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Scientific Foundations of Water Requirements of Peanuts in the Conditions of the Central Region of Uzbekistan

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Annotation: Scientific research on ecological testing and selection of peanut varieties in various soil and climatic conditions, increasing yield and seed quality, and improving cultivation technology has been conducted at leading international scientific centers and higher educational institutions around the world. In this article presented data obtained during the study of water requirements of peanut varieties at the central region of Uzbekistan. The increase in the number and rate of irrigation of peanuts has a positive effect on the acceleration of its physiological processes and the extension of the growing season. When irrigation in the "Mumtoz" variety was carried out in the order of 70-75-65% compared to LFMC, the ripening period was extended by 7-10 days and amounted to 165-167 days.

Keywords: peanut, water requirement, irrigation methods, watering, norm, m3, fertilizer, ammonium nitrate (NH4NO3-33-34% nitrogen), ammophos (NH4H2PO4-11-12% nitrogen, 46-60% phosphorus), phosphorus, potassium.

INTRODUCTION

The peanut (*Arachis hypogaea*), also known as the groundnut [5], goober (US)[6], goober pea[7], pindar (US) [6] or monkey nut (UK), is a legume crop grown mainly for its edible seeds, contained in underground pods. It is widely grown in the tropics and subtropics by small and large commercial producers, both as a grain legume and as an oil crop [9]. Geocarpy is a typical among legumes, which led botanist Carl Linnaeus to name the species *hypogaea*, or 'under the earth'.

The peanut belongs to the botanical family Fabaceae (or Leguminosae), commonly known as the legume, bean, or pea family [4]. Like most other legumes, peanuts harbor symbiotic nitrogen-fixing bacteria in root nodules [10], which improve soil fertility, making them valuable in crop rotations.

The *Arachis* genus is native to South America, east of the Andes, around Peru, Bolivia, Argentina, and Brazil [12]. Cultivated peanuts (*A. hypogaea*) arose from a hybrid between two wild species of peanut, thought to be *A. duranensis* and *A. ipaensis [13; 14]*. The initial hybrid would have been sterile, but spontaneous chromosome doubling restored its fertility, forming what is termed an amphidiploid or allotetraploid. Genetic analysis suggests the hybridization may have occurred only once and gave rise to *A. monticola*, a wild form of peanut that occurs in a few limited locations in northwestern Argentina, or in southeastern Bolivia, where the peanut landraces with the most wild-like features are grown today [11], and by artificial selection to *A. hypogaea* [12].

Today, increasing the yield and quality of oilseeds, including peanuts, is of great importance in meeting the needs of the population in the world for food products. Globally, peanuts are grown in 117 countries, with a total area of 27.66 million hectares, a gross yield of 43.98 million tons, and an average yield of 1.59 tons per hectare. Peanuts cover 56 percent of the cultivated area of Asia and 40 percent of Africa, and these continents account for 68 percent or 25 percent of the total production [15; 29].

Review of foreign scientific research on the scientific topic. Scientific research on ecological testing and selection of peanut varieties in various soil and climatic conditions, increasing yield and seed quality, and improving cultivation technology has been conducted at leading international scientific centers and higher educational institutions around the world. In particular, it was conducted at the American Peanut Research and Education Society, UF-University of Florida IFAS Research (USA) [16; 21; 22], International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) [20], International Center for Agricultural Research in the Dry Areas (ICARDA)[22; 23], Shandong Peanut Research Institute (China), KOPIA (South Korea), Krasnodar State Agrarian University (Russia), Plant Science Research Institute, Tashkent State Agrarian University (Uzbekistan).

Peanut plants need 16-30 inches of water during the growing season, which includes rainfall and irrigation, with peak demand during the flowering and pod development stages, requiring about 1.5-2 inches of water per week. A consistent, dependable water supply is crucial, especially since random rainfall patterns may necessitate irrigation to prevent drought stress and ensure good yields [25].

Peanut irrigation requirements depend on the crop's growth stage and external factors, including region and climate conditions. According to research conducted in the Southeast of the United States, a peanut crop typically needs 18 inches of water (from irrigation plus rainfall) to provide satisfactory yields. The total amount of water input may need to be higher since rainfall or irrigation may not be 100% efficient, and water losses may occur due to runoff, deep percolation, or environmental conditions. Growers must consider four critical periods based on how much water peanuts need to develop satisfactorily - planting to emergence; emergence to pegging/flowering; flowering/pegging and pod formation; pod formation to maturity. Peanut

irrigation requirements enter the most critical period from week 8 to 15 during flowering, pegging, and pod formation when the crop's water use is highest [26].

When irrigating peanuts, consideration is needed for possible rainfall. Too much water, especially during the maturation stage, can promote plant diseases such as Cylindrocladium black rot, Sclerotinia white mold and leaf blights [27].

Watering peanut plants is typically hit-or-miss during much of the growing season. However, growth, flowering, and peanut pod development all depend upon abundant moisture. Too dry growing conditions during these critical periods will decrease the size of your harvest significantly and jeopardize your plant's health. Peanut plants need plenty of water from the time they begin to bloom until the pegs have all completely burrowed into the soil. Look for your first flowers to appear somewhere between 25 and 40 days after planting. From blooming until harvest, take care to not let your peanut plant dry out [18; 19; 28].

Water requirements and irrigation methods of peanuts have been studied by many foreign and domestic scientists. Depending on the regional and climatic conditions in the state of Virginia, the peanut crop requires 20 inches (1 inch = 25.4 mm) to 28 inches (508-711 mm) of water during the growing season [24].

According to X.N.Atabaeva, J.B.Khudaykulov [1; 398-p.], M.Amanova, A.Rustamov, T.Duysenov [3; p. 37-38], in the conditions of Uzbekistan, peanuts require little moisture from germination to flowering, so one watering during this period is sufficient. From flowering to pods, the humidity in the soil should not be less than 70% limited wet field capacity. Irrigation rate is 700-1000 m^3/ha. Seasonal irrigation rate is 4000-5000 m^3/ha. During the growing season, the number of irrigations is 4-5. During the growing period of peanuts, keeping the field free of weeds, weeding, loosening the rows between the rows when gynophores are formed, and heaping soil around the bush are carried out [2].

PLACE OF RESEARCH, SOIL-CLIMATIC CONDITIONS

The scientific research was conducted at the agricultural scientific research and educational experimental farm of Tashkent State Agrarian University. The experimental farm is located in the upper reaches of the Chirchik River, at an altitude of 481 m above sea level, at 410 11^{II} north latitude and 380 31^{II} east longitude in the Kibray district of Tashkent region.

The soil of the experimental farm is a typical gray soil that has been irrigated since ancient times. 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. The soil is not saline. This soil is characterized by water permeability and difficulty in loosening. If mineral and organic fertilizers are used, it is possible to produce high yields of field crops. In the plains and foothills, winter temperatures are unstable and vary from year to year. The coldest month in the region is January, with temperatures ranging from 0°C to -29°C. The amount of precipitation in the region also varies. The annual precipitation in the plains is 261 - 316 mm, in the foothills and foothills it is 366 - 435 mm, and in the mountains it is 700 - 895 mm.

The sum of useful temperatures during the season required for the care of field crops is 2200-2400 ^{0}C in April-October, and the duration of frost-free days is 235-240 days on average. The highest precipitation occurs in the winter-spring seasons, averaging 400-500 mm. The average annual precipitation is 510-520 mm, therefore irrigated cultivation of field crops is recommended.

The purpose of research work. The purpose of the study is to scientifically substantiate the optimal irrigation regime for peanut varieties suitable for the conditions of typical gray soils of the Tashkent region.

The objects of the study. The objects of the research work were typical gray soils of the Tashkent region, local peanut varieties "Salomat" and "Mumtoz", irrigation regimes, timing and norms.

Research methods. Methodological manuals "Methodology of State Variety Testing of Agricultural Crops", "Methods of conducting field experiments", "Scientific research works in plant science" were used for conducting field and laboratory experiments, phenological observations, biometric measurements and yield determination. Agrophysical and agrochemical soil analyses were conducted based on the methods of "Methods of Agrochemical, Agrophysical and Microbiological Research in Irrigated Areas" The data obtained in field experiments were analyzed using mathematical statistics using the Microsoft Excel program based on the method of B.A.Dospekhov[17].

When fertilizing peanuts, ammonium nitrate (NH_4NO_3-33-34% nitrogen) was used as nitrogen fertilizer, ammophos ($NH_4H_2PO_4$-11-12% nitrogen, 46-60% phosphorus) was used as phosphorus fertilizer, and potassium chloride (KCl-57% potassium) was used as potassium fertilizer. The nitrogen content of ammophos was taken into account when determining the annual rates of mineral fertilizers.

Phenological observations

During the experiment, the following phenological observations, records and laboratory analyses were carried out on peanut crops:

1. The germination of seeds was determined in peanut plants after 6 days, and in laboratory conditions - after 10 days at a constant temperature of $+25^0$C.

2. Seed germination was monitored in all variants of experiment repetitions;

3. The number of sprouted shoots and the thickness of seedlings were determined at 3 points in all variants;

4. Phenological observations were made of the counted plants (germination, branching, flowering, formation and ripening of nuts);

5. During the experiment, agrochemical analyses of the soil were carried out.

To determine the agrochemical composition of the soil before the start of field experiments and harvesting, samples were taken from the arable (0-30 cm) and subarable (30-50 cm) soil layers:

a) the total amount of humus (by the method of I.V. Tyurin);

b) the total amount of nitrogen and phosphorus in the soil (by the methods of I.M. Maltseva, L.N. Gritsenko);

c) the calorimetric method for determining nitrate nitrogen; mobile phosphorus was determined by the method of B.P. Machigin and exchangeable potassium - P.V. Protasov in a flame photocolorimeter.

6. The following agrophysical studies were carried out:

- the bulk density of the soil was determined in the 0-50 cm layer at the beginning and end of the application period by the method of N.A. Kachinsky;
- the root capacity of the soil was determined at the beginning of the application period;
- LFMC (Limited Field Moisture Capacity) was determined from soil samples before each irrigation;
- the peanut irrigation standards were measured using a 0.5 m wide "Chipoletti" water meter shovel;

Based on the experimental system, irrigation procedures and fertilization rates of local peanut varieties were studied. In field experiments, options are placed in 3 tiers, and one option area (2.8 x 18=) is 50 m2, i.e. 2.8 m wide (0.7 m x 4 rows), 18 m high. The experiment consisted of 16 options (16 x 50 m^2 = 800 m^2) in 3 replications (800 m^2 x 3 replications = 2400 m^2) in a total

area of 0.25 ha. In the experiment, the "Salomat" variety of peanut and the "Mumtoz" variety were planted as a control variety, and the optimal watering procedures and mineral fertilizer standards for these varieties were determined.

SCIENTIFIC ANALYSIS OF RESEARCH RESULTS

Description of the "Salomat" variety. Uz008418 was created by mass selection from the collection sample, and the main authors are M.E. Amanova, A.S. Rustamov, Sh. Nigam, and Z.I. Kholiqulov [7, 8]. It belongs to the Valencia variety type, the plant grows upright, the stem is of medium height, the pods are large. The shape of the pod is wavy, slightly deep, pale yellow, the skin is medium-rough, the nut is 3 to 4 seeds, the middle is slightly constricted, the stitch is medium, the color of the seed is dark red, oblong-oval. The variety is medium-ripe, ripening in 138-140 days. The weight of 1000 seeds are 540.0 g. The variety is large-fruited, large-grained and productive. Suitable for assembly with mechanism. Legume has a high adhesion of 5.0 points, ripeness of 85.0%. The fat content of the grain is 50.0%, protein is 17.0%.

Description of the "Mumtoz" variety. The L-5 X ICGV-94088 (India) collection was created by mass selection. The main authors are M.E.Amanova, A.S.Rustamov, Sh.Nigam, R.F.Mavlyanova, Z.I.Kholiqulov [6]. It belongs to Virginia, and the plant is semi-erect, moderately branched. The shape of the large dukka is fat, wavy, the surface is slightly deep, pale yellow, the skin is medium-rough, the middle is slightly narrow, the seam is medium. The color of the seeds is dark red, oblong-oval in shape. The variety is medium-ripe, ripening in 138-145 days. Yields average 27-28 q/ha. Weight of 1000 seeds is 686.0-710.0 gr. Suitable for assembly with mechanism. Legume has a high adhesion of 5.0 points, maturity of 80.0%. The fat content of the grain is 48.5%, the protein is 18.0%. The variety is resistant to agricultural diseases and insects. Entered into the State Register in 2006.

Results and Discussion. The most accurate and correct method for determining irrigation dates was determined by determining soil moisture relative to the limited field moisture capacity (LFMC). During the season, irrigation was carried out 4-5 times at a rate of 600-700 m^3/ha. The irrigation regime was ensured to be 70-65-65% and 70-75-65% relative to the limited field moisture capacity (LFMC). The first cultivation and mowing were carried out after the grasses had fully emerged. The first food was given and watered. The second cultivation was 6-8 cm, the third cultivation was 8-10 cm, and the last one was 10-12 cm. In field experiments, a combination of blades, KKO, and naralnik was used to avoid damaging the plant during cultivation and burying it with soil. The second feeding was carried out after the plant entered full flower. The seedlings were mulched 5-6 weeks after the plant entered the flower bed. Mulching was carried out 2 times during the entire growing season. After the peanut pods were separated from the stalk, the remaining stalks were pressed using a CASE-III unit attached to a modern MX-80 tractor. When harvesting in the late period, the moisture content of the nuts was 40-60%, and they were spread out and dried 5-6 centimeters thick in buildings with a breeze. After drying (moisture content 14-15%), the seeds were sorted. Well-dried, large nuts with dense seeds, no blackened skin, no mechanical damage, typical for the variety, were selected for planting next year or long-term storage. Agrophysical properties of soil. Studying the bulk density of soil is of great agronomic importance. Since this property of the soil is an indicator of its density. In the experimental field, the bulk density of the soil was determined in a soil section excavated at the beginning of the study.

The determination was made in the arable layer and sub-arable soil layers up to one meter deep. According to the obtained data, the volumetric mass of the arable layer of the soil was 1.38 g/cm^3 in the first year of the experiment, and 1.45 g/cm^3 under the arable layer (30-50 cm). After the peanut harvest, the density of the upper soil layers (0-30; 30-50) increased by 0.066 - 0.038 g/cm^3. The next time the soil was measured before planting, in 2013, its density averaged 1.36 g/cm^3 in the tilled layer and 1.45 g/cm^3 in the subsoil. When determined in the pre-harvest period, it was found that these amounts increased by 0.09 and 0.04 g/cm^3 in the upper layers.

Table 1. Volumetric mass of experimental field soil, g/cm^3

№	Soil layer, sm	Period					
		2012 year		2013 year		2014 year	
		Spring time	Before hurvisting time	Spring time	Before hurvisting time	Spring time	Before hurvisting time
1.	0-30	1,37	1,43	1,35	1,45	1,35	1,40
	30-50	1,45	1,48	1,43	1,47	1,44	1,47
2.	0-30	1,39	1,45	1,37	1,43	1,33	1,42
	30-50	1,44	1,48	1,46	1,49	1,45	1,47
average	0-30	1,38	1,44	1,36	1,44	1,34	1,41
	30-50	1,45	1,48	1,45	1,48	1,45	1,47

In general, the bulk density of the experimental field soil meets the requirements from an agronomic point of view and fully ensures the growth and development of peanuts.

Limiting field (soil) moisture capacity. The limiting soil moisture capacity is the main factor that provides water to plants and determines the irrigation rates. The limiting soil moisture capacity in the experimental field was determined by the method of pouring water into the frames at the beginning of the study. The results obtained are presented in Table 2.

Table 2. Limiting field(soil) moisture capacity (LFMC, %) in the experimental area

Soil layer, sm	3 day	4 day	5 day	average
0-10	20,0	20,0	19,8	20,0
10-20	21,6	20,3	20,8	20,9
20-30	22,8	21,8	21,6	22,1
30-40	23,4	23,0	22,7	23,3
40-50	24,5	22,8	23,4	23,4
50-60	24,0	23,8	23,7	23,7
60-70	23,7	23,4	23,4	23,6
70-80	23,6	23,3	23,7	23,4
80-90	24,2	24,0	23,2	23,8
90-100	23,6	23,4	23,9	23,6
0-100	23,1	22,6	22,9	22,8

According to the data of the table, its amount in one meter layer of the soil was 23.1% in 3 days, 22.6% in 4 days and 22.9% in 5 days. Such a change in the limiting moisture capacity of the soil by days is mainly due to the movement of moisture from one layer to other layers and through the tubes. In general, the marginal moisture capacity of the experimental field soil was 22.8% in an average one-meter layer. This indicator is characteristic of the structure and mechanical composition of the soil and is the basis for determining the irrigation standards of peanuts.

In the experiment, water consumption was taken into account using a Chippoletti water meter, and irrigation was carried out based on the order of irrigation specified in the work program, taking into account the soil moisture. Soil moisture before irrigation of peanuts. According to its biological characteristics, peanut is a heat-loving and light-loving crop. Therefore, peanut varieties are planted in the spring and summer season, and from this period, they grow and develop and go through development phases. However, in our conditions, the period when peanuts are planted and grow is a period when atmospheric precipitation is low, air temperatures are high (25-30°C), and evaporation from the soil surface is high.

Determination of soil moisture before planting peanuts in the experimental field showed that its

amount during this period was 12.3-13.2% of the dry weight of the soil on average over the years, and 53.9-57.9% of the soil's limiting moisture capacity. According to the obtained results, the amount of moisture in the 10 cm layer of the soil, that is, in the layer where the seed fell, was 8-10% compared to the dry weight of the soil, and 35.0-43.8% compared to the limit moisture capacity of the soil.

This amount of moisture cannot ensure complete germination of the seed. Therefore, irrigation was required under such conditions. In experimental variants with soil moisture before irrigation of 70-65-65% compared to limited field moisture capacity (LFMC), it was necessary to irrigate peanuts three times in 2012, that is, when the amount of atmospheric precipitation during the period of operation was 142.1 mm. Soil moisture before these irrigations was 15.03% relative to soil dry weight and 65.8% relative to limited field moisture capacity (LFMC).

In the variants of the experiment, the soil moisture before irrigation was determined to be 70-75-65% compared to LFMC, peanuts were required to be watered four times during the period of operation. In these varieties, soil moisture before irrigation was 16.5% of its dry weight, and 72.4% of its dry weight.

The number, timing and norms of peanut irrigation. Before planting and during the seed harvest periods of peanuts, as well as during the flowering, pod formation and ripening periods of the growing season, atmospheric precipitation was not sufficient to meet the water demand. Therefore, irrigation was required during the above growing seasons. After planting peanut seeds, irrigation at an average rate of 700 m^3 per hectare in all variants ensured uniform seed germination. In the experiment, irrigation was necessary in the first ten days of June in 2012-2014, when the soil moisture content before irrigation was 70-65-65% relative to the LFMC.

Table 3. Number, duration and norms of peanut irrigation, m^3/ha

№	Irrigation rejime to relative to the LFMC, %	Rate of mineral firtilizers, kg/ha	Irrigation during the growing season					Seasonal irrigation rate, m^3/ha
			1	2	3	4	5	
“Salomat” variety								
1	70-65-65%	Control	700	600 10.06	740 15.07	850 14.08	-	2890
2		$N_{100}P_{150}K_{100}$	700	600 10.06	740 15.07	850 14.08	-	2890
3		$N_{150}P_{150}K_{100}$	700	600 10.06	740 15.07	850 14.08	-	2890
4		$N_{200}P_{150}K_{100}$	700	600 10.06	740 15.07	850 14.08	-	2890
5	70-75-65%	Control	700	600 05.06	550 05.07	600 01.08	830 26.08	3430
6		$N_{100}P_{150}K_{100}$	700	710 05.06	570 05.07	620 01.08	830 26.08	3430
7		$N_{150}P_{150}K_{100}$	700	710 05.06	570 05.07	620 01.08	830 26.08	3430
8		$N_{200}P_{150}K_{100}$	700	710 05.06	570 05.07	620 01.08	830 26.08	3430
“Mumtoz” variety								

9	70-65-65%	Control	700	600 10.06	740 15.07	850 14.08	-	2890
10		$N_{100}P_{150}K_{100}$	700	600 10.06	740 15.07	850 14.08	-	2890
11		$N_{150}P_{150}K_{100}$	700	600 10.06	740 15.07	850 14.08	-	2890
12		$N_{200}P_{150}K_{100}$	700	600 10.06	740 15.07	850 14.08	-	2890
13	70-75-65%	Control	700	600 05.06	550 05.07	600 01.08	830 26.08	3430
14		$N_{100}P_{150}K_{100}$	700	710 05.06	570 05.07	620 01.08	830 26.08	3430
15		$N_{150}P_{150}K_{100}$	700	710 05.06	570 05.07	620 01.08	830 26.08	3430
16		$N_{200}P_{150}K_{100}$	700	710 05.06	570 05.07	620 01.08	830 26.08	3430

Note: irrigation rates (m^3/ha) / duration (date and month)

Peanut varieties in these variants were irrigated at the rate of 600 m^3/ha. In the variants of the experiment with 70-75-65% of LFMC, the second irrigation was carried out at the beginning of June at the rate of 550 m^3/ha. Daily irrigation rates for peanut cultivars varied depending on soil moisture prior to irrigation. In variants with soil moisture before irrigation of 70-65-65% compared to LFMC, the second irrigation was carried out in the first half of July and irrigation was carried out at the rate of 740 m^3/ha. When calculating the seasonal water consumption, the total water consumption was 2890 m^3/ha. Seasonal irrigation rates for peanut varieties depended on the number of irrigations per year and the irrigation rates for each season. In the experiment, in variants where the soil moisture before irrigation was 70-75-65% relative to the LFMC, the seasonal water consumption was 3430 m^3/ha. In the 1-2-3-4 variants, where irrigation regimes were 70-65-65% relative to the LFMC, and mineral fertilizers were applied at a rate of P150K100 kg/ha, when seeds of the "Salomat" peanut variety were determined by counting seedlings in the calculated area 8 days after planting, 18-24% of the seeds germinated. In variants with irrigation regimes of 70-75-65% to LFMC, sprouted seedlings averaged 20-22%. As mentioned above, in the "Salamat" variety, the initial field germination of seeds was close to each other in terms of variants.

In variants 9-10-11-12, where the irrigation regime was 70-65-65% relative to the LFMC, and mineral fertilizers $P_{150}K_{100}$ kg/ha were applied, when seedlings were counted 8 days after planting the seeds of the "Mumtoz" peanut variety, 8-12% of the seeds germinated. Irrigation procedures were 70-70-65% and 70-75-65% compared to ChDNS, and the average was 14-16% and 12-14%. In the "Mumtoz" peanut variety, the initial field germination of seeds was close to each other according to the variants.

However, when comparing peanut varieties, it was observed that on May 28, 2012, the field germination of seeds of the "Salomat" variety was on average 8-10% higher than that of the "Mumtoz" variety. According to the analysis of three-year average data, in the control "Salomat" peanut variety, in the 1-2-3-4 variants with an irrigation regime of 70-65-65% relative to the LFMC, mineral fertilizers $P_{150}K_{100}$ kg/ha were applied, and when seed germination was determined 16 days after planting, 88-90% of seeds germinated in 2012 and 84-86% in 2013. The full field germination of seeds of the "Salomat" peanut variety was close to each other on average across the years in the variants with irrigation regimes of 70-65-65% and 70-75-65% relative to the LFMC.

Irrigation regimes were 70-65-65% of the total nitrogen content, and mineral fertilizers $P_{150}K_{100}$

kg/ha were applied (nitrogen fertilizers were not applied during the germination period). In variants 9-10-11-12, when the number of seedlings in the calculated area was determined 10 days after sowing the seeds of the "Mumtoz" variety, 34-40% of the seeds germinated.

According to the analysis of three-year average data, in variants 9-10-11-12, where the irrigation regime was 70-65-65% of the total area, mineral fertilizers $P_{150}K_{100}$ kg/ha were applied (nitrogen fertilizers were not applied during the germination period), when the seedlings of the "Mumtoz" peanut variety were counted in the calculated area 16 days after planting, 90-92% of the seedlings germinated in 2012, 86-88% in 2013, and 84-86% in 2014.

CONCLUSIONS

The results of the experiment showed that local peanut varieties were fed with mineral fertilizers at a high rate of $N_{200}P_{150}K_{100}$ kg/ha and the irrigation regime was 70-75-65% relative to the NWFP, which resulted in high grain and hay yields as a result of the plant's full demand for mineral nutrients. however, it was found that the coefficient of use of fertilizers decreases during the formation of leguminous crops.

When determining the oil content in the seeds of peanut varieties, it was observed that the effect of mineral fertilizer rates was greater than that of irrigation regimes, and in the "Salomat" variety, the average was 47.2-50.8% in the variants with an irrigation regime of 70-75-65% relative to the LFMC.

Under this irrigation regime, although the “Mumtoz” variety had the highest bean yield among the experimental variants, the oil content in its seeds was lower than that of the “Salomat” variety, averaging 46.5-48.6%. It was noted that the oil content in the seeds of the peanut varieties studied in the experiment was higher in the “Salomat” variety.

The increase in the number and rate of irrigation of peanuts has a positive effect on the acceleration of its physiological processes and the extension of the growing season. When irrigation in the "Mumtoz" variety was carried out in the order of 70-75-65% compared to LFMC, the ripening period was extended by 7-10 days and amounted to 165-167 days.

When irrigation was carried out in the ratio of 70-75-65% of the total annual rainfall, and mineral fertilizers were applied at the rate of $N_{200}P_{150}K_{100}$ kg/ha, the yield of legumes was 2.96 t/ha for the "Salomat" variety, and 3,41 t/ha for the "Mumtoz" variety.

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