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TECHNOLOGY OF PRODUCTION COMBINED HIGH-PROTEIN FOOD ADDITIVES WITH REJECTS CONVERSIONS PRODUCTS OF POULTRY AND FISH

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In SPE "Biokor-Agro" (w. Grigorovka Obukhov district Kyiv region) on the basis of rotary agglomerators designed apparatus (device), which has not analogues in Ukraine, and to establish a permanent process technological line with 9 of such apparats for the production combined a of high-protein food additives with inedible rejects conversions of fish, slaughter poultry and hydrolyzed feather hide. Annual production of food additives in the SPE "Biokor-Agro" in the last 5 years is about 2 thousand tons cost to 10 million UAH per year. When fed feed additives produced by SPE "Biokor-Agro" daily average gain of repair young pigs were raised by 106 - 132 g (+ 21,1 – 25,5 %) with high economic efficiency.

Device, technological line, food the fish and animal origin

The feeds of fish and animal origin are the most complete of nutrient density. One of their characteristic features is a high level of protein and its biological full-value, according to its amino acid composition, as much as presence of vitamins and mineral substances within.

Existing traditional ways of producing feeds, obtained from fish and animal primary products by means of high temperature processing, are rather energy-demanding and related with complicate technological processes, great losses of nutritive substances during manufacturing process, high self-cost of end-products and low competitive ability. Moreover, these ways are significantly lacking of its ecological friendliness as for the production.

The objective of the present work is to create energy saving and environmentally safe technology of producing combine high-protein feed additives, obtained from inedible waste of fish processing, slaughter of poultry, hydrolyzed feather primary products and oil and fat production waste (soybean and sunflower oil meal, etc.), in particular, to create an apparatus (a device) and a manufacturing line based on these devices for feed additives production and to study the zoochemical composition of these additives, their nutrient density and the usage efficiency in animal nutrition.

Materials and methods of research. The construction of apparatus (devices), line assembling, elaboration of recipes for feed additives and its production were conducted in private scientific and production enterprise (SPE) “Biokor-Agro” (in Grygorivka village, Obuhiv district, Kyiv area). It was established in 2001 on the basis of reconstructed facilities of Grygoriv associated collective farms enterprise for cattle feeding. The zoochemical composition and nutritive density of feed additives have been being researched at the Test Centre of the Institute of Animal Breeding of the National Academy of Agrarian Sciences of Ukraine. The research of feeding efficiency for feed additives produced by SPE “Biokor-Agro” was carried out while breeding swine replacements in private enterprise “Drujba”, Obuhiv district, Kyiv area, and AU (affiliated undertaking)

Rokytne of DP (agricultural limited liability company) “Avangard” in Novoselytsya district, Chernivtsi area.

Research results. The research scientists of the Institute of Animal Breeding and Genetics of National Academy of Agrarian Science, along with specialists of the private SPE, have developed and implemented a brand new, as compared to the existing ones, environmentally friendly and energy saving technology for production of feed additives, obtained from inedible waste of fish processing, slaughter of poultry, extruded or hydrolyzed feather primary products. There has been developed an original apparatus (a device) on the basis of rotary agglomerators for production of feed additives, obtained from fish and poultry products processing waste, a new permanent manufacturing line has been assembled from 9 such apparatus. The productivity of one apparatus per shift is equal to 0,5 t of ready dry feed and 1 t per 2 shifts. The annual level of feed additives production in SPE “Biokor-Agro” in the last 5 years equals approximately 2 000 t and its value is up to 10 million gryvnyas a year. The profitability of feed additives production in the enterprise equals approximately 30%. At present, despite the crisis, the enterprise continues to develop and extend. There were only 5 workers in the enterprise in 2001, however, by 2014 their number increased to 50. The demand for feed additives does exist, so its realization for agricultural enterprises goes successfully. The enterprise pays state taxes on time, only in the 2013 it paid a sum of 1,2 million gryvnyas and 1,05 million for the 10 month period of 2014.

There have been elaborated recipes for different feed additives obtained from inedible fish processing waste, slaughter of poultry and hydrolyzed feather primary products, as much as ways of its production, which were recognized by 6 patents of invention received. There also has been researched the zoochemical constitution and nutrient density of high protein fish additive, as one of the richest of protein. According to the analysis, the content of crude protein in high protein fish additive equals to 51, 19%, i.e. almost like in manufactured blood, meat and fish meal, but its amount is slightly bigger in cattle cake and oil meal. A

characteristic feature of high protein fish additive produced by this technology is the high content of fat within – up to 28, 54%, which is lost in most cases, when other technologies are applied.

Conclusion and prospects of further researches. In the SPE "Biokor-Agro" there has been developed a new apparatus (a device) on the basis of rotary agglomerators used in plastic industry, which is unprecedented in Ukraine. There has been also created a permanent manufacturing line of 9 such apparatus for production of combine high protein feed additives, obtained from inedible fish processing waste, slaughter of poultry and hydrolyzed feather primary products. While breeding swine, feeding them with combine fish high protein feed additive increased the average daily live weight gain from 517 g in control group up to 649 g in the experimental group (+132 g or +25,5%, $p < 0, 001$). It is found that the level of profitability, when feeding with high protein feed additive, is 120%, the level of profit per 1 gryvnya of expenses equals to 1,2 gryvnyas.

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