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SCENARIOS OF OPTIMISATION OF PORK PRODUCTION TECHNOLOGIES IN UKRAINE IN THE CONTEXT OF GLOBAL WARMING

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The pig industry is traditional and at the same time an important component of domestic livestock production (the share of pork in the meat balance of Ukraine is about 30%), which in turn occupies an important stage of agricultural production in Ukraine as a supplier of raw materials for the food industry [1].

In addition, it creates new jobs: on the farm, at processing plants, transport and logistics companies, etc.

As of today, pork has lost its first place in the meat balance of Ukraine to the poultry industry and has taken second place in the last 2-3 years, but pork will certainly retain its leading position in livestock production in the future. Of course, this is due to important biological characteristics of pigs, such as high fertility, relatively early age of sexual maturity, short gestation period, early maturity of young animals, good adaptation, etc.

Thus, the two industries - poultry and pig production - due to their valuable biological and economically useful characteristics are and will remain leaders in meat production in Ukraine for a long time to come. They are united by the fact that successful production of both pig and poultry products requires the use of an increased amount of compound feed, which in turn consists of cereal and protein ingredients and contains a wide range of biologically active substances such as vitamins and minerals (macro- and microelements). The use of increased amounts of mixed fodder in feeding pigs and poultry makes these animal species compete with humans in terms of consumption of grain, cereals, etc., which is especially relevant in the context of global warming, which will reduce or even eliminate the yield of grain and industrial crops. Such examples are known when in the dry year of 2020 in the south of the Odesa region, it was not economically feasible to harvest grain due to low yields.

This study aims to identify possible scenarios for optimising pig production technologies in Ukraine against the background of global warming.

It is worth recalling that the production of 1 kg of beef requires 10 kg of feed and about 15 litres of water, 1 kg of lamb - 10 kg of feed and about 8 litres of water, 1 kg of pork - 4 kg of feed and about 6 litres of water, waterfowl meat - 3 kg of feed and about 5 litres of water, 1 kg of chicken - 2 kg of feed and about 4 litres of water [2].

Based on the above calculations, 300 kg of complete feed and 450 litres of water will be used to feed 1 head of young pigs under intensive production technology, while under extensive technology - 1000 kg of grain mixture and 1500 litres of water, due to the increased life expectancy of the animal and daily feed overconsumption due to the need for maintenance feed. As a result, each kg of feed requires a certain amount of water. Hence, intensive industrial production is more economically viable due to better feed conversion, which is usually 2.5-3.0 times lower than in extensive production. Such technologies also provide lower final water consumption per unit of weight gain.

In addition, it is worth considering the water consumption for servicing large-scale pig farms, which for fattening young animals is 100% of the cost of watering the animals, i.e. a 1:1 ratio, which in absolute terms is 4.0-4.5 litres. With such water consumption for washing feeders and cleaning the premises, it is worth considering the reuse of water wastewater for further technical use.

Indeed, recycled water in agricultural production can save on water consumption. For example, water consumption in the agro-zoo sector is significantly higher than in the civilian sector and industry. For example, in Italy, this ratio is 60%, 15% and 25%, respectively. Pursuant to European regulations (the repeal of European Directive 91/271), recycled water is currently preferred, and connection to the main water supply system - if the water is not intended for drinking purposes or ichthyotic purposes - may be used when it is not possible to separate treated wastewater or when it is not economically feasible. Wastewater is supplied free of charge, and capital expenditures on the organisation of treatment systems are deductible from the tax base. It should be borne in mind that the use of recycled water in agriculture is not always possible, but only if the agricultural land where such technology is to be used is located in a very remote area or at a lower altitude. Wastewater should not be used if its chemical composition is incompatible with agriculture (excessive sodium and calcium content compared to potassium and magnesium, etc.) It is worth noting that the relatively low current prices of ordinary tap water used for irrigation (determined by the cost of a licence to connect to a source or drill a well) do not encourage the use of treated wastewater for this purpose. The technology of wastewater treatment for

agricultural production is differentiated depending on the types of crops for which it is intended. For example, to irrigate crops intended for human consumption in raw form, water must undergo clarification, filtration and disinfection. For irrigation of gardens and pastures, clarification by flocculation (or biological settling) and disinfection is sufficient, while for irrigation of fields with non-food crops, biological settling is sufficient [3].

In the case of the pig industry, the reuse of water for further technical use in manure management in Ukraine could make a lot of sense.

In the context of global warming, the issue of crop yields will become even more important. Yields depend on many factors, the main ones being the quality of breeding material, rainfall, crop rotation, and the use of fertilisers, with a focus on organic fertilisers. Under such conditions, eco-technologies or even organic crop cultivation technologies may become more popular.

Organic fertilisers are an important but underestimated factor in increasing the yield of our fields in the Ukrainian agricultural sector, as their proper use activates the soil microflora and, once the mineralisation process is complete, saturates the soil with nutrients that are already used by plants. Manure mineralisation takes 3-4 years to complete, which has a positive impact on soil fertility. It is known that 1 tonne of manure used in the fields as a valuable organic fertiliser in long-term crop rotations can yield up to 1 tonne of additional production in terms of grain [4, 5], which in turn will eliminate the problem of "competition between humans and animals for grain ingredients".

Conclusions

Possible scenarios for optimising pig production technologies in Ukraine against the background of global warming include

- wider introduction of intensive industrial production of pork, which, unlike extensive production, provides significantly lower final feed and water consumption per unit of growth;

- reuse of water effluents for their further technical application in manure management processes for large-scale pig production in Ukraine should be developed as a priority area;

- Gradual increase in the popularity of eco-technologies or even organic technologies for growing crops with the use of organic fertilisers, which, against the background of long-term crop rotations, allows to obtain up to 1 tonne of additional production in the recalculation into the grain

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INFLUENCE OF VENTILATION TYPE ON THE MICROCLIMATE OF BOAR`S HOUSING

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In Ukraine, despite ongoing hostilities, pork remains the most common type of meat consumed, and production occurs in areas with extreme temperatures. The climate of southern Ukraine is characterized by a temperate continental climate, with