Market research of rice cereals

G M Maslova, I M Glinkina, N A Kashirina and N V Bailova

Voronezh State agrarian university, 1, Mitchurina St., Voronezh, 394087, Russia
E-mail: glinkina@srd.vsau.ru

Abstract. Rice groats are in high demand among buyers. Given the current situation in the rice market, market research conducted to identify consumer preferences and the main factors affecting the choice and degree of satisfaction with the quality of rice cereals aroused some interest. The article gives a brief description of the rice market, its structure, the main stages of development, describes the factors affecting the formation of demand. The research of self-sufficiency and structure of the Russian rice market, growth rates is given. The dynamics of rice export and import in 2018 is presented. A marketing research was conducted aimed at clarifying the preferences of consumers of rice cereals, identifying the main factors affecting their choice and the degree of satisfaction with quality in the market of the Voronezh region. Based on studies for trade enterprises, several recommendations have been developed aimed at increasing demand and increasing cereal sales.

1. Introduction
Rice groats in Russia belongs to the products that are in highest demand among customers. The volume of consumption and popularity of this product in recent years has increased by about 11-14% per year due to an increase in domestic production. Its consumption is about 4-5 kg per year per person. In addition, it confidently bypasses the popularity of buckwheat and other types of cereals.

Currently, ordinary rice groats (polished and crushed rice) and quick digesting, “clean rice”, rice with a high content of vitamins and minerals (brown rice, steamed rice), flavored rice (jasmine), etc. are produced from rice. Rice cereal is characterized by a large starch content compared with other cereals, a relatively small amount of protein (7-9%) and very small fiber and minerals. Polished rice (rice from which the germ, fruit and seed membranes, and a significant part of the aleuron layer were removed as a result of grinding) contains almost no vitamins, but has very high consumer and culinary properties, good digestibility, and high calorie content.

2. Results
Around the mid-2000s, half of the rice market in Russia consisted of products imported from abroad. But then the situation began to slowly but surely change for the better. By 2011, exports of this product slightly exceeded imports, with domestic needs, which are approximately 1 million tons per year, overlapping with products grown by Russian farmers. Now, rice imports have declined significantly, although not completely stopped.

The production of Russian enterprises predominates in the structure of the rice market. About 21% of total production is exported. The largest buyers due to which rice export is constantly developing are
such countries as Azerbaijan, Libya, Kazakhstan, Turkmenistan and others. They buy exclusively finished cereals that are made from this crop at domestic enterprises (Figure 1).

![Figure 1. Rice export structure by destination countries in 2018,%](image)

Even though the volumes grown in Russia are enough to meet the needs of domestic consumers, the import of rice from India, Vietnam, Thailand and other countries has not been completely stopped. And this is not due to lack of product - there is simply a shortage of quite popular varieties of it. In our country, the crop is grown in the Krasnodar Territory, from where up to 90 percent of the total rice volume goes to the market. Rice is also cultivated in the Chelyabinsk and Rostov regions. None of these regions have suitable climatic conditions to grow long-grain basmati rice or jasmine. Their shortage is compensated by imports (Figure 2).

At the same time, there are no problems with round-grain varieties (flagship, rapan, Khazar) - they are almost completely sent to processing enterprises producing rice flour, as well as cereals, which are in great demand in the market.

![Figure 2. Rice import structure by countries of origin in 2018,%](image)
Russia’s self-sufficiency in rice (the ratio of production to consumption in percentage terms) as early as 2006 was at 50%. By 2009, the indicator reached 76%. In 2012-2013 it was at 98%. In 2014, the country’s self-sufficiency in this type of grain exceeded the 100% mark and amounted to 117% - for the first time, the country produced more rice than it consumed. The volume of rice exports from Russia during this period exceeded the volume of imports by 158 thousand tons. In 2015, due to the growth of imports while reducing production volumes, the self-sufficiency indicator fell to 90.9%. Now, the self-sufficiency of the rice market is gradually growing and approaching 100% (Figure 3).

The Food Security Doctrine of the Russian Federation does not spell out the necessary indicators of self-sufficiency separately for rice. However, according to this document, the threshold for ensuring food security in general for all types of crops is the level of self-sufficiency at no less than 95%.

The presence of imported rice in the domestic market, even at a time when production volumes exceed consumption, is due primarily to the fact that many varieties of this crop do not grow in the Russian Federation. A wide range of rice on the shelves of supermarkets is largely provided by imports. The decline in rice production primarily affected the export component, and not the internal structure of Russian consumption of rice of domestic and imported production (Figure 4).

The state program aimed at developing rice production in the country is bearing fruit - the area allocated for this culture is constantly increasing. Farms that actively cultivate rice are given compensation for payment of electric energy, as well as for the purchase of elite varieties of culture.

In addition, it is worth mentioning about the increase in import duties on crops from abroad. Thanks to this, rice cultivation has become a rather profitable business for domestic farmers. In the coming years, an increase in acreage is expected, as well as production growth.
Figure 4. The structure of the Russian rice market in 2003 - 2018,%

Given the current situation in the rice market, market research in the Voronezh region was conducted to identify consumer preferences and the main factors that influence the choice and degree of satisfaction with the quality of rice cereals. It is with the help of marketing research that trading enterprises can track changes in customer needs, find new development paths and build business plans that are linked to the current market situation. 1000 people took part in the survey, among whom 67.7% of the total number of respondents were women. Basically, all respondents were between the ages of 25 and 35 years old or older than 50 years, which amounted to 75.9%. Most of the respondents had a low- and medium-income level - 48.3% and 43.3% respectively, with only 8.3% of consumers with high incomes. The group of respondents had a different social status: students - 21.7%, workers - 25%, employees 30.3%, pensioners - 16.3%, unemployed - 6.7%. As it was found out, most respondents consume cereals - 96.7%, the rest replace these valuable products with others, most often pasta.

Cereals are classified depending on the feedstock. During the survey, it was found that cereals from rice (65.8%), buckwheat (64.9%) and oats (59.7%) are most popular, and cereals from corn are the least popular - 10.7%. Wheat cereals occupy an intermediate position (28.3% of respondents consume these types of cereals), possibly due to the widespread gluten intolerance.

Rice groats are quite popular. It is used often enough, all respondents answered unequivocally that at least occasionally they use cereals from rice. Most respondents buy cereals from rice exclusively for themselves or for the whole family - 82.7%, some buy for relatives - 7.8%, or for baby food - 9.5%.

The largest number of respondents consume cereals from rice 1 time per week - 45.7%, every day none of the respondents consume this product, about 15% of respondents consume this type of cereal 1 time per month or less.

The consumer chooses the place of purchase of rice cereals based on convenience, variety of assortment, proximity to home or other location, prices of the trading company, as well as for any personal reasons. As it was found out during the survey, potential buyers do not distinguish one or another type of trading enterprise. The purchase of cereals from rice is made almost equally often in supermarkets (38.3%) or convenience stores (35%), less often respondents go to a hypermarket (21.7%), the remaining 5% does not matter in which store to purchase this product.
Rice trademarks, by contrast, are very significant. The most preferred brand for purchase was Mistral - 17.3%, in second place Uvelka - 15.3%, Sudarushkino pole - 14.5%. The following brands are the least popular: “Red price” - 3.0%, “365 days” - 2.7%, “Every day” - 2.5% and “What you need” - 2.3% (figure 5).

![Figure 5. Consumer preferences of brands of cereals from rice, % of the number of respondents](image)

Currently, manufacturers produce cereals from rice with various net weights of 450 g or more. According to a marketing research, the most purchased packages are net weights of 900 and 450 g - 48.5% and 39.7, respectively. Much less often, consumers purchase cereals weighing 800 g (9.8%) and 1000 g (2.0%). Of the respondents surveyed, no one buys cereals from rice by weight.

When buying, most always pay attention to the variety, expiration date, production date and price. Least of all consumers are interested in the appearance of the package and other factors (Figure 6).

Rice cereals are produced in the following types: polished rice, steamed polished rice, polished crushed rice, unpolished brown rice, rice flakes, etc. The respondents are most in demand polished rice - 38.7% and polished polished rice - 35.4%, crushed rice is rarely bought - about 3% of respondents. Unpolished brown rice is also rarely bought unjustifiably (about 7% of respondents), although it is quite rich in vitamins of the group. Unlike other types of rice, this may be due to the high price of this product.

The following rice varieties are distinguished: round-grain, medium-grain and long-grain. The most popular are long-grain varieties - 49.2%, round-grain varieties occupy a confident second place - 48.9%. Mid-grain rice varieties are not very popular, perhaps this is due to their insignificant presence on the market of the Voronezh region.
Figure 6. Factors that consumers pay attention to when choosing cereals from rice, % of respondents

Most often, various types of cereals or pilaf are prepared from rice (which is also, in fact, a type of porridge), and therefore various ingredients can be added to improve their taste, for example, meat, fish, vegetables, chestnuts, nuts, dried fruits, etc. According to the results of a marketing research, it was found that the majority of respondents prefer to eat cereals from rice with meat or pilaf - 55.5%, significantly less than those who like rice without any additives - 21.7%, about 20% of respondents prefer rice with nuts and dried fruits, over 3.3% of respondents had a bad answer.

In general, the existing assortment of cereals from rice is convenient for consumers (79.5% of respondents), but there are still those who would like to expand the range with new varieties (13.5%) or types of rice (red, black, wild) - 7%. More than half of the respondents are completely satisfied with the quality of rice cereals (63.4%), 22.5% would like to improve the quality of existing cereals, and 14.1% would like more variety among rice cereals with various additives.

3. Conclusion
Thus, based on the results obtained, several conclusions can be drawn regarding the rice cereal market in the Voronezh region. Merchants should consider that cereals from rice, buckwheat and oats are most purchased, therefore, they should be present in enough quantities on the shelves. Among the cereals made from rice, the most popular brands are Mistral, Uvelka, Sudarushkino pole. Carrying out various promotions or lower prices can help to increase the demand for other brands and consequently increase the turnover of cereals in general and rice.

The assortment of rice cereals is generally satisfactory for consumers, however, to maintain demand, it is necessary to update it periodically: add new varieties and types, use new additives, change packaging and brand names in the store. All these measures will increase the attractiveness of the trade enterprise for consumers, and, consequently, its competitiveness.

References
[1] Li T, Balezentis T and Cao L 2018 Technological and economic development of economy 24 (6) 2065-2082
[2] Wagan, Shoaib A, Memon, Qurat U A and Li Qi 2019 Custos e agronegocio on line 15-2 63-86
[3] Kanburi B J, Fialor S C and Dadso A 2019 Impact of contract farming on rice farm performance: Endogenous switching regression Cogent economics & finance 7-1
[4] Gars J and Ward P S 2019 World development 115 178-189
[5] Robert V Moncaut N et al. 2019 Morganizational capabilities and competences for productive diversification: the case of rice and pacu in Chaco, Argentina 11 (1) 41-64
[6] Zivkov D Njegic J and Pecanac M 2019 Multiscale interdependence between the major agricultural commodities *Agricultural economics-zemedelska ekonomika* 65-1 82-92

[7] Rigo P D Bolzan M Flaviani S and Weise A D 2018 Analysis of economic viability in rice production in a municipality of Rio Grande of the South via Monte Carlo simulation *Custos e agronegocio on line* 14 213-242

[8] Gorst A Dehlavi A and Groom B 2018 Crop productivity and adaptation to climate change in Pakistan *Environment and development economics* 23(6) 679-701

[9] Dedeurwaerdere T and Hannachi M 2019 Socio-economic drivers of coexistence of landraces and modern crop varieties in agro-biodiversity rich Yunnan rice fields *Ecological economics* 159 177-188

[10] Arora A Bansal S and Ward P S 2019 Do farmers value rice varieties tolerant to droughts and floods? Evidence from a discrete choice experiment in Odisha, India *Conf. 4th Workshop on Non-Market Valuation (WONV) Water resources and economics* 25 27-41

[11] Ali M P et al. Establishing next-generation pest control services in rice fields: eco-agriculture *Scientific Reports* 9(1) 10180

[12] Custodio M C Email A Cuevas R P Ynion J Laborte A G Velasco M L and Demont M 2019 Rice quality: How is it defined by consumers, industry, food scientists, and geneticists? *Trends in Food Science and Technology* 92 122-137

[13] Karyani T Arifin F Hapsari H and Supriyadi E Organic Rice Farming for Sustainable Development in the Nurani Sejahtera Farmers Group *IOP Conference Series: Earth and Environmental Science* 306(1) 012013

[14] Johannes H Priadi C R and Herdiansyah H 2019 Organic rice farming: An alternative to sustainable agriculture *IOP Conference Series: Materials Science and Engineering* 546(2) 022008

[15] Unteawati B and Fitriani F C 2018 Consumer’s market analysis of products based on cassava *IOP Conference Series: Earth and Environmental Science* 141(1) 012033

[16] Xu P Su H and Lone T 2018 Chinese consumers’ willingness to pay for rice *Journal of Agribusiness in Developing and Emerging Economies* 8(2) 256-269