

Working for Sustainable Farming in Europe

The Farm Network,
a BASF partnership



 **BASF**
We create chemistry

Yellow Wagtail (*Motacilla flava*) in Oilseed Rape Field

00 | EDITORIAL

Dear reader

By 2050, the world will need to feed nine billion people, using existing land resources but with less water and energy. How can farmers maintain the delicate balance between profitability, caring for the environment and meeting the expectations of society? In short, what does sustainable farming look like?

This brochure presents one of our key initiatives, the Farm Network, a BASF partnership. In the European network we proactively cooperate with professional farmers and independent experts to investigate how modern agriculture can go hand-in-hand with measures to support the environment, local wildlife and plant species.

Operating under real-world conditions, we answer the questions that are on everyone's lips. What can farmers do to protect water and soil? What is the best way to protect birds and pollinators? How do farmers maintain the balance between highly productive fields and species-rich field margins?

Our goal is to share learnings and showcase what sustainable farming can achieve. To learn more about the Farm Network we invite you to turn the page and read on!

Sincerely



Vincent Gros
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01 | FARMING AND THE ENVIRONMENT IN EUROPE

Farmers see the work they do as a vocation that extends beyond the planting and harvesting of crops. This translates into three key activities: providing food, supporting rural culture, and caring for the land.

Farmers and consumers agree that the main task of farmers is to provide affordable food to feed the world. However, the majority say that environmental costs and associated resources have increased significantly over the past 50 years. As part of the Farm Network, a BASF partnership, we focus on topics relevant to farmers, like efficient crop production, resource conservation and biodiversity support. Why are these topics so important?

The reality is that in less than 40 years, we will have an additional three billion people living on this planet; however, farmers will still have to cope with the limited amount of arable land available. This means that growing sufficient quality food and crops will become increasingly challenging.

Sustainable agriculture is the only solution – it saves resources and protects the environment, using land, water and other resources more efficiently. It also contributes to greater biodiversity within the agricultural landscape.

Did you know?

In the 1960s, each European depended on 0.3 hectares of arable land for food. In 2011, this decreased to 0.2 hectares, caused partially by population growth but also due to an increase in urban and forest areas. Over the same time period, yields per hectare more than doubled with the average cereal yield increasing from almost two tons per hectare to almost five.





Did you know?

The Farmland Bird Index is used as an indicator by the European Union to monitor biodiversity and the environment. Data is collected on 37 bird species that are dependent on agricultural habitats, for example, the linnet, corn bunting and yellowhammer. Most European countries also have a national version of this index, particularly for monitoring species of local importance.

Protecting our limited resources

Some people may regard it as dirt but there are few things more precious than the soil, where crops are sown and harvested into food. Soil is the very basis of life on earth.

Soil degradation – normally caused by erosion, compaction and the depletion of organic matter – can be attributed to inadequate management. The good news is that if farmers maintain healthy soil conditions (stable soil structure and appropriate organic matter levels), overall soil fertility can be maintained and even improved for future generations.

Not only will the world have to contend with limited land, water will also be scarce. Agriculture accounts for 70 percent of all water usage, a figure that rises to 95 percent in developing countries. Over the next 50 years, water shortages in agriculture are predicted to be the single biggest constraint facing food production.

The main opportunity to protect water quality in agricultural areas lies in practical, site-specific measures, for example, avoiding point pollution sources in farmyards, using drift-reducing techniques when applying crop protection products, and implementing vegetated buffer strips to reduce surface runoff to water courses.

The farm ecosystem

Biodiversity and agriculture are inextricably linked. On the one hand, biodiversity provides essential functions to agriculture. These ecological services are delivered through functional biodiversity, for example, soil organisms, insects, bacteria, plants and fungi all contribute to soil fertility and the breakdown of organic waste. Likewise, strong vegetation is a defence against erosion while bees pollinate crops and predatory insects help to control pests and aphids.

The relationship is two-way. In turn, agriculture has also created habitats and developed varieties and

strains that contribute to biological diversity, commonly known as agro biodiversity. Farming in Europe has effectively created a landscape of arable land, dotted with flowery meadows and pasture land, heaths, woodland borders, hedges, shrubs and trees.

On the farm, the best way to enhance biodiversity is through targeted initiatives with several options available at field, farm, and broader landscape level.

02 | THE FARM NETWORK IN EUROPE

The Farm Network is a group of farms and other partners, who collaborate with us to demonstrate how productive agriculture can co-exist in harmony with nature. Currently, there are more than 10 farms in the network, located in the Czech Republic, France, Germany, Italy, Poland and the UK.

So, how do we deliver on this? We work with key stakeholders – farmers, researchers, local environmental and farming organizations as well as other interested parties – to develop innovative farming methods. Each stakeholder brings valuable expertise to the table. BASF and its local partners are responsible for advising farmers on how to implement sustainable techniques. Outcomes are independently measured over time while lessons learnt are shared and incorporated into future programs.

At the end of the day, farming is a professional business. The farmers working with us are independent business people, managing their farms as commercial entities. We help farmers increase profits and yields while protecting and conserving biodiversity, water and other resources.

Did you know?

A typical feature of European agricultural landscapes, the skylark (*Alauda arvensis*) features in the Farmland Bird Index, and is protected under the EU Birds Directive 79/409/EEC. Known for its dramatic flight and melodious song, the skylark breeds from April to July, nests on the ground, and feeds on arable fields (cereals, legumes, and root crops), set-aside, grassland, and stubble fields.



Did you know?

*In Europe, we have over 2,500 species of bees, including the well-known honey bee (*Apis mellifera*) as well as wild species such as mining bees and bumble bees. The honey bee and the bumble bee live in complex societies, called colonies, while most other bees are solitary. Other insects such as butterflies, moths, hoverflies and beetles also pollinate crops and wild plants.*



Our concept

As the farms differ in size and produce a diversity of crops (cereals, oilseeds, fresh vegetables and vines), measures are equally varied. Test criteria applied include convenience to the farmer as well as measured impacts on the protection of the natural resource or on increased levels of biodiversity.

Our trials are practical. Once a farmer learns about a particular sustainable practice, he can implement it first in a limited part of the farm before assessing whether it is viable to extend to a larger area. For birds and pollinators, we use seed and flower mixtures that can be easily established and provide food throughout the year. The same skills and technologies found in crop production are used to establish and manage seed and flower mixtures.

Independent experts evaluate the biodiversity of each farm, using recognized methods and standards. Monitored data includes the number of birds, pollinators (including, wild bees and butterflies) and beneficial insects for pest control. Identifying and monitoring the species currently present on the farm is not only useful for evaluation purpose, it is also invaluable for planning ways to encourage other desirable species.



Our journey

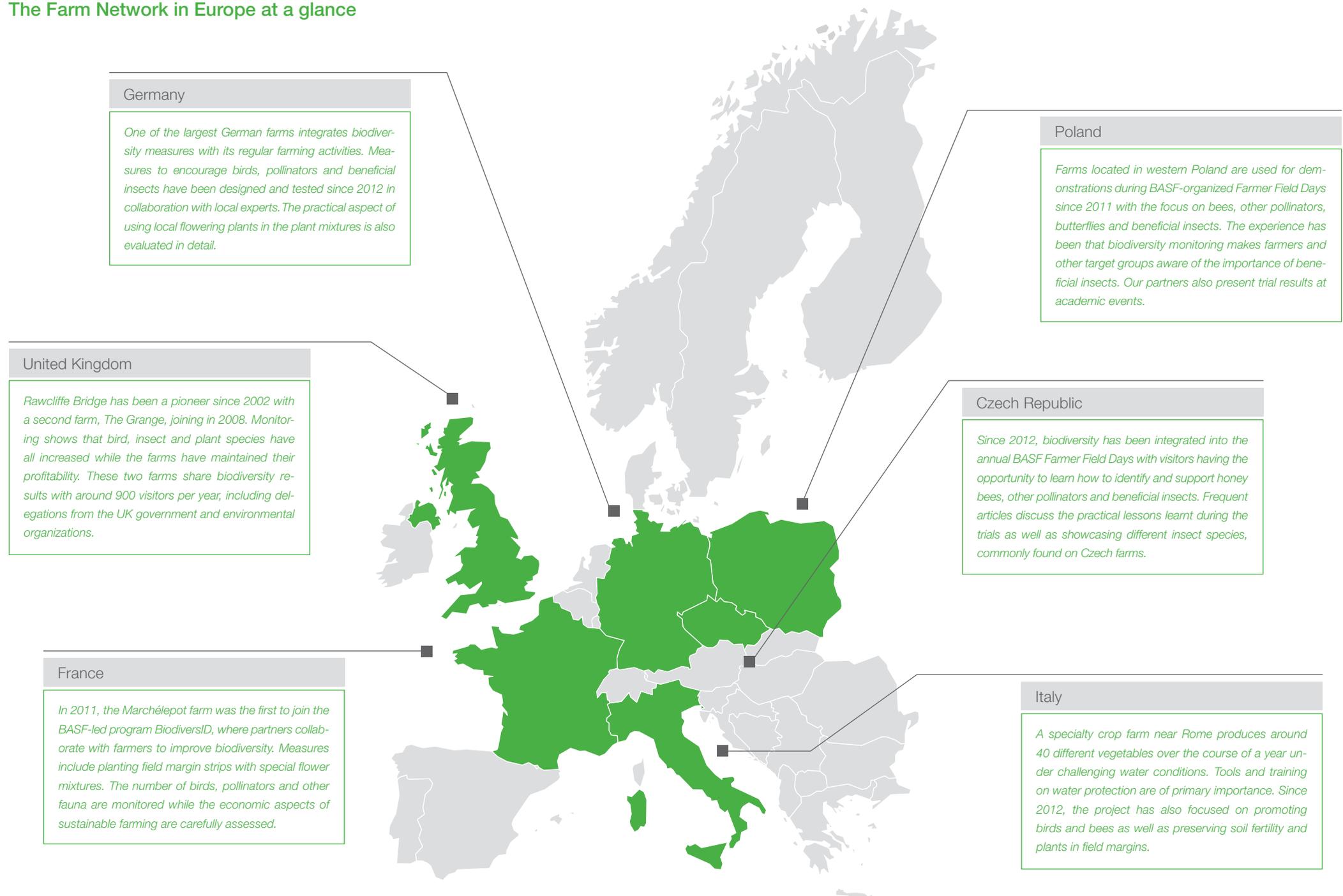
Sustainability is not an end destination but rather a journey of continuous improvement. Our goal is to find the right tools and knowledge to improve farming on a continual basis.

Apart from learning and collecting valuable information, the farms also provide a unique opportunity for everyone to come together and exchange views on sustainable agriculture. For example, training events, organized by our partners in the UK, cover soil management and how to improve water quality on a profitable farm. In Italy, a number of universities, the crop protection association and the TOPPS project (more information in “Links to other initiatives”) collaborate to provide training and practical demonstrations on water protection. In addition to encouraging farmers, a big part of the work undertaken is public outreach to important audiences, including local schools and key influencers.



In the medium term, our goal is to see these farms provide feedback on how sustainable agriculture measures have had a positive effect on both modern farming systems and the protection of biodiversity and resources. In the longer term, we would like to see these techniques being embraced by new farms outside the existing network.

The Farm Network in Europe at a glance





03 | SUSTAINABILITY ON YOUR FARM



This initiative demonstrates that commercial farmers can support biodiversity while continuing to run profitable and successful farms.

Preliminary results from the more mature farms in the UK show that the number of breeding birds has increased significantly through smart creation and management of habitats without any negative impact to the highly productive arable areas of the farms. Several trials in France also indicate that pollinators benefit from the location of pollen and nectar strips in small farm areas.

Simple steps are a great way to start:

- **Seek advice:** Establish what you already have and build on it. Use diagnostic tools to identify potential areas for improvement, or contact a local advisor to identify specific risks, for example, your water catchment area.
- **Keep it simple:** The simplest change can bring about huge benefits. For example, avoiding point pollution sources can reduce 50 to 90 percent of water contamination on your farm.
- **Keep it local:** Make sure the species you are encouraging is indigenous to your area. Ask local organizations for advice.
- **Proactively manage:** Manage biodiversity proactively the same way as you would your cropped areas. Establish habitats; remove pernicious weeds from field margins, flower strips and wild bird food crops, particularly during the early stages.
- **Talk about it:** Highlight successes to neighbouring farmers and challenge myths about conventional agricultural production. Provide some good news stories, and invite them to visit your farm.

Six ideas for your farm

Water protection

You can avoid 60 to 90 percent of pesticide point source contamination on your farm by cleaning your sprayers in the field or alternatively by using Osmofilm or bio-filter systems.

Food for bees and pollinators

If you own a beehive or want to promote local wild bees and other pollinators, make sure they have enough nectar and pollen from flower mixtures and flowering crops.

Good agricultural practices

Prevent spray drift by adjusting your sprayer (lower boom height and slower speed) and by using drift reduction nozzles when possible, especially on headlands and field margins.



Field margin management

To support beneficial insects, plant annual or perennial flowers in field margins. To ensure year-round flowering, follow best practice guidelines around seeding and mowing times.

Crop production

Maintain the productivity of your arable fields. Talk about your contribution to society. For example, the Marchélepôt farm feeds over 5,600 people. How many people does your farm feed?

Supporting birds

Thanks to the introduction of bed and breakfast nest boxes and feeding stations in Rawcliffe Bridge, tree sparrow numbers increased from six to 59 pairs between 2003 and 2010.

04 | LINKS TO OTHER INITIATIVES

- Farm Perspectives studies – news section on www.agro.basf.com
- ECPA initiative Hungry for Change – www.hungry4change.eu
- TOPPS – www.topps-life.org
- Quellendorf project (in German) – read more on www.agrar.basf.de in the section on sustainability and biodiversity.
- BiodiversID (in French) – read more on www.agro.basf.fr in the section on sustainable agriculture and the dossier on the compatibility of productivity and biodiversity.
- Biodiversity project in UK – read more on www.agricentre.basf.co.uk in the section on “About Us” and biodiversity.
- Sustainable Agriculture (in Czech) – read more on www.agro.basf.cz in the section on sustainable agriculture and biodiversity.
- “A hungry planet and the contribution of South European Agriculture” – find the video on www.youtube.com.

Imprint

Published by:
BASF SE | Agricultural Center
67117 Limburgerhof | Germany

Order number: APD/S 2013/1, 2nd print

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05 | FACTS AND FIGURES 2014

Czech Republic

Location: Kněževes (Prague-West)
Main Crops: Cereals – Corn – OSR rotation
Key Partners: Crop Research Institute (CRI), Czech University of Life Sciences Prague (CULS), Bee Research Institute (BRI)
Visitors: Since 2012, 300 to 500 farmers and experts visit per year

France

Location: Marchélepot (Picardie); Ponsin and Rannou (Champagne-Ardenne), Chantereau (Centre), and Merville (Midi-Pyrénées)
Main Crops: Cereals and other field crops, vineyards and orchards
Key Partners: FARRE, BBN, and other BiodiversID partners
Visitors: Since 2013 annual visitors have increased to around 350, including training days for farmers

Germany

Location: Quellendorf (Sachsen-Anhalt)
Main Crops: Cereals – OSR rotation
Key Partners: Farm managing director, DVL, Hochschule Anhalt, local insect and bird experts
Visitors: Since 2013 around 300 annual visitors including media, farmers union, politicians and NGOs

Italy

Location: Fiumicino (Rome)
Main Crops: Carrots and over 40 other specialty crops
Key Partners: Farm owners, local bees and bird organizations, universities and entomologists
Visitors: Since 2013 visits focus on biodiversity experts and BASF colleagues – the farm will open for wider audiences in 2015

Poland

Location: Jarosławiec (Poznań), Pągow (Wrocław)
Main Crops: Cereals – Corn – OSR rotation
Key Partners: Wrocław and Poznań Universities of Life Sciences
Visitors: Since 2011 up to 1,000 farmers and experts visit per year, including over 50 European IPM researchers in 2014

United Kingdom

Location: Rawcliffe Bridge (East Yorkshire) and The Grange (Northamptonshire)
Main Crops: Cereals – OSR rotation
Key Partners: Farm owners, FWAG, GWCT, LEAF, NFU, Limagrain UK
Visitors: Between 800 and 900 visitors per year, including politicians, key influencers, and farmers

