

# MODERN CONDITION AND PROBLEMS OF IMPLEMENTATION VARIETY TECHNOLOGIES OF SOY CULTIVATION

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**Abstract:** *In this paper, the article identifies relevant studies to improve the economic assessment of the effectiveness of the cultivation of soybean varieties. Correctly carried out economic evaluation of the efficiency of cultivation of soybeans allows you to identify strengths and weaknesses, as well as reserves to increase the profitability of soybean production.*

**Key Words:** *biological, agricultural technology, soybeans, economic efficiency, agricultural products, production.*

## 1. INTRODUCTION:

Modern agricultural production is increasingly demanding economically sound approaches, which will ensure an increase in production efficiency. The solution of many problems in the agricultural sector is impossible without the concentration and skillful use of all available production resources in the enterprise. A special role should be assigned to the rational interaction of all factors of production through the use of scientifically based methods for assessing the economic efficiency of agricultural production [1].

Soy is a high-protein oilseed crop, the production of which in Uzbekistan has grown rapidly over the past five years. Given the lack of protein in the nutrition of the population of Uzbekistan and the need for vegetable oil, increasing the efficiency of soybean production will solve this problem. Currently, the Amur Region is the main producer of soybeans in Uzbekistan, where the gross harvest of grain of this crop in 2014 exceeded the milestone of 1 million tons, which is 2 times higher than the value of five years ago. Such an increase in production is ensured by increasing interest in this high-protein oilseed by the processors.

Producers are interested in reducing costs and increasing the productivity of soybeans. To this end, farms are leading the renewal and improvement of variety technologies. The variety composition cultivated in soybean farms is different and is regularly updated. In the Amur region for 5-6 years, it changed by 50-90%, which in turn entails a change in the varietal technologies of soybean cultivation, since each variety is unique and has its own characteristics, not only biological, but also agro-technological. In this regard, studies on the improvement of the economic assessment of the efficiency of cultivation of soybean varieties are relevant. Correctly carried out economic evaluation of the efficiency of cultivation of soybeans allows you to identify strengths and weaknesses, as well as reserves to increase the profitability of soybean production. Minimal 4 and zero technologies, plow rejection and other resource saving methods are gaining popularity. Each varietal technology, in order to obtain the greatest effect from its application, requires an economic assessment that takes into account the varietal characteristics of soybeans, the main of which is its oil content and high protein content. The relevance of developing methodological approaches to assessing the efficiency of soybean production, taking into account its varietal characteristics, is also due to the fact that the use of different varieties and technologies of cultivation of culture has a significant impact on production and financial and economic performance of not only soybean producers, but also from processing enterprises. At present, the available methods of economic evaluation of crop cultivation do not allow such an assessment for soybeans, since they do not fully reflect the specifics of soybean production and underestimate its varietal characteristics. All previous studies focused on the analysis of the economic efficiency of soybean production only as high-protein culture, not taking into account its oilseed qualities. This requires the improvement of methodological approaches to assessing the economic efficiency of growing and processing soybeans, taking into account its specificity. Full consideration of soy-specific qualities will allow a more precise selection of the varietal technology (sowing width, seeding rate, fertilizers, plant protection products), taking into account its biological features, methodically accurately determine the economic efficiency of production of a given culture. Ultimately, this will allow developing directions for increasing the efficiency of soybean production on the basis of improving the technologies of its cultivation that most adequately meet the natural and economic conditions of soybean cultivation and take into account requests from processing plants for varietal indicators of soybean.

## 2. LITERATURE REVIEW:

The state of knowledge of the problem. Theoretical issues of increasing economic efficiency are discussed in the writings of the classics of economic theory by K. Marx, F. Pareto, U. Petty, D. Riccardo. The economic efficiency of agricultural production was addressed by Amosov A.I., Borisov E.F., Busygin A.V., Bunich P., Vasilenko V.P., Vermel D.F., Vidyapin V.I., Darmaev V.G., Dobrynin V.A., Zubakhin A.M., Konstantinov S.A., Konstantinova L.M., Makin

G.I., Malysh M.N., Obolensky K.P., Petraneva G.A. , Simonova Yu.A., Strumilin SG, Sukhoveeva L.Yu., Tertyshkina M.I., Trubilin I.T. Ushachev I.G., Frolova O.A., Shamina A.E., Shafronov A.D. Assessment of the economic efficiency of growing crops is the work of Altukhov A.I., Dragaytseva V.I., Krasitsky L.F., Minakova I.A., Nevalennoy G.N., Shelepa A.S. Churilova KS, Problems of soy production in the world, Uzbekistan and the Amur region, in particular, are considered in the works of Antonova S.I., Grigorieva A.V., Krasitsky L.F., Krivoshlykova K.M., Migal N. A., Pyatnitsyna E.M., Pankovsky G.A., Petibskoy V.S., Skrynnik E.L., Chayka N.V., Cherepanova P.F. et al. The works of these authors provided a methodological basis for the economic efficiency of soybean production and processing. At the same time, research aimed at improving the economic efficiency of soybean production based on taking into account the varietal and technological features of the crop during its cultivation and processing has not been fully studied, which requires research in this direction.

### 3. MATERIALS AND METHODS:

The theoretical and methodological basis were the works of domestic and foreign authors on the problems of the development of the agro-industrial complex of Uzbekistan, the definition of the economic efficiency of crop production. The study was conducted using modern methods: economic-mathematical, economic-statistical, abstract-logical, monographic.

### 4. ANALYSIS, DISCUSSION AND FINDINGS:

Soy plays a strategic role in the economy of a number of countries in the Americas (USA, Brazil, Argentina), which in recent decades have become the main producers and exporters of soybean grain and by-products [2,3,4]. Over the past decade, this culture has the highest production growth rates in the world. According to the US Department of Agriculture (USDA), the soybean acreage in the world in 2014 amounted to 118.3 million hectares, having increased over the past 10 years by 33.0%, over 50 years - by 4.6 times. The top three in terms of the cultivated area includes the USA - 33.61 million hectares (28% of the total area), Brazil - 31.50 million hectares (27%), and Argentina - 19.80 million hectares (17%). Uzbekistan ranks 8th - 1.91 million hectares [133]. Soybean production in the world in 2014 amounted to 318.6 million tons - this is a record figure. Over the past 20 years, global soybean production has increased 2.0 times, over 50 years - 9.5 times. In spite of this, production of high-protein crops needs to be increased, since the world continues to deficit vegetable protein, both in animal nutrition and in humans [106]. Whole soybeans are grown in more than 94 countries around the world. Ten key countries producing soybeans in 2014 accounted for 97% (309.25 million tons) of world soybean production.

The United States is the leader in the production of soybeans. In 2014, they accounted for 33.9% (108.01 million tons) of world production. The second and third places are occupied by Brazil and Argentina - 29.7% (94.5 million tons) and 18.8% (60 million tons), respectively. In 2014, these three countries provided 82.4% (262.51 million tons) of world soybean production. These countries demonstrate a convincing example of strategic planning in the grain production structure of a significant proportion of high-protein crops. In Uzbekistan, the share of all legumes with soybeans in some years was about 4% of the gross volume of grain, while in the US, soybeans, not counting other legumes, accounted for more than 25% of the total grain harvest [2,3,4]. The top ten countries-producers also included: China - 12.35 million tons, India - 9.8 million tons, Paraguay - 8.4 million tons, Canada - 6.05 million tons, Ukraine - 3.8 million tons, Uruguay - 3.4 million tons and Bolivia - 2.65 million tons .

The share of individual countries in world soybean production,%, 2014. Source: [5,6,7] Uzbekistan in 2014 occupied the 11th place in the gross soybean harvest - 2.6 million tons, which is 54.5% more, than in 2013. The yield of soybeans in Uzbekistan compared to most of the key producing countries is relatively not high. In 2014, the average yield of soybeans in Uzbekistan was 1.36 t / ha. For comparison, in the US, the yield of soybeans is 3.21 t / ha, in Brazil - 3.00 t / ha, in Argentina - 3.03 t / ha, in Uruguay - 2.5 t / ha (table 1.)

**Table 1 - Soybean yield in the world, t / ha**

A country	Productivity, t / ha	
	2013	2014
USA	2,96	3,21
Argentina	2,76	3,03
Brazil	2,88	3,00
EU countries	2,56	2,98
Canada	2,88	2,71
Paraguay	2,52	2,57
Uruguay	2,43	2,50
China	1,78	1,82
Uzbekistan	1,36	1,36
India	0,78	0,90

([www.fao.org/publications](http://www.fao.org/publications))

Over the past 15 years there has been a clear trend of soybean price growth. So, according to the Chicago Mercantile Exchange, prices for soybeans in 2014 compared to 2000 increased by 3 times. In August 2012, the highest marks for soybeans reached \$ 622.33 per ton. In recent years there has been a slight decrease in soybean prices. So, in December 2014 compared to December 2013, the price of soybeans decreased by 29%, compared with December 2012 by 41% (Figure 2.2) [8,9,10,11]. The growing price of soybeans in the world encourages producers to increase their acreage and intensify production to get more yield.

In recent years, the production of soybeans in Uzbekistan has a stable positive trend. Gross fees of this high-protein culture have increased over the past time more than 2.5 times. The growth of soybean production in Uzbekistan occurs under the influence of both the intensification of production, with growing yields, and as a result of extensive development, with the expansion of acreage for soybeans. By 2014, sown areas in Uzbekistan increased by 1.7 times compared with 2010, which allows increasing the volume of soybean production. In total, Uzbekistan sowed in 2014 more than 2 million hectares of soybeans, which is 2 times higher than the result of five years ago. The growing areas of this crop in the country from year to year confirm the interest of agricultural producers.

## 5. CONCLUSIONS:

Summarizing, we can say that currently soybean is becoming one of the leaders of crop production. In world grain production, it ranks fourth in the size of the sown area [12,13,14,15]. Soy is a leading technical culture and one of the main cultures in developing countries (China, Brazil, etc.). Uzbekistan in world soybean production is not at the leading positions, traditionally the leading positions in the country are occupied by grain crops - wheat, oats, barley, oilseeds - sunflower, and also potatoes [16,17,18,19]. Nevertheless, the country is moving in the general global trend, gradually increasing the volume of soybean production.

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