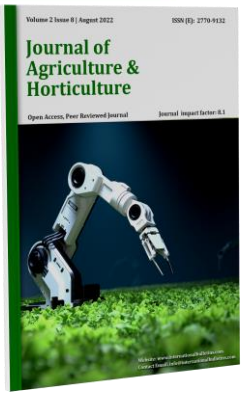

TECHNOLOGY OF GROWING MASH BEAN IN THE CONDITIONS OF KARAKALPAKSTAN

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Abstract. Mash bean is superior to other leguminous crops, such as beans, chickpeas, and green peas, due to its content of protein and vitamins, its nutritional value, and its quick cooking time. Therefore, the article presents the investigation of growing mash bean in the condition of Karakalpakstan. Mash bean is grown as a main and repeated crop in all regions of the republic. This crop is the best predecessor for all crops in the rotation system. If the seeds of soybeans, chickpeas, buckwheat, and lentils are not treated with inoculants before sowing, biological nitrogen will not be formed in their roots. Due to the fact that mash bean with the help of new technology has already been planted in all the soils of the republic, nodule bacteria that accumulate biological nitrogen naturally form in the soil and, depending on the thickness of the seedling, it accumulates an average of 80-120 kg of nitrogen per hectare. - is expanding to the year.

Keywords: crops, harvest, mash bean, mung bean, climate, technology, condition, Karakalpakstan, variety, temperature.

In general, for all varieties in the study, it was noted that the optimal sowing time for mash bean in our conditions occurs when the soil at the seeding depth warms up to +12 ... +14 ° C [3, 644-651]. In Karakalpakstan, the optimal sowing time for mash bean may be even later.

The vegetation period of mash bean in Karakalpakstan was 89-97 days for varieties Pobeda 104 and Tajik 1, for varieties Sarhad - 107-116 days. For all these varieties, it was possible to harvest in September, before the onset of autumn rains and frosts. In all years of research, the crop was of good quality (in terms of moisture content, weight of 1000 seeds, protein content in the grain).

The studies of the optimal sowing scheme for mash bean showed that it is necessary to sow 400-500 thousand viable seeds per 1 ha with row spacing of 45 cm. turn by anthracnose and gray rot), in some years there was a complete lodging of thickened crops [5, 17-23].

Based on the results of the research, a technology for the cultivation of mash bean (mash bean) in Karakalpakstan on irrigation was proposed.

Predecessors. We grew mash bean after potatoes, tomatoes, root crops. In all cases the results were good. Mash bean crops were avoided after legumes, with which it has common pests and diseases. The plot for sowing mash bean should be clean from weeds, especially perennials.

Mash bean itself can be an excellent predecessor for many agricultural crops, and its introduction into vegetable crop rotations will solve a number of serious problems - from maintaining soil fertility to increasing the yield of vegetable crops.

Fertilizers. Mash bean culture is quite demanding on soil fertility. Therefore, for an estimated yield of 15-18 q / ha, it is necessary to apply P50 in the fall for the main treatment, in the

spring in the pre-sowing cultivation N35, in the rows during sowing - P10 (in the form of granulated superphosphate) [2, 160-165].

Potash fertilizers were not applied, because there is enough potassium available to plants in the soils of Karakalpakstan. In addition, mash bean seeds before sowing should be treated with micronutrient fertilizers containing boron and molybdenum, as well as nodule bacteria preparations.

Soil preparation. After harvesting the predecessor - stubble stubble or disking, then plowing to 18-20 cm. In the autumn period - weed control by cultivation or treatment with continuous herbicides. In spring - preparation of the field surface for sowing, loosening, leveling the surface, destruction of the soil crust, control of weed seedlings. Directly on the day of sowing - pre-sowing cultivation to the intended depth of seed placement (usually 4-6 cm).

Sowing. The sowing rate of mash bean is 400-500 thousand viable seeds (20-25 kg) per 1 ha. The optimal sowing depth is 4-6 cm, row spacing is 45 cm [4, 106-111].

Crop care. Under favorable conditions (the presence of moisture in the soil and the soil temperature of +14 ° C and above), mash bean shoots appear quickly, already 7-10 days after sowing. After sowing and watering, we recommend harrowing with light harrows (to destroy the soil crust) and then treat with Gezagard or its analogue with a drug consumption of 2-3 l / ha. We did not use other herbicides on mash bean crops, so we cannot recommend them. Approximately 4 weeks after full emergence, inter-row cultivation was carried out. In some years, it was necessary to carry out a second cultivation (10-12 days after the first) [6, 50-56].

Watering. Irrigation rate in the conditions of Karakalpakstan is within 2600-3500 m^3/ha. Efficient frequent irrigation with small rates (350-400 m^3 / ha), such irrigation during the growing season should be carried out 7-9. Usually it is necessary to carry out primary irrigation with a rate of 300-400 m^3 / ha.

Weed control. In the presence of perennial weeds, it is better to deal with them in the fall, using continuous herbicides (glyphosate).

In the spring, after sowing, the soil was sprayed with gezagard (or its analogues) at a rate of 2-3 l/ha. The results were good - for 4-5 weeks the herbicide "screen" held back the germination of weeds, and the mash bean plants grew and developed during this time without any negative consequences from the application of the herbicide. Insurance herbicides were not used on mash bean - No recommended drugs, and there was no great need.

Disease control. Of all the mash bean diseases, we had to deal with only anthracnose. Moreover, this disease developed most often in thickened crops, in conditions of high humidity and moderate temperatures.

To combat anthracnose, copper-containing preparations were used (1% solution of Bordeaux mixture, Champion 3-4 kg/ha). If they managed to carry out the treatment on time (immediately after the first signs of the disease appeared), the development of the disease could be stopped. If not (or weather conditions did not allow timely processing), the disease literally spread throughout the entire area in a matter of days and significantly reduced the yield and quality of grain.

Harvesting. One of the problems in growing mash bean for grain is the non-simultaneous maturation, the culture's tendency to lodging, and in some years the high humidity of the grain heap. Some varieties are also characterized by the low location of the first tier of the pods or their cracking when harvesting is delayed. All this leads to significant yield losses.

For high-quality harvesting without loss, separate harvesting is recommended - mowing when 70-80% of the beans are ripe, then picking up and threshing with combines. It is possible to use desiccants - when 80% of the beans are ripe, Reglon Super (2.5 l / ha) is processed. In this case, it is possible to harvest by direct combining, after adjusting the header of the combine according to the height of the cut, the speed of rotation of the reel, and also by correctly setting the threshing drum. For tall climbing varieties (Sarhad), mechanized harvesting is not possible, only manual harvesting.

Culture features. Plants of mash bean perfectly tolerate high air temperatures up to +40 ° C. The optimum temperature for the growth and development of this crop is +28 ... +35 ° C. There were periods when the air temperature during the growing season of mash bean time was within +14 ... +21 ° C. Plants stopped growing, development phases were significantly extended. As a result, the growing season was extended. Therefore, it hardly makes sense to grow mash bean in the central and northern regions of Karakalpakstan.

The culture tolerates air drought well, but is demanding on the presence of moisture in the soil. It is unrealistic to grow golden beans in the conditions of the south of Karakalpakstan without irrigation. When watering by sprinkling, the development of fungal diseases was noted. Therefore, it is better to irrigate along the furrows or with the help of drip irrigation.

Economy. Using the developed technology, it is possible to obtain an average of 15-18 centners / ha of mash bean. Its retail price is 18-25 UAH/kg, wholesale can be sold for 11-15 UAH/kg. The cost per 1 ha (in 2012 prices) is about UAH 8.5 thousand. Accordingly, the profitability of production is more than 100%.

Conclusion. Based on the above-mentioned data related to mash beans, it can be concluded that Mash bean, black gram, is an important legume crop widely grown in Karakalpakstan and has great value as food, fodder and green manure. In addition to improving the soil fertility, it is a cheap source of protein for direct human consumption. Due to the fact that mash bean with the help of new technology has already been planted in all the soils of the republic, nodule bacteria that accumulate biological nitrogen naturally form in the soil and, depending on the thickness of the seedling, it accumulates an average of 80-120 kg of nitrogen per hectare. - is expanding to the year.

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