

Best practices

**IN INTEGRATED AND
SUSTAINABLE PRODUCTION
AS AN OPPORTUNITY FOR
THE DEVELOPMENT OF
POLISH HORTICULTURE**



SUMMARY OF THE REPORT 2023

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LADIES AND GENTLEMEN,

on the following pages you will find the statements, main theses and abbreviations of articles written by the leaders and experts of the horticultural industry, contained in a report unique on a Polish scale: „Best practices in integrated and sustainable production as an opportunity for the development of Polish horticulture”.

Its full version is available at: www.grupyogrodnicze.pl/promocja/produkcja-integrowana-i-zrownowazona/

The full version of the report is the first document in the horticultural industry which serves as the voice of the environment. It comprehensively describes the opportunities and threats regarding sustainable development.

On its pages, industry leaders and experts talk about the threats and opportunities arising from the implementation of the European Green Deal and

related strategies: FIT for 55, Farm to Fork, as well as the biodiversity strategy. It is therefore crucial to understand these matters in the name of the development of the broadly understood horticultural industry of our country. Development should be the goal of our joint efforts. However, let the directions of this development remain an open question.

One of the most important conclusions of this report is the realization that many of the aspects or challenges discussed in it have already been achieved. For example, Integrated Production - it meets many goals of the UN Sustainable Development and the European Green Deal. Integrated Production has been successfully implemented in thousands of horticultural farms in Poland for over 20 years.

Therefore, we invite you to familiarize yourself with this publication - both the abbreviated version of the report, as well as the full version.

ANALYSIS OF THE HORTICULTURAL SECTOR IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

STRENGTHS

- Polish horticulture is environmentally friendly.
- Recent achievements of the industry are a solid foundation for further, sustainable modernization of Polish horticulture. Our industry leaders are at the highest international level.
- Many farms already meet the UN Sustainable Development Goals and the EGD strategy.
- High degree of biodiversity conservation.
- More family farms, less industrial production.
- High levels of creativity in the search for new pro-environmental solutions.

WEAKNESSES

- Underinvestment/infrastructural deficiencies in the effective use of water resources and renewable energy sources.
- Insufficient scale of soil/plant analysis in order to determine strategies for fertilization, water protection and soil regeneration.
- Insufficient level of knowledge of sustainable fertilization and plant protection on some producers' part.
- Ineffective systems of consulting and exchanging knowledge.
- Low level of organization and digitization of production.

OPPORTUNITIES

- Stopping degradation, preserving and regenerating unique strategic resources (soil, water, microclimate).
- EGD and eco-schemes as a motivating factor for the implementation of pro-environmental activities.
- Promoting good practices in the field of innovation and pro-environmental activities implemented in Poland.
- More effective transfer of knowledge. Raising the level of awareness of producers in the field of innovative methods of fertilization and plant protection.
- Improving the image of Polish horticulture in the opinion of consumers and food distributors in the country and abroad.
- Consumer trends, e.g. the search for food from sustainable production or from local suppliers.
- Development of local processing.
- Development of the business, research and scientific environments focused around horticulture.
- Development of cooperation in the sector, e.g. within the Core Team.

THREATS

- Insufficient knowledge on the part of opinion-makers and consumers about positive changes in Polish horticulture.
- Increase in production costs.
- Decrease in production in Poland and the European Union resulting from the implementation of the European Green Deal without sufficient support for horticulture.
- Redistribution of public support instead of investing in useful innovations related to biologization and digitization.
- Lack of an effective food safety monitoring system in the supply chain, including imports from outside the EU27.
- Limited dialogue between decision-making circles and the horticultural community.



INDUSTRY ACHIEVEMENTS TO DATE AND KEY CHALLENGES

Statements and opinions of experts



SYLWESTER TABOR, PROF. AT THE UNIVERSITY OF AGRICULTURE IN KRAKOW
Rector of the University of Agriculture in Krakow

“Let's promote solutions that will allow us to fulfill all three goals related to sustainability: environmental, social and economic.”

“As the European Union, we want to be a leader of these changes, but we must also try to influence others to follow our example. If we do not introduce these solutions globally, e.g. in America, China or Africa, we have no chance to achieve our goals.”



PROF. MAREK MRÓWCZYŃSKI
Institute of Plant Protection - National Research Institute in Poznań

“All restrictions related to the European Green Deal unfortunately generate high production costs. The balance has been disturbed, which does not apply to non-EU countries. Hope lies in biological methods, but unfortunately they are often 3–5 times more expensive than chemical methods. Therefore, for several years, 10 EU countries have introduced national subsidies of up to 50% to cover the costs incurred by gardeners using biological methods.”

“Eco-schemes, which will be enforced from 2023, will not solve all the problems of horticultural production, because the area covered by the subsidies is very small. The eco-scheme for the use of biological methods covers only 5,000 ha a year, while the amount of 400 PLN per ha makes the situation even worse. It will be similar to IP, which will be subsidized only up to an area of approx. 28,000 ha total, while it should actually reach even several million hectares for all important horticultural and agricultural crops.”



PROF. LIDIA SAS-PASZT
Department of Microbiology and Rhizosphere
Institute of Horticulture - National Research Institute in Skierniewice

“Numerous scientific research, especially in recent years, has enabled the development of technology for the propagation of beneficial soil microorganisms in bioreactors and their application to substrates that determine their long survival.”

“Current figures show that Europe is the second largest market for biofertilizers, accounting for around 30% of the global supply. Due to strict EU regulations on the use of chemical fertilizers, they are being replaced by bio-fertilizers.”



BARBARA H. ŁABANOWSKA PHD
Institute of Horticulture - NRI in Skierniewice

“In 2005–2008, as part of the FAPA activity (competition in 2005), the Institute of Orcharding and Floriculture and the Institute of Vegetable Production conducted numerous IP training sessions. Thousands of producers were trained in the Łódź, Mazowieckie, Lubelskie and Świętokrzyskie provinces. As part of this work, specialists from the Institutes in Skierniewice developed further or improved production methods.”

“As part of the supervision over Integrated Production, the inspection included: control of the IP notebook; farm control; crop control; training control. The IP certificate was issued by the voivodeship inspector for the place of cultivation. It was issued at the request of the plant producer and contained the mark of integrated production, producer number, date of issue.”



PROF. WALDEMAR TREDER
Head of the Irrigation Laboratory
Institute of Horticulture - National Research Institute in Skierniewice

“Speaking of the use of water for irrigation of crops, it must be underlined that we have many very modern solutions at our disposal, which are used to make rational decisions. The challenge, however, is to convince a wider group of gardeners that those solutions are worth using, which will translate not only into the condition of plants and the yields obtained, but also allow for savings in water, energy, used fertilizers, as well as human labor costs.”



ARTUR MISZCZAK PHD
Head of the Food Safety Laboratory
Institute of Horticulture - National Research Institute in Skierniewice

“The results of monitoring the correctness of the use of protection products, which the Food Safety Research Institute carries out on behalf of the Ministry of Agriculture and the State Plant Health and Seed Inspection, show that the quality of our fruit is clearly improving year by year. And it is worth saying that we see the results from a 20-year perspective, because we have been monitoring them since 2002.”

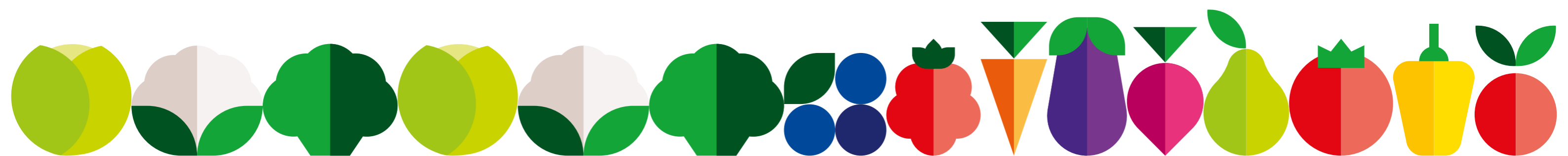


PIOTR BARYŁA PHD
Researcher at the University of Life Sciences in Lublin,
President of the Polish Association of Currant Growers,
producer of berries.

“Our farm has been fulfilling the requirements of sustainable production for a long time. These are also the expectations of fruit recipients and consumers.”

“I believe that there are many examples in Poland that can be set as a model when it comes to running farms in a sustainable and innovative way. I am convinced that these are not activities that have been initiated in the last 2 or 3 years, but much earlier.”

“More financial support for farms is needed if we want to see a more widespread shift to a sustainable production model. The best example could be different forms of support for innovative solutions, which will popularize them. In addition, we should refrain from spending resources on expanding the area of cultivation, but focus on improving product quality, innovation and efficiency.”





MACIEJ CYBULAK

Grower

“Sometimes I get the impression that ‘sustainable farming’ has become a buzzword that is sometimes used in the wrong context. Many manufacturers approach it with distrust. However, if we think about it more closely, we already successfully meet most of these assumptions.”

“What will be the biggest challenge in the near future? In my opinion, the introduction of alternative methods of protecting orchards, the use of which will be economically justified. Sustainable agriculture should, in my opinion, be a balanced distribution of costs and benefits.”



PAWEŁ GULCZYŃSKI

Grower

“The Natura 2000 area obliges us to appropriate production and coexistence with nature. We try to live in harmony with nature and exploit the earth so as not to diminish its well-being. We care about soil fertility, e.g. by increasing the content of humus, as well as maintaining the proper pH for growing vegetables (at the level of 6.5–7.0). In my opinion, this is where you should begin your adventure with sustainable production.”

“Let’s not forget that land is our national asset and we have to take care of it so that it can also be used by future generations.”



ARKADIUSZ KARTUS

Fruit grower, president of the Polish Eco Fruit Association

“Don’t let the subsidies fool you - organic production requires patience, many years of learning and gaining experience. However, success is possible, and currently available means of production can guarantee it.”



CEZARY ROKICKI

Grower

“With the current increase in energy prices, I wouldn’t even think about storing apples if it wasn’t for the photovoltaic installation we set up in 2019 (we began using it a year later). At that time, we assumed that the return on the investment would take 6–8 years, whereas with today’s rates per 1 kWh, we can already think in those terms.”



DARIUSZ SZYMCZAK

Grower

“We have been introducing sustainable farming practices for several years. We work with companies that help us reduce costs and give a new outlook. We observe the effects of this cooperation, assessing the health of plants, as well as the condition of orchards and plantations. I am not afraid of a challenge, but I have a basic rule - my actions must be rational, and everything must be backed up by a positive economic calculation.”

“Integrated Plant Protection is crucial to us, and for several years our primary goal was to reduce the number of treatments and to use biological methods for the protection of orchards. We have introduced the pear beetle, and well as the red mason, and we are constantly increasing its population. The non-chemical methods of protection we use also favor beneficial organisms. We perform treatments only when necessary - we rely on monitoring the presence of pests using pheromone traps.”

“I am also testing organic production, which unfortunately, in my opinion, does not bring adequate income to the farm so far. To produce fruit in this system, we need knowledge and assets, and the prices obtained from these products so far do not compensate for the costs of these efforts. Unfortunately, if this imbalance persists, it will not be possible to maintain the viability of organic farms.”



PAWEŁ KRAWIEC PhD

Horti Team

Promoter of integrated and sustainable fruit production
Organizer of numerous conferences, workshops and demonstration plantations

“Everything that is said about sustainable agriculture, sustainable production, I was already implementing 10–15 years ago. So this is nothing new to me. Especially since the certificate we had to obtain when selling raspberries to the English market went even further. It was broader - encompassing the farm and facilities, which had to be adapted to the final recipient’s requirements.”



ROBERT WRZODAK PhD

Expert in sustainable vegetable production

“If the active substances being withdrawn in Europe are harmful to the environment, why are they allowed to be used in other parts of the world? The land is a common good and should be cared for in its entirety, not just in selected areas.”

“Currently, we use two weeders with modern optics, which allow us to remove weeds not only from between the rows, but also within the rows of plants. I think these techniques will continue to evolve. There are already solutions for destroying weeds with a laser beam and if there is such a possibility, we would like to test it, too.”



JERZY PRÓCHNICKI PhD

Graduate of the Agricultural University in Wrocław, with many years of work experience in agriculture and in corporations working for agriculture in Poland, Europe and globally.

“Shocking changes in the prices of energy carriers, including fuels, synthetic fertilizers, chemical products, etc. require farmers to change their way of thinking about soil, fertilization and the availability of water, energy and other goods that determine the possibility of producing and selling the crops they obtained. The time of conventional agriculture, based on ‘programmes’ and recommendations based on ‘average’ field conditions, assuming the maximization of yield without taking into account the profitability of such action, is definitely coming to an end.”

“The Accenture report (2022) shows that 75% of Poles want to buy food products from Sustainable Agriculture, and 73% declare to pay more for them than for conventional food. Moreover, 76% of Poles believe that food processors should use raw materials from sustainable crops.”



KAROLINA ŚLUZEK

Agro and Sustainable Development Manager, Doehler Sp. z o. o.

“Orchard farmers use plant protection products in accordance with the principles of Integrated Pest Management, fertilize based on soil analysis and provide only those ingredients that are needed. They maintain the turf in the orchard, thus giving shelter to beneficial organisms, and rationally irrigate their orchards. And although they perform all these practices and have much to be proud of, they react with concern to the slogan of ‘sustainable agriculture’. Completely unnecessarily, because they often do it very well.”



WOJCIECH WIECZOREK PhD

Director of the Crop Solutions department at ICB Pharma

“We operate on the global market, our technologies and products are sold in over 100 countries around the world, most of them in Europe and South America. Trends present on the European market are also replicated in South American countries. There, too, we have sustainable agriculture and integrated conservation.”

“Environmental protection, integrated plant protection, reducing chemical use - these are global trends, implemented not only as part of the European Green Deal, but around the world.”



CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE ACTIONS

Within the framework of the Core Team, the potential of the fruit and vegetable sector was combined. We represent over 40 institutions and organizations operating within the horticultural industry and its surroundings. Among the key initiatives of the Core Team is promoting the idea of sustainable production.

KEY CONCLUSIONS DRAWN FROM THE MATERIAL GATHERED IN THE REPORT:

- The report is the first document in the horticultural industry which, as the voice of the environment, comprehensively describes the opportunities and threats regarding sustainable development.
- Industry leaders are like-minded when it comes to the threats and opportunities arising from the implementation of EGD and related strategies, FIT for 55, Farm to Fork and the biodiversity strategy.
- Oftentimes, even experts differ in their interpretation of key concepts, such as sustainable production, the objectives of the EGD regarding reducing the risk resulting from the use of plant protection products.
- Integrated Production meets many of the UN and EMP Sustainable Development Goals. IP has been a system successfully implemented in thousands of horticultural farms in Poland for over 20 years.
- Organic fruit and vegetable production, despite numerous challenges, has been developing quite steadily in recent years. Assumed and approved in the NSP for the years 2023-2027, reaching 7% of organic production expressed in hectares is feasible, provided that the profitability of production is maintained.
- Many horticultural farms meet the UN Sustainable Development Goals and the EGD strategy.
- The National Strategic Plan in the form approved by the European Commission (as of December 2022) does not sufficiently support Polish horticulture.
- Eco-schemes, which are supposed to support pro-environmental activities, discriminate against horticulture in comparison to other agricultural production sectors.
- The authors of the report recommend that the collected material should ignite a public debate on the sustainable development of the horticultural industry.

RECOMMENDATIONS FOR HORTICULTURE GROWERS AND ALL INDUSTRY LEADERS REGARDING FUTURE ACTIONS FOR SUSTAINABLE DEVELOPMENT:

- The authors of the report and quoted experts indicate the achievements of the horticultural industry to date as a foundation for further, sustainable modernization of Polish horticulture.
- All participants in food supply chains should jointly support activities that will result in the implementation of sustainability goals: environmental, social, as well as economic.
- In the report, many experts emphasize the fundamental principle: without ensuring the profitability of production for gardeners, it will not be possible to achieve other goals of sustainable development.
- Innovations in farms thanks to energy transformation, biologization, regeneration and digitization will allow for a smooth transition to a modern way of gardening, in line with global trends and consumer expectations.
- Promoting the best practices in integrated and sustainable production is an opportunity for the development of Polish horticulture. It will make it possible to strengthen the positive image of producers in the eyes of consumers and food distributors in the country and abroad.
- To ensure sustainable development, a dialogue between decision-makers and the horticultural community is necessary.

LIST OF BASIC TERMS (A-Z)

Biological plant protection – control of pests and diseases in crops by introducing natural enemies of harmful organisms; biological plant protection products and plant protection products of natural origin, i.e. biopesticides.

Eco-schemes – a new type of funding for the implementation of practices beneficial to the environment, climate and animal welfare, which go beyond the basic conditional requirements. They meet the environmental and climate objectives of the CAP to mitigate and adapt to climate change, to promote sustainable development and to protect natural resources such as water, soil and air, as well as biodiversity.

European Green Deal (EGD) – a set of political initiatives aimed at directing the EU on the path of ecological transformation, and ultimately – achieving climate neutrality by 2050. It is a response to the climate crisis and ongoing processes of environmental degradation.

Integrated pest management – a method of protecting plants against harmful organisms, using all available plant protection methods, giving priority to non-chemical methods, in a way that minimizes the risk to human health, animal life and the environment. It allows you to limit the use of chemical plant protection products to a minimum and thus limit their effect on the biodiversity of the agricultural environment.

Integrated crop production (IP) – a food quality system that uses technical and biological progress in cultivation, plant protection and fertilization in a sustainable manner, and pays special attention to environmental protection and human health. It allows to obtain healthy food of plant origin, in which the permissible levels of residues of plant protection products, heavy metals, nitrates and other elements and harmful substances have not been exceeded.

Internet of Things (IoT) – a digital network created by interconnected objects and at the same time connected to the physical world, enabling the exchange of data and its analysis in order to increase efficiency and innovation. IoT devices can connect to the Internet and to each other in several different ways. They are often equipped with sensors that enable them to collect data.

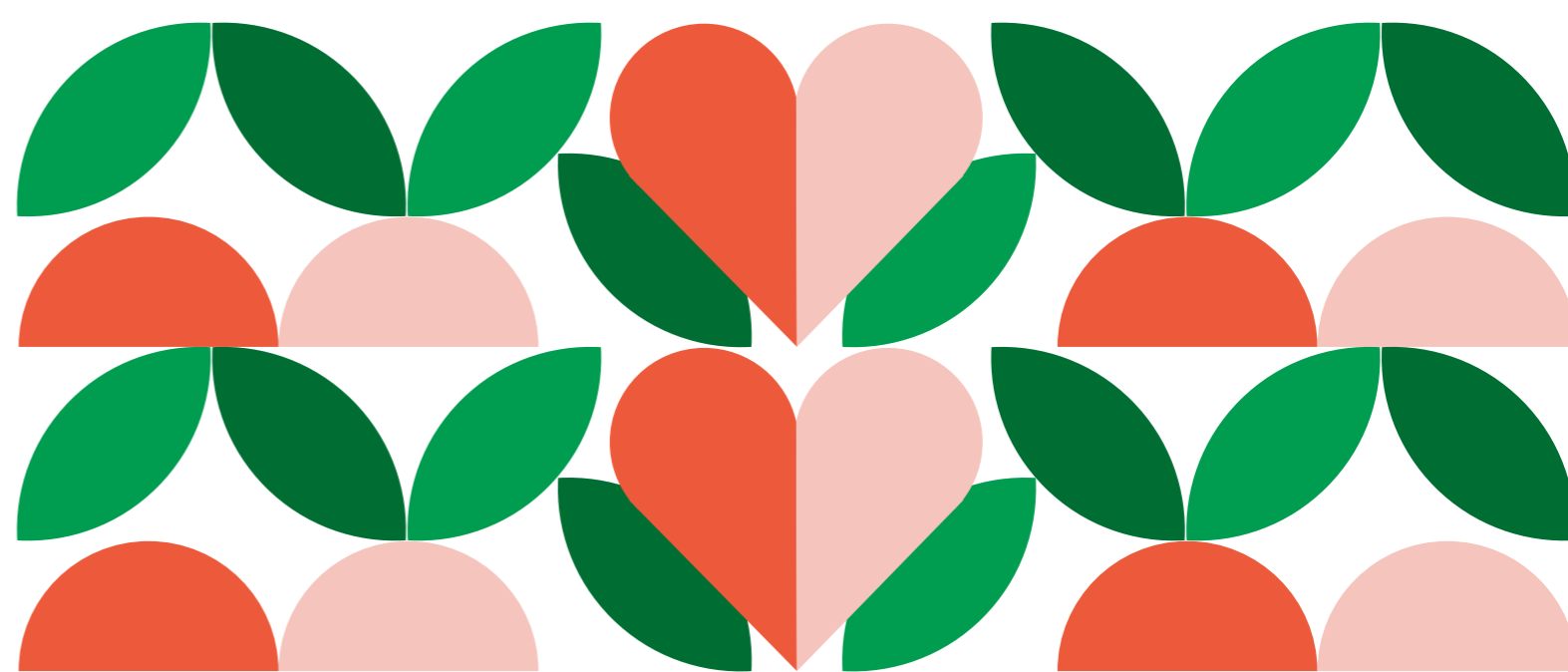
Soil organic matter – an organic part of the soil consisting of plant and animal remains at various stages of decomposition, soil humus, humic acids and humins, and organic products of the activity of soil organisms, the so-called non-specific organic substances. As a rule, living organisms are usually not included in soil organic matter.

Maximum Residue Level (MRL) – the highest allowable level of residues of an active substance in domestic and imported food, considered acceptable in accordance with the law in force in a given country. Residues of plant protection products below the established MRL prove that the crop was properly protected, without exceeding the maximum dose of the plant protection product, the maximum number of treatments per season and with the grace period indicated on the label of the product.

Climate neutrality – no impact on climate change processes. The goal of the European Union economy described in the European Green Deal is to achieve climate neutrality by 2050, and EU agriculture should achieve climate neutrality by 2035.

Non-chemical methods of plant protection – methods of plant protection and pest control alternative to chemical pesticides, based on agronomic techniques or on physical, mechanical or biological methods of controlling harmful organisms.





Plant protection – the science and practice of controlling pests, diseases and weeds that damage crops and other plants that can have a devastating effect on crop yields and farmers' livelihoods. It can be carried out with chemical, biological, breeding, mechanical and physical instruments.

Humus – an organic substance formed as a result of long-term decomposition of plant and animal remains, accumulating in the soil and on its surface. It usually constitutes 40-80% of soil organic matter. Humus is one of the basic components of soil that determines its fertility, as well as the creation of favorable water-air proportions. Active humus is formed from fresh organic remains after about 15 years, stabilized humus is formed in the following decades, and permanent humus is formed after about 100 years.

Conventional agriculture / conventional food production – specialized, high-performance agriculture using modern means of production and technologies using large amounts of materialized labor and low human labor, as well as traditional agriculture using machines, fertilizers and plant protection products with a large amount of human labor. The common denominator is maximizing profit even at the cost of environmental degradation.

Organic farming / organic food production – the most environmentally friendly method of agricultural production. A system that combines best environmental practices, a high degree of biodiversity, the protection of natural resources, the application of high animal welfare standards and a production method that favors the use of natural substances and processes. It rejects the use of synthetic fertilizers and plant protection products as well as antibiotics.

Sustainable agriculture / sustainable food production – all activities limiting the impact of agriculture on the environment, enabling more effective and environmentally friendly use of resources, e.g. soil, land, water, machinery, plant protection products, seeds, fertilizers or energy, while maintaining the profitability of production agriculture and its social acceptance.

Regenerative agriculture – agriculture whose main goal is to restore and maintain the yield potential of agro-ecosystems through agricultural production that does not harm the natural environment. Regenerative agriculture has a negative carbon footprint, using a number of premises of sustainable agriculture, organic farming, permaculture and precision farming.

Carbon farming – synonymous with regenerative agriculture as a business model that will reward land management methods that increase carbon sequestration (keeping carbon dioxide in living and/or dead organic matter). In short, the idea is that the farmer will sell so-called carbon credits with a value adequate to the measurements of carbon dioxide retained in a given farm.

Digital farming, or farming 4.0 – sometimes referred to as smart or e-farming, are tools that digitally collect, store, analyze and share electronic farming data and/or information to optimize food systems. Digital farming also includes precision farming. Unlike precision farming, digital farming affects the entire agri-food value chain – before, during and after farm production. This is why on-farm technologies such as yield mapping, GPS guidance systems and variable dosing applications fall into the realm of precision farming and digital farming. Digital technologies related to e-commerce

platforms, services, warehouse receiving systems, blockchain-based food tracking systems, etc. fall under the scope of digital farming, but not precision farming.

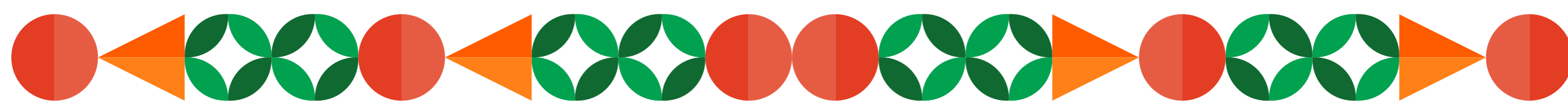
Farm to Fork – an element of the European Green Deal strategy. It comprehensively addresses the challenges of sustainable food systems and highlights the importance of the link between human health, welfare of the community and the planet. The strategy assumes reducing the use of pesticides, antibiotics and fertilizers, and increasing the share of organic farming.

FIT for 55 – a set of targets aimed at reducing greenhouse gas emissions by 55%, as a transitional target in reducing their emissions in the European Union by 2030, in relation to the 1990 level.

Biodiversity Strategy – a comprehensive, ambitious and long-term plan to protect nature and reverse the degradation of ecosystems. The main objective set out in the strategy is to restore biodiversity in Europe by 2030.

Common Agricultural Policy (CAP) – ventures concerning the agricultural sector undertaken by the European Union in order to fulfill the provisions of the Treaty on the Functioning of the European Union. It aims to ensure food security, increase competitiveness in the food supply chain, sustainable use of natural resources and combat climate change. It defines in detail the principles of financial support for agriculture.

Sustainable development – actions for changes and transformations of the world in which the needs of the present generation can be met in a sustainable manner, with respect for the environment and taking into account the needs of future generations. Actions aiming to reduce poverty, ensure access to education, food and clean water, ensure equal opportunities, support human rights, peace and stability in the world, protect the natural environment, mitigate climate change, access to sustainable energy sources.



THE FULL REPORT IS AVAILABLE ON THE WEBSITE:

WWW.GRUPYOGRODNICZE.PL/PROMOCJA/PRODUKCJA-INTEGROWANA-I-ZROWNOWAZONA/

**THE CONTENT WAS DEVELOPED AS PART OF THE IMPLEMENTATION OF THE TASK
„BEST PRACTICES IN INTEGRATED AND SUSTAINABLE PRODUCTION AS AN OPPORTUNITY
FOR THE DEVELOPMENT OF POLISH HORTICULTURE”**

BY THE NATIONAL ASSOCIATION OF FRUIT AND VEGETABLES PRODUCER GROUPS.

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