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# IRRIGATION DATE, NUMBER OF SORGHUM AND PERIOD BETWEEN THEM IN THE CONDITION OF SALINE SOILS

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**ABSTRACT**

**Relevance of the topic** : It is not a secret to anyone that rapid reclamation of lands, that is, their increasing salinity and reduction of irrigation water reserves will turn Uzbekistan into the most difficult region of the arid region in the coming years. Now it is considered appropriate to carry out large-scale practical and scientific researches on improving soil reclamation and saving irrigation water reserves in agriculture of the Republic (4,5,10).
During the visit of the President of the Republic of Uzbekistan to the Syrdarya region in May 2017 and April 2018, the factory "Bek cluster" was established, where it is planned to grow 80 thousand tons of food crops. Cultivation of fodder crops in the conditions of the Syrdarya region is an urgent issue for the implementation of the above-mentioned specific task (1).

**The purpose and objectives of the study:** Salinity resistance of the "Qorabosh" variety of sorghum (sorghum) grown on salted lands, salt washing and irrigation procedures, the effect of sorghum growth, yield and product quality are studied.

**Object of the research:** The research was conducted at the farm "Bekzafarlik Khorvadoril" of Babur WUU in the direction of animal husbandry in Oq Oltin District, Syrdarya Region. The soil of the experimental area is meadow-sierozem.
The field experiment was conducted in 9 variants, 4 repetitions. The options are arranged in one tier. The length of the rows is 50 m. Each option includes 8 rows, i.e. one return of the seeder (50X5.6-280 m2). The total area of each plot is 280 m2, the accounted area is 140 m2. Based on this, the total area of the experiment was 10080 m2, and the calculated area was 5040 m2.

## Introduction

## METHODS AND MATERIALS

In field experiments in agricultural crops authored by Dospekhov B.A "Methodology of conducting field experiments". M. Kolos. 1979 y. And "Field Experiment Methodology" developed by Nurmatov Sh and others. (Textbook. T.:2007-145 p.) used (2,3).
Based on the natural climatic conditions of the Oq Oltin district of the Syrdarya region, medium salinity land is selected for the field experiment.

**The field experiment was carried out in the following options:**

In options 1-3, the soil salt was not washed. Oats were irrigated at 70-80-75%; 70-80-70%; 70-70-70%;

In options 4-6, soil salinity was washed in November. Oats were irrigated at 70-80-75%; 70-80-70%; 70-70-70% compared to LFWC (Limited Field Wet Capacity);

In options 7-9, soil salinity was washed away in February. Oats were irrigated at 70-80-75%; 70-80-70%; 70-70-70% compared to LFWC;

When corn is planted in rows, 14 kg/ha is the norm. The row spacing is 60 cm. The plant spacing is 15 cm. planting will give good results.

**The agrochemical and water properties of the soil are studied in the experimental field.**

In order to determine the agrochemical parameters of the soil of the experimental field, mixed soil samples were taken from 0-30 and 30-50 cm soil layers by envelope method from 5 points of the field. The total amount of humus and humus in these samples I.M. Tyurin; nitrogen and phosphorus I.M. Maltseva, L.N. Gritsenko; in a nitrate nitrogen-ionometric instrument; mobile phosphorus is determined by the methods of B.P. Machigin and exchangeable potassium by P.V. Protasov.

samples were taken in the 0-30 and 30-50 см layers of the plowed and under-plowed soil to determine the amount of NPK, general and mobile forms, humus, the amount of humus and sent to the laboratory for analysis (2,3,4).

The volume weight of the soil is determined according to the irrigation procedures in each layer at depths of 0-50 cm from 10 см.

The water permeability of the soil was determined using special cylinders in the spring and after harvesting.

**RESULTS AND DISCUSSION**

In the experiment, sorghum was irrigated 3 times out of 5 during the growing season depending on soil moisture deficiency. The most important indicator is determining the period of irrigation of corn. Before the next irrigation, the actual soil moisture and the limiting field moisture capacity (LFWC) were very useful in determining the correct date of irrigation. Each successive irrigation was determined based on the actual soil moisture and the limit field moisture capacity (LFWC) indicator.

In 2019, in the control variant of the experiment, the 1st watering fell on June 4, the 2nd watering fell on June 25, the 3rd watering fell on July 7 , and the 4th watering fell on July 25, and finally the 5th watering fell on August 10. The period between successive irrigations was 21-22 days during the pre-irrigation soil moisture content of 70% compared to LFWC in option 1, and 12-13 days during the pre-irrigation soil moisture content of 80% compared to LFWC. In this variant, the soil moisture during the growing season was 70-80-75% in comparison with LFWC.

In the second option, the 1st watering was on June 4, the 2nd watering was on June 26, the 3rd watering was on July 7, and finally the 4th watering was on August 1. Based on that, the 1st irrigation was given on 22 days, the 2nd irrigation on 12-13 days, the 3rd irrigation

on 18-19 days, and the 4th irrigation after 19-20 days. In this option, soil moisture was maintained at 70-80-70% during the growing season compared to LFWC.

In the 3rd option, where the soil salt was not washed, the 1st irrigation of corn was on June 4, the 2nd irrigation was on July 26, and finally the 3rd irrigation was on July 22. The period between irrigations was 25-26 days. In this option, soil moisture was maintained at 70-70-70% during the vegetation period compared to LFWC.

In variant 4, which was washed with soil salinity in November, the 2nd irrigation was carried out on June 24, the 3rd irrigation on July 9, the fourth irrigation on July 28 and the 5th irrigation on August 12. The period between successive irrigations was 19-20 days in the period when the pre-irrigation soil moisture was 70% compared to LFWC in option 4, and 14-15 days in the period when the pre-irrigation soil moisture was 80% compared to LFWC was kept at 70-80-75%.

In option 5, the 2nd watering was carried out on June 25, the 3rd watering on July 10, and the fourth watering on August 2. The period between successive irrigations was 19-22 days when the soil moisture was 70% relative to LFWC during the growing season, and 14-15 days when the soil moisture was 80% relative to the LFWC during the growing season. In this option, soil moisture was maintained at 70-80-70% during the growing season compared to LFWC.

In the 6th option, the 1st irrigation of corn fell on June 5, the remaining irrigations, including the 2nd irrigation, were carried out on July 27, and finally, the 3rd irrigation was carried out on July 21. The period between the next irrigations was 24-25 days in the fourth option. In this option, the soil moisture was kept at 70-70-70% compared to LFWC during the growing season.

In option 7, which was washed with soil salinity in February, the 2nd irrigation was carried out on June 25, the 3rd irrigation on July 10, the fourth irrigation on July 29 and the 5th irrigation on August 14. The period between successive irrigations in the 7th option was 19-20 days in the period when the pre-irrigation soil moisture was 70% compared to LFWC, and 14-15 days in the period when the pre-irrigation soil moisture was 80% compared to LFWC. In this variant, soil moisture was kept at 70-80-75% during the growing season compared to LFWC.

In option 8, the 2nd watering was carried out on June 27, the 3rd watering on July 11, and the fourth watering on July 3. The period between successive waterings was 20-21 days in the period when the pre-irrigation soil moisture was 70% compared to LFWC in option 8, and 14-15 days in the period when the pre-irrigation soil moisture was 80% compared to LFWC. In this option, the soil moisture during the vegetation compared to LFWC was kept at 70-80-70%.

In the 9th option, the 2nd irrigation was carried out on June 28, and the 3rd irrigation was carried out on July 23 **.** The period between the next irrigations was 24-26 days in the seventh option. In this option, the soil moisture was kept at 70-70-70% during the vegetation period compared to LFWC.

In the control variant, due to the fact that the soil salt was not washed, the process of coming to the next water of corn was accelerated, because during the growing season of the plant, there was not enough moisture in the soil for the growth and development of the plant (6,7). In experimental options (options 4, 5, 6) where the soil salt was washed in November, the next irrigation period was delayed by 2-3, and in some cases, 4-5 days. The main reason for this is that the soil is provided with a sufficient amount of moisture reserves in the process of washing the soil salt, and the loss of this moisture caused a slight delay in the irrigation period. According to our analysis, in these options (options 4, 5, 6), the soil capillaries were restored due to the washing away of harmful salts from the soil, and in early spring, the moisture in the lower layer was accelerated up through the capillary pores, due to which the moisture reserve in the soil reached the next irrigation.

In the experiment, it was noted that the next irrigation was slightly delayed due to the washing of soil salt in February. The main reason for this is that the moisture in the soil was preserved for a long time during the washing of the soil salt in February, and the loss of this moisture caused a slight delay in the irrigation period (9).

In the experiment, the sorghum used enough of the soil moisture reserves from the time it sprouted until flowering. We can also know this from the water consumption indicators of the sorghum. In the experiment, it was reported that sorghum satisfied its water demand by 30-33% from rain and reserve water. (7,8) Only one It should be noted that in 2019-2020, when the soil moisture was 70% relative to LFWC, the period between watering was 21-22 days, and when it was 80% relative to LFWC, the period between sorghum irrigation was 14-15 days, in 2021, the period between sorghum irrigations was 1. It was reduced by 2 days or the plant came to water early. This year, precipitation was 30-40% less than in 2019-2020.

In these years, when the water shortage is increasing, keeping the soil moisture at the level of 75-80% LFWC during the growing season raises the level of seepage water, makes it possible to re-salinize the soil, and worsens its amelioration condition. In order for sorghum to properly use soil moisture during its growth and development, it is advisable to schedule irrigation from 14-15 days to 19-20 days based on the plant's development phases.

**Table 1 The irrigations date, number, of corn and period between them, data for 2019.**

| Option no | 1-watering | | 2-irrigation | | 3-watering | | 4-watering | | 5- watering | |
|---|---|---|---|---|---|---|---|---|---|---|
| | watering period | day | watering period | day | watering period | day | watering period | day | watering period | day |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| **1.** | 4.06. | 21-22 | 25.06. | 12-13 | 7.07 | 18-19 | 25.07. | 16-17 | 10.08. | |
| **2 .** | 4.06. | 21-22 | 26.06. | 12-13 | 7.07 | 18-19 | 1.08 | | - | |
| **3.** | **4.06.** | **21-22** | **26.06.** | **25-26** | **19.07** | **-** | - | | - | |
| **4.** | 5.06. | 19-20 | 24.06. | 14-15 | 9.07 | 21-22 | 27.07. | 16-17 | 12.08. | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **5 .** | 5.06. | 19-20 | 25.06. | 14-15 | 10.07 | 21-22 | 2.08 | | |
| **6.** | **5.06.** | **21-22** | **27.06.** | **24-25** | **21.07** | | | | |
| **7.** | 6.06. | 19-20 | 25.06. | 14-15 | 10.07 | 18-19 | 29.07. | 15-16 | 14.08. |
| **8.** | 6.06. | 20-21 | 27.06. | 13-14 | 11.07 | 21-22 | 3.08 | | |
| **9.** | **6.06.** | **21-22** | **28.06.** | **24-25** | **23.07.** | | | | |

**Table 2 The irrigations date, number, of corn and period between them, data for 2020**

| Option no | 1-watering | | 2-irrigation | | 3-watering | | 4-watering | | 5-watering | |
|---|---|---|---|---|---|---|---|---|---|---|
| | watering period | day | watering period | day | watering period | day | watering period | day | watering period | day |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| **1.** | 9.06. | 19-20 | 28.06. | 13-14 | 12.07 | 14-15 | 27.07. | 15-16 | 12.08. | |
| **2.** | 9.06. | 19-20 | 29.06. | 14-15 | 14.07 | 15-16 | 29.08 | | - | |
| **3.** | **9.06.** | **22-23** | **2.07.** | **23-24** | **25.07** | | - | | - | |
| **4.** | 10.06. | 18-19 | 29.06. | 14-15 | 14.07 | 13-14 | 28.07. | 14-15 | 14.08. | |
| **5.** | 10.06. | 19-20 | 30.06. | 14-15 | 15.07 | 14-15 | 30.07 | | | |
| **6.** | **10.06.** | **22-23** | **3.07.** | **25-26** | **27.07** | | | | | |
| **7.** | 11.06. | 19-20 | 2.07. | 12-13 | 15.07 | 14-15 | 30.07. | 14-15 | 14.08. | |
| **8.** | 11.06. | 18-19 | 29.06. | 14-15 | 14.07 | 14-15 | 1.08 | | | |
| **9.** | **11.06.** | **22-23** | **3.07.** | **25-26** | **28.07.** | | | | | |

**Table 3 The irrigations date, number, of corn and period between them, data for 2021**

| Option no | 1-watering | | 2-irrigation | | 3-watering | | 4-watering | | 5-watering | |
|---|---|---|---|---|---|---|---|---|---|---|
| | watering period | day | watering period | day | watering period | day | watering period | day | watering period | day |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| **1.** | 7.06. | 18-19 | 26.06. | 13-14 | 8.07 | 14-15 | 23.07. | 16-17 | 10.08. | |
| **2.** | 7.06. | 18-19 | 25.06. | 14-15 | 9.07 | 18-19 | 28.07 | | - | |
| **3.** | **7.06.** | **23-24** | **1.07.** | **23-24** | **25.07** | | - | | - | |
| **4.** | 8.06. | 17-18 | 25.06. | 13-14 | 9.07 | 14-15 | 24.07. | 16-17 | 12.08. | |
| **5.** | 8.06. | 17-18 | 25.06. | 14-15 | 10.07 | 18-19 | 29.07 | | | |
| **6.** | **8.06.** | **22-23** | **2.07.** | **22-23** | **25.07** | | | | | |
| **7.** | 9.06. | 16-17 | 25.06. | 14-15 | 9.07 | 14-15 | 24.07. | 16-17 | 12.08. | |
| **8.** | 9.06. | 16-17 | 26.06. | 15-16 | 12.07 | 19-20 | 2.08 | | | |
| **9.** | **9.06.** | **22-23** | **2.07.** | **23-24** | **26.07.** | | | | - | |

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