The current state, main tendencies and problems of development of the Ukrainian milk market are investigated. It is proved that there is an internal shortage of dairy raw materials in Ukraine: to provide enough milk and milk products for the population of Ukraine in 2019, according to The Adult Health Nutrition Guidelines, approved by the Minister of Health of Ukraine, at least 11500 tonnes of milk should have been produced, while in fact only 9686.9 tonnes were produced by all kinds of farms together. The reasons for the decrease in milk production have been identified: cow population decreasing in 2019 by 620 thousand animals, or 25.38%, versus 2013, and stabilizing of the average yearly milk yields in households.

Factors affecting the decrease in the number of cows are analyzed. Among agricultural enterprises the key factors are the rapid implementation of the land market in Ukraine, incomplete payouts of compensation provided by state support programs in 2019, as well as rumors about the significant reduction of these programs in 2020. Factors that influence the decrease in cow population at household farms include declining labour resources in rural areas due to migration and aging of the rural population that drives the elderly people who are mostly involved in milk production, to resign from owning cattle, not having sufficient means of sustaining it. Low purchasing prices for milk are also among the factors.

Budget support programs for dairy cattle breeding in 2018—2019 are considered. Proposals to improve the management of the development of the milk market, in particular, the need to develop a long-term program of development of the dairy industry of Ukraine are substantiated. This program needs to span at least five years, which is driven by the long term of return on investment in milk cattle farming. It should provide for preferential conditions and priority right to purchase land allotments by dairy farming enterprises; maintaining a number of current budget support programs for livestock (such as offsetting the cost of bank-financed assets; partial reimbursement of the cost of livestock facilities; partial reimbursement of costs for stock-breeding animals, semen and embryos, subsidies for growing stock); replacement of special budgetary subsidies for keeping cows with subsidies for the volume of products sold.
INTRODUCTION
The milk market is an integral part of the food market and plays an important role in shaping the state’s food security. Currently, there are quite contradictory statements in the media space of Ukraine regarding the problems and prospects of the development of the milk market in the country. Thus, according to the data of the International Farm Comparison Network (IFCN), Volodymyr Andriets, an analyst of the Ukrainian Milk Producers Association notes that Ukraine is ranked 22nd in the ranking of world milk producers and has every chance to increase its share in the structure of world exports. Among the main competitive advantages of Ukraine, the expert lists the price of milk, which is 10% below the world average, and the increase in the production of extra grade milk (26% of the total milk production). The role of Ukraine as a world exporter of casein — third largest in the world, butter — fifth largest, skimmed milk powder — eighth largest, and second largest (after New Zealand) exporter of butter to EU countries is also emphasized [1].

Leading researcher of the Department of Economics of Agrarian Production and International Integration of the National Science Center of the Institute of Agrarian Economics (IAE NSC) Olga Kozak, based on the results of the study “Forecast of milk production in Ukraine by 2030: methodology and calculations— [2], emphasizes that, given the current trends in the dairy industry, milk production in Ukraine will decrease by 12.3% (up to 8830.0 thousand tons) by 2030 compared to 2018, and there is already a shortage of dairy in the country raw materials, as evidenced by: rising purchase prices corresponding to, and in some places higher than the world, the expansion of up to 600 km of scales of raw materials of processors, reduction of export and increase of import of dairy products.

Key words: deficit, milk market, state support of the producers.

STATISTICAL AND METHODS
The basis of the study is a systematic approach to the study of the formation and development of the milk market in Ukraine. The statistical and economic method, including its methods — dynamic, index, structural and graphical analysis, was used in the research process. The data of the State Statistics Service of Ukraine, the Association of Milk Producers, the legislative and regulatory acts of Ukraine, the work of domestic experts on the problem of research, as well as information resources of the Internet are analyzed.

RESULT AND DISCUSSION
The Adult Health Nutrition Guidelines, approved by the Minister of Health of Ukraine, stated that daily consumption of dairy and sour milk products should be 2.5—3 servings per day (one serving is a glass of liquid product or 40 g of solid cheese or 120 g of homemade cheese) [4]. Similar recommendations are also provided by the USDA Center for Nutrition Policy & Promotion. Therefore, in order to provide milk and dairy products to the Ukrainian population in 2019, a minimum of 11500 thousand tons of milk was needed (taking into account that the average size of the existing population excluding the temporarily occupied territory of the Autonomous Republic of Crimea and Sevastopol in January-November 2019, according to the State Statistics Service of Ukraine, amounted to 42037936 people. Since in 2019 all categories of farms in Ukraine produced 9686.9 thousand tonnes of milk (Fig. 1), we can say that in Ukraine there is indeed an internal shortage of dairy raw materials.

Figure 1 shows that milk production in Ukraine by all categories of farms decreased in 2019 compared to 2010 by 1208.7 thousand tonnes or 11.09%. And if we compare with 2013 (the maximum volume of milk production in the last decade) — by 1503.7 thousand tons or by 13.44%. In 2019 only 9686.9 thousand tonnes of milk was produced in Ukraine, while in 1990 — 24508.3 thousand tonnes, in 2000 — 12657.9 thousand tonnes.
It should be noted that during 2014—2019, with the annual decrease in the gross milk production in Ukraine, agricultural enterprises in general increased production by 6.21%, while households — decreased by 19.26% (Table 1). This led to a decrease of 5.19 in the share of households in gross milk production. n., which is a positive trend. It is this that gives rise to restrained optimism about the possibility of further increasing the volume of milk production by agricultural enterprises, subject to a prudent state policy to support agricultural producers. However, it is worrying that, by 2017, agricultural businesses have been steadily increasing their milk production, in 2018—2019, we are seeing the opposite trend.

Milk production depends on the number of cows and their productivity. The decrease in milk production is primarily due to the decline in the number of cows that characterize the data in Table 2. A significant decrease in the number of livestock is observed in all categories of farms. So, in 2019 compared to 2013, the total number of cows decreased by 620 thousand heads or by 25.38%. The number of cows in agricultural enterprises decreased by 122.4 thousand heads or 21.85%, in households — by 497.6 thousand heads or by 26.43%. The share of households in the total cow population fluctuates around 76%.

The calculation of the chain index showed a sharp decline in livestock in agricultural enterprises in 2019 (6.39%) after stabilization and even a slight increase in 2018. According to experts, the main reason for the decrease in livestock is the rapid implementation of the land market in Ukraine: enterprises with inefficient animal husbandry do not plan to buy land for the organization of animal feeding, so they get rid of animals by concentrating on crop production; efficient enterprises have partially reduced domestic investment in order to accumulate funds for the purchase of the same land [3]. Also notable are the incomplete payment of compensation for existing state support programs in 2019 and rumors of a significant reduction in 2020.

As for the factors affecting the decline in cow livestock in households, one of them is the reduction of labor resources in rural areas, which is related to migration processes. Milk production is mainly done by elderly people who grow old and

![Figure 1. Dynamics of milk production by all categories of farms in Ukraine in 2010—2019, thousand tons](image)

Source: built on data to the State Statistics Service of Ukraine.

Table 1. Milk production by category of farms (thousand tons)

| Categories of farms        | 2013          | 2014          | 2015          | 2016          | 2017          | 2018          | 2019          |
|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Farms of all categories    | 11190,6       | 11132,8       | 10615,4       | 10381,5       | 10280,5       | 10064,0       | 9686,9        |
| Agricultural enterprise    | 2558,9        | 2647,5        | 2669,2        | 2705,6        | 2765,7        | 2755,5        | 2717,7        |
| Households                 | 8631,7        | 8485,3        | 7946,2        | 7675,9        | 7514,8        | 7308,5        | 6969,2        |
| Share of households,%      | 77,13         | 76,22         | 74,86         | 73,94         | 73,1          | 72,62         | 71,94         |

Source: calculated according to the State Statistics Service of Ukraine.

Table 2. Cows by category of holdings, thousand heads

| Categories of farms        | 2013          | 2014          | 2015          | 2016          | 2017          | 2018          | 2019          |
|----------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Farms of all categories    | 2443,0        | 2262,7        | 2166,6        | 2108,9        | 2017,8        | 1919,4        | 1823,0        |
| in % to the previous year  | -             | 92,62         | 95,75         | 97,34         | 95,68         | 95,12         | 94,98         |
| Agricultural enterprise    | 560,3         | 529,2         | 505,1         | 484,6         | 466,6         | 467,8         | 437,9         |
| in % to the previous year  | -             | 94,45         | 95,46         | 95,94         | 96,29         | 100,26        | 93,61         |
| Households                 | 1882,7        | 1733,5        | 1661,5        | 1624,3        | 1551,2        | 1451,6        | 1385,1        |
| In % to the previous year  | -             | 92,08         | 95,85         | 97,76         | 95,50         | 93,58         | 95,42         |
| Share of households,%      | 77,07         | 76,61         | 76,68         | 77,02         | 76,88         | 75,63         | 75,98         |

Source: calculated according to the State Statistics Service of Ukraine.
increase in cow productivity in households was less of 5% per year during the study period, while the agricultural enterprises increased by an average that the average annual milk yield per cow in 2018, cow productivity averaged 6190 kg of milk per year, while in households — 467 kg or 10.48% (Table 3). However, in agricultural enterprises in 2018, cow productivity averaged 6190 kg of milk per year, while in households — 4559 kg. The calculation of the chain index shows that the average annual milk yield per cow in agricultural enterprises increased by an average of 5% per year during the study period, while the increase in cow productivity in households was less than 1% per year. That is why the reduction in the number of cows in households while stabilizing average annual milk yields leads to a decrease in milk production in the country. While increasing cow productivity in farms, despite the decline in livestock, has made it possible to increase milk production in this category of farms.

The performance of the cows was influenced by the improvement of breeding and breeding work, the strengthening of the forage base and the improvement of the conditions of keeping the cows. In particular, high-performance herds of Ukrainian black-spotted dairy breed were created in breeding plants, which was created by crossing black-spotted cattle of domestic breeding with Holstein. However, it should be remembered that Ukraine is far behind developed countries of the world.

Thus, in order to increase milk production, cows’ livestock production should be stopped and their productivity improved. To this end, the State Budget of 2018 and 2019 provided funds for livestock support and approved the Cabinet of Ministers of Ukraine Decree "On Approval of the Procedure for Using the Funds Provided in the State Budget for Support of Livestock, Storage and Processing of Agricultural Products, Aquaculture (Fisheries) — 2018 № 107, according to which the budget funds were directed to the state support of animal husbandry in the following areas:

- partial compensation for the cost of construction and reconstruction of livestock farms and complexes, milking parlors, agricultural processing enterprises in terms of costs financed without value added tax due to bank loans (offsetting the value of the objects financed by banks);
- special budgetary subsidy for keeping cows of dairy, dairy and meat and productivity direction (subsidy for keeping cows);
- special budget subsidy for the rearing of young cattle (subsidy for young animals);
- partial reimbursement of the value of the breeding animals purchased for further reproduction, namely heifers, heifers, dairy cows, dairy and meat products, pigs and rams, ewes, rams, boar boars and cattle, and embryos, which

| Categories of farms | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------------|------|------|------|------|------|------|
| Farms of all categories | 4455 | 4508 | 4644 | 4735 | 4820 | 4922 |
| % in the previous year | -101,19 | 103,02 | 101,96 | 101,80 | 102,12 | - |
| Agricultural enterprise | 4833 | 5027 | 5352 | 5643 | 6025 | 6190 |
| % in the previous year | -104,01 | 106,47 | 105,44 | 106,77 | 102,74 | - |
| Households | 4351 | 4363 | 4437 | 4473 | 4480 | 4559 |
| % in the previous year | -100,28 | 101,70 | 100,81 | 100,16 | 101,76 | - |

Source: calculated according to the State Statistics Service of Ukraine.
have a breeding (genetic) value (partial reimbursement of the value of breeding animals, semen and embryos);

— partial reimbursement of the cost of construction and reconstruction of livestock farms and complexes, milking parlors, agricultural enterprises (partial reimbursement of livestock facilities) [6].

However, it is unknown whether these livestock support programs will continue to operate.

**CONCLUSION**

To stop the decrease in milk production is possible only with the comprehensive support of the dairy cattle industry by the state.

For this purpose it is necessary to create a working group, which should include, in particular, representatives of the Association of Milk Producers, the Union of Dairy Enterprises of Ukraine, the Association of Cattle Breeders of Ukraine, and to develop a program for the development of the dairy industry. It should be calculated for at least five years, which is related to the long payback period of dairy cattle. The predictability of agrarian policy towards the industry and the certainty that the state support rate is unchanged will create clear rules for the game for agricultural producers.

The dairy development program should, first of all, provide for preferential conditions (lending, compensation of interest rates on land loans) and priority right to purchase allotments for growing roughage of dairy farming enterprises.

We consider it expedient to retain such government support programs as offsetting the cost of bank-financed assets; partial reimbursement of the cost of livestock facilities; partial reimbursement of the cost of breeding animals, semen and embryos; subsidy for the young.

We agree with the proposal of the Association of Milk Producers regarding the need to replace special budgetary subsidies for keeping cows with subsidies for the volume of sales, which will encourage farmers to increase the productivity of the herd.

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