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Food, Land and Agribusiness Management Department,

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The state and prospects of compound aquafeed production in Ukraine

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Abstract

The study shows the information about the development of the aquaculture sector in Ukraine. The leaders in the cultivation of marketable products in aquaculture in 2021 were Sumy, Cherkasy, Vinnitsa, Kirovohrad, Zhytomyr and Kyiv regions. Cyprinid fish species remain traditional objects of aquaculture: carp, white and bighead carp, their hybrids and grass carp. However, other species have recently been actively cultivated: rainbow trout, European catfish, pike, catfish, crucian carp, tench, and among sturgeons the most common are sterlet, Russian sturgeon, stellate sturgeon, beluga, bester, paddlefish, etc. The market of fish feed production is the following: 50% - for carp, 23%- sturgeons, 10% - catfish, 10% - salmon and 7% - other fish species. 42 % of aquaculture farms use compound feeds (local or foreign), 17 % - produce feeds themselves, 8 % - use grain (majority for carp feeding), 33 % - use grain by-products and oil cakes as fish feed ingredients. But the trend towards the gradual transition of many Ukrainian producers to intensive forms of aquaculture with the use of modern compound feed is becoming noticeable. Compound feeds for fish are being improved, adapted to new climatic conditions and fish breeds, and the field of feed sales is also developing. An important slogan of aquaculture: quality feed is the key to a successful business in aquaculture.

Keywords

Aquafeeds, Ukraine, aquaculture, fish farming, compound fish feeds

Presenter Profile

Dr. Liudmyla Fihurska is an Associate Professor of the department of grain and compound feed technologies, PhD in grain science. Her main expertise is in the field of animal feed technology and her research topic focused on animal feed, grain and food processing technologies, fish feed production, extrusion of fish feed, testing of feed manufacturing processes and animal feed.

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Introduction

In Ukraine aquaculture is one of the dynamic and profitable types of fish farming, which has a low barrier to entering this area of agribusiness and guarantees a quick return on investment and a sufficiently high profit. The main direction of fishery activity in the inland waters of Ukraine, which provides up to 70% of production in the total volume of freshwater fish catching and constitutes the main reserve for the further development of domestic aquaculture, is pond fish farming.

Methods

The material of the study was reports and scientific papers domestic and foreign scientists on the state of the fish farming industry in recent years. The data of the State Statistics Service of Ukraine, FAO reports, and analytical studies of the industry's activities were used. The study was carried out using monographic, structural-functional and abstract-logical methods. MS Excel was used for statistical data processing.

Results

Traditionally, the dominant role in pond fish farming in Ukraine is played by enterprises specializing in the cultivation of cyprinid fish species. In 2018, more than 4 thousand business entities carried out activities in aquaculture. They raised 20.2 thousand tons of marketable fish, including: cyprinids - 9.6 thousand tons, herbivorous - 7.8 thousand tons, catfish - 0.2 thousand tons, sturgeon - 0.1 thousand tons, salmon - 0.3 thousand tons, other species - 2.2 thousand tons. The leaders in the cultivation of marketable products in aquaculture last year were Sumy (2869 tons), Cherkasy (2520 tons), Vinnitsa (1934 tons), Kirovohrad (1369 tons), Zhytomyr (1216 tons) and Kyiv (1156 tons) regions [1-3].

Today in Ukraine, cyprinid fish species remain traditional objects of aquaculture: carp, white and bighead carp, their hybrids and grass carp. However, other species have recently been actively cultivated: rainbow trout, catfish, crucian carp, tench, and among sturgeons the most common are sterlet, Russian sturgeon, stellate sturgeon, beluga, bester, paddlefish, etc.

In Ukraine, there are fifteen farms engaged in the cultivation of sturgeon species. In 2018, more than 200 kg of black caviar were supplied to the domestic fish market and 67 kg of black caviar were sent for export. Sturgeon species are grown more by fish farms located in Zaporizhya, Cherkasy, Odesa, Chernivtsi and Kyiv regions. The development of sturgeon breeding in Ukraine in recent years is also associated with the development of recirculation aquaculture, to a lesser extent with the development of garden fish farming. The leading farms of Ukraine that are engaged in the cultivation of sturgeon species are: Osetr LLC (Kyiv region), NPSP Bester (Kyiv region), Chernihivrybhoz PJSC (Chernihiv region), Ukrainian Service Enterprise LLC (Kyiv region), PE "Fortuna-XXI" (Kyiv), LLC "Kindfish" (Kyiv region), "Odesa sturgeon complex" (Odesa region), Farm "Ishkhan" (Chernivtsi region), LLC "Oasis Bisan" (Mykolaiv region), GC "Aquasvit", LLC "Aqua Top" (Odesa), LLC "NPC "Forel" (Volyn region), SE "Irklievsky fish nursery" (Cherkasy region), LLC "Brig LTD" (Zaporizhya region), LLC " Biosila "(Kyiv), Olesya LLC (Kherson region).

The greatest results in the production of catfish species (the cultivation of European catfish prevails) were achieved by the Kirovograd, Kharkiv and Kyiv regions. In recent years, more and more clariid or marbled catfish are grown, which is the most common aquaculture object for recirculation system (recirculating water installations). It should also be noted that with the

development of recirculating aquaculture, the production of tilapia is becoming more widespread [1-3].

Salmon breeding in Ukraine is represented mainly by the cultivation of rainbow trout. Traditionally, trout production is carried out in the Western regions, in the highlands. The most famous trout farms of the enterprise are SPC Trout (Volyn region), Farm Ishkhan (Chernivtsi region), FT Golubaya Niva (Transcarpathian region), PrJSC Transcarpathian Fish Processing Plant (Transcarpathian region), LLC Trion (Rivne region), PE "Kaskad" (Volyn region), FH "Galician source" (Lviv region).

The volume of salmon production fell by 13% compared to 2018. However, salmon make up only slightly more than 1% of the total number of farmed fish in Ukraine in 2019. This species was grown: - in pond farms - 34%; - in aquariums - 1%; – in swimming pools – 65%. It should be noted that the main object of Ukrainian salmon breeding is rainbow trout, and fish farms that grow trout are located in the western regions. At the same time, the data on the volume of trout feed used indicate not a drop in production volumes, but their growth, in 2019 - to almost 3 thousand tons.

The market of fish feed production is the following: 50% - for carp feeds, 23%- sturgeons feeds, 10% - catfish feeds, 10% - salmon feeds and 7% - feeds for other fish species [4]. Modern fish feed must consider both the economic and ecological components, i.e. the impact of feed production technologies, the origin of feed components, the impact of feed residues, and feed itself on the state of the environment in which the aquaculture facility is located, the impact on the environment bordering production facilities. Modern combined feeds are made considering the object of aquaculture, the breed, the stage of the life cycle of the fish and the purpose (mother stock or fattening).

An analysis of the cost structure of farmed fish allows us to say that the cost of feed is one of the largest cost items. Statistical data indicate that the amount of feed used by domestic fish farmers for fattening fish has been practically at the same level for a number of years. There is only the question of the quality of these feeds. A slight decrease in feed in aquaculture can be explained by the gradual transition of feeding from grain mixtures to better mixed feed. We also note an increase in the amount of feed for growing sturgeons; this direction can also be attributed to developing in Ukraine to a large extent due to the production of black caviar.

According the questionnaire 42 % of aquaculture farms use compound feeds (local or foreign), 17 % - produce feeds themselves, 8 % - use grain (majority for carp feeding), 33 % - use grain by-products and oil cakes as fish feed ingredients. But the trend towards the gradual transition of many Ukrainian producers to intensive forms of aquaculture with the use of modern compound feed is becoming noticeable [1-4].

LLC "Golden Food" is among the manufacturers of compound feed for facilities. The company produces fish feed under the trademark "Reucher Aqua Fish". Fiorma manufactures dry extruded complete feed for carp, catfish, salmon, and sturgeon fish species on modern high-tech equipment. LLC "Agro-Ros" has productivity to produce up to 150 tons of high-quality compound feeds for animal husbandry per day, which is over 50,000 tons of compound feed per a year from the perspective of up to 100,000 tons per year. (Tashlyk village, Smilyansky district, Cherkasy region, BUHLER equipment). PJSC "Vilshanka" (the full-system fish farm) produces granular feed for aquaculture not only for its own production, but also for sale subjects of aquaculture. Also, the world-famous manufacturer of fish feed - the Dutch

company Skretting - built and commissioned a compound feed plant for aquaculture operating in Vinnytsia. One of the directions of its production is carp feeds.

Conclusion

Aquaculture is an important sector of the economy and a source of income for the country's population. In Ukraine, the fish feed market is just forming. Imported products are represented on this market, and domestic analogues that compete with imports are beginning to appear. Compound feeds for fish are being improved, adapted to new climatic conditions and fish breeds, and the field of feed sales is also developing. It is worth noting an important slogan of aquaculture: quality feed is the key to a successful business in aquaculture.

References

Situation with fish feed in Ukraine. Retrieved from: https://bumtca.com.ua/situaciya-z-kormami-dlya-rib-vukra%D1%97ni/ [in Ukrainian].

Markovic, Z., Stankovic, M., Rasˇkovic, B., Dulic, Z., Zivic, I., & Poleksic, V. (2016). Comparative analysis of using cereal grains and compound feed in semiintensive common carp pond production. Aquacult Int., 24:1699–1723 DOI 10.1007/s10499-016-0076-z. Cit. by: Zoran Markovic (2021). Extruded feeds offer advantages to carp farmers. Eurofish Magazine. № 4. 2021. P. 44–47.

Iegorov, B., Fihurska, L., Tsiundyk, O., & Morozovska, Y. (2020). CONDITION AND PROSPECTS OF DEVELOPMENT OF COMPOUND FEED PRODUCTION FOR SALMONIDAE. Grain Products and Mixed Fodder's, 20(1), 31-35.

Myskovets, N.P. (2020). Analiz suchasnoho stanu ta perspektyvy rozvytku rybnoho hospodarstva krainy [Analysis of the current state and prospects for the development of fisheries in Ukraine]. Biznes Inform [Business inform]. no. 3, pp. 104–111. Available at:http://nbuv.gov.ua/UJRN/binf 2020_3_15.

Sharylo Ya., Vdovenko N., Boyarchuk S., Gerasimchuk V., Konovalov R. Toolkit for regulating the feed market in in the context of ensuring competitiveness and development of rural areas. Economic analysis. 2022. Volume 32.