SCIENCE AND EDUCATION IN KARAKALPAKSTAN

ҚОРАҚАЛПОҒИСТОНДА ФАН ВА ТАЪЛИМ

ҚАРАҚАЛПАҚСТАНДА ИЛИМ ҲӘМ ТӘЛИМ

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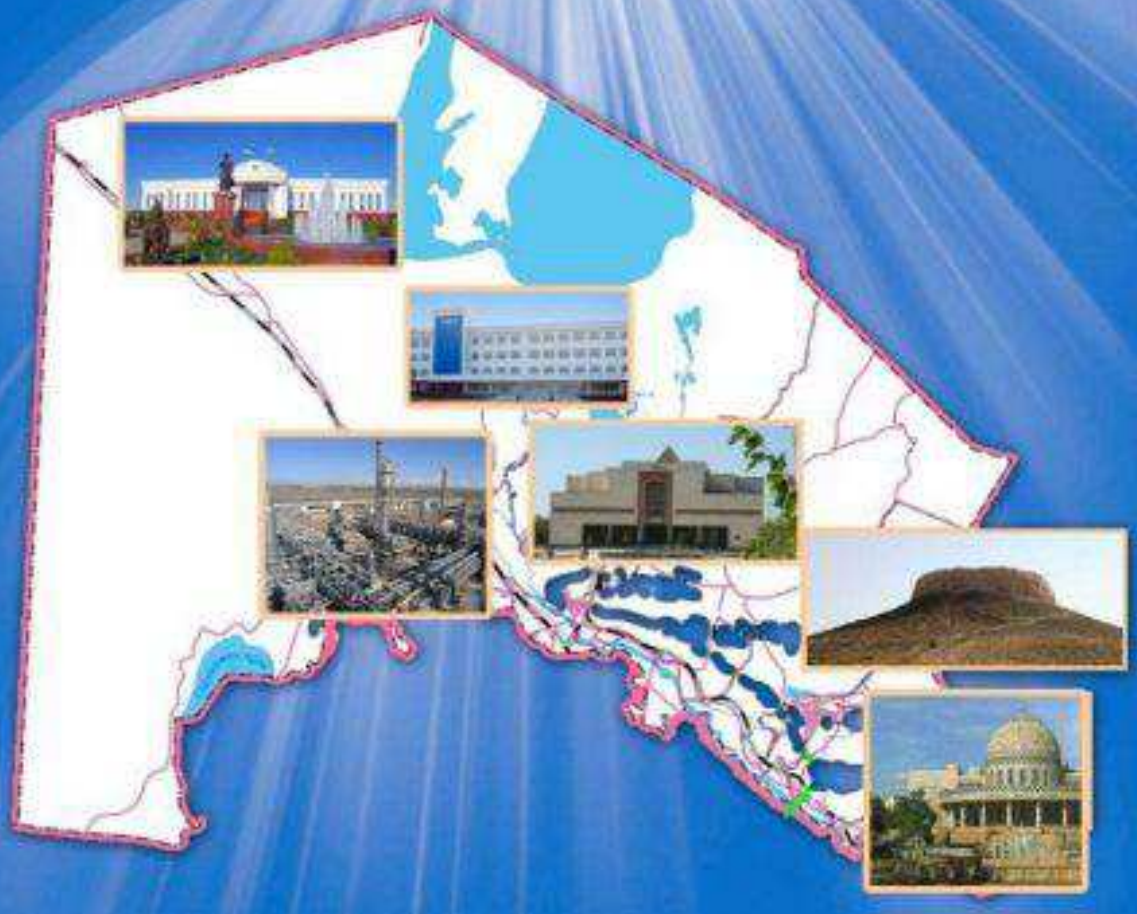

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Editorial address:
Street, 1 Ch.Abdirov,
Nukus, 230100,
Phone: 223-60-19

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AGRICULTURAL SCIENCES

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THE INFLUENCE OF MULCHING METHODS ON THE CULTIVATION, DEVELOPMENT AND PRODUCTIVITY OF VARIETIES AND HYBRIDS OF VEGETABLE (SWEET) CORN IN THE CONDITIONS OF KARAKALPAKSTAN

Saparniyazov I. A.[1], Sanaev S.T.[2]
[1]Nukus State Pedagogical Institute named after Ajiniyaz
[2]Samarkand Veterinary Medical Institute

Summary. *The article provides information on the effects of soil melting in vegetable (sweet) corn in the conditions of Karakalpakstan, using the methods of mulching, which influence on soil, on the growth of plants, formation, development and productivity of the plants.*

Key words. *Horticulture, mulching options,variety, Zamin and Megaton F1, soil, temperature, plant, productivity.*

In our country, special attention is paid to the development of vegetable production, not only filling in the domestic market with vegetables, but also growing export-oriented products and enlarging the growth of foreign earnings. The Decree of the President of the Republic of Uzbekistan dated March 29, 2018 "On Additional Measures to Accelerate the Development of Horticulture in the Republic of Uzbekistan" numbered 5388, is a key document in the development of the branch.

In order to produce all kinds of food products and satisfy the population's demand fornon-traditional food products, supplying vegetable (sweet) corn, which is rich in healthy vitamins is very important, and the area of its cultivation is growing day by day.

We know that planting, growing and picking crops in its season is not enough today. Therefore, it is important to improve the technology of producing food crops and to take advantage on using saline and non-saline lands of Karakalpakstan.

Sweet corn is one of the new vegetable crops produced in Uzbekistan.

Therefore, today it is important to use the methods of mulching of sweet corn by enlarging the growing period, improving high yield and crop quality, growing plants in different periods of time, using fresh water and economizing it during irrigation.

Sweet corn has high sugar content (13-17%) and water-soluble polysaccharides, mainly dextrin (over 23%). The composition of vegetable corn and other subspecies, includes at least 30% starch. The protein content is mainly water-soluble, up to 18-20% by dry matter and up to 8-9% by oil. Sweet corn is used in the milk preparation phase, conserved and used in the frozen form.

Sweet corn is rich in sugars and starch, and also contains a certain amount of protein needed for human health, vitamins C, B_1, B_2, PP, and also provitamin A. Nutritional value is close to peas and beans (T.E.Ostonoqulov, Sh.O. Burxonov, S.X.Narzieva, 2007).

Sweet or vegetable (sweet) corn differs from other species and varieties, but only by the structure and biochemical composition of the cereals. In the milk waxing phase, the grain contains a lot of sugar, and has a translucent and wrinkled appearance.Among vegetable crops, vegetable (sweet) corn contains a lot of proteins and its amount reaches 5%.Vegetable (sweet) corn contains many water-soluble carbohydrates - dextrin, a large number of articulated endosperms, and in its endosperms, there are odd starch glands, only in the smallest number near the buds.

The vegetable (sweet) corncobs are harvested at the stage of milk waxing. Cobs are used in the canning industry, and fresh cobs are used for food.

The biochemical composition of vegetable sweet corn consists of 26% dry matter, which consists of 3.7% protein, 1.2% fat, 0.7% ash and 20.5% carbohydrate. And the composition of canned sweet corn consists of 24% dry matter, of which 2.5% is protein, 0.9% fat, 1.0% ash and 19.6% carbohydrate.

Based on this, we set the goal to scientifically prove the growth, development, and productivity of Zamin and Megaton F1 sorts and hybrids without mulching (observation), under a black membrane, when using manure, sawdust, coal powder.

Experimental sites, objects and materials. The field works were carried out in an open field conditions in the Republic of Karakalpakstan, $42^0 18''$ north latitude and 60^0 south longitude, at an altitude of 76 meters above sea level, where groundwater is located at a depth of 1.2 (2.5) meters. As an object of study in the experiment, Zamin and Megaton F1 hybrids of vegetable (sweet) corn were studied. As a standard, the sort Zamin was selected.

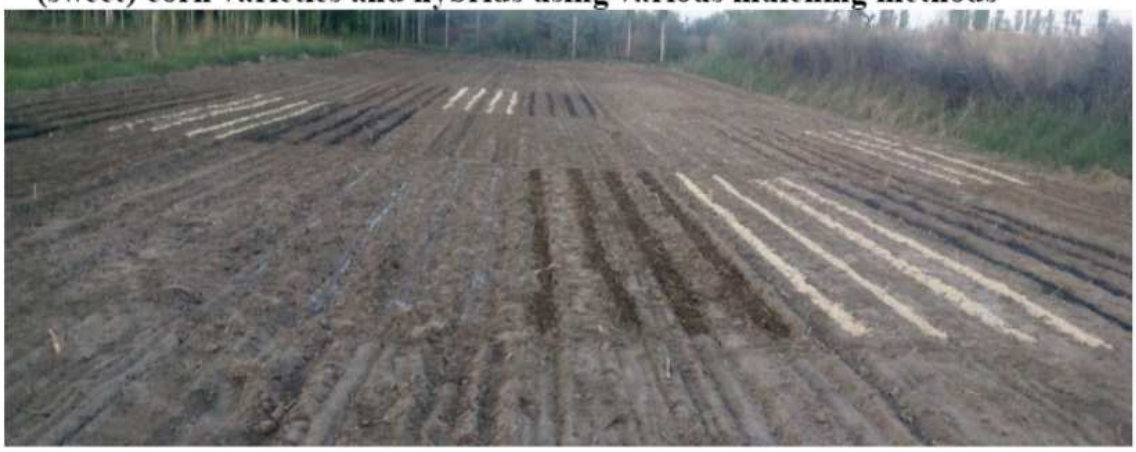
Each variety was planted four times in a row. The plot area was 28 m^2.

All observations, analyzes, evaluations and calculations in the field of experiments were carried out on the basis of the State Commission for Testing Crop Varieties, Corn Breeding Guidelines and Agricultural Recommendations.

Research results. The sown area for sweet vegetable corn was plowed, harrowed, leveled and brought into sowing condition, and the sowing itself was made on April 29, 2018.

Picture 1

General view of the field of experiments in the cultivation of vegetable (sweet) corn varieties and hybrids using various mulching methods



On the test field, the temperature (°C) of the soil layer was measured at a depth of 8-10 cm, from the time of sowing the seeds to the appearance of the first leaves.

Table 1

Changings in the soil temperature on the test field during the day

Time / Variety	:00	:00	8 :00	1 0:00	1 2:00	1 4:00	1 6:00	1 8:00	2 0:00	2 2:00
without mulching (observation)	9	0°	2 0°	2 1°	2 3°	2 6°	2 9°	2 8°	2 5°	2 2°
under a black membrane	9	0°	2 0°	2 4°	2 6°	2 9°	3 1°	3 1°	2 8°	2 4°
using manure	9	0°	2 0°	2 2°	2 4°	2 7°	3 0°	2 9°	2 7°	2 3,5°
using sawdust	9	0°	2 0°	2 1°	2 4°	2 7°	2 9,5°	2 8°	2 5°	2 2°
usingcoal powder	9	0°	2 0°	2 3°	2 5°	2 8°	3 0°	2 9°	2 5,5°	2 2,5°
using black sand	9	0°	2 0°	2 2°	2 4°	2 6,5°	2 9,5°	2 9°	2 5°	2 2°

Thus, as can be seen, from the moment of sowing of sweet vegetable corn under a black membrane, and until the first leaf appeared, the soil temperature during

mulching using manure, coal powder, with respect to the variant without mulching, increases the temperature by 2-3^0 and has positive effect on the formation of the underground and aboveground organs of the plant.

When mulching in a different way, the early growth of seeds after sowing was associated with the temperature of the soil. On sunny days with good weather at 8-9 o'clock in the morning with different types of mulching, a sharp increase in soil temperature was observed, as well as in the evening and at 4-5 o'clock in the morning in quiet and good weather there was a sharp increase in soil temperature to 0,5-1^{0}C. In the daytime, during cloudy and sometimes in rainy weather, there was a slight difference in the temperature of the soil with different types of mulching and with the appearance of the sun the temperature of the soil increased again.That is, the early growth of seeds was observed in Zamin and Megaton F1 varieties and hybrids on May 4–5, the growth of which was noted on days 5–6 after mulching of sowing under black membrane, and the latest growth was observed on days 8–9 with the variant without mulching (observation) and when mulching by using black sand.Prior to the start of the first watering, the benefits of a plant that were mulched under black membrane, manure and coal powder were immediately apparent. But when it came to the appearance of the fruit, there was no difference in growth between the varieties, andthe stems and leaves of the plant, that were mulched with dry manure were well preserved, and the yield was higher than that of other varieties. After harvesting, the soil composition was studied in detail and it was noted that organic matter residues are much higher than other soil variants.The manure used for mulching was subsequently converted into soil by moisture into natural fertilizers and showed a positive effect on the growth of plants. At the same time, it was found that the sorts and hybrids of vegetable (sweet) corn mulched with manure developed 8-10 days longer compared to other variants.

In the studied variants of the Zamin sort, the vegetation varied from 157 cm to 165 cm in size, the number of lateral stems from 2,6 to 3,1; the height of the first cob from 33.2 cm to 35.4 cm, the number of cobs on one stem was 3, 0-4,3 pcs. The average weight of one cob was 379,8 – 404,7g, and the weight – 223,5 – 254,5g per 1000 grains, the yield changed to 421-512 centners per hectare.

These figures were recorded in the hybrid Megaton F1, while the highest yields were recorded in the mulched versions under black membrane and manure. Here the highest yield was observed at 521-537 centners.

Based on our experience, we can conclude that the use of manure and black membrane to grow vegetable (sweet) corn sorts and hybrids under the conditions of Karakalpakstan increases the productivity of vegetable (sweet) corn.

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Rezyume. *Maqolada Qoraqalpog'iston sharoitida sabzavot (shirin) makkajo'xorini o'stirishda mulchalashning turli usullaridan foydalanilganda tuproq haroratiga tasiri, o'simliklarning unib chiqishi va hosil organlari rivojlanishiga tasiri, variantlararo o'simliklarning o'sishi, rivojlanishi va hosildorligi haqida malumotlar keltirilgan.*

Резюме. *В статье приведены информации об использовании методов мульчирования влияющие на температуру почвы, на растительную (сахарную) кукурузу в условиях Каракалпакстана, с использованием различных методов мульчирования, влияния почвы на рост растений, формирование растений, рост, развитие и продуктивность растений.*

Kalit so'zlar. *abzavotchilik, mulchalash variantlari, nav, Zamin va Megaton F_1, tuproq, harorat, o'simlik, hosildorlik.*

Ключевые слова. *Овощеводство, варианты мульчирования, сорт, Замин и MegatonF_1, почва, температура, растения, урожайность.*