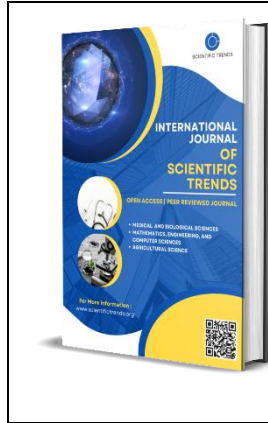


# Relationship of Soybean Plants to Food Elements

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## **Abstract**

**The article discusses the relevance and importance of conducting research on the nutrient elements used for growing high-quality soybean varieties in our country, their feeding methods and technologies, and the soybean plant.**

**Keywords: Phosphorus, nitrogen and potassium fertilizers, legumes, protein, oil, budding bacteria.**

## **Introduction**

Soybean is an industrial food crop that occupies an important place in the agriculture of industrialized countries of the world. Soybean is unmatched among all cultivated plants for its universality of use. Because soybean contains 28-52 percent protein, 18-27 percent ecologically clean vegetable oil, and a large amount of mineral salts, medicines, which can compete with the most important food products such as meat, milk, and eggs in terms of amino acid supply. storage is particularly important.

Soybean is a very demanding plant for soil fertility. It grows well in all soils except saline, swampy and acidic soils. The optimal conditions for soybeans are when the pH of the soil solution is 6.5-7.

Soybeans should be placed after a well-fertilized grain crop in crop rotation. The yield of grain, sugar beet, rice, flax and other crops planted after soybeans will increase.

**The purpose of the research** is to determine the nutritional requirements of soybean varieties and the norms of using more or less of which nutrients.

According to the data, 142 kg of nitrogen, 23 kg of phosphorus and 35 kg of potassium were absorbed from each hectare of land when 20 s/ga of grain and corresponding vegetative mass were obtained. That's why soybeans should be planted on well-fed land with organic and mineral fertilizers.

For soybeans, high rates of phosphorus and potassium fertilizers have a good effect. Phosphorous fertilizers, in particular, increase the yield of soybeans and increase the oil content of the seeds. Phosphorous fertilizers improve the assimilation of atmospheric nitrogen by improving the

activity of the nodular bacteria in soybean roots. Due to good feeding of soybean, it is possible to get a yield of up to 40 s/ga.

Good results are obtained if soybeans are treated with nitrogen before planting. This method increases the yield of not only soybeans, but also the barley that follows it.

In order to obtain a high grain yield, it is necessary to supply soybeans with mineral nutrients. 80-90 kg of nitrogen, 36-40 kg of phosphorus, 60-65 kg of potassium are used to produce 1 ton of oil. The assimilation of nutrients is not uniform during the period of action. From germination to the beginning of flowering, the plant absorbs 15% of nitrogen, 16% of phosphorus and 26% of potassium compared to the total amount during the entire growth period. Most of these elements are assimilated from flowering to pod formation and during oil filling (80% of nitrogen and phosphorus and 50% of potassium). The rest of the nutrients are absorbed during ripening. Phosphorus, cobalt and molybdenum are necessary for the plant during the initial life period from germination to branching. Phosphorus participates in the formation of generative organs. From the period of branching and budding, the plant requires nitrogen, potassium and boron. The critical period in relation to nitrogen is the period from budding to flowering (vegetative mass accumulation period).

Soybean absorbs a large amount of nitrogen, and the plant absorbs only a small part of it due to the activity of nitrogen-fixing bacteria. Phosphorus fertilizers ensure good development of buds, which improves nitrogen nutrition. Applying high amounts of nitrogen before planting will reduce nodule development. Until the beginning of flowering, the soybean plant absorbs potassium 1.5 times more than nitrogen and 1.8 times more than phosphorus. But the largest amount of potassium is absorbed during the formation and maturation of pods. During this period, soybeans require sulfur and magnesium. Based on this biological requirement, if the fertilizer standards are correctly defined and applied, the planned harvest can be achieved.

**Effect of nitrogen fertilizer application period on soybean yield**

Appearances	Number of pods/plant	Grain yield, s/ga
<b>Without fertilizer</b>	37	14
<b>When nitrogen is applied</b>		
<b>Before planting</b>	47	16
<b>Before flowering</b>	53	18
<b>Grassing + flowering + pod formation</b>	54	19

It is known that in the conditions of irrigated soils of our country, the cultivation of leguminous crops such as soybeans, mash, beans - Russian beans creates an opportunity to grow additional products from each hectare of land. When these crops are used, not only their grain, but also their soybeans and other wastes are used as silage forage for livestock, they are more "infectious" feed than wheat straw. The reason is that every 100 kilograms of crop residues contain 38-52 nutrient units, which contain at least 5.8-6.3 kg of digestible protein, fully supplied with the most essential amino acids for the animal body. One of the most important features of these crops is that during the growing season, they not only produce grain and animal feed, but also, on average, 65-105 kg of biological nitrogen, which can be fully assimilated by all crops planted after them, by fixing

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"free" molecular nitrogen from the air and lowering it into our soil. and significantly improves the ecological and microbiological aspects of our soils.

Now we need to produce our own local soybean. All conditions are there for this.

Thanks to the development of our agricultural science, a number of varieties of soybeans such as local, non-GMO high-yielding, early spring "To'maris", "MAN-60", "Oyjamol", "Genetika-1", "Orzu" were created and entered into the State Register. They are suitable for repeated cultivation after crops such as winter wheat in the conditions of irrigated soils of all regions of our republic.

Before plowing the land to get grain from soybeans, it is necessary to fertilize it with mineral fertilizers at the rate of 90 kg of P<sub>2</sub>O<sub>5</sub> and 60 kg of K<sub>2</sub>O per hectare, and then prepare it for planting. Preparing the soil for planting as soon as possible determines the productivity of soybeans, because the seeds are planted in time. The optimal period for sowing soybean seeds is until May 15, delaying it will lead to a decrease in grain yield.

Soybean seeds should be planted at the rate of 330-400 thousand viable seeds per hectare, and the row spacing should be 60-70 cm, and the depth of sowing should be 6-8 cm. The most important step in soybean production is to ensure that the fields are irrigated with seed water on the same day of planting, which ensures a complete coverage of the lawns per hectare.

At least 150 kg of nitrogen fertilizer per hectare is fed with 1-3 leaves of soybean seedlings. During the growing season, it is watered up to 4-5 times, depending on the soil conditions. It is especially important not to leave the grain out of the water during the ripening period. Between the rows is processed 2 times. It is necessary to treat pests 2-3 times, especially against bollworm. As much as possible, protection of shade fields from weeds and insects is one of the most important agrotechnical measures and determines productivity.

Today, our multi-disciplinary farmers understand well the importance of soybeans in the diet of livestock in the process of bringing in foreign bred cattle and chickens. Because if soy products are not included in the diet, it is impossible to achieve the expected income from breeding livestock. As the demand for products such as soybean oil and soybean isolate increases, the price is increasing.

Thus, on average, 1.8-2.5 tons of grain and at least 6.8 tons of straw can be collected from each hectare of cultivated shade. It is known from scientific studies that when soybeans are grown, the vegetable oil in the grain increases to an average of 3.5 percent. Taking into account that 200-220 kg of environmentally friendly vegetable oil is extracted from each ton of soybeans and the retail price of each kilogram is estimated at 8500-10000 amount, the income from oil alone is 1700000-2200000 amount per hectare. It is not difficult to calculate the total price of 4,290,000-48,800,000 amount, considering that the rest of soybeans are 780-800 kg and each kilogram of it is sold at 5,500-6,100 amount today.

**Practical significance of research.** The results of this study showed that legumes, when planted on fertile land and well fed, not only produce abundant and protein-rich crops, but also increase soil fertility. In addition, if each ton of grain obtained from soybeans is reprocessed and the kunjara obtained from the production of vegetable oil is added, the income is 4,290,000-9,760,000 amount. It is not difficult to calculate these numbers as equivalent to the yield of soybeans per hectare. So, soybean cultivation is extremely profitable.

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