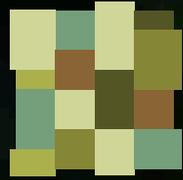




This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n. 773814



DYNAVERSITY



# DYNAVERSITY

Biodiversity matters for agriculture



# 1. The problem with industrial agriculture

Agriculture contributes to sustaining a continuously growing world population, currently around 7.5 billion inhabitants (2018 data, <http://www.worldpopdata.org/>).

At the same time, today, food malnutrition afflicts millions of people around the world. On the one hand, more than 100 million people have inadequate access to food, which endangers their lives<sup>1</sup> and more than 800 million, one in nine, suffer from hunger<sup>2</sup>. On the other hand, about two billion people suffer from obesity or are overweight.

Agriculture, with its many economic, political and social implications, is a world that is continuously changing. The “invention” of agriculture marked a turning point in the history of humanity, about 10,000 years ago, leading to a sedentary life and many other consequences.

After the Second World War, technological progress, at least in the part of the “developed” world that has been able to accommodate it, has led to a boom in food production. The aim was to increase crop productivity with the ultimate goal of providing enough food. Therefore, agronomists selected plant varieties that have high yield potential, when cultivated with specific methods: fertilisation, mechanical cultivation of the soil, chemical treatments and irrigation.

Farmers quickly and widely adopted these varieties and related technologies.

The shift to intensive agricultural production has increased productivity but has led to substantial negative environmental and social impacts leading to the current agricultural crisis. This crisis no longer has just a sectoral, environmental and social dimension, but increasingly involves public health. For this reason, a radical transformation of the agricultural and food system is necessary at a global level: the uniformity of agriculture and diets is compromising not only the health of the planet but also that of people. FAO statistics say that out of 382,000 species of vascular plants, a little over 6,000 have been cultivated for food. Of these fewer than 200 species had significant production levels globally and only nine (sugar cane, maize, rice, wheat, potatoes, soybeans, oil-palm fruit, sugar beet and cassava) account for over 66 per cent of all crop production<sup>3</sup>.

However, the data also says more: “diversity in farmers’ fields has decreased, and threats to diversity are growing stronger”. This phenomenon of loss of genetic diversity is defined as “genetic erosion”. In other words, not only is our diet based on a few species but within them, diversity is decreasing; fewer and fewer varieties are being cultivated, and these

are increasingly similar to each other. In a historical era in which uncertainties and risks are increasing, as demonstrated by climate change and fluctuations in prices and markets, we are making all agriculture more uniform and equal.

Nevertheless, these uniforms and monocultural farming systems are much more fragile, unable to react to unforeseen events (e.g. a particular insect or disease) and no longer able to produce diversity over time. FAO also states that “biodiverse agricultural landscapes in which cultivated land is interspersed with uncultivated areas such as woodlands, pastures and wetlands have been, or are being, replaced by large areas of monoculture, farmed using large quantities of external inputs such as pesticides, mineral fertilisers and fossil fuels.”

An alternative approach to intensive agricultural production is possible. It is more complicated but has the revolutionary potential to restore centrality to the role of the farmer and environmental and economic sustainability.

---

<sup>1</sup> Global Report on Food Crisis 2019, Food Security Information Network, <http://www.fsinplatform.org/global-report-food-crises-2019>

<sup>2</sup> FAO, IFAD, UNICEF, WFP and WHO. 2018. The State of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition. Rome, FAO. <http://www.fao.org/3/i9553en/i9553en.pdf>

<sup>3</sup> FAO. 2019. The State of the World's Biodiversity for Food and Agriculture, J. Bélanger & D. Pilling (eds.). FAO Commission on Genetic Resources for Food and Agriculture Assessments. Rome. 572 pp. <http://www.fo.org/3/CA3129EN/CA3129EN.pdf>

## 2. An innovative solution: promoting agro-biodiversity

With the process of agriculture modernisation, many farmers have abandoned local varieties in favour of high-yield, genetically uniform ones. This trend presents several risks, such as the increased vulnerability of crops to changes in the environment and climate and decrease of resilience to climate change.

On the contrary, agro-biodiversity increases resilience to shocks and stresses; it provides opportunities to adapt production systems to emerging challenges and is a critical resource in efforts to increase output sustainably. Agricultural biodiversity includes all biological, environmental and socio-cultural resources that are important for food and agriculture: plant and crop varieties, livestock, wild species and other organisms as well as the farmers and local communities that interact to manage them.

The latest IPCC special report on Climate change and Land<sup>4</sup> specifically indicates that diversified crops in the field lead to lower vulnerability to catastrophic loss. Enhanced cultivated biodiversity reduces degradation of soil, improves general ecological processes in the ecosystem while strengthening local communities and recognising the value of farmers and their knowledge. Diversification of many components of the food system – by increasing resilience and lowering the risks – may ultimately translate in enhancing food securi-

ty, improving dietary diversity while reducing the agricultural impact on climate change.

In line with this approach, many initiatives have emerged throughout Europe during the last 30 years, heterogeneous in composition and structure, but sharing the common objective of restoring biodiversity through dynamic management.

Very different actors, farmers, agronomists, scientists, small seed companies, environmentalists and citizens, all play a role in these new networks. They run farms that focus on crop diversity, participatory and decentralised breeding, product processing and direct selling to the public. They choose local varieties and create new farmers' varieties, carrying out a valuable work of bringing back diversity into agriculture. They create community seed banks and join forces to build sustainable supply chains and development models.

They organise meetings, fairs, seed swaps, public events, to exchange knowledge and to raise public awareness of the vital role of diversity in agriculture.

---

<sup>4</sup> IPCC. 2019. Special report on Climate change and Land. <https://www.ipcc.ch/report/srcl/>

### 3. Experiences from the ground

Restoring biodiversity in the field and all along the agro-food supply chain is a must. The European project DYNAVERSITY is one of these initiatives. It was initiated in 2017. The project studies and describes experiences under which biodiversity had been restored, also through a photographic exhibition.

Among others, the exhibition tells the story of Caselle in Pittari, a small town in the Campania region of Italy, where a wheat harvest competition takes place every year since 2005: the "Palio of Wheat". On the day of the race, the eight districts of the village meet at dawn in the village square and reach the competition field in procession. The team that is best and fastest at reaping its share of the field wins. Harvesting is done by hand, using tools and techniques handed down from the elderly. At the end of the race, there is a celebration with bread and local products. This ceremony is held in memory of peasant traditions celebrated during the year.

The Palio is much more than a re-enactment event that takes place on a summer day, attracting people from neighbouring towns and many tourists. It is a way to rebuild and strengthen a community and its bond with the land, to restore value and dignity to tradition, but at the same time to create new opportuni-

ties for economic development. The community of Caselle in Pittari has undertaken a process of recovery of some local varieties of wheat, has built a mill to produce local flour and pasta and complete the supply chain.

In France, the Réseau Semences Paysannes (RSP) is one of the oldest associations promoting agricultural biodiversity and claiming the rights of farmers to be producers and not just consumers of seeds. The RSP association groups more than 90 regional organisations under a common political goal: social and ecological agriculture-based in the territories.

The members of the RSP network meet regularly to discuss the overall objectives and activities of the association. Other moments are dedicated to visits local farms presenting interesting examples for the association. During field activities, in 2018, the members of the networks visited a family-run organic farm dedicated to raising dairy and angora goats and growing local varieties of cereals (including a mixture of ancient varieties of wheat) and forage. The products are processed on the farm and sold directly to the public or local businesses. The farm is also open to the public with educational activities that show the stages of processing of products and tell the choices in favour of maintaining agricultural diversity. By sharing experience across

organisations, by visiting concrete initiatives, the RSP raises awareness of biodiversity and disseminates good practices at local farm level.

The Irish Seed Savers Association has been active since the 1990s and is dedicated to maintaining local varieties of vegetables, cereals, fruit trees and flowers, currently having around 600 varieties of seeds out of commerce. It has more than 170 apple varieties, including 33 varieties that do not require grafting for propagation, which is probably the most extensive collection of this type in the world. The association has fields in which it experiments and maintains the varieties, but which are also open to the public to carry out a work of promotion and dissemination of diversity in agriculture and gardening. Every year the association organises a large public event, which includes training meetings, guided tours of the fields and orchards, tastings.

There are members of the association who participate in the testing and conservation of varieties using seeds and plants on their farms and returning results and seeds to the common bank.

For instance, this is the case of a farmer who runs a small farm and mainly grows vegetables, in the field and greenhouses. A former chef, he aims to produce primarily good food to be sold at local farmers' markets. Moreover, he has found in the diversity of crops and varieties the key to meet the taste of consumers and promote a change in habits and food culture.



*Caselle in Pittari, Campania, Italy*



*Caselle in Pittari, Campania, Italy*





*Brugnac, Lot-et-Garonne, France*



*Brugnac, Lot-et-Garonne, France*



*County Clare, Ireland*



*Ennis, County Clare, Ireland*



*Ennis, County Clare, Ireland*



*Scariff, County Clare, Ireland*

# What is Dynaversity?

**DYNAMIC** seed networks for managing European di**VERSITY** (DYNA**VERSITY**) is a three-year project started in 2017 involving ten partners from four European countries and funded by Horizon 2020, the European Programme for Research and Innovation.

DYNA**VERSITY** is a multi-actor research project on networking *in situ* and on farm communities, linking the world of life sciences with social sciences, local communities, seed and consumers' networks. One of the main objectives of the project is to survey and map the realities involved in the management of agricultural diversity in Europe, which include farmers' associations, agronomists, scientists, consumers, environmentalists and seed companies.

Such mapping will make these realities known to the public and stakeholders in agriculture, will promote the creation of new networks and facilitate the exchange of knowledge. Training is an integral part of the project and involves the organisation of demonstration days and the involvement of teachers.

Many dissemination activities are planned, such as a photo exhibition, aimed at raising awareness among a broader public on the issue of the management of agricultural diversity and its contribution to the achievement of sustainable development models from a social, economic and environmental point of view.

## What can you do as a consumer?

- **Inform yourself** and others around you about the issue of agro-biodiversity by using the materials developed by our organisations (for instance, sharing this booklet!)
- **Buy food directly from your local farmer** or at a farmers' market. Ask them questions about the varieties they are growing, where they come from, their history.
- **Become a gardener or adopt an endangered peasant or heirloom seed!** You can also join a local Seed Savers' network or Community Seed Bank.
- **Be part of a CSA!** Community Supported Agriculture is one of the best forms of producers-consumers' partnerships to support farmers who work to protect agro-biodiversity. Lookup for one active in your city.

# DYNAVERSITY

## photographic project

To portray the communities that experience innovative ways in agriculture, recovering varieties of plants, creating new ones and promoting new supply chains, six events across Europe were chosen as particularly representative:

- Palio of Wheat of Caselle in Pittari - Campania, Italy (*thanks to Associazione Pro Loco - Caselle in Pittari and Rete Semi Rurali*).
- Meeting for the participatory selection of an evolutionary population of SOLIBAM tomato in the experimental field at Rotonda Basilicata, Italy (*thanks to Pollino National Park and ALSIA and Rete Semi Rurali*).
- Great Irish Garden Open day in Scariff - County Clare, Ireland (*thanks to Irish Seed Savers Association*).
- Annual meeting of Réseau Semences Paysannes in Casteljaloux - Lot-et-Garonne, France (*thanks to Réseau Semences Paysannes*).
- XV Andalusian Fair of Agro-biodiversity in Jodar - Andalusia, Spain (*thanks to Red de Semillas*).
- Looking at legumes through the consumers' eye, a workshop organised by True project in Budapest, Hungary (*thanks to ESSRG*).

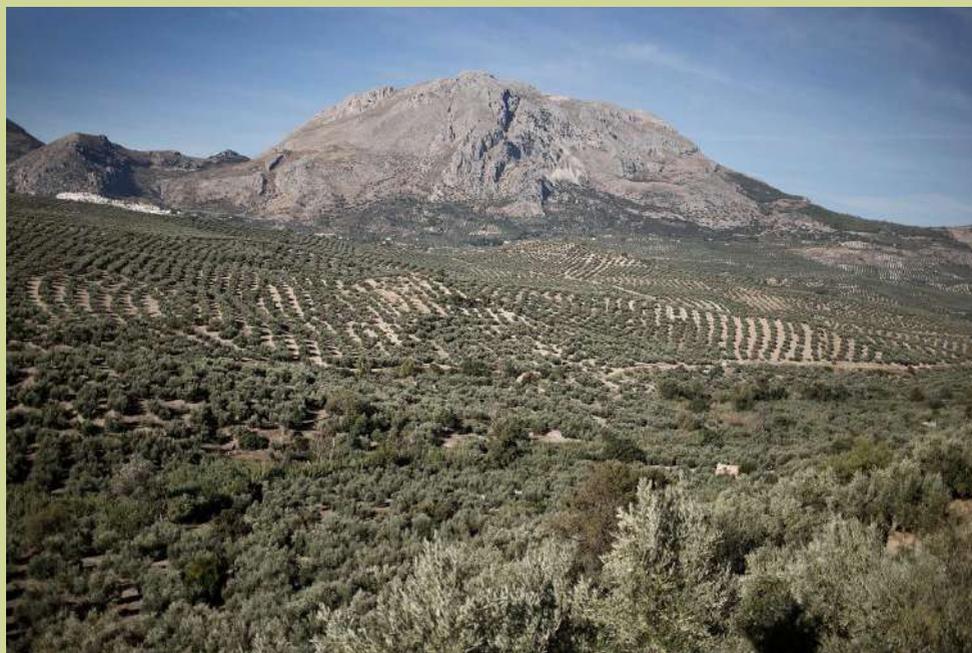
*The photoshoots were taken between July and November 2018. Exhibitions will be organised around Europe to maximise the visibility of the project.*

### The photographer

A lawyer by training, Italo Rondinella ([www.italorondinella.com](http://www.italorondinella.com)) has been working for about ten years as an independent photographer and filmmaker, producing social and anthropological reportages. He worked mainly abroad, first in Spain and then in Turkey, where he currently resides.



*Balaton Lake, Hungary*



*Jodar, Andalusia, Spain*



*Rotonda, Basilicata, Italy*



*Ronda, Andalusia, Spain*



Caselle in Pittari, Campania, Italy