Trends and Prospects for the Development of the Cereal Market in Ukraine

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Abstract. The development of agricultural products processing, in particular cereals, and improving their quality characteristics will contribute to the growth of employment in rural areas, satisfaction of internal and external demand, growth of foreign exchange earnings to the state and incomes of commodity producers. The purpose of the paper is to assess the prospects for the development of the cereal products market in Ukraine, considering trends in supply and demand. The methodological basis of the research was system and dialectical approaches and the application of synthesis and analysis methods in determining the regularities and features of the cereal products market in Ukraine. The paper analyses the dynamics and structure of cereals production, identifies the problems of increasing the supply of their main types. Factors of internal and external demand for Ukrainian cereals and future trends in the development of the cereal market are considered. As a result, it is proved that the volume of production of basic cereals directly depends on the availability of raw material supply and its quality, demand for finished products both on the internal market and from importing countries of Ukrainian products, as well as the retrospective profitability of sales of alternative crops. The expansion of sales of Ukrainian cereal products on the internal market can be achieved through the integrated use of non-tariff restrictions that do not contradict agreements within the WTO. The originality of the study consists in systematising the factors of cereal products supply and demand development and analysing their impact on market conditions. The practical significance of the study is to identify the main areas in which problems of further development of the cereal industry are generated, which creates the basis for developing measures to minimise their negative impact

Keywords: cereal products, cereal production, cereal market, processing enterprises, grain production

The Problem Statement

The cereal market, like any other market, is a sphere of interaction between supply and demand subjects. The established food traditions in Ukraine determine a considerable demand from the population for a variety of cereals produced from buckwheat, millet, rice, oats, barley, wheat, corn, peas. External demand for domestic cereal products has a large potential to increase, given the aggravation of the global food problem. Therewith, the expansion of its supply by Ukrainian producers is constrained by significant fluctuations in profitability and periodic interventions of cheap cereals at low prices from neighbouring countries in cases of overproduction.

Considering these circumstances, it is difficult for economic entities that operate the market to predict the parameters of its further development and form long-term business strategies. However, the analysis of general retrospective market trends in combination with the study of changes in consumer preferences under the influence of price and non-price factors allows forming such strategies for the short and medium term.

Analysis of Recent Research and Publications

The importance of Ukrainian cereal production for food security of the state and features of market development is analysed by O.Yu. Nishodovska [1]. O.V. Nikishina, based on the analysis of the problems of a relevant cereal products market development, outlined the priorities of its development strategy, the implementation of which involves active state intervention, which is quite controversial in the context of liberalisation and integration into the world economic space [2]. The negative impact of state intervention on pricing in the cereal crop market was determined by

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A.I. Kaminska, who suggests limiting it to the state's implementation of commodity and financial interventions, the introduction of subsidies to producers [3]. In contrast to the previous approach, O.V. Orlenko believes that it is market regulatory mechanisms combined with the activation of integration processes that can give an impetus to the effective development of such a market [4]. The main factors that form the competitive advantages of enterprises growing cereal crops are given in the paper by O.Yu. Niskhodovska and T.V. Marusei [5]. In most Ukrainian papers devoted to the consideration of these problems, trends in the cereal products market development are analysed only in terms of supply development [6].

Purpose of the Study

The purpose of the paper is to assess the prospects for the development of the cereal products market in Ukraine, considering trends in supply and demand.

Research Results

In all countries, cereals make up a large part of citizens' diet. According to the current nomenclature, 7 types of cereals are produced in Ukraine, while processing enterprises produce several types of them from one type of grain: buckwheat - unground and crushed buckwheat, barley - barley and pearl, wheat - wheat and semolina [2]. Cereals are whole or crushed grains that are completely or partially freed from the shell, aleurone layer, and germ. The range of cereal products is divided into 6 groups: whole cereals: milled rice, polished rice, millet, unground buckwheat, whole oatmeal, whole peas; ground milled cereals – barley, “Poltava” and “Arték” (made of wheat), milled corn (5 numbers in size); ground cereals: barley, oatmeal, corn divided by size into 3 numbers; flakes – a product of further processing of cereals (flaked); cereals high nutritional value – made of a mixture of 2-3 types of ground cereals with concentrates (for example, SMP – skimmed milk powder); instant cereals – processed using a special technology. All cereals produced from different crops and depending on the quality are divided into varieties: higher, first, second, etc., numbers [4].

The consumer norm in Ukraine sets the annual consumption of cereals by one able-bodied person at the level of 7.1 kg (Table 1), but in reality, this indicator varies considerably [7]. With real incomes growing, Ukrainians are reducing their consumption of cereals in favour of other substitute goods. However, now there is a tendency to increase the consumption of cereals, which is conditioned not only upon a decrease in the real incomes of considerable segments of the population but also to changes in the food preferences of Ukrainians under the influence of popularising the ideas of healthy eating.

### Table 1. Annual consumption rates of cereals included in the consumer basket for 2019 per person, kg

<table>
<thead>
<tr>
<th>Cereals</th>
<th>Consumer categories</th>
<th>Up to 6 years old</th>
<th>6-18 years old</th>
<th>Able to work</th>
<th>Unable to work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td></td>
<td>1.3</td>
<td>1.8</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Semolina</td>
<td></td>
<td>0.9</td>
<td>1.2</td>
<td>-</td>
<td>0.9</td>
</tr>
<tr>
<td>Millet</td>
<td></td>
<td>2.7</td>
<td>3.3</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Buckwheat</td>
<td></td>
<td>2.4</td>
<td>3.4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Oat</td>
<td></td>
<td>0.7</td>
<td>0.9</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Others (barley, pearl barley)</td>
<td></td>
<td>3.1</td>
<td>4.7</td>
<td>0.5</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Source: [7]

During 2016-2018, the lion's share of products in the market of the agricultural sector of Ukraine was made up of own production. Due to the rather high productivity of cereal crops, similar trends were observed in the profile market. Notably, there are no accurate statistics on the production and sale of cereals in Ukraine, so there are discrepancies in different sources regarding the values of the main market indicators. The offer of products on it, according to the Pro Consulting agency (Table 2), during the study period, increased to 295 thousand tonnes, providing an increase of 2.7%. This situation has developed both due to the growth of production within the country and imports of products (by 1.1 and 9.5 times, respectively). In 2018, there was a sharp decrease in production of cereals (by 15%). On the one hand, it was conditioned upon a reduction in the volume of raw materials of the required quality to processing enterprises, which is associated with unfavourable weather and climatic conditions, and on the other – a drop in the level of demand from consumers for certain types of cereals (wheat, millet, barley, etc.) [8]. This decline was partially offset by an increase in the supply of the most popular types of products from other countries. Despite the fact that cereals belong to the export-oriented products of the Ukrainian agricultural sector, their imports have considerably higher growth rates.

### Table 2. Key indicators of the cereal market in physical terms, thousand tonnes

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>261.51</td>
<td>269.84</td>
<td>228.49</td>
</tr>
<tr>
<td>Export</td>
<td>58.28</td>
<td>75.43</td>
<td>65.60</td>
</tr>
<tr>
<td>Import</td>
<td>73.35</td>
<td>115.47</td>
<td>132.75</td>
</tr>
<tr>
<td>Market capacity</td>
<td>276.58</td>
<td>309.88</td>
<td>295.64</td>
</tr>
<tr>
<td>Growth rate, %</td>
<td>x</td>
<td>4.7</td>
<td>-3.54</td>
</tr>
</tbody>
</table>

Source: calculated based on the data [8]
The sufficiency of the raw material base for the production of various types of cereals varies significantly. A considerable amount of raw materials is available for the production of wheat, corn, and barley grains. Therewith, despite favourable natural and climatic conditions for cultivation in most regions of Ukraine, producers massively refuse to sow buckwheat, rye, oats and redistribute acreage for crops the profitability of which is consistently high. Production capacities in the country allow producing about 3.5-3.7 million tonnes of cereal products [9], but the level of their loading ranges from 35-45%. Even large processing enterprises that are co-founders of agricultural enterprises cannot fully load their production facilities. However, there is no shortage of cereal products on the market (except for certain types, for example, buckwheat in 2015), and competition among commodity producers is increasing [10]. During 2016-2018, only the production of oatmeal increased considerably in Ukraine in percentage terms (Table 3).

<table>
<thead>
<tr>
<th>Table 3. Production of certain types of cereals in Ukraine in 2016-2018, thousand tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>buckwheat</td>
</tr>
<tr>
<td>corn</td>
</tr>
<tr>
<td>millet</td>
</tr>
<tr>
<td>oat</td>
</tr>
<tr>
<td>rice</td>
</tr>
<tr>
<td>barley</td>
</tr>
</tbody>
</table>

Source: [8]

Conventionally, buckwheat grains are the leaders in terms of production volume. In 2016, Ukraine became one of the three largest buckwheat producers in the world, after Russia and Kazakhstan. A small part of this cereal (about 1%) is exported, mainly organic buckwheat. The rest is consumed on the internal market, but there is not enough to meet its demand, and the deficit in recent years has been covered by imported buckwheat mainly from Russia and Kazakhstan. Therewith, the acreage under buckwheat annually decreased from 570 thousand hectares in 2000 to 100 thousand hectares in 2018 [11], which is 42.6% less than in 2017 [12].

High production volumes of corn grains are mainly conditioned upon external demand since in Ukraine they are not particularly popular among consumers. Mostly, Ukrainian producers supply these cereals to Egypt and Israel. The EU market is also promising, but nowadays, the conditions of quotas are an obstacle to a significant increase in corn grains exports. The quota for corn and corn cereal is the same and is chosen by ordinary corn literally in the first days of the new year. In general, the potential for increasing the supply of Ukrainian corn grains is high, given the presence of a considerable raw material base. The interest of foreign capital in further development of corn processing facilities is evidenced, for example, by the construction of a plant in the village of Demkivka, Trostianets district, Vinnytsia region, which was started in 2019 by Dacsa Bunge (the American company Bunge and the Spanish Dacsa group of companies). The planned investment volume is 14 million USD. The new enterprise will be engaged in processing special varieties of corn into cereals and flour. The design capacity is 300 tonnes per day and 100 thousand tonnes per year. About 80% of finished products will be sold for export [13].

A considerable increase in the supply of rice in the medium term is unlikely, given the specific features of its cultivation. Nowadays, in Ukraine, there are a small number of fields suitable for its cultivation, and their development requires considerable investment in the arrangement of irrigation systems. Currently, rice farming is carried out only in the Odesa and Kherson regions, and this covers the needs of the internal market by only a third, which causes dependence on imported rice. The main factors of internal demand for cereals are the level of income and the level of prices for products. If the purchasing power of the population decreases, consumers will switch from meat, fish, and potatoes to cereals. Analysing the dynamics of the physical volume of retail trade enterprises turnover in dynamics, mainly an increase in the volume of grain consumption in physical terms can be observed, with the exception of 2015 (Table 4).

<table>
<thead>
<tr>
<th>Table 4. Sales of cereals by retail enterprises of Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator</td>
</tr>
<tr>
<td>Physical volume indices, in % before the previous year; in compared prices</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>Physical volume indices, in % before the previous year; in compared prices</td>
</tr>
<tr>
<td>Sales volumes, mln UAH</td>
</tr>
<tr>
<td>Share of cereals sales produced on the territory of Ukraine, %</td>
</tr>
</tbody>
</table>

Source: compiled according to the Office for national statistics of Ukraine [14]

The growth of sales volumes in monetary terms in percentage increases significantly outstrips the indices of physical volume, which is mainly conditioned upon an increase in selling prices, that is, the inflationary component. The specific features of the Ukrainian market are also a sharp fluctuation in selling prices for cereals in response to sudden and sharp crisis phenomena in the economy. In conditions of a shortage of goods or a sharp deterioration in the financial situation of the population, the purchase of all types of cereals and groceries is activated, which allows market operators to raise prices for them, as happened in 2010 and 2014 when there was a huge demand for buckwheat grains [14].
The share of sales of cereals produced in Ukraine remains consistently high – more than 90%. Both exports and imports of cereals are characterised by small volumes [14]. The reason is that raw materials are usually imported and exported to the country, after which they are processed into cereals by local producers. In the structure of foreign trade, there is a predominance of imports over exports, which is caused by the quality and price advantages of foreign cereals over Ukrainian ones, as well as insufficient provision for their own consumption of Ukrainian cereals.

The dynamics of grain imports to Ukraine has its own specific features. The Ukrainian manufacturer performs import deliveries seasonally – usually from January to April. In other months, the volume of cereals is most often insignificant or absent altogether. There is also a significant fluctuation in the total volume of goods. In 2018, Ukraine imported cereals with a total volume of 133.9 tonnes, which is 168% more than in 2017. The largest import of cereals in 2018 was observed in February [15].

The insignificant volumes of cereals that Ukraine supplies to the foreign market are explained by their low quality, as well as the specific features of consumption in some countries. The main external buyers of Ukrainian cereals in 2018 were: the Netherlands – 19.5%, Poland – 15.5%, Lithuania – 11.7%, and Slovenia – 11.3%. The largest companies-exporters of cereal products were: LLC “Interlink”, which has 20.5% of the sales market, LLC “Skvirskyi grain processing factory” – 20.4% of the market [16].

The results of the analysis of the state of raw materials and production sectors cereal market development indicate that the production volumes of the main cereals (with the exception of rice and oatmeal) do not have a clearly directed trend, are characterised by a wave-like variation, and depend mainly on three factors: 1) the availability of raw material supply and its quality; 2) the demand for finished products both in the internal market and from the importing countries of Ukrainian products; 3) retrospective profitability of sales of alternative crops. Accordingly, the economic problems of the cereal market development are generated in the plane of these factors (Fig. 1) [17].

**Table 5. Dynamics of retail selling prices for individual cereals on average in Ukraine, UAH/kg**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Buckwheat</td>
<td>24.84</td>
<td>34.14</td>
<td>28.37</td>
<td>26.78</td>
<td>18.06</td>
<td>18.46</td>
<td>17.1</td>
<td>17.06</td>
</tr>
<tr>
<td>Millet</td>
<td>7.42</td>
<td>8.65</td>
<td>8.92</td>
<td>9.7</td>
<td>16.28</td>
<td>18.71</td>
<td>24.67</td>
<td>37.21</td>
</tr>
</tbody>
</table>

**Source:** compiled according to the Office for national statistics of Ukraine [14]

The production volumes of cereals (with the exception of rice and oatmeal) do not have a clearly directed trend, are characterised by a wave-like variation, and depend mainly on three factors: 1) the availability of raw material supply and its quality; 2) the demand for finished products both in the internal market and from the importing countries of Ukrainian products; 3) retrospective profitability of sales of alternative crops. Accordingly, the economic problems of the cereal market development are generated in the plane of these factors (Fig. 1) [17].

**Figure 1.** Problems of the cereal crop market development in Ukraine

**Source:** compiled according to the data [17]
Despite these problems, experts believe that the country has potential opportunities to enter the EU market of Ukrainian cereals rich in Boltungs and fibre, which is the basis of a healthy diet. This prospect opens the way for investment in Ukrainian processing enterprises.

Ukrainian marketing analysts have described 10 future trends in the development of the cereal market [18-22]:
1. Prospects for the development of cereals and cereal products in developed countries of the world show its growth with increasing incomes of the population.
2. The growth of the market is due to an increase in the consumption of high-quality cereals, ready-made breakfast cereals, muesli, etc. And also due to the transition to instant cereals.
3. During the crisis, there is a reduction in all segments and a slight increase in demand for low-cost cereals. As an alternative food group, there is a growing demand for flour, pasta, and potatoes.
4. For the development of the packaged cereal market, the worst thing is the instability of the manufacturer's quality.
5. To lead the market, the manufacturers need to become not processors but operators in the distribution field, earn additional value at the expense of the brand.
6. The consumption of various cereals is increasing due to the fashion for a healthy lifestyle.
7. The Ukrainian cereal market will consist almost entirely of Ukrainian-made products.
8. An important role is played by the yield of certain crops. At its low level, the price of the product increases, which leads to its replacement in the diet with another cereal crop.
9. Given the favourable situation on the commodity market, the fundamental changes in packaged cereals should not be expected. For grain producers, the main purposes will remain the purchase of raw materials and the sale of the product in retail chains. Among cereals, the main leaders on the shelves will remain Ukrainian buckwheat and imported rice.
10. In the future, the market for packaged cereals with high added value will grow, which require additional processing – these are instant cereals, packaged cereal side dishes. The high price of such products leads to partial demand for them, so a sharp jump in this segment should not be expected.

**Conclusions**

The conditions for the development of internal and external demand for Ukrainian cereal products are mainly favourable for increasing its production volumes. The main obstacles to the expansion of exports of Ukrainian products are the low quality of a large part of raw materials and outdated processing technologies that do not allow the production of cereals that meet European standards. However, organic cereal producers are gradually increasing sales volumes in the EU and North American markets. Expansion of sales volumes in the internal market can be achieved with a comprehensive application of non-tariff restrictions that do not contradict agreements within the WTO. This makes it necessary for further research to study the experience of developed countries in curbing low-quality imports of cereals at dumping prices.

**References**


**Список використаних джерел**

Тенденції та перспективи розвитку ринку круп’яних виробів в Україні

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Анотація. Розвиток переробки аграрної продукції, зокрема круп’яної, підвищення її якісних характеристик сприятимуть зростанню зайнятості в сільській місцевості, задоволенню внутрішнього і зовнішнього попиту. Зростання валютних надходжень у державу і доходів товариств вихованих. Метою статті є оцінка перспектив розвитку ринку круп’яних виробів в Україні з урахуванням тенденцій в попиті й пропозиції. Методичною основою дослідження стали системний та діалектичний підходи та застосування методів синтезу та аналізу під час визначення закономірностей та особливостей ринку круп’яних виробів в Україні. У статті проаналізовано динаміку та структуру виробництва круп, визначено проблеми наращування пропозиції й основних видів. Розглянуті чинники внутрішнього і зовнішнього попиту на українські круп’яних виробів. У результаті, доведено, що обсяги виробництва основних круп напряму залежать від наявності пропозиції сировини та й її якості, попиту на готову продукцію як на внутрішньому ринку, так і з боку країн-імпортерів, а також ретроспективної рентабельності продажу альтернативних культур. Розширення обсягів реалізації круп’яних виробів на внутрішньому ринку можливо досягти за комплексного використання нетарифних обмежень, що не суперечать угодам у рамках СОТ. Наукова новизна дослідження полягає в систематизації чинників формування попиту і пропозиції круп’яних виробів та аналізі їх впливу на ринкову кон’юнктuru. Практичне значення дослідження полягає в визначенні основних напрямів, у межах яких генеруються проблеми подальшого розвитку круп’яної галузі, що створює підґрунтя для розробки заходів для мінімізації їх негативного впливу

Ключові слова: круп’яна продукція, виробництво круп, ринок круп, переробні підприємства, зерновиробництво