

PRODUCTIVITY INDICATORS OF FOREIGN AND LOCAL PEA VARIETY SAMPLES PLANTED IN THE AUTUMN PERIOD

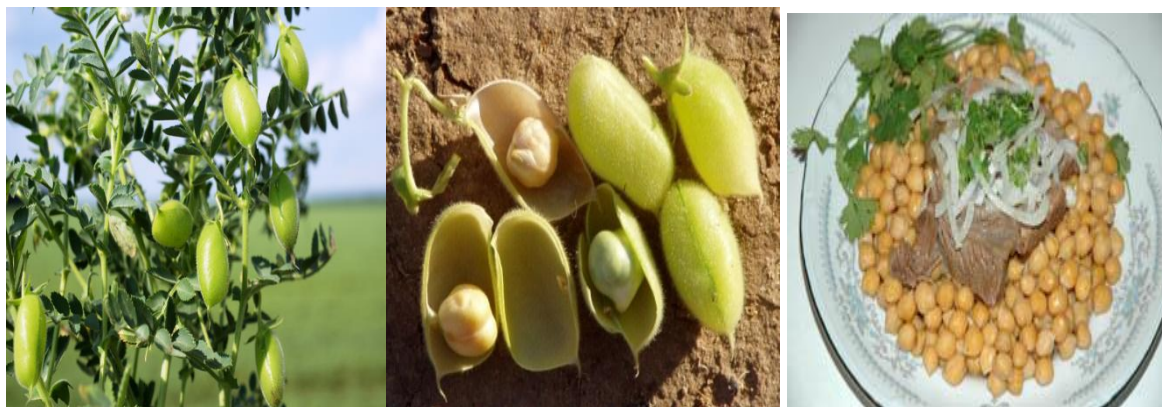
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Abstract. Peas have been cultivated since ancient times in the arid regions of Central and Asia Minor, and accordingly, the average yield of peas is 15-20 t/ha (25-30 t/ha and more in countries with advanced modern technologies). Pea seeds contain vitamin B1, mineral salts and amino acids: tryptophan 1.1%, lysine 6.1%, histidine 3.1%, tyrazine 2.9%, cystine 0.75% and methionine 1.6%. The yield indicators of foreign and local pea varieties planted in the autumn period in the conditions of the Tashkent region are shown.

Keywords: pea, cultivation, agrotechnics, yield, soil, fertility, grain, protein, variety.



Usage. Chickpea grain is used in human nutrition, cereals are prepared from grain, various dishes can be prepared, flour is added to pastries, in bread making, 10–20% wheat flour is added to bread making, and artificial coffee is prepared. Grains contain 19-33% of protein, 4-7% of fat, 48-61% of carbohydrates, 2-12% of fiber, 2-5% of ash and vitamins. Organic acids (malic and others) contain in the biomass and hay, therefore, animals are not eaten in pure form. Chickpea is a good preceding crop for field crops; during the growing season, 50-70 kg of biological nitrogen accumulates in the soil.

Table 1. Chickpea sown area, yield and production (FAO data for 2021)

Countries of the world	Sown area, 000 ha	Yield, q/ha	Grain production, 000 tons
In the world	13,500.0	9.7	13,100.0
Australia	2,630.0	10.6	281.2
India	9,547.0	10.4	9,937
Iran	456.0	4.3	200.0
Kazakhstan	67.5	6.6	44.9
Malawi	160.0	8.3	133.9

Mexico	95.8	21.1	202.8
Myanmar	379.0	13.1	499.0
Pakistan	943.0	4.7	446.0
Russia	78.1	10.0	78.5
USA	79.7	10.5	84.2
Turkey	517.7	12.1	630.0
Ethiopia	208.0	20.8	435.1
Uzbekistan	15.0	13.4	20.2

History. Homeland of chickpeas are South-Western Asia. Chickpeas are cultivated in India, Italy, Greece, Bulgaria, Egypt, Algeria, Morocco, Turkey, and Iran. In India, organic acids are obtained from chickpeas. In Central Asia, chickpeas have long been cultivated. In the world, chickpeas are cultivated on an area of 13.5 million hectares, including in India – 9.6 million hectares. The average grain yield is 9.7 q/ha, and gross production is 13.1 million tons.

Systematics. Chickpea belongs to the legume family – *Fabaceae* to the genus *Cicer* L. The genus includes 27 species, of which 22 are perennial species. Widely distributed along the Mediterranean. Only one type of chickpea is cultivated – *Cicer arietinum* L. It is cultivated, annual, grassy, widely distributed. Varieties of cultural chickpeas: 1) Southern European – *proles loheneicum* G. Pop, 2) Middle European – *proles franscaucasicum* G. Pop. 3) Anatolian – *proles turcicum* G Pop. To determine the types of chickpeas: the shape of the grain, the color of the grain, branching are determined.

Methodology. Based on the relevance of the topic, in the conditions of the irrigated typical gray soils of the Tashkent region, together with the varieties "Uzbekistan-32" and "Jahongir" included in the State Register of the local pea varieties, in comparison with them, the world collection of pea varieties brought from the international organization "ICARDA" and their important field experiments farm signs were studied.

The scientific research work was carried out in 2015-2017 at the agricultural scientific research and educational experimental farm of TSAU, located in Qibray district.

2-table

Preliminary agrochemical parameters of experimental field soil

Soil layer, cm	Common forms of nutrients, %			Mobile forms of nutrients, mg/kg		
	humus	nitrogen	phosphorus	N-NO ₃	P ₂ O ₅	K ₂ O
1. 0-30	0,920	0,083	0,152	4,7	47,1	180,7
30-50	0,715	0,065	0,134	3,1	40,3	140,0
2. 0-30	0,804	0,078	0,148	5,1	44,3	195,0
30-50	0,787	0,069	0,127	3,7	40,6	153,0

Place of research, soil - climatic conditions: Scientific research work was carried out at the agricultural scientific research and educational experimental farm of Tashkent State Agrarian University. The soil of the experimental farm is a typical gray loam that has been irrigated for a long time. This soil contains 0.8-1.0% humus, about 0.058-0.089% nitrogen, about 0.141-0.184% phosphorus, and about 0.154-0.148% potassium, which indicates that the nutrients used by the plant during growth are very small. . The soil is not saline. It differs in soil water permeability,

softening complexity. Groundwater is located in a layer deeper than 3 m. The experimental field was insufficiently supplied with nitrogen and phosphorus. If mineral and organic fertilizers are used, it is possible to grow high yields from field crops.

Results of research. In the experiment, the local variety of peas "Uzbekistan-32" was controlled, and 36 samples of new varieties imported from Syria and Turkey were studied. We present the information of 5 of these studied varieties in this article.

Soil preparation and sowing. For uniform sowing of seeds, it is necessary to achieve a loose state, a flat surface, clean from weeds, with preservation of soil moisture. The method of tillage depends on the mechanical composition of the soil, the degree of weed infestation, and humidity.

Basically, chickpeas are sown at the same time as spring crops or in the fall in October. Plowing is done in autumn. Harrowing is carried out in the spring. Tillage is carried out according to the following technology:

The field is cleaned of plant residues, 200 kg of ammophos and 100 kg of potash fertilizers are brought in, and plowing is carried out to a depth of 25-30 cm by plows PD-3-35, PD-4-35, and PYa-3-35. For autumn sowing, the soil is cleared from weeds, twice chiseled to a depth of 16 - 18 cm, and then soil packing is carried out. For spring sowing, zigzag harrows are harrowed twice. Before sowing, chizeling is carried out to a depth of 16 -18 cm and packing.

Equipment for sowing. Seeders STH-4, CXY-4 or SFC-6M are used for sowing. For sowing on the rainfed, SUB-48M grain sowing machines with a row spacing of 45 and 60 centimeters are used.

The 11-tooth sprockets are installed on the SFC-6M seeders, and 30 tooth stars are installed on the sowing machine, 40 tooth stars are installed on the suction apparatus. When sowing with such devices, chickpea seeds are sown without damage.

Chickpea seeds are sown in a moist soil layer to a depth of 5-7 cm. Depending on the soil condition and seed size, the sowing depth may be 4-8 cm.

800 m³ was irrigated to collect moisture in the experimental field. Then, after 6 days, autumn plowing was carried out at a depth of 28-30 cm, chisel-harrowing was done. After mulching, the distance between the plows on the MTZ-80 tractor was 70 cm. Because the seed sent from abroad was very small, the number of replicates in the experiment was 3, and each replicate was 10 meters long. In the fall, pea variety samples were planted on November 5. According to our several years of field experience, when peas are planted in the autumn season, it has been found that the wintering of the seeds, which have turned and formed a thick root (2.5-3.2 cm long), gives good results. For this reason, unlike winter wheat, when this crop was planted in the fall, it was not watered for the purpose of weed recovery.

By the second ten days of February, it was observed that the lawns of pea varieties planted in the autumn season sprouted. However, a low number of plant stems was noted in some varieties. It can be estimated that these varieties have a lower level of winter resistance.

The data obtained on plant stem height, height of first pod appearance, weight of 1000 seeds are shown in Table 1 below, important economic characteristics of these varieties:

3-table

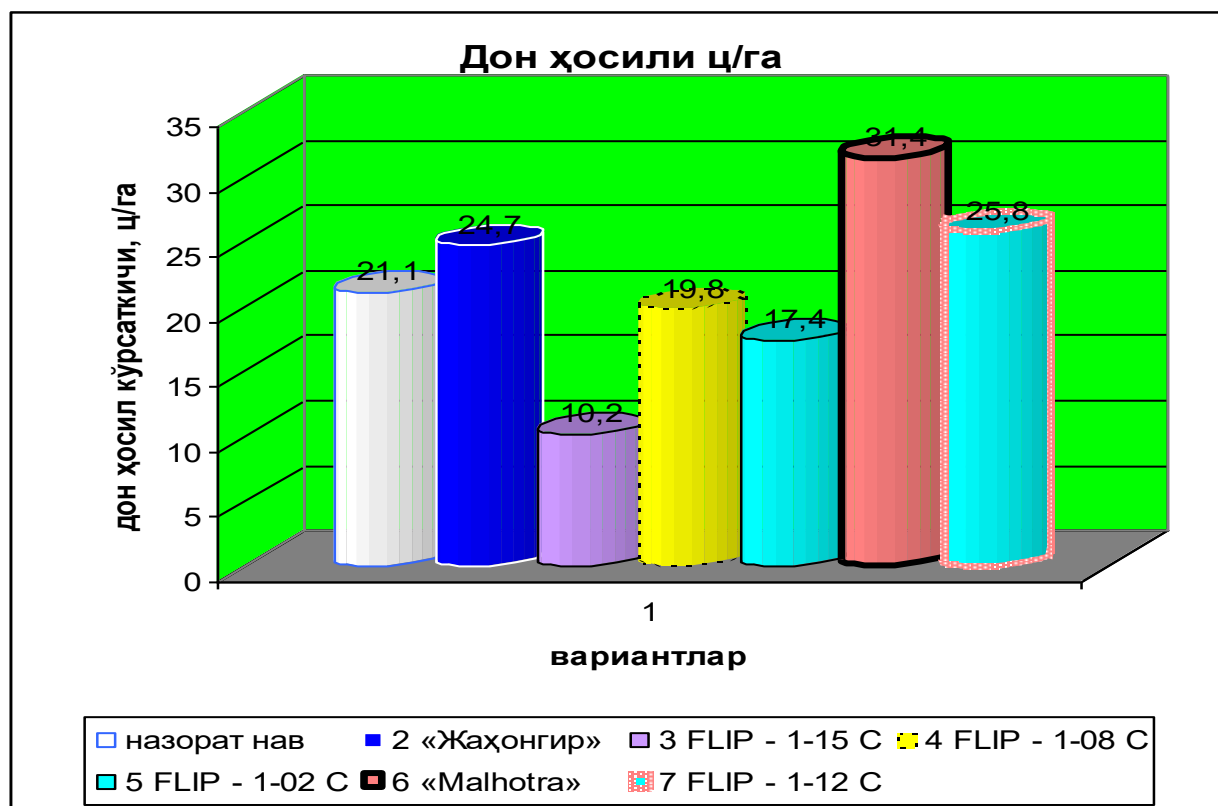
Important economic characteristics of pea variety samples

№	Varieties name	Plant stem height, cm	The height of the first pod emergence, cm	1000 seed weight, gram	Ripening time, date and month
1	"Uzbekistan-32" control variety	64,5	16,8	361,9	24.06
2	«Jakhongir»	68.9	17,5	388,5	24.06
3	FLIP - 1-15 C	61,2	15,6	402,1	26.06
4	FLIP - 1-08 C	65,7	17,1	424,7	28.06
5	FLIP - 1-02 C	48,9	11,8	374,6	26.06
6	«Malhotra»	74,5	21,9	438,4	2.07
7	FLIP - 1-12 C	62.4	14,4	415,9	30.06

"Uzbekistan-32" was taken as a control variety, the height of the main stem is 64.5 cm; In 2009, the local "Jahongir" variety - 68.9 cm and FLIP - 1-15 S - 61.2 cm brought to the State Register from ICARDA; FLIP - 1-08 S – 65.7 cm; FLIP - 1-02 S – 48.9 cm; It was found that samples of "Malhotra" - 74.5 cm and FLIP - 1-12 S - 62.4 cm varieties had stem diameters. It can be seen that compared to the control variety, some cultivars have lower and some cultivars have higher stem height.

According to the results of the grain yield, 21.1 ts/ha of the control variety; "Jahongir" variety - 24.7 ts/ha and FLIP - 1-15 S from ICARDA - 10.2 ts/ha; FLIP - 1-08 S – 19.8 ts/ha; FLIP - 1-02 S – 17.4 ts/ha; "Malhotra" - 31.4 tons/ha and FLIP - 1-12 S - 25.8 tons/ha high grain yield.

1- figure



Conclusion. In conclusion, we believe that it is appropriate to continue breeding domestic and foreign pea varieties for seeds, which give a high yield when planted in the autumn season. In the near future, high-yielding varieties that are resistant to winter frosts and give environmentally

friendly products when planted in the autumn season will be first propagated in the conditions of the typical gray soils of the Tashkent region, and then recommended to farmers and peasant farms for cultivation on large areas.

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