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BULK DENSITY AND POROSITY OF THE SOIL IN THE EXPERIMENTAL FIELD

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Abstract

Halva, candy, cakes and other confectionery products are made from peanut kernels, and they are also eaten roasted. Its fruit is a pod, and the pods contain 1-2, 2-3 or 4-7 seeds. The weight of 1000 pods ranges from 500 g to 1900 g. The weight of 1000 seeds ranges from 200 g to 1200 g. In the soil where peanuts are



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grown, 50 kg of pure nitrogen accumulates per season through the nodule bacteria on its roots [2, pp. 5-7]. According to the research results of M. E. Amanova, A. Rustamov and T. Duysenov [3, p. 24], when growing peanut seeds using class 1 seeds, the optimal sowing scheme for seed production of the "Salomat" variety is 70x15 cm (95-100 thousand plants), while for the "Qibray-4" and "Mumtoz" varieties, because their seeds are larger, the optimal sowing scheme is 70x20-1, that is, good results were achieved when an average of 75-80 thousand plants per hectare were left. For the "Salomat" variety (with an average weight of 1000 seeds of 500-600 g), a sowing rate of 50-55 kg/ha is recommended, and for the "Qibray-4" and "Mumtoz" varieties (with an average weight of 1000 seeds of 750-800 g), a sowing rate of 60-65 kg/ha is recommended.

Research results

One of the most important agrophysical indicators of the soil is its bulk density and its porosity. The higher the soil density, the worse the water and air properties necessary for the plant become. For this reason, all agrotechnical measures carried out should be aimed at improving the agrophysical properties of the soil. Data on the bulk density of the soil and its porosity for the year the experiment was conducted, 2026, were determined under field conditions. Here, at the beginning of the season, before irrigation, the bulk density of the soil in the 0-30 cm layer was 1.34 g/cm³ and its corresponding porosity was 50.2%; in the 0-50 cm layer of the soil these figures were 1.38 g/cm³ and a porosity of 49.2%; and in the 0-70 cm layer, correspondingly, the bulk density was 1.39 g/cm³, while the porosity was found to be 48.7%.

By the end of the growing season, in the variant where furrow irrigation was carried out, when irrigation was carried out at a pre-irrigation soil moisture of 70-70-60% of field capacity (FC), the bulk density of the soil in the 0-30 and 0-50



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cm layers was 1.36 and 1.38 g/cm³ and the porosity was 49.7% and 48.8%, while in the 0-70 cm layer the bulk density was observed to be 1.40 g/cm³ and the porosity 48.2%. When irrigation was carried out at a pre-irrigation soil moisture regime of 70-75-65% of FC, the bulk density of the soil in the 0-30 cm layer was 1.34 g/cm³ and the porosity was 50.2%. In the 0-50 and 0-70 cm layers of the soil, the bulk density was observed to be 1.38 and 1.39 g/cm³, with porosity of 49.0% and 48.2%. In the most optimal variant, at a pre-irrigation soil moisture regime of 60-75-60% of FC, the bulk density of the soil in the 0-30, 0-50 and 0-70 cm layers was found to be 1.38, 1.39 and 1.40, with the porosity in the estimated layers mentioned above being 49.0%, 48.3% and 48.2% respectively. In the drip-irrigated variants, in the control variant, at a pre-irrigation soil moisture regime of 70-70-60% of FC, the bulk density of the soil in the 0-30 cm layer was found to be 1.38 g/cm³ with a porosity of 48.9%, while in the 0-50 and 0-70 cm layers the bulk density was 1.40 and 1.41, with the corresponding porosity of 48.0% and 47.9%. At a pre-irrigation soil moisture regime of 70-75-65% of FC, the bulk density of the soil in the 0-30 and 0-50 cm layers was 1.38 and 1.40 g/cm³, with its porosity being 48.9% and 48.3% respectively, and in the 0-70 cm estimated layer of the soil the bulk density was 1.40 g/cm³ and the porosity was 48.0%. In the drip-irrigated experimental variants, at a pre-irrigation soil moisture regime of 60-75-60% of FC, the bulk density in the 0-30 cm arable layer of the soil was 1.35 g/cm³ with a porosity of 49.9%, and in the 0-50 cm estimated layer of the soil the bulk density was 1.39 g/cm³ with a porosity of 48.7%, while in the 0-70 cm estimated layer of the soil the bulk density was 1.40 g/cm³ and its porosity was found in the experiments to be 48.2%.



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Figure. Growth and development of peanut in the experimental field, 2026

Conclusion

Under drip irrigation, for the peanut varieties, at a pre-irrigation soil moisture regime of 60-75-60% of FC, the bulk density of the soil in the 0-30 cm layer was 1.35 g/cm³ with a porosity of 49.9%, in the 0-50 cm estimated layer the bulk density of the soil was 1.39 g/cm³ with a porosity of 48.7%. In the 0-70 cm estimated layer of the soil, the bulk density of the soil was found to be 1.40 g/cm³ with a porosity of 48.2%.

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