



CHICKPEA (CICER ARIETINUM L.) PRODUCTION TECHNOLOGY IN UZBEKISTAN

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Abstract: In terms of output, Chickpeas come in third place worldwide, with growing production in Turkey, Canada, and Australia. This crop has a wide range of adaptations and is extensively dispersed; nonetheless, a number of biotic and abiotic stressors limit its production. Through a symbiotic connection with Rhizobium, it fixes atmospheric nitrogen, which benefits chickpea and its offspring crops. The ideal sowing time is determined by temperature, photoperiod appropriateness, and moisture availability. For optimal yield, sowing rates should be between 40 and 200 kg/ha, with a sowing depth of between 5 and 8 cm. Because chickpeas are able to absorb many minerals from unconventional soil sources, the application of mineral fertilizers leads to slight increases in output. Effective management of weeds is essential, supporting the hunt for better control strategies and genetic resources.

Key words: chickpea agronomy, disease and pest management, production technology, sowing time, sowing depth, weed control.

Importance of chickpeas. Chickpea (*Cicer arietinum* L.) is an ancient crop that belongs to the legume family. It has been grown in Africa, the Middle East, and India for centuries and is eaten as a dry pulse or green vegetable. It is an ancient crop that is believed to have been first grown in Turkey 7500 years ago. Approximately 44 countries in tropical, subtropical, and temperate regions of the world are home to chickpea farms. A wide range of high-protein culinary recipes employ chickpeas. About 20% of seeds are protein, 5% are fat, and 55% are carbohydrates. It is eaten as a green vegetable or as a dry pulse crop. Chickpeas are used in soups, vegetable combinations, and other dishes in Uzbekistan. White-grain varieties are grown for food, and black-grain varieties are grown for fodder.



The following agrotechnical measures are used when growing chickpeas on irrigated lands in autumn at different planting times and depths.

Crop rotation. Chickpeas enrich the soil with nitrogen, and as a row crop, they leave the field free of weeds in their wake. A field free from weeds was selected for planting chickpeas.

In irrigated lands, winter cereals, field crops, corn, sunflower, alfalfa, annual and perennial grasses, and fertilized plows are good predecessors for chickpeas. Potatoes, cotton, corn, and cereal crops planted after chickpeas increase the yield and improve the quality of the grain.

Chickpeas themselves also give high yields when placed after alfalfa. The yield of chickpeas planted on the black plow is 2-3 quintals per hectare higher because diseases and insects are very rare. It is not recommended to plant chickpeas on land that has been vacated by chickpeas. If chickpeas are planted after chickpeas, the yield will be significantly reduced due to diseases and pests.

Preparing the seed for planting. In order to have a full number of seedlings and healthy lawns in the fields where chickpeas are planted, it is necessary to plant high-quality, healthy seeds, clean from foreign additives. For this, selected, non-ascochyous, resistant, and healthy seed varieties should be selected.

Chickpea seed to be planted must meet the requirements of the I-class seed standard. According to the standard requirements, the germination of seeds of class I should not be less than 95%, the moisture content should not be higher than 14%, and the purity should not be less than 99%. In some cases, class III seeds with 90% fertility and 97% purity are also planted, they are mainly planted in fields that are not used for seeds.

In order to protect the seeds and seedlings from diseases and pests in the soil, before sowing (20–30 days), the seeds were mixed with Tigam at a rate of 300–400 g per 100 kg of seeds and Panoctin at a rate of 200 g per 100 kg of seeds. In order not to be affected by Fusarium disease, the seed was treated with 34% aqueous suspension concentrate of "Vitovax 20 FF" 2.5 l/t or 25–30% powder of "Darmon 4" 3 kg/t 20–30 days before sowing.

Cultivation and sowing of seeds. The soil is tilled in order to achieve an alternative softness, to eliminate weeds, and to preserve the soil's moisture so that the plant seeds are sown evenly. Soil treatment before planting chickpeas includes various technological processes depending on its mechanical composition, degree of pollution, and moisture conditions.



Soil tillage when planting pea seeds is no different from tillage for other grain and leguminous crops. Soil cultivation was carried out mainly as follows:

The selected field was cleared from previous crop residues in the fall, and the soil was plowed with PD 3-35, PD 4-35, PYa - 3-35 plows at a depth of 25–30 cm. For late-autumn cultivars, when the soil reaches the surface, in order to maintain moisture in the soil and eliminate germinating weeds, it is chiseled transversely to a depth of 16–18 cm with a two-row harrow and leveled with a trowel.

Chickpea seeds can be sown in an STX-4, SXU-4, or SPCh-6M seeder. Also, on non-irrigated lands, chickpeas are planted using a SUB-48M grain seeder, planting devices with a row spacing of 45 or 60 centimeters, and adjusting the roller to drop seeds from above.

SPCh - 6M seed sowing machine is used for planting chickpeas by placing an 11-tooth star on the wheel of the seeder, a 30-tooth star on the planting device, and a 40-hole disk on the seed suction device. If chickpeas are planted with such a device, the seeds are less damaged.

In our experiments, pea seeds were sown by hand using a template in the wet layer of the soil at a depth of 3-5 cm, 6–9 cm, and 10-12 cm in different variants.

After the seed sprouts, certain agrotechnical activities are carried out in the fields planted with chickpeas. Above all, the fields were kept free from weeds and the soil was not compacted and moisture was not lost.

Since chickpeas were planted in irrigated land and 60 cm between the rows, during the growing season, the mechanization between the rows was done and the soil was always softened. The purpose of tillage is to eliminate weeds and keep the soil surface soft. When the surface of the soil is softened, the evaporation of moisture decreases, harmful salts do not rise to the surface, air exchange improves, and the water permeability of the soil increases.

Work between the rows began as soon as the seedling fully germinated and the row was identified. Because, at this time, the weeds have not taken root, the pea root system is still delicate.

In the experiment, chickpeas were cultivated once until the first water, N40P40K30 mineral fertilizer was given with the cultivation, and mowing was carried out once. The next cultivations were carried out with the number of irrigations and soil preparation. Cultivated up to 4–5 times in total.

During the initial development period of chickpeas, the ground was softened to a depth of 6–8 cm with the help of peripheral working bodies, and 10–12 cm with



the help of the middle one. The protection zone is 10–12 cm, softened by walking at a distance of 3–5 cm from the plant.

In subsequent cultivations, especially after watering, the working organs of ККО, which soften in layers, were established. These are nornalniks, the peripheral organs were processed at a depth of 8–10 cm, and the middle organ at a depth of 12–14–16 cm.

The depth of the furrow for irrigation was increased to 10–18 cm depending on the phases of plant development in the row spacing of 60 cm. Chickpeas were always kept free of weeds during the growing season.

Harvesting chickpeas. After the pea grains are mostly 85–90% ripe, they are harvested by adjusting the drums of the combine harvester to 40–500 revolutions per minute. It is also harvested by hand with the stem and brought to field conditions or special areas and threshed.

After ripening the chickpea crop in the experiment, each field was started to harvest the chickpeas separately in the cool morning before the weather warmed up. The yield of each harvested plant was determined in separate replicates.

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