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**ANALYSIS OF TRENDS AND DEVELOPMENT STRATEGY OF**  
**JSC "BELSOLOD"**

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***Abstract***

The article describes the main points of malt production in the Republic of Belarus. According to the production technology, malt is a product of fermentation of rye, wheat or barley grain. Which is produced by germination, drying, grinding and boiling the grain. Malt broth is called wort and is used to make beer, kvass, bread, and some strong alcoholic beverages. Due to the processes of fermentation of grains, a diastatic substance is formed in them, which divides complex carbohydrates into simple sugars. They interact with yeast and turn into alcohol. An important parameter of the quality of the raw material is the extract of malt - the number of active ingredients that, when cooked, get into the wort. Extractive malt is much more valuable because it allows you to improve the processes of fermentation and get a better final product than low-extract malt. In brewing it is preferable to use barley malt, less often – wheat. In this case, brewing malt must have a high percentage of extractability, otherwise the fermentation process may not go at all. This article also describes the state of malt production in the specialized largest malt producer in Belarus JSC Belsolod. We study the dynamics of production and sales, justifies the strategy of enterprise development using the economic-mathematical model. Using the proposed recommendations of JSC Belsolod as a result of its activities will be able to get additional profit in the amount of 2767.8 thousand rubles.

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**Keywords:** JSC Belsolod, optimal solution, the strategy of enterprise development.



## 1. Introduction

In the Republic of Belarus there are 12 enterprises specializing in the production of beer. At the same time, an analysis of the dynamics of beer production in the Republic of Belarus during the reporting period shows that all the leading beer producing enterprises increased their production volumes. Currently, the main problem, on which the increase in production volumes and the improvement of beer quality depends, is to ensure the production of domestic brewing barley. In Belarus, as in the entire Customs Union, the ban on the import of malted barley from the outside, since almost all barley malt of Belarusian brewers is produced from barley grown in the Republic. Previously, some Belarusian factories had their own malt houses, but now the only large malt production enterprise in the country is JSC Belsolod from the city of Ivanovo, Brest Region. Consequently, an important direction in this study is the identification of reserves for increasing the production of malt from domestic raw materials for the expansion of the brewing industry (Gold of OJSC “Belsolod”, 2017; OJSC “Mashpishcheprod”, 2018; What is malt, 2018).

## 2. Problem Statement

Malt is the main material for the production of beer. Malt characteristics such as taste, color and smell often play a decisive role in determining the type of beer produced from it, and its quality directly affects the quality of the beer. Therefore, special attention is paid to the production of malt. It receives its characteristic properties precisely in malting, and also depending on the quality of the grain used for it. Barley is commonly used to make malt. This is due to the ease of its processing, good germination and unpretentiousness of the soil to climatic conditions and the most suitable taste (Balanov, Smotrataeva, Ivanchenko, & Khabibullin, 2017).

Barley malt allows you to get a beer with the best taste. Barley belongs to the family of cereals. Without going into details of the structure of the grain of barley, it should be noted that it consists of three main parts – the germinal, powdery body (endosperm) and the shell.

Malt is used not only for the production of beer, but also forms the basis for well-known varieties of bread: “Narochansky”, “Yubilyarny”, “Spring”.

Special barley varieties intended for malting should be healthy, large, free from damage, cleaned and sorted. Barley does not turn into malt immediately. Freshly harvested, it has not yet reached physiological maturity, that is, it does not complete the biochemical processes of maturation. Therefore, the grain must lie and ripen for at least two months. With the condition of large volumes, the aging phase is carried out in special silos. Barley is pre-dried. In the process of ripening barley, starch is synthesized from sugars, the production of proteins from amino acids, a decrease in moisture content and water-soluble substances. The breakdown and oxidation of germination inhibitors occurs (Khudinskaya, 2017; Dolgopolik, 2008; Ozhereleva, 2016).

Before entering the production of grain, barley is cleaned again. Before soaking it is sorted according to the grain size, which ensures uniform soaking, germination and subsequent high-quality grinding of the finished malt. When sorting, there are two varieties of barley – barley belongs to the first, with a grain thickness of more than 2.5 mm, and brewing barley with a thickness of 2.2 to 2.5 mm to the

second. Grains whose thickness is less than 2.2 mm are called waste and are not used in brewing (Savitskaya, 2015; Savchik, 2016; Tukhtasunov & Muhiddinova, 2017).

Studying the structure of barley in Belarus, we note that the Brest, Grodno and Minsk regions occupy the largest share in the structure of barley supply. This is due to soil quality and climatic conditions.

It should be noted that in 2016 for the renewal of brewing barley material, 100 tons of seeds of high reproductions of European breeding were purchased in the Czech Republic, France, and Germany.

### **3. Research Questions**

The study is devoted to an important problem: providing the population with high-grade and high-quality products, as a priority direction of socially-oriented states, including the Republic of Belarus. Development and implementation of scientific methods for optimizing production, aimed at solving the most important tasks of the state – ensuring food safety and improving product quality by creating competitive food products. Therefore, the study of trends in the development of malt in the Republic of Belarus is timely and relevant.

### **4. Purpose of the Study**

The purpose of the study – the development of the main directions of development of a specialized enterprise for the production of malt in JSC Belsolod.

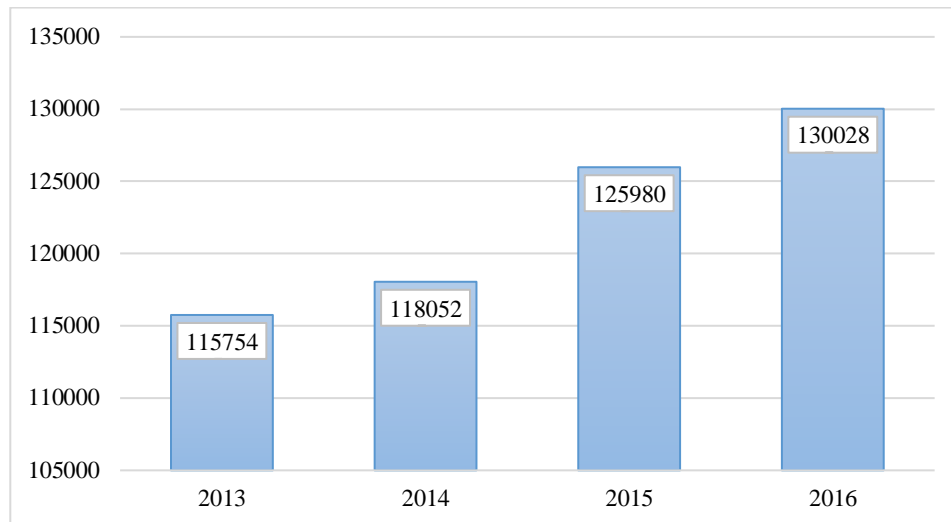
### **5. Research Methods**

The study is to establish using the methods of analysis and synthesis, induction and deduction, comparative analysis, systems approach, economic and mathematical modeling.

### **6. Findings**

Malt production in the Republic of Belarus is carried out by the specialized enterprises of OJSC Belsolod and OJSC Mashpishcheprod.

OJSC “Belsolod” is the largest malt producer in Belarus, malt is used for the production of various types of beer. After the reconstruction, the capacity of JSC Belsolod for the production of malt was doubled to 130 thousand tons per year. In 2016, the company produced 130.0 thousand tons of malt, which is 3.2% higher than the previous year, including 121.8 thousand tons from own raw materials, 8.3 thousand tons from raw materials supplied by the customer (Figure 01) (The structure of crops in farms of all categories. Graphic material of Belstat, 2017).



**Figure 01.** Dynamics of malt production in the Republic of Belarus, t

OJSC Belsolod supplies brewing raw materials, both to domestic producers of beer and for export, cooperates with multinational companies (The structure of crops in farms of all categories. Graphic material of Belstat, 2017). The company's products have been in steady demand for over 25 years among Belarusian, Russian consumers, as well as among consumers in Central Asia and the Caucasus, in 2016, malt was delivered to breweries of Laos, Vietnam, Malaysia, Brazil (see Table 01).

**Table 01.** The distribution of malt of JSC "Belsolod" by sales markets

Destination country	2015 year		2016 year		2016 as% of 2015
	КОЛ-ВО	%	КОЛ-ВО	%	
RF	59822.7	75.0	57176.4	71.6	95.6
Kazakhstan	3373.1	4.2	8474.5	10.6	251.2
Turkmenistan	470.9	0.6	646.1	0.8	137.2
Kyrgyzstan	1705.3	2.1	413.0	0.5	24.2
Tajikistan	2322.6	2.9	2332.7	2.9	100.4
Azerbaijan	4213.0	5.3	177.0	0.2	4.2
Uzbekistan	5185.0	6.5	637.5	0.8	12.3
Georgia	20.0	0.03	59.0	0.1	295.0
Armenia	1010.6	1.3	1413.4	1.7	139.9
Moldova	1481.0	1.9	899.2	1.1	60.7
Vietnam	69.7	0.1	1508.0	1.9	2163.6
Laos	92.7	0.1	5967.5	7.5	6437.4
Malaysia	-	-	72.9	0.1	-
Brazil	-	-	26.0	0.03	-
Total:	79766.4	100.0	79803.3	100.0	100.0

From table 1 it is obvious that the main market for malt is domestic (share 44.0% in 2016), exports – the market of the Russian Federation (share 40.1%), at this stage work is underway to diversify markets: it was planned to reduce the shipment of brewing malt in the Russian Federation in 2017, and increase shipments to countries with hard currency. It is planned to make test shipments of brewing malt to non-

traditional markets: Thailand, Cambodia, the Philippines, Mongolia, China, Iran, Indonesia (Gross yield and yield of grain and leguminous crops. Graphic materials. Belstat, 2017; Breweries in Belarus increased profits 4.5 times in 2016, 2016).

On the foreign market, OJSC Belsolod mainly works under direct contracts, as well as through official dealers, which operate in the following markets: Russian Federation, Tajikistan, Armenia. In the domestic market, OJSC Belsolod operates under contracts for the supply of its own malt, as well as under processing contracts on a give-and-take basis. From table 02 it follows that for the period January-December 2016, under the supply contracts for the domestic market, 55709.826 tons were shipped, and 7000.340 tons were shipped under processing contracts (see Table 02).

There is a single price for breweries in the domestic market, which is declared by the Department of Pricing Policy of the Ministry of Economy of the Republic of Belarus. The price for malt corresponds to the declaration on the level of selling prices for malt brewing barley and is registered by order of the Department of Pricing Policy of the Ministry of Economy of the Republic of Belarus.

**Table 02.** Supply of brewing malt to the domestic market for 2015-2016, tons

Name of the brewing organization	2015 year	2016 year	2016 as% of 2015
Own malt, total	44732.133	55709.826	124.5
OJSC Krinita	13442.768	14027.740	104.4
Heinekenbelarus	4795.140	11455.160	238.9
OJSC "Brewery" Olivaria "	5468.100	8073.830	147.7
Open Society "Lidsky beer"	14781.920	15572.250	105.3
JSC "Brest beer"	1850.040	3275.520	177.1
Other	4394.165	3305.326	75.2
Tolling Malt, total	9511.660	7000.340	73.6
OJSC "Brewery" Olivaria "	1188.200	-	-
OJSC Krinita	2773.540	7000.340	252.4
Heinekenbelarus	5549.920	-	-
TOTAL	54243.793	62710.166	115.6

Among consumers of products of JSC "Belsolod" there are state, private and commercial enterprises, presented in table 03.

**Table 03.** Main consumers of OJSC "Belsolod" in the domestic and foreign markets

Domestic market	External market
OJSC Krinita	Carlsberg Eastern Europe Ltd. (RF)
Open Society "Lidsky beer"	CJSC Agroimpex (RF)
JSC "Brest beer"	OOO Tagilskoe beer (RF)
OJSC "Olivaria Brewery"	JSC "Bochkarevsky PZ"
IZAO "Heineken Breweries"	LLC Regionopt (RF)
SOOO "Oasis Group"	LLP "Viva pro group" LLP (Kazakhstan)
ALC "PC Beaver"	LLC TopMalts (RF)
Dvinsky Brovar LLC	JSC Balakovskypivkombinat (RF)
Mirsky branch of Grodno Nemanoff Distillery	GORMASHRESURS LLP (Kazakhstan)

The main activity of the enterprise allowed to receive in the reporting period 24.5 rubles of profit for every 100 rubles of funds spent on the production and sale of products (see Table 04).

The company is relatively increasing the pace of production, in 2016 the rate exceeded by 1.7 percentage points. the value of 2014; malt production increased by 10.2%; the number of stocks of finished products decreased by 217 pp, which indicates a good marketing strategy of the enterprise, a good marketing policy of the enterprise. In 2016, there is also a change in the structure of malt supply to sales markets: a decrease in the volume of supplies to the domestic market amounted to 5.6%, and to the external market - an increase of 18.8%, which means export-oriented production.

**Table 04.** Main indicators of financial and economic activity of JSC Belsolod for 2014-2016

Indicators	Year			2016 as% of 2014
	2014	2015	2016	
Growth rate of industrial output in average annual prices of the base year,%	101.1	103.5	102.8	+1.7 pp
Production volume Products in actual selling prices, thousand rubles	46207.1	52761.0	71347.0	154.4
Total malt production, tons	118052.0	126455.0	130028.0	110.2
Including own unroasted, tons	99674.0	111472.0	119018.0	119.4
Unrullawed, tons	18378.0	14676.0	8257.0	44.9
Own roasted, tons	0.0	307.0	2753.0	-
The use of production capacity for malt,%	90.8	97.3	100.0	+9.2 pp
Cost of stocks of finished products, thousand rubles	9035.2	5525.0	1003.0	11.1
Stock level of finished products,%	234.8	125.6	16.9	-217.9 pp
Shipped malt, total, tons	133606.0	134010.0	142513.0	106.7
Including to domestic market, tons	66454.0	52244.0	62710.0	94.4
For export, tons	67152.0	79766.0	79803.0	118.8
Investments in fixed capital, thousand rubles	59.6	3133.0	115.0	193.0
Average number of people	582.0	381.0	376.0	64.6
Average monthly salary, rub.	526.5	642.6	785.6	149.2
Proceeds from the sale of products, goods, works, services per 1 average employee, thousand rubles.	113.0	177.9	235.5	208.4
Proceeds from the sale of products, goods, works, services, thousand rubles	65760.7	67782.0	88564.0	134.7
Profitability of products sold,%	5.3	11.3	24.5	+19.2 pp
Return on sales,%	4.5	9.4	18.2	+13.7 pp
Net profit (loss), thousand rubles	-3646.8	10.0	1503.0	-
Return on sales in net profit,%	-5.5	0.0002	1.7	+7.2 pp
Exports of goods, thousand USD	30333.0	23726.0	25213.2	83.1
Imports of goods, thousand USD	1921.1	2555.0	2467.0	128.4
Foreign trade balance, thous. USD	28411.9	21171.0	22745.3	80.1

One of the tools to improve the efficiency of production development is the use of economic and mathematical modeling, which makes it possible with the available resources to improve the efficiency of the industry as a whole.

As a result of solving the economic and mathematical problem, the optimal solution was obtained.

The growth in the volume of purchases of raw materials, the optimization of its use in areas of processing will allow an increase in the production of products in an assortment (see Table 05).

**Table 05.** Production, t

Product type	Fact	Payment	Payment in% to the fact
Total malt production, tons	130028	136520	105.0
Including own unroasted, tons	119018	126451	106.2
Unrullawed, tons	8257	5695	69.0
Own roasted, tons	2753	4375	158.9

For the future, it is recommended to increase the production of own unroasted malt by 6.2%, at the same time reduce the production of unpaved unpaved malt, with a simultaneous increase in malt roasted by 58.9%.

In the process of solving the economic and mathematical problem, the sales volumes of products in the assortment are optimized by sales channels (see Table 06), while the prospect is for the realization of existing stocks of finished products, therefore, the total sales will increase by 11.2%.

It is recommended to sell the largest share of malt volumes in the Republic of Belarus (42.3%) and for export (57.7%). Such an implementation channel as the Russian Federation is the most attractive, since transport costs for the delivery of products are lower than in other regions. However, the company adheres to the policy of diversification of sales markets.

**Table 06.** The distribution of malt of JSC "Belsolod" by markets

Implementation channels	Fact		Payment		Payment in% to the fact
	T	%	t	%	
Republic of Belarus	62 710.0	44,0	66967.6	42.3	106.8
Russian Federation	57176.4	40,1	58633.3	37.0	102.5
Kazakhstan	8474.5	5,9	15498.0	9.8	182.9
Turkmenistan	646.1	0,5	804.4	0.5	124.5
Kyrgyzstan	413.0	0,3	344.9	0.2	83.5
Tajikistan	2332.7	1,6	2338.4	1.5	100.2
Azerbaijan	177.0	0,1	43.5	0.0	24.6
Uzbekistan	637.5	0,4	79.9	0.1	12.5
Georgia	59.0	0,0	97.8	0.1	165.8
Armenia	1413.4	1,0	2523.5	1.6	178.5
Moldova	899.2	0,6	1676.1	1.1	186.4
Vietnam	1508.0	1,1	2631.5	1.7	174.5
Laos	5967.5	4,2	6715.8	4.2	112.5
Malaysia	72.9	0,1	112.4	0.1	154.2
Brazil	26.0	0,0	28.0	0.0	107.7
Total:	142 513.0	100,0	158495.1	100.0	111.2

Growth in raw materials purchases, optimization of its use through processing channels, justification of production volumes in stock, optimization of production volumes through sales channels will allow the company to increase revenues from product sales by 11.8%, cost will increase by 10.8%, profits will increase by 15.9% (see Table 10). The level of profitability will increase from 24.5% to 25.6% or 1.1 pp.

**Table 07.** The financial results of the company

Indicators	Fact	Payment	Payment in% to the fact
Proceeds from the sale of products, goods, works, services, thousand rubles	88564.0	99014.6	111.8
Cost of sales of products, goods, works, services, thousand rubles	71135.7	78818.4	110.8
Profit	17428.3	20196.1	115.9
Profitability level, %	24.5	25.6	+1.1 pp

Thus, the analysis of the solution of the model development program of JSC Belsolod showed that the company has the potential to improve the efficiency of operation, for this it is required to optimize the range of products, to increase to a greater extent the production of the most profitable types of products.

Exports of products should be expanded, which will ensure the inflow of currency, improve the financial condition of the enterprise, and expand the markets outside the Republic of Belarus.

The implementation of the program calculated by us will allow the enterprise to learn in the future.

## 7. Conclusion

As a result of the study, we note that the production of malt in the Republic of Belarus is in the only enterprise of JSC Belsolod, which provides the brewing industry of the Republic with high-quality domestic raw materials, as the brewing industry has a steady tendency to expand, as a result, the need for raw materials increases to solve the posed problem the optimization program for the development of the JSC “Belsolod” was calculated, which allowed to increase the production of malt from barley and by direct increase the economic efficiency of the enterprise.

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