

ЧҮЙ ӨРӨӨНҮНДӨГҮ СОЯНЫН АР ТҮРДҮҮ СОРТТОРУН *GLYCINE MAX* (L.) MERR. ОСТҮРҮҮДӨГҮ ЭКОНОМИКАЛЫК НАТЫЙЖАЛУУЛУК ЖАНА ПЕРСПЕКТИВАЛАРЫ

Биймырсаева А.К.¹, Ризван Уллах²

¹Кыргыз Республикасынын Улуттук илимдер академиясынын Химия жана фитотехнологиялар институту, Эл аралык жогорку медицина мектеби, Бишкек шаары, Кыргызстан, аспирант, илимий кызматкер, мугалим, e-mail: aluska91@mail.ru

²Эл аралык жогорку медицина мектеби, Бишкек, Кыргызстан, студент, e-mail: rizwanullah755402@gmail.com

Аннотация. Фактылуу материалдардын негизинде биз айдоо аянттарынын динамикасын, түшүмдүүлүгүн жана соянын дүң түшүмүн, эмгек өндүрүмдүүлүгүн, өздүк наркын, рентабелдүүлүгүн, ошондой эле Чүй өрөөнүндө соянын келечектүү сортторун өстүрүүнүн экономикалык эффективдүүлүгүн талдап чыктык. Изилдөөнүн жыйынтыгында Чүй өрөөнүндө өстүрүлгөн соянын келечектүү сортторун өстүрүүнүн экономикалык натыйжалуулугун жогорулатуунун негизги багыттары аныкталды.

Негизги сөздөр: түшүмдүүлүк, рентабелдүүлүк, экономикалык эффективдүүлүк, өздүк нарк, эмгек өндүрүмдүүлүгү, пайда

ЭКОНОМИЧЕСКАЯ ЭФФЕКТИВНОСТЬ И ПЕРСПЕКТИВЫ ВЫРАЩИВАНИЯ РАЗЛИЧНЫХ СОРТОВ СОИ *GLYCINE MAX* (L.) MERR. ЧУЙСКОЙ ДОЛИНЫ.

Биймырсаева А.К.¹, Ризван Уллах²

¹Институт химии и фитотехнологий Национальной академии наук КР, Международная высшая школа медицины, Бишкек, Кыргызстан, аспирант, научный сотрудник, преподаватель, e-mail: aluska91@mail.ru

²Международная высшая школа медицины, г. Бишкек, Кыргызстан, студент, e-mail: rizwanullah755402@gmail.com

Аннотация. На основе фактического материала нами проведен анализ динамики посевных площадей, урожайности и валовых сборов сои, производительность труда, себестоимость, рентабельность, а также экономической эффективности выращивания наиболее перспективных сортов сои в Чуйской долине. В результате исследования определены основные направления повышения экономической эффективности выращивания наиболее перспективных сортов сои, возделываемых в Чуйской долине.

Ключевые слова: урожайность, рентабельность, экономическая эффективность, себестоимость, производительность труда, прибыль

ECONOMIC EFFICIENCY AND PROSPECTS FOR GROWING VARIOUS SOYBEAN VARIETIES *GLYCINE MAX* (L.) MERR. OF CHUI VALLEY.

¹Biimyrsaeva A.K., Rizwan Ullah²

Institute of Chemistry and Phytotechnologies of National Academy of Sciences of Kyrgyz Republic,

²International high school of medicine, Bishkek, Kyrgyzstan, postgraduate student, researcher, teacher, e-mail: aluska91@mail.ru

²International high school of medicine, Bishkek, Kyrgyzstan, student, e-mail: rizwanullah755402@gmail.com

Annotation. *Based on factual material, we analyzed the dynamics of sown areas, yields and gross soybean yields, labor productivity, cost, profitability, as well as the economic efficiency of growing the most promising soybean varieties in the Chui Valley. As a result of the study, the main directions for increasing the economic efficiency of growing the most promising soybean varieties cultivated in the Chui Valley were identified.*

Key words: *yield, profitability, economic efficiency, cost, labor productivity, profit*

Introduction. Soybean (*Glycine max*) is an economic crop used for both human and animal feed. Soy products are used in the food industry worldwide. The world-famous soybean is central to the production of biodiesel, which offsets the world's complete dependence on fossil fuels, which are a limited resource.

In the world of agriculture, soybeans rank fourth after wheat, corn and rice and first among grain legumes. World production is growing at a very fast pace. Currently, the largest cultivated areas are in the USA (about 35–40% of the world), Brazil (20%), Argentina (12%), China (12–13%) and India (8%). The area of Russia accounts for 0.7–1% of the soybean area in the world. The world average yield is approximately 22.5 c/ha. United States and Brazil lead the world in terms of production volume; respectively, they account for about 50 and 20% of the world's gross harvest. Soybeans rank first in the world markets for the production of oil, meal and feed, and have a large share in regional and national food programs. [1].

Increasing the share of legumes and oilseeds in the structure of sown areas due to the widespread introduction of soybeans will not only lead to an increase in the grain deficit, but will also reduce its consumption by livestock due to a more balanced feed structure, which will allow import substitution of vegetable protein and oil. In feeding other animals to increase the milk yield of dairy herds, especially highly purebred ones, it is impossible to do without soybean meal and cakes [2,3,4].

Grain legumes have outstanding nutritional and nutraceutical properties, providing an economically accessible plant source of protein for people that contributes to future food and feed security in the context of a growing world population. Legumes also have an important impact on agriculture due to their ability to fix atmospheric nitrogen through symbiosis with rhizobium. This supplies agroecosystems with available nitrogen, increases the carbon content in the soil, and stimulates the productivity of subsequent crops. Soybean produces increased yield mainly due to symbiotic nitrogen during early nodule formation and highly effective symbiosis [5,6].

Relevance of the topic and statement of tasks. The decisive factor for the effectiveness of a variety in a farming system is how the variety matches the climatic resources of the landscape [7].

Soybean (*Glycine max*) is grown commercially in over 35 countries as a major oilseed crop. [8]. And soybean seeds are a high protein crop, the amino acid composition of which is as close as possible to animal proteins, thereby often replacing meat protein. Not all natural

products contain as much protein as soybeans. The high protein content of soybeans gives it significant value as a food product both for people and as feed for livestock. Protein, being an integral part of food, plays a role in the formation of muscles and other tissues of the body. The nutritional value of protein lies in a sufficient amount of essential amino acids found in food, necessary for growth and normal development. Due to its high protein content, soybeans should be treated as a concentrate and fed mixed with other lower protein feeds. In addition, soybean seeds are useful in the oil industry.

The seeds of grain and oilseeds are considered to be the basis of the world food supply. The variety of plant proteins of these crops have the chemical and physical properties of the products obtained from these seeds. Protein is essential for both growth and maintenance of life. The effectiveness of using food protein depends on its biochemical composition. Protein is an integral part of animal and human food. Carbohydrates in soybean seeds are represented by sucrose, which is completely soluble in water. It contains many vitamins. Soybean seeds also contain a lot of minerals - potassium, calcium and phosphorus. In their chemical composition, soybeans contain a large amount of macro- and microelements, carbohydrates, fiber, ash, and most importantly proteins and fats. In terms of its content of such a rich biochemical composition, soybean has no equal among many crops. Carbohydrates are represented mainly by sucrose, which is completely soluble in water. [9].

An indispensable condition for highly profitable bean farming is the rational use of grown products based on agro-industrial integration. In the current economic conditions, when the market infrastructure is insufficiently developed, there are difficulties with the sale of products, non-payments, it is advisable to sell not raw materials, but processed products. Processing an agricultural crop at the place of its production is economically profitable, as it allows for the rational use of all grown products and, through their processing, to involve them in trade turnover. Undoubtedly, production cost is one of the most important indicators of the economic efficiency of agricultural production. It shows how much it costs a particular enterprise to produce agricultural products. The cost reflects the qualitative side of the economic activity of enterprises: the efficiency of use of production resources, the state of technology and organization of production, the introduction of scientific achievements and best practices, the level of economic management.

From an economic point of view, the most profitable way to increase soybean grain production is to expand the sown area to 15% of the crop rotation area (extensive production). Another way is to increase the yield of a given crop, which implies improving its cultivation technology. In this case, the increase in yields is achieved only through active investments - the use of fertilizers and changes in soil cultivation (intensification of production) [10].

Research results and recommendations. In connection with the above, the purpose of our study was to show the economic efficiency of soybean of the most promising varieties

cultivated in the Chui Valley. We have analyzed the economic efficiency of promising soybean varieties, which we display in the following table (average for 5 years).

Table 1. – Analysis of the economic efficiency of growing promising soybean varieties.

Varieties	Average yield for 5 years, t/ha	Average market selling price, 1 kg/som	Cost of gross output per 1 ha, som	Costs per 1 ha, som	Cost of 1 kg of seeds	Profit per 1 ha, som	Profitability level, %
AS 1928KG	2,86	43,2	123 552	29 000	86,4	94 552	326,04%
AS 966 KG	2,82	43,6	122 952	29 000	86,8	93 952	323,9 %
Emerge 3776	2,7	44,2	119 340	29 220	87	90 120	308,4 %
Emerge 2282	2,72	43,8	119 136	29 220	87,2	89 916	307,7 %
Emerge 2r29	2,76	44,8	123 648	29 220	87,8	94 428	323,1 %

The analysis shows that every year in Kyrgyzstan the area of arable land for the cultivation of the most adapted and profitable agricultural crops is expanding. In this regard, from year to year more and more land in tChui Valley is devoted to the cultivation of leguminous crops. Of the most adapted legumes, soybean has become in demand. Consequently, productivity also increases. We took the average value for each indicator over the last five years (2019-2023). Based on the table data, the highest average yield was given by the domestic variety AS 1928 kg - 2.86 t/ha, the lowest by Emmerge 3776 with a difference

of 0.16. Taking into account material costs and costs of agricultural work, the profit was calculated, where regionalized local varieties had 94,490 soms per hectare, and American varieties were close in value. A market economy requires any manufacturer to pay the most serious attention to marketing their products. It is advisable to create the corresponding services, firstly, at large agricultural enterprises producing a wide range of products; secondly, in farms that sell a significant part of it outside their administrative district or region. At the same time, in the current conditions, when the economic situation of most agricultural enterprises is close to critical, the development of the grain industry is impossible without government support. It is necessary to provide them with compensation for part of the costs of purchasing mineral fertilizers, plant protection products, petroleum products, agricultural machinery, and electricity. State regulation of agricultural production should be based on the principle of providing all normally operating farms with a minimum profitability sufficient for their further development.

LIST OF REFERENCES

1. Ибрагимова, В. И. Экономическая эффективность выращивания сои в современных условиях / В. И. Ибрагимова. — Текст: непосредственный // Молодой ученый. — 2017. — № 1 (135). — С. 176-178.
2. Давыденко, О.Г. Своя соя ближе к успеху / О.Г. Давыденко // Республика. — 2008. — 2 дек. — С. 2–3.
3. Тарануха, В.Г. Соя: пособие / В.Г. Тарануха. — Горки, 2011. — 51 с.
4. Щербаков, В.А. Яровые масличные культуры / В.А. Щербаков. — Минск: ФУА информ, 1999. — 288 с.
5. Joseff C. Jimenez – Lopez, Alfonso Clemente, Sergio J. Ochatt, Maria Carlota Vaz Patto, Eric Von Wetteberg and Petr Smykal. Biological and Genetic basis of Agronomical and Seed Quality traits in Legumes. *Frontiers in plant science*, 2022. 6 p.
6. Monarkh V., Pantsyreva H. 2019. Stages of the Environmental Risk Assessment. *Ukrainian Journal of Ecology*. 9(4), 484–492. DOI: 10.15421/2019_779
7. Лукьянов, С. Н. Перспективы выращивания сои в Верхневолжье / С. Н. Лукьянов, Е. Н. Богомолова // Владимирский земледелец. — 2016. — № 2(76). — С. 24-27.
8. Smith K.J. Huyser W. 1987. World distribution and significance of soybean. In: *Soybeans: Improvement, Production, and Uses*. Wilcox J.R. (ed), Second edition. Agronomy Monographs 16 American Society of Agronomy, 1220-89118-090-7WI.
9. Биймырсаева А.К., Содомбеков И.С. НЕКОТОРЫЕ ПОКАЗАТЕЛИ БИОХИМИЧЕСКОГО СОСТАВА СЕМЯН СОИ (GLYCINE MAX.), ВЫРАЩЕННОЙ В УСЛОВИЯХ ЧУЙСКОЙ ДОЛИНЫ // Международный журнал прикладных и фундаментальных исследований. — 2023. — № 3. — С. 16-19;
10. Кремпа, А. Е. Экономическая тенденция внедрения высокоурожайных сортов сои / А. Е. Кремпа // Пища. Экология. Качество: труды XVII Международной научно-практической конференции, Новосибирск, 18–19 ноября 2020 года. — Екатеринбург: Уральский государственный экономический университет, 2020. — С. 325-328.