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EFFECT OF MICROELEMENTS (B, ZN) ON PRODUCING OF COTTON PLANT'S DRY MASS

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Abstract

This article presents the results of the study of the effect of microelements on the leaf area, plant height formation and yield of cotton in the conditions of the gray soil of the Zarafshan Valley.

The optimal rate of using microelements had a positive effect on the leaf area and dry mass of cotton plants.The highest result was observed when $N_{200}P_{140}K_{100}$ +KUPRUMHITE+NANOSEREBRO kg/ha was applied with mineral fertilizer.

Keywords: fertility, cotton, organic fertilizers, physiological process, biometrical measures,micronutrient, productivity.

1.Introduction

Today famine is becoming one of the most serious global problems. The reason for that is the increase in the number of the world population, moreover the weather and soil conditions are changing dramatically. Also, the lack of micronutrients in plants causes a decrease in the yield of plants [7].In order to meet the demand for food, it is necessary to increase the productivity of agricultural crops on the available land, to achieve more food production more crops should be planted on per unit of the currently available cropland [3].As a result of the positive effect of microelements, the amount of chlorophyll in the leaves increases, photosynthesis increases, and the assimilative activity of the whole plant increases. [9]. Deficiency of microelements causes defects in the growth and development of agricultural crops, their development is delayed, resistance to adverse conditions decreases, and they are often damaged by diseases and pests [8].

To meet the food demand of the growing world population, food production needs to be greatly increased. At the same time, the increase in the world's population due to urbanization and intensive farming puts serious pressure on the available agricultural land [1]. The rapid growth of the population and the reduction of arable

land to a certain extent create the need for the development and scientific justification of measures to increase soil fertility, improve the weight and quality of crops obtained from agricultural crops [5].

Taking into account the ecological problems, the use of micronutrients in combination with proper agrotechnical methods appears to be the most sustainable and cost-effective solution for alleviating food shortages. Reducing the use of macrofertilizers can provide a number of advantages, such as tolerance to abiotic and biotic stresses. The use of microfertilizers which are rich in biologically available microelements is the most optimal way to improve the nutritional status of the land [2].

To meet the demand for food, it is necessary to increase the agricultural production on the available land. This means that to achieve more food production, to produce more agricultural products on per unit of currently available cropland is very crucial [3]. After increasing the amount of fertilizer, higher yields on per unit area led to greater depletion of micronutrients in the soil, and less attention was paid to micronutrient fertilization.

Currently, micronutrient deficiency has become a limiting factor in the productivity of many agricultural lands around the world. (6) Currently, intensive crop cultivation, high yield production, improvement of agricultural mechanization, and micronutrients with low mixtures of macronutrients, the production of fertilizers and the use of modern irrigation systems have increased crop production per unit area and the amount of trace elements in the soil increased [4].

2.Object and Methods of Research

For high yield of cotton, it is necessary to produce a number of physiological processes in it, that is,to obtain dry mass by obtaining the leaf level, and to obtain a high yield by increasing the dry mass was the basis of the experiment.The main purpose was to change increase several physiological parameters of cotton and thereby obtain a high yield. The purpose of this was to change several physiological indicators of cotton and thereby obtain a higher yield.Our purpose , by increasing the leaf level of cotton, it was possible to accelerate the photosynthesis process, to achieve high productivity by increasing the amount of dry mass.

2.1.METHODS.

All analyses, phenological observations, calculations were performed based on generally accepted methodologies [11]. The amount of dry matter was determined by L. G. Tretyakov, A. S. Sulaymonov method by drying in a drying cabinet to a constant mass. Our research was conducted in the graysoils of Pastdargom district of Samarkand region in 2020-2022. We used the "Omad" variety of cotton in our research. This variety is planted in large areas in Samarkand region.

Climate and soil conditions of the research area. limatic conditions.

The growth and development of plants depends on the weather conditions of a particular region, and the agrotechnological processes used to obtain a high and quality harvest should be suitable for this.

The irrigated areas of the Samarkand region belong to the mountainous region and are characterized by a sharply continental climate. It is characterized by an unexpectedly changing climate, drought, heat and light, cold winter, relatively warm and humid spring, dry, hot summer. In autumn, thereare often sharp changes in temperature, short-term frosts, precipitation sometimes turning into snow. The main reasons for such sudden changes are the presence of deserts and mountain ranges in the region, as well as the extension of the territory. The climate of Pastdargom district is sharply continental, the average annual temperature is 13.40C, the average temperature in January is - 1.20C, the average temperature in July is 270C, the highest temperature is 450C, the average annual precipitation is 312 mm, mainly in winter and spring. it rains The relative humidity of the air during the growing season is 44-54%, the hottest month of the year is July and the coldest month is January.

Soil conditions. In the territory of Pastdargom district of Samarkand region, typical gray soil, light- gray soil, dark-gray soil are considered. Gray soils occupy an area of 2635 thousand hectares in Uzbekistan or 6.40% of the total area of the Republic. Gray soils are moistened at a depth of 40-120 cm, depending on the weather (natural climate). In gray soils, plant-unusable moisture (withering moisture) is dark in color and 1.5-2 times less than intypical gray soils. This is definitely due to the lightness of the mechanical structure of the soil, the slightly smaller moisture capacity [10].

We conducted our field experiments in a typical gray soil area.

3.Results Obtained and Their Analysis

Table 3 shows the results of the effect of trace elements on dry mass accumulation of cotton.

Table 3. The effect of microelements on the produce of cotton plant's dry mass. (g).

Options	Cinnabar	Polishing	Flowering	Ripening
Control variant	1,54	3,85	26,61	106,13
$N_{200}P_{140}K_{100}$+B0.05%	1,56	4,24	27,60	127,28
$N_{200}P_{140}K_{100}$+B0.02%	1,57	4,51	30,61	122,83
$N_{200}P_{140}K_{100}$+Zn 0.05%	1,55	4,49	29,74	122,40
$N_{200}P_{140}K_{100}$+Zn 0.02%	1,57	4,40	27,77	118,67
$N_{200}P_{140}K_{100}$+ KUPRUMHITE+NANOSEREBRO	1,58	4,56	30,83	129,33
$N_{200}P_{140}K_{100}$+PMK XZ-Co^{2+}	1,56	4,41	28,96	120,18
$N_{200}P_{140}K_{100}$+KUPRUMHITE	1,56	4,43	30,58	123,32
$N_{250}P_{175}K_{125}$+B0.05%	1,57	4,51	30,89	129,21
$N_{250}P_{175}K_{125}$+B0.02%	1,61	4,47	32,48	125,68
$N_{250}P_{175}K_{125}$+Zn 0.05%	1,57	4,52	32,31	124,48
$N_{250}P_{175}K_{125}$+Zn 0.02%	1,59	4,45	31,92	126,19
$N_{250}P_{175}K_{125}$+ KUPRUMHITE+NANOSEREBRO	1,70	4,72	36,65	135,33
$N_{200}P_{175}K_{125}$+PMK XZ-Co^{2+}	1,57	4,62	33,20	124,72
$N_{250}P_{175}K_{125}$+KUPRUMHITE	1,55	4,66	33,93	126,56

The obtained results show that in the period of 3-4 cinnabar, the dry mass is 1.54 g in the control variant, and in the 1st variant, the dry mass is 1.56 g, in the 2nd variant, the dry mass is 1.57g, and in the 3rd variant, the dry mass is 1.55g. In option 4, the dry weight is 1.57 g, in option 5, the dry weight is 1.58 g, in option 5, the dry weight is 1.56 g, in option 6, the dry weight is 1.56 g, and in option 7, the dry weight is 1.57 g, and in option 9, the dry mass is 1.61 g, and in option 10, the dry mass is 1.57 g, and in option 11, the dry mass is 1.59 g, and in option 12, the dry mass is 1.70 g, 13

- in the variant, the dry mass was 1.57 g, and in the 14th variant, the dry mass was 1.55 g.

In the planing phase, the dry mass in our control option is 3.85 g, in the 1st option the dry mass is

4.24 g, in the 2nd option the dry mass is 4.51 g, in the 3rd option the dry mass is 4.49 g, and in the 4th option dry mass is 4.40 g, and in option 5, dry mass is 4.56 g, and in option 5, dry mass is 4.41 g, and in option 6, dry mass is 4.43 g, and in option 7, dry mass is 4.51 g, 9 - the dry mass in the option is 4.47 g, in the 10th option the dry mass is 4.52 g, in the 11th option the dry mass is 4.45 g, in the 12th option the dry mass is 4.72 g, and in the 13th option the dry mass is 4 ,62 g, and in option 14, the dry mass was 4,66 g.

In the flowering phase, the dry mass in the control variant is 26.61 g, in the 1st variant, the dry mass is 27.60 g, in the 2nd variant, the dry mass is 30.61 g, in the 3rd variant, the dry mass is 29.74 g, and in the 4th variant, the dry mass is 29.74 g. mass is 27.77 g, and in option 5, dry mass is 30.83g, and in option 6, dry mass is 28.96 g, and in option 7, dry mass is 30.58 g, and in option 8, dry mass is 30.89 g, In option 9, the dry weight is 32.48 g, in option 10, the dry weight is 32.31 g, in option 11, the dry weight is 31.92 g, in option 12, the dry weight is 36.65 g, and in option 13, thedry weight is 33.20 g, and in option 14, the dry mass was 33.93 g. In the ripening phase, the dry mass in the control variant is 106.13 g, in the 1st variant, the dry massis 127.28 g, in the 2nd variant, the dry mass is 122.83 g, in the 3rd variant, the dry mass is 122.40 g,and in the 4th variant, the dry mass is 122.40 g. mass 118.67 g, and in option 5 dry mass 129.33 g,in option 5 dry mass 120.18 g, in option 6 dry mass 1233.32 g, in option 7 dry mass 129.21 g, andin option 9 dry mass is 125.68 g, and in option 10, dry mass is 124.48 g, and in option 11, dry mass is 126.19 g, and in option 12, dry mass is 135.33 g, and in option 13, dry mass is 124.72 g , and in option 14, the dry mass was 126.56 g.

Conclusion

1. It was found that the dry mass accumulation of cotton grown in the conditions of Samarkand region is the highest in the flowering and ripening phases.
2. The dry mass formation of cotton increased rapidly with nitrogen fertilizers N200P140K100kg/day, and it was observed that the increase of fertilization had little effect on the increase of dry mass.
3. It was found that the most favorable rate of nitrogen for cotton grown in the conditions of Samarkand region is 200 kg per hectare, and in this, dry mass is formed from 118.67 to 129.33 g.

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