federal Government, this implies a global responsibility for environmental and resource policy that goes beyond the goals and activities of the Protein Crop Strategy in the narrower sense. This political responsibility is fleshed out in the BMEL's livestock management strategy.

Strengthening regional value chains

Increasing protein supply from domestic production

The following observation is made in the section on “International agricultural trade”: *“The German livestock industry depends on purchasing additional feed from abroad to cover about a quarter of all protein components. The large quantities of protein animal feed imported into Germany are the main focus of criticism because of their impact on the world‘s forests, biodiversity and, last but not least, the health and development opportunities of the local population. Therefore the Federal Government seeks to increase the use of environmentally-friendly protein feed and of domestically-produced protein feed.”*

The effect of legumes on the climate and the environment

Increasing the quantity of legumes cultivated makes an important contribution to the protection, conservation and sustainable use of biological and genetic diversity and to the diversity of agricultural ecosystems. As legumes are able, in symbiosis with the rhizobia bacteria, to bind nitrogen from the air and use it as a nutrient, the quantity of nitrogen fertilisers used can be reduced. Some of the fixed nitrogen is also available to the following crop. This means it is possible to save on a huge amount of energy required in industrial production, transportation and the application of nitrogen fertilisers when cultivating legumes and the follower crops.

Increased cultivation of legumes extends the range of crop species and reduces the intensity of crop rotations. This can reduce the occurrence of harmful organisms and improve the efficiency of weed control measures through alternating between first-season and secondary-season crops and between leaf and cereal crops. Extended crop rotations contribute to integrated plant protection and a reduced risk of the development of resistance to pesticides. This can result in a reduced use of plant protection products and, consequently, can reduce the negative impact of these products on biological diversity. In addition, flowering legumes offer an excellent source of food for nectar-collecting, pollinating insects.

Expanding the range of crop species is consequently a good way of increasing overall agrobiodiversity, i.e. species diversity, genetic diversity and the diversity of ecosystems in agricultural landscapes, and of contributing to climate change mitigation.

Advantages of cultivating legumes

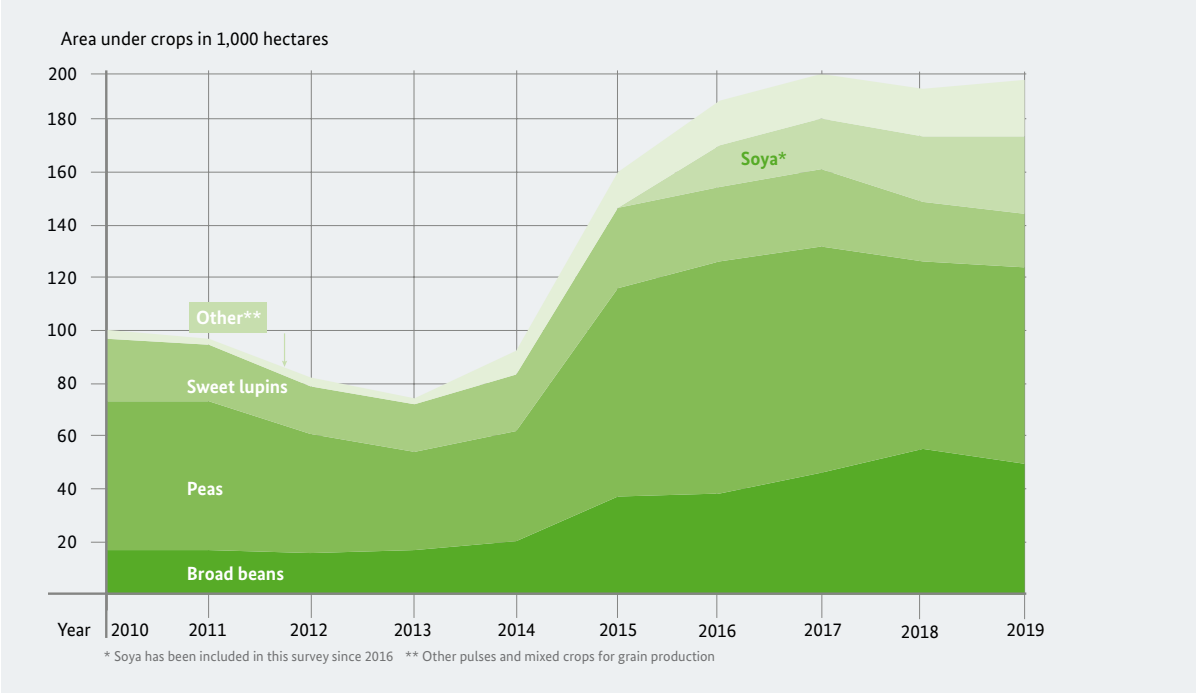
- → Reduction in the intensity of crop rotation systems – increased agrobiodiversity
- → Supply of additional food for honeybees and wild bees
- → Reduced use of nitrogen fertilisers and consequently a reduction of CO_2 emissions and greater energy efficiency
- → Enhanced soil fertility
- → Positive effect on humus
- → Positive phytosanitary impact during crop rotation
- → Positive contribution to integrated plant protection
- → Better water retention capacity of the soil
- → Increase in the earthworm population
- → Deep root penetration, breaking up of detrimental soil compaction

Cultivation of legumes in Germany

Due to its low competitiveness, the cultivation of legumes has dropped continuously in Germany. There were many reasons for this, including the greater physical and monetary yield of competing crops such as grains, maize, sugar-beet and rapeseed, the greater complexity of legume cultivation, the greater fluctuation in legume yields, a lack of marketing and processing opportunities, and the specific parameters of the agricultural policy framework. As a result, knowledge of production techniques was lost, progress in breeding new varieties was slow and there was a drop in the range of suitable and effective plant protection measures and specific preparation and processing methods that were available. This resulted in a negative spiral that saw domestic protein crops becoming less and less competitive.

In view of this, the BMEL's Protein Crop Strategy aims to help crop rotations with legumes perform just as well monetarily in the medium term as crop rotations without legumes, where only grains, maize, sugar-beet or rapeseed are cultivated. In addition to the economic instruments for determining the intra-farm competitiveness of individual crops (the performance without direct costs or labour costs, contribution margin), this must for example also take into account the effects legumes have on follower crops and the phytosanitary effects (e.g. reducing the use of mineral nitrogen fertilisers or of plant protection products).

The land-use survey published the following figures regarding the area of land under the various pulses referred to in the diagram:



Development of the (entire) area under broad beans, peas, sweet lupins, soya and other legumes in Germany from 2010 until 2019 (source: Federal Statistical Office and BMEL)

Since 2014, figures have shown an upward trend in the area under these crops. The increase can be put down in particular to the introduction of Greening (ecological focus areas) under the CAP reform and the agri-environment-climate measures offered in numerous Laender. But the support for knowledge transfer and the intensification of extension services and research-and-development projects have also contributed to this development. Further information on these topics will be provided in the following chapters.

Agricultural policy measures

The reform of the CAP, adopted at the end of 2013, means on the one hand that agriculture in Europe has a reliable and stable framework for the coming years and on the other that it is becoming more ecological and more sustainable. Overall, approximately 6.2 billion Euros of EU funds are available each year for agricultural support in Germany from 2014 until 2020, with these funds being used to support both farmers and rural regions.

EU support is divided across two pillars:

- The first pillar consists of the direct payments to farmers. They are a core element of the CAP and are linked to an even greater extent than previously to environmental measures due to the introduction of so-called Greening.
- The second pillar comprises specific aid programmes for sustainable and environmentally sound farming and rural development.

Greening - ecological focus areas

One core element of the CAP reform is Greening (1st pillar). This includes diversifying cultivation (diversity in the cultivation of crops on arable land), conserving permanent grassland (meadows and pastures) and declaring at least 5 percent of arable land as ecological focus areas (EFAs). The EFAs must be used for the benefit of the environment, although it is still possible, under certain conditions, to use the EFAs in an agriculturally productive manner.

In Germany, it is basically possible to use all the types of EFAs listed in EU legislation; these include land with nitrogen-fixing plants (legumes). Weighting factors are used to take account of the different ecological benefit provided by the various types of EFAs. The weighting factor for legumes is 1.0. In addition to legumes in pure seed, mixtures of legumes with other crops can also be designated as EFAs. This means that cultivating legumes with cereals as a supporting crop is possible, as is the cultivation of clover grass or alfalfa grass as EFAs, provided that the share of legumes is higher. However, since 1 January 2018, the use of plant protection products on EFAs has been banned.

In 2019, EFA applications were submitted for almost 90,000 hectares under nitrogen-fixing crops. Nitrogen-fixing crops represent the third largest group of EFAs following intercrops/undersowing and fallow land.

Agri-environment-climate measures

Agri-environment-climate measures (AECMs) are an important instrument for achieving the environmental goals of the CAP (2nd pillar). AECMs are supported in Germany via financial contributions from the EU, the Federal Government and the Laender. The EU's legal basis for support during the programming period 2014-2020 is the EAFRD Regulation.

The AECMs supported under the Joint Task for the Improvement of Agricultural Structures and Coastal Protection (GAK) (market-adapted, site-adapted and ecologically-compatible land management, including contractual nature conservation and countryside stewardship) also include the support scheme entitled „Diverse crops in arable farming". The main support requirement in this regard is that a farm needs to cultivate at least five different main crops, in combination with legumes, each year, and that the area under these crops should cover at least 10 percent of the farm's arable land.

The Planning Committee for Agricultural Structures and Coastal Protection (PLANAK) has decided on the following payments for the "Diverse crops in arable farming" AECM in the 2019 GAK framework plan:

- Cultivation of legumes or mixed crops including legumes on at least 10 percent of the arable land
  - 90 Euros per hectare (€/ha) arable land; if an EFA: 70 €/ha
  - 55 €/ha arable land for organic farms
- Cultivation of legumes or mixed crops including legumes on at least 10 percent of the arable land, if at least 5 percent of these crops are large-grain legumes
  - 100 €/ha arable land; if an EFA: € 80/ha
  - € 65/ha arable land for organic farms
- Cultivation of large-grain legumes on at least 10 percent of the arable land
  - € 110/ha arable land; if an EFA: € 90/ha
  - € 75/ha arable land for organic farms

The Laender may raise or reduce these amounts by up to 30 %.

A large number of Laender (Baden-Wuerttemberg, Hamburg, Hesse, Mecklenburg-Western Pomerania, North Rhine-Westphalia, Rhineland-Palatinate, Schleswig-Holstein, Thuringia) offer the „Diverse crops" AECM. Bavaria offers this measure outside the GAK. Supplementing CAP Greening, this support scheme provides further impetus for the cultivation of grain legumes in Germany, particularly as the Laender can, under the GAK, and in addition to the EU co-financing rate (up to 75 percent), claim back 60 percent of the national funds from the federal budget.

Further information

- www.bmel.de

Implementing the Strategy

Promotion of knowledge transfer and research

The responsibility for delivering the project, i.e. for implementing and coordinating the BMEL's Protein Crop Strategy in the fields of knowledge transfer and research and development, has been assigned to the Federal Office for Agriculture and Food; a dedicated office within the Federal Office has been set up for this purpose. The office's remit includes coordinating the activities between the Federal Government and the Laender and providing extension services to the BMEL. With the German Bundestag's resolution on the 2020 Budget Act, the 2020 Federal Budget has funds totalling 5.8 million Euros earmarked for the BMEL's Protein Crop Strategy. This means that, from 2014 until 2020, the Protein Crop Strategy has therefore received 36.8 million Euros in support funds. The BMEL is in favour of having a longer-term budget allocation to the tune of just under 6 million Euros per year.

From the very beginning, the key element in the Protein Crop Strategy has been support for the fields of knowledge transfer, research and development. These funds have been used to set up model demonstration networks for soya, lupins and peas/beans with both conventional and organic farms. A fourth network for fine-seeded legumes was launched in mid-2019 is currently under development. The networks focus on knowledge transfer and the intensification of extension services. One important component comprises the demonstration farms on which current research findings are being put into practice and demonstration installations relating to various production issues installed. Production-related, economic and other evaluations are carried out based on the data recorded on the farms. Beyond that, opportunities are demonstrated along the entire value chain, from cultivation to use. A large number of events for farmers, extension providers and enterprises have been carried out throughout the country and have been very well received.

In December 2018, the Soya Network, which was the first network supported under the Protein Crop Strategy, came to an end. It ran for five years and the overall balance of its achievements was positive.

The work done by the network has played a pivotal role in more than tripling the area under soybean crops between 2013 and 2018 and in significantly increasing the number of processing facilities. In addition, three model value chains for the food and feed sector were established and teaching materials for use in general-education, vocational and technical schools were developed.

Flanking the networks, funding also goes to various research projects on breeding, cultivation, processing, feeding, food and ecosystem services. These are intended to

improve existing processes, generate innovations and provide impetus for the economically successful cultivation of legumes and their utilisation.

Following the focus the protein plant strategy placed in recent years on large-grain legumes, such as soya, lupins, peas and beans, a further focus is now being placed on fine-seeded legumes such as clover and alfalfa. The projects for these will be launched step by step. At the same time, new priority topics will be identified and the corresponding announcements will be prepared.

Further information

- → www.ble.de/eps
- → www.sojafoerderring.de
- → www.lupinen-netzwerk.de
- → www.demoneterbo.agrarpraxisforschung.de
- → www.demonet-kleeluzplus.de

Dialogue forum on making protein feed more sustainable

The dialogue forum on making protein feed more sustainable has been active since 2018 under the aegis of the Protein Crop Strategy office. Before that, the German branch of the World Wide Fund For Nature (WWF) had been coordinating the dialogue for almost four years, while the project was ongoing. The goal is to bring together all stakeholders from along the value chain in order to develop solutions for using more sustainable protein feed in Germany.

The members of this forum comprise 65 companies, associations, scientific institutions and authorities from the areas of agriculture, nature conservation, food and feed production and trade. A steering committee consisting of the most important stakeholder bodies (producers, processors/trade, retail, nature conservation groups) advises and supports the forum.

As a result of the consultations, around 30 stakeholders adopted a joint position paper that outlined eight ideas in October 2017. In the paper, the forum affirmed its commitment to raise the share of legumes in cultivation and feeding and to strengthen the competitiveness of legumes. It also advocates only using certified sustainable soya in the future. In doing so, the dialogue forum and its members have sent a strong message that the stakeholders in Germany are assuming responsibility in the global supply chains and want to improve social, economic and environmental conditions along the entire protein feed value chain.

Further information

- → www.eiweissforum.de

The DAFA‘s research strategy

The German Agricultural Research Alliance (DAFA) conducted a technical forum on the subject of legumes; based on this, DAFA developed a research strategy in 2012 to identify the research needed to consistently tap the potential of legumes and facilitate their role in a future-orientated agri-food sector. In implementing its own strategy, the BMEL has taken the research topics identified by DAFA into account to as great an extent as possible.

Further information

→ www.dafa.de

World Pulses Day on 10 February

On 20 December 2018, the General Assembly of the United Nations agreed that 10 February should become the World Pulses Day. This acknowledges the key role pulses play for a healthy and balanced diet and the environmental benefits for sustainable farming. The World Pulses Day is intended to follow up on the large amount of attention that was paid to the International Year of Pulses (IYP) in 2016.

The IYP’s goal was to heighten public awareness of the benefits of pulses as part of sustainable food production. Celebrating the 2016 International Year of Pulses was a unique opportunity to further global production of pulses, to use pulses better in crop rotations and to address the challenges that exist regarding trade in pulses. Another aim was to better utilise pulse-based proteins worldwide, for example by promoting their use along the entire food chain. The resolution emphasises that pulses are a vital source of plant-based proteins and amino acids for people around the globe and that they are also a source of nutritious feed for animals.

Further information

→ www.fao.org/world-pulses-day/en/
→ www.fao.org/pulses-2016/en/

European Soya Declaration, European Protein Plan and Amsterdam Declaration

Legumes are a source of high-quality plant protein, for both feed and food. Regionally produced legumes, in particular, can make a significant contribution to a diverse and more sustainable agriculture.

On 17 July 2017, 14 EU Ministers of Agriculture (Germany, Hungary, Austria, France, the Netherlands, Italy, Poland, Croatia, Romania, Slovenia, Slovakia, Finland, Greece, Luxembourg) signed the European Soya Declaration. They advocate sustainable and certified production, processing and marketing of protein crops in Europe, particularly soya. The Declaration lists measures to reach this objective and thus contribute to more sustainability in European agriculture. This includes, on the one hand, promoting the locally adapted cultivation of legumes and fostering optimised feeding. On the other hand it is important to inform consumers about plant-based protein-rich diets and to enhance support for import certifications. At the fringes of the 2018 International Green Week, the Ministers of Agriculture from four Eastern European states (Moldova, Montenegro, Kosovo and Macedonia) acceded to the Declaration; Switzerland joined in 2019.

The European Commission formulated a report on the development of plant proteins in the EU in 2018. It reviews and examines the supply and demand of vegetable protein, such as soya, peas, beans and rape, as well as the possible expansion of production. The BMEL's Protein Crop Strategy already implements many of the instruments and programmes proposed by the Commission to promote the production of plant proteins. They include the intensification of research and knowledge transfer and the development of value-added chains.

Beyond that, there are synergies between the Protein Crop Strategy and the aims of the Amsterdam Declaration, in particular with respect to the use of agricultural commodities associated with deforestation in Europe. In 2015, Germany, the Netherlands, the UK, Denmark, Norway, France and Italy joined together and formed the "Amsterdam Declarations Partnership" as a think tank on the subject of deforestation-free supply chains. They support cross-border initiatives for palm oil, cocoa and soy and knowledge sharing between the members.

Further information

→ www.bmel.de

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