



## PHYSICAL PROPERTIES OF THE SOIL, THE FORMATION OF THE POTATO CROP DEPENDING ON THE METHODS OF PLANTING AND CARE MEASURES IN THE SOUTH OF UZBEKISTAN

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Article history:	Abstract:
<b>Received:</b> 6 <sup>th</sup> October 2022	It was revealed that in order to obtain 25-30 t/ha and higher marketable yield, it is advisable to plant tubers according to a 90x15 cm scheme and planting care during the growing season - loosening and hilling first time 18 cm, second times 23 cm with a protective zone 8-10 cm with a milling cultivator "Amak" or a cultivator KRN-2, 8A with installed additional devices.
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It was revealed that in order to obtain 25-30 t / ha and above the commercial yield, it is advisable to plant tubers according to the scheme of 90x15 cm and care for plantings during the growing season of plants - loosening and dipping 1st time 18 cm, 2nd time 23 cm with a protective zone of 8-10 cm with a milling cultivator "Amak" or a cultivator KRN-2.8A with installed additional devices. The natural and climatic conditions of the southern regions of Uzbekistan, including surkhandarya region, are favorable for the production of early potatoes. At the same time, an important place is occupied by the correct selection of highly productive and adapted varieties, the organization of local primary and elite 116 seed production and the improvement of existing agricultural technology. In these regions, to obtain sustainable high, high-quality early and seed yields of potatoes in early and double-harvesting crops of the current is the optimization of the system of care measures aimed at maintaining the plantings clean of weeds, the soil in a loose state (treatment between the rows, cultivation, loosening, hoeing, fertilizing, dipping, etc.). Studies on this system of agrotechnical measures in the cultivation of potatoes as an early and two-crop crop with different widths of row spacing and care measures in the context of varieties, taking into account existing and, modern technology, are not enough. The purpose of the study is to develop a system of measures to ensure a high, high-quality and cheap harvest, based on the study of the impact on the growth, development of plants, physical and water properties of the soil in the cultivation of medium-early varieties of potatoes as an early and double-yielding crop with different widths of row spacing and care measures. Field experiments were carried out in the conditions of irrigated light gray-earth soils of the farm "Shodibek Sunnatbek Surkhan" of the Angarsk district of the Surkhandarya region. According to the mechanical composition of the soil, mainly homogeneous, heavy and medium loamy, the depth of groundwater is 8-10 meters, unsalted. It is established that when growing potatoes as an early and two-harvest crop according to the planting scheme of 90x15 cm, and applying care measures - loosening and cutting furrows with the help of a milling cultivator "Amak" or a cultivator KRN-2.8A with the installation of an additional device, the first to a depth of 18 cm, the second to a depth of 23 cm with the leaving of a protective zone of 8-10 cm, in comparison with planting 70x20 cm create an opportunity to improve the physical properties of the soil - volumetric mass and soil ripeness. When using the milling cultivator "Amaq" or the cultivator KRN-2.8A with the installation of an additional device for loosening the soil and cutting furrows in different widths of the rows, when growing in an early and double-harvest culture, a decrease in the volume mass of the soil by 0.02-0.03 g / cm<sup>3</sup> was ensured, and the duty cycle increased by 0.4-0.7% compared to the control option. The dynamics of changes in soil temperature on the plots of potato varieties by year and decade in the arable horizon of 0-20 cm in May-June during the cultivation of an early culture of medium-early potato varieties with different widths of row spacing and care measures was revealed: in May, the soil temperature changed on average 21.8-24.2 and 21.9-23.10 C, that is, along the horizons there was an increase in temperature by an average of 2.6 and 2.40 C. These indicators for horizons of 0-10 and 10-20 cm in June averaged 26.4-27.9 and 26.9-27.50 C or there was a gradual increase in temperature by 1.5 and 1.40 C. When growing potato varieties as a two-crop crop with different widths of row spacing (when planting according to the schemes of 70x20 and 90x15 cm) and applying care measures, the soil temperature along the horizons of 0-10 and 10-20 cm for years and decades in July-October on plots of potato varieties changed on average: in July from 26.5-24.5 and 26.2-23.5; in August from 24.6-23.9 and 23.4-23.3; in September from 22.7-20.6 and 22.0-20.1; in October, 19.8-17.9 and 19.3-17.50 C or monthly there was a decrease in soil temperature along the horizons by an average of 2.0-2.7 and 1.9-2.10C. It was noted that the increase in soil moisture from the upper horizon (0-10 cm) to the lower (10-20 cm) when applying care measures - loosening and cutting furrows with the help of a milling cultivator "Amak" or a cultivator KRN-2.8A with the installation of an additional

device, the first to a depth of 18 cm, the second to a depth of 23 cm with the leaving of a protective zone of 8-10 cm, when planting potatoes according to the schemes 70x20 and 90x15 cm and in comparison with the control option when seedlings appeared, soil moisture was at a depth of 8-10 cm 0.2-0.5 and 0.2-0.3% higher, with butanization-flowering by 0.1-0.5 and 0.4-1.1%, with yellowing of the tops by 0.5-0.6 and 0.1-0.4%. The results of the studies showed that various care measures and the width of the row spacing have a significant impact on the growth and development of potato varieties, loosening and cutting furrows with the help of the milling cultivator "Amak" or the cultivator KRN-2.8A with the installation of an additional device, the first to a depth of 18 cm, the second to a depth of 23 cm with the left protective zone of 8-10 cm, increase the length of the growing season by 2-4 days, at the beginning of the vegetation of plants, the formation of tall, powerful, multi-stemmed and deciduous potato bushes is ensured. With an early culture and planting scheme of 70x20 cm in plants of potato varieties, the area of assimilation of 117 leaf surfaces per hectare was 46.9-53.3 thousand m<sup>2</sup>, which is 4.3 thousand m<sup>2</sup> more than the indicators of the control variant, when planting according to the 90x15 cm scheme, these figures, respectively, amounted to 54.2-57.8 thousand m<sup>2</sup> or 3.6-4.4 thousand m<sup>2</sup> more. When growing potato varieties in a two-yield culture and planting according to the 70x20 cm scheme, the area of the assimilation surface of leaves per hectare was 41.1-49.0 thousand m<sup>2</sup>, which is 7.0-6.4 thousand m<sup>2</sup> more than the indicators of the control variant, when planting according to the 90x15 cm scheme, these figures, respectively, amounted to 43.9-51.5 thousand m<sup>2</sup> or 4.4-4.7 thousand m<sup>2</sup> more than the control version. In early and two-crop crops, potato varieties had a difference in crop formation and plant productivity with different care measures and the width of the row spacing. The highest productivity of plants (619-660 g, this is more than the control version by 24-26 g) was obtained when planting according to the scheme of 90x15 cm and applying care measures - loosening and cutting furrows with the help of a milling cultivator "Amak" or a cultivator KRN-2.8A with the installation of an additional device. For these variants, higher rates were obtained in the cultivation of potato varieties compared to the control. It was noted that the mass of the tops from 1 bush was 416-463 g or was 3-15 g more than the control version, the height of the plant was 92.1-105.4 cm or 7.7-8.1 cm higher, the number of leaves was 112.9-120.0 pieces or 13.6-6.6 pieces more, the number of tubers was 9.0-10.8 pieces or 0.1-0.3 pieces more and the average weight of one tuber was 57.9-73.3 g or 1.2-2.1 g more than the control version. When growing potatoes in a two-crop crop, the greatest productivity by variety (480-536 g, 28-42 g more than control) was obtained when planting according to the 90x15 cm scheme and applying care measures - loosening and cutting furrows with the help of the Amaq milling cultivator or the KRN-2.8A cultivator with the installation of an additional device. The yield of potato varieties in early culture with different widths of row spacing and care measures was 24.4-33.3 tons per hectare. The highest yield per hectare by variety - 29.8-33.3 tons or 3.0-4.9 tons (11.2-17.3%) more than in the control version, was obtained when planting according to the scheme of 90x15 cm, loosening the row spacing and cutting furrows with the help of a milling cultivator "Amak" or a cultivator KRN-2.8A with the installation of an additional device. With an increase in the width of the row spacing from 70 cm to 90 cm, an additional yield of 2.0-3.1 tons (7.0-10.3%) per hectare was obtained. When applying different widths of row spacing (planting schemes 70x20 and 90x15 cm) and measures for caring for potato plantings in a double-harvest crop, a yield of 20.8-29.1 tons per hectare was obtained for the tested potato varieties, which is 2.8-6.2 tons more compared to the control options. The highest additional yield by variety (3.3-6.2 t / ha) was obtained when planting tubers according to the 90x15 cm scheme and applying care measures using the Amaq milling cultivator or the KRN-2.8A cultivator with the installation of an additional device. When growing potato varieties in early culture, the highest commercial yield (28.7-32.7 t / ha), the yield of seed tubers (16.8-17.9 t / ha) and the reproduction rate (4.7- 5.0) were obtained when planting according to the scheme of 90x15 cm and applying care measures - loosening and cutting furrows with the help of the milling cultivator "Amak" or cultivator KRN-2.8A with the installation of an additional device. The same pattern was observed in the cultivation of potatoes in a two-crop crop. At the same time, the commercial yield per hectare was 25.3-28.2 tons, the yield of seed tubers was 13.4-14.7 tons and the reproduction rate was 4.1-4.9. Thus, when cultivating medium-early varieties of potatoes with early and double-yielding culture in the conditions of irrigated light gray-earth soils of the southern regions of Uzbekistan, in order to obtain 25-30 tons / ha and above the commercial yield, it is advisable to plant tubers according to the scheme of 90x15 cm and care for plantings during the growing season of plants - loosening and dipping 1 time 18 cm, 2nd time 23 cm with a protective zone of 8-10 cm milling cultivators "Amaq" or cultivator KRN-2,8A with installed additional devices

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