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Innovative Trends in Modern Processing Cycles in the Agrarian Sector.

The vital importance of food to physical, economic and cultural development, together with the importance of efficient, sustainable production makes modern techniques crucial—in fact, there is strong evidence that only such approaches have any significant chance of meeting the world's basic food needs in the next few decades. In addition, they offer by far the world's best—perhaps only—prospect of dealing with growing future challenges to protect the environment and to deal with global climate change. Actors in the public sector, academic institutions, private firms, and other entities try to interact in order to understand and meet the innovation needs of different industries and agricultural activities.

In agriculture as in other sectors, innovation is the main driver of productivity growth. At national level, innovation helps create higher value added and improve competitiveness and economic growth. It also contributes to economic diversification. At farm level, introducing innovation leads to a better allocation of resources, higher productivity, and thus income. Innovation can also improve the environmental performance of the farm. Introducing new techniques and products can be risky, e.g. if they are not adapted to specific circumstances, if they are difficult to implement, or if the marketing potential does not materialize. At the same time, some innovations have the potential to help farmers deal with production and income uncertainties (e.g. irrigation; animal medicines, pesticides, improved seeds, and innovative risk management tools). Innovation in agriculture has been very successful in improving the productivity and quality of agricultural products, but to remain competitive, it needs to be continuous. Further innovation is needed to adapt to input and output market developments, and changes in resource quality and availability.

Innovation has a key role to play in helping the agri-food sector produce more nutritious, diverse and abundant food, and provide raw material for non-food

use, without depleting natural resources, and adapt to expected changes in natural conditions from climate change. In some regions, the challenge is to adapt agricultural production systems to more difficult natural environments (e.g. due to salinity, more frequent drought).

It is essential to distinguish the following categories of innovation introduced in Ukrainian agriculture:

- *Selection and genetic* (new varieties and hybrids of crops, new breeds, types of animals and poultry crosses, the creation of plants and animals that are resistant to pests and diseases, adverse environmental factors);
- *Technical and technological and production* (the use of new techniques, new technologies of cultivation of agricultural crops, new industrial technologies in animal husbandry, science-based system of agriculture and livestock, fertilizers, and their new systems, new crop protection agents, the greening of agriculture, new resource-saving technologies production and storage of food products aimed at improving consumer value);
- *Organizational, managerial and economic* (development of cooperation and the formation of integrated structures in agriculture, new forms of maintenance and provision of resources agriculture, new forms of organization and motivation, new forms of organization and management in agribusiness, marketing, innovation, creation of innovation and advisory systems in the field of science, technology and innovation, concepts, methods of decision-making, forms and mechanisms of innovation development);
- *Social and ecological* (forming a system of training scientific and technical support of agriculture, improvement of working conditions, making healthier, education and culture of the rural workers, promotion and enhancement of environmental quality, provision of favorable environmental conditions for living, working and recreation).

Many innovations in the agricultural sector are “process innovations” that relate to the production techniques (e.g. adoption of improved seeds, irrigation and waste management technologies, and the development by farmers of practices

adapted to their situation). “Product innovations” include improved seeds and animal breeds, agricultural machines, irrigation systems, buildings, and food with new functional attributes. Marketing and organizational innovations along the supply chain are also increasingly important.

Introduction of innovations in the agrarian sector is characterized by some negative aspects as well. Among them are: high risk of innovative processes in agriculture; departmental disunity and weakening of the scientific potential within the agricultural science; weakening of financial standing of organizations; disparity in prices for agricultural and industrial products; low salaries and wages in agriculture, lack of highly-qualified and skilled specialists and others.

As can be seen from the above, all these innovative trends play a significant role in modern processing cycles in the agrarian sector. New technologies and their adoption are key drivers in maintaining Ukrainian agriculture competitive in a global world.