

## POLAND

### Farm's performance, restructuring & modernisation

#### Location

Bydgoszcz

#### Programming period

2014 – 2020

#### Priority

P2 – Competitiveness

#### Measure

M16 - Cooperation

#### Funding (EUR)

Total budget 432 090

EAFRD 192 259

National/Regional 109 893

Private 129 938

#### Project duration

2018 – 2021

#### Project promoter\*

EIP Operational Group  
Ancient Grain

#### Contact

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[www.pradawneziarno.pl/](http://www.pradawneziarno.pl/)

An EIP Operational Group worked on the reintroduction of ancient wheat species in the context of current practices applied at farm level.

### Summary

The cultivation of ancient wheat varieties gives the opportunity to obtain grain for consumption with a higher content of biologically active ingredients compared to common wheat. For this purpose, an EIP (European Innovation Partnership) Operational Group was set up to restore the cultivation and economic use of the original forms of round grain and Persian wheat with increased nutritional value.



The operational group developed and tested new cultivation technologies (low-input conventional and organic) and new production processes (bread, cereals, pasta). It also developed a marketing strategy that is common to the members of the consortium (scientists, farmers and entrepreneurs, local government and advisory institutions) to create supply and demand for the project's grain and primary wheat products.

### Results

Ancient types of wheat (round grain and Persian) were restored to both organic and conventional cultivation on several farms, using environmentally friendly technologies. As the availability of seed material increases, this production will be expanded to other farms, with growing demand shown by the numerous enquiries about seed availability from Facebook users.

More than 3 000 consumers took part in a tasting of the project's wheat products. The Polish Organic Food Association started distributing the grain and flour, and more than a dozen craft bakeries have carried out baking tests and are preparing to introduce new bakery products which use primary wheat and round grain flour.

### Lessons & Recommendations

- The cooperation between multiple actors contributes to the creation of close links between research and agriculture, as well as entrepreneurs and consulting services. This facilitates the implementation of innovative solutions in practice. All actors involved share their knowledge and experience, and thanks to the joint promotion of results, the solutions developed are available at both the national and international level.

\* The Project promoter/beneficiary is an EIP-AGRI Operational Group (<https://ec.europa.eu/eip/agriculture/en>)

## Context

Agriculture is one of the sectors most exposed to climate change, which intensifies abiotic and biotic (non-living and living) stresses. One of the most important effects of climate change on agriculture is the increased probability of drought. Adaptation of plant production to climate change requires limiting water use (e.g. through water-saving cultivation technologies), improving the water retention of soils (e.g. by increasing the content of organic matter), popularising the use of species and varieties of crops that are resistant to changing climatic conditions and increasing pressure of biotic factors (diseases, pests).

Years of breeding work to increase crop yields have resulted in 75 % of plant genetic resources being withdrawn from use (gene erosion) in the last 100 years. The importance of biodiversity for the process of adaptation of plant production to changing habitat factors and protection of the natural environment, encourages the search for and restoration of genetic variation in plant production, conditioning a wider range of desired features. An important source of this variability may be species related to cultivated plants e.g. primary forms of wheat (round grain and Persian).

The domestication of wheat and further breeding work resulted in the emergence of high-yielding species and varieties, mainly common wheat, but it was not accompanied by an improvement in the biologically active value of grains. There is now increasing interest, among breeders, farmers and processors in primary species, due to the growing demand for highly nutritious foods.

The cultivation of primary wheat gives the opportunity to obtain grain for consumption with a higher content of biologically active ingredients compared to common wheat, especially through organic farming.

The existing initiatives for traditional, regional products should be supported by an information and promotional campaign for ecological products. The main goal of such a campaign should be to inform consumers about the properties of such products, as determined by independent scientific research. The growing interest in selling organic products increases the importance of promotion, especially at the initial stage of introducing the product to the market. The promotion of a common trademark (brand) may contribute to easier product identification and involve both producers and processors.

## Objectives

The project responds to the need for effective, environmentally friendly cultivation technologies for

valuable, currently unused agricultural plant species and the need for a sustainable supply of food with high nutritional value.

The main goal of the Operational Group is to restore the cultivation and economic use of the original forms of round grain and Persian wheat with increased nutritional value.

There is also a need to develop a marketing strategy that is common to the members of the consortium (scientists, farmers and entrepreneurs, local government and advisory institutions) to create supply and demand for the project's grain and primary wheat products.

## Activities

The Ancient Grain project is being implemented by a consortium consisting of:

- the scientific partner /project leader (University of Science and Technology in Bydgoszcz);
- five farmers to verify the technologies developed for organic production in practice;
- the Regional Agricultural Advisory Centre – in a dual role as employer of an innovation broker and for dissemination activities;
- two food processing companies; and
- the local government.

The successful reintroduction of the original forms of round grain and Persian wheat requires that its possibilities are recognised, and the technology of their cultivation is determined. Over a three-year period (2018-2020) field experiments were conducted in conventional low-input systems (at the University Research Station) and in 2019 tests were carried out simultaneously at five certified organic farms.

Under the field experiments (organic and conventional) the following agrotechnical parameters were tested: different sowing densities; energy and water-saving, and conserving methods of tillage (shallow surface cultivation instead of ploughing or technology of cultivation and strip-till sowing). Additionally, to optimise the low-cost conventional technology, the response to the absence or low doses of nitrogen fertilisation and various variants of straw shortening were determined. The impact of cultivation technology elements on the yield, weed infestation, the occurrence of pests, diseases (plant health and grain contamination with mycotoxins) as well as the nutritional and technological value of grain from both production systems was assessed.

Assessment of the nutritional value of the grain includes the content of macro- and microelements, amino acids, fibre, vitamins as well as of the quantity and quality of gluten. The technological quality is defined on the basis of the grinding value of the grain and baking flour. Field experiments and laboratory tests provided the basis for the selection of optimal agrotechnical parameters favouring high plant productivity and the quality of the obtained crop.

Another activity necessary to restore the economic use of primary wheat (round grain and Persian) is the development of a technology for processing grain to produce end products. It was planned to develop new processes for the production of pasta, flakes and bread from the flour of primary forms of round-grain wheat and Persian wheat with increased nutritional value. The basis for their development are production tests in agri-food processing companies that are part of the consortium. These processes are adjusted to the previously determined physicochemical properties of grain and flour.

Recipes for baking bread are developed (from single and mixed flours). The parameters of the dough preparation and pasta drying process are set to ensure the desired structure, hardness and flexibility are obtained. Flake production parameters are developed to achieve the preferred taste and culinary properties. The food products obtained from round grain and Persian wheat are characterised by an increased nutritional value. Their high quality is achieved thanks to the quality characteristics of wheat and the sustainable use of industrial production means in integrated production processes or their non-use in organic production.

To succeed it was necessary to develop a new marketing strategy that would be common for all members of the consortium. This joint strategy involves:

- Branding - building brand awareness and recognition by developing and promoting a common logo for round grain and Persian wheat products, which aims to give these products a new, recognisable image;
- The introduction of a QR code on the packaging, which enables large amounts of data to be saved, such as: information about the product (made from round grain and Persian wheat and details about these

grains), information about the nutritional value etc., website address, a virtual business card (the so-called vCard);

- Joint promotion of products at fairs; and
- Joint market research, analysis of consumer needs and preferences. This gives the opportunity to better adjust the range of food products from the original forms of round grain and Persian wheat to the expectations of the consumer.

### Main results

Ancient types of wheat (round grain and Persian) were restored to both organic and conventional cultivation on several farms, using environmentally friendly technologies. As the availability of seed material increases, this production will be expanded to other farms.

Over 3 000 consumers took part in a tasting of the wheat products of the project. The Polish Organic Food Association started distributing the grain and flour, and more than a dozen craft bakeries have carried out baking tests and are preparing to introduce new bakery products which use primary wheat and round grain flour.

### Key lessons

The cooperation between multiple actors contributes to the creation of close links between research and agriculture, as well as entrepreneurs and consulting services. This facilitates the implementation of innovative solutions in practice. Cooperation is established between farmers, processors, a scientific and advisory institution and a local government unit. Thanks to this form of integration, farmers, producers and grain processors can better use their skills, knowledge and competences and have easier access to information, advice and new technologies. Faster transfer of knowledge to the economy is possible as well as a quicker response from research, advisory institutions and local administration to the needs of entrepreneurs and farmers. All entities share their knowledge and experience, and, thanks to the joint promotion of results, the solutions are available at both the national and international level.

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#### Additional sources of information

[www.facebook.com/PradawneZiarnoPL](http://www.facebook.com/PradawneZiarnoPL)