

Technology of Intensive Planting of Sunflower and Soybean for Grain in Sandy Soils

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Abstract:

The article describes the possibilities of growing grain crops by cultivating sunflower and soybean crops in the conditions of sandy soils of the desert region.

Keywords: Sandy soil, agrotechnology, fertilization rate, mineralized water, sunflower, soybean crop.

Introduction

Relevance of the topic: Almost a third of the land area of the Republic of Uzbekistan (13.8 million hectares) consists of sand dunes [1].

Of this, 1 million 572 thousand hectares are irrigated [2].

Due to the very low productivity of sandy soils and poor water-physical properties, less than 20.0 t/ha of cotton and 25.0 t/ha of wheat are grown [3].

Therefore, establishing the cultivation of high-yielding, high-income, low-demand crops in the conditions of sandy soils is one of the most important and urgent tasks facing science and practice.

As a high-income crop, sunflower is grown on an area of 22.8 million hectares worldwide. The growing season is 90-140 days [4].

In addition, soybeans are widely consumed and marketable, and are grown on 73.5 million hectares in more than 60 countries of the world. The growing period is 80-150 days [5].

Due to the length of the growing season of sunflower and soybean crops, it is not possible to plant even their fastest growing varieties in a row due to intermediate land preparation in the conditions of our Republic.

Since sunflower and soybean crops are rich in protein and oil, they are in high demand in the food industry. After all, growing grain crops from sunflower and soybean crops in one season is of great scientific and practical importance.

The purpose of the study. Creation of a resource-efficient agrotechnology for the cultivation of abundant grain crops under the conditions of the sandy soils of the desert region, with the combined care of sunflower and soybean crops.

Research method. Field experiments were carried out on the basis of methodological manuals "Metodika polevogo opyta" [6], "Metodika Gosudarstvennogo sortoispytaniya selskohozyaystvennykh kultur" [7], laboratory analyzes "Metody agrokhimicheskikh agrofizicheskikh i mikrobiologicheskikh issledovaniy v polivnykh hlopkovykh rayonakh" [8].

Research conditions. Field experiments were conducted in the conditions of sandy soils common in the Central Fergana desert region.

The mechanical structure of the soil is very light, the amount of fine sand particles in one

meter layer is 71.10-80.34%, and the amount of physical turbidity is 7.96-9.17%.

Therefore, the water permeability of the soil is very high, and the water is absorbed through the layers of the soil "as if passing through the soil". Moisture storage capacity is also poor, with limited field moisture capacity of 7.2 in the 0-30 cm soil layer; at 0-50 - 8.1; at 0-70 - 8.7; 0-100 is equal to 9.4%.

Volume weight 1.38-1.43 at 0-30 cm; 1.39-1.45 at 30-50; 1.43-1.47 at 50-70; It consists of 1.32-1.38 g/cm³ at 70-100. Soil porosity is 43.7-45.6; 42.9-45.3; 42.1-43.7 and 45.6-48.0%.

Humus content is 0.342; 0.274; 0.293 and 0.318 %.

It is very poorly supplied with nutrients and is very inconvenient for the maintenance of agricultural crops.

Research Results

In our experiments, when sunflower and soybean crops were planted together, placing one between the other in the 60x15-1 scheme, at a seedling thickness of 110+110 thousand plants/ha, irrigated with canal (river) and ditch water in a ratio of 1:1, the crops grew and developed well and a bountiful harvest was produced.

In particular, when the sunflower was planted in pure form and fertilized with N200P140K100 kg/ha, and watered only with canal water during the growing season, the average height was 239.6 cm, the number of large leaves was 40.9 pieces, and the diameter of the fruit basket was 18.9 cm on average. In this case, when sunflower was planted together with soybeans and cared for with such fertilizing, irrigated with canal and ditch water in a ratio of 1:1, these indicators were 241.8 cm, 42.7 pieces and 19.2 cm. That is, irrigation with weakly mineralized water did not have a negative effect on the growth and development of the sunflower crop.

When fertilization was carried out at the rates of N150P105K75 kg/ha, the growth and development indicators of the sunflower plant were 224.2 cm, 38.6 units and 18.4 cm with a slight decrease.

In the 2nd and 3rd years of our research, when sunflower was sown in its pure state, growth and development worsened, and significant improvement was observed when it was cared for together with soybeans.

In particular, in the 3rd year of the experiment, the sunflower was planted in its pure form, and at the rate of fertilization of N200P140K100 kg/ha, when it was only irrigated with canal water and cared for, the height was 227.8 cm, the number of large leaves was 37.9 pieces, and the diameter of the fruit basket was 16.7 cm. , planted together with soybeans, with this fertilization rate, irrigated with canal and ditch water at a ratio of 1:1, these indicators were 254.3 cm, 45.1 units and 20.4 cm.

Soybean crops grow more slowly in sunflowers and yield less than sunflowers after harvest, growth and development improved dramatically.

It is noteworthy that the soybean plant grew and developed well even at the rate of N150P105K75 kg/ha fertilization.

For example, when soybeans were planted together with sunflowers at the rate of fertilization of N200P140K100 kg/ha, irrigated with canal and ditch water at a ratio of 1:1,

the plant height was 58.7 cm, the number of branches was 12.8, and the number of fruit pods was 69.7 pieces, fertilization was N150P105K75 kg and according to the norm, it was 56.3 cm, 12.1 and 63.4 units.

In the 2nd and 3rd years of the experiment, the growth and development indicators of the soybean plant, such as sunflower, improved, and fertilization was 64.8 cm at the rate of N200P140K100 kg/ha, 11.7 and 69.3 units, and 59.8 cm at the rate of N150P105K75 kg/ha. It consisted of 11.1 and 62.2 units.

Also, it was found that the yield decreases when the sunflower is replanted in its pure state, and increases when it is cultivated together with the soybean crop.

In particular, in the 1st year of the experiment, the yield was 24.9 t/ha when sunflower was planted in a pure form and fertilized with N200P140K100 kg/ha, only irrigated with canal water, and planted together with soybeans and fertilized in the same way, in the ratio of 1:1 canal and ditch. 24.3 and 25.8 in the 2nd year, when the crops were cultivated repeatedly in the same agrotechnology, while it was 24.4 ts/ha when they were irrigated with water; In the 3rd year, it consisted of 23.1 and 26.6 ts/ha.

It is noteworthy that when sunflower and soybean crops were grown together, the yield of sunflower decreased by 3.5 t/ha in the first year at the rate of fertilization of N150P105K75 kg/ha, the difference was 2.6 t/ha in the second year, and 2.1 t/ha in the 3rd year.

It is more noteworthy that soybean, being a heat-loving plant, grows in the shade of sunflowers, 17.2-19.3 t/ha in the 1st year, 15.3-17.7 t/ha in the 2nd year, 16.3-18.6 t/ha in the 3rd year delivered a grain harvest to /.

After all, the sunflower plant kills almost all the weeds growing under the shade of its thick leaves.

In such a case, it is surprising that the soybean plant will grow and produce a grain crop again.

Conclusions:

Therefore, by cultivating sunflower and soybean crops together under conditions of sandy soils:

- 1) Cultivation of 2 valuable grain crops with one cost, saving water and mineral fertilizers;
- 2) Increasing productivity;
- 3) Use of well water in a ratio of 1:1, reducing its mineralization in the summer months when water scarcity increases;
- 4) It will be possible to grow 24.4-26.6 tons/ha of sunflower and 17.7-19.3 tons/ha of soybeans.

References:

1. Рафиков А.А. "Почвенный покров"//Опустынивание в Узбекистане и борьба с ним//.Ташкент, Фан, 1988.

2. Ў.Тошбеков, Б.Холбоев, Х.Номозов //Тупроқшунослик ва агрокимё // Ўзбекистон миллий нашриёти. Тошкент. 2018 й.70-бет.
3. Мирзажонов К. //Лик Центральной Ферганы впрежнее и настоящее время//. с 146-149; 162-165.
4. <https://mirishkor.uz/dehqonchilik/kungaboqar-ekini-yetilganligini-qanday-bilish-mumkin/>
5. Атабаева Х.Н. “Соя”. Ўзбекистон миллий энциклопедияси давлат илмий нашриёти. Тошкент. 2004 йил.
6. Доспехов В.А. “Методика полевого опыта” 5-ое изд. с доп. и перераб. М.Агропромиздат, 1985 г.
7. “Методика Государственного сортоиспытания сельскохозяйственных культур”. М. Колос, 1971.
8. Методы агрохимических агрофизических и микробиологических исследований в поливных хлопковых районах-// СоюзНИХИ.Ташкент, 1963.
9. Усмонов, . Н. (2023). ЧЎЛ МИНТАҚАСИ ҚУМЛИ ТУПРОҚЛАРИ ШАРОИТИДА ҒЎЗАНИ ЕРЁНҒОҚ БИЛАН ҲАМКОР ЭКИШ ТЕХНОЛОГИЯСИ. *Естественные науки в современном мире: теоретические и практические исследования*, 2(4), 67–69. извлечено от <https://in-academy.uz/index.php/zdtf/article/view/13456>
10. Usmonova Ozodakhon Qakhramon qizi, & Usmonov Nodirjon Botiraliyevich. (2022). Theoretical Foundations of Studying the Term Concept in English-Uzbek Information Communication Technologies. *Eurasian Journal of Humanities and Social Sciences*, 14, 53–57. Retrieved from <https://geniusjournals.org/index.php/ejhss/article/view/2641>
11. Usmonov Nodirjon Botiraliyevich. (2022). EFFECT OF SEED GERMINATION OF INTERCROPPING COTTON AND PEANUT. *E Conference Zone*, 1–2. Retrieved from <http://www.econferencezone.org/index.php/ecz/article/view/1423>
12. Usmonov Nodirjon Botiraliyevich. (2022). Effect of Intercropping of Cotton and Peanut on Quantity and Quality of Soil Microorganisms. *Eurasian Scientific Herald*, 11, 12–15. Retrieved from <https://geniusjournals.org/index.php/esh/article/view/1990>
13. Usmonov Nodirjon Botiraliyevich. (2022). BENEFITS OF CO-PLANTING COTTON WITH PEANUTS. *Conferencea*, 90–92. Retrieved from <https://conferencea.org/index.php/conferences/article/view/1040>
14. Usmonov Nodirjon Botiraliyevich. (2022). EFFICIENCY OF CO-PLANTING OF COTTON AND PEANUTS IN SANDY SOILS OF THE DESERT REGION. *Web of Scientist: International Scientific Research Journal*, 3(7), 458–461. <https://wos.academiascience.org/index.php/wos/article/view/2228>
15. A.S.Abduraximov, N.B.Usmonov. Effectiveness of co-planting crops in sandy soils. *Plant Cell Biotechnology and Molecular Biology (SCOPUS JOURNAL)*. 2020. 21(65&66). pp 1-9 <https://www.ikppress.org/index.php/PCBMB/article/view/5688>.

