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ADVANTAGES OF USING NATURAL AGRO-ORES IN WINTER WHEAT CULTIVATION UNDER NON-IRRIGATED CONDITIONS

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Abstract. *The article presents the results of a field experiment conducted on the effect of bentonite clay on the growth, development and productivity of winter wheat in the dry conditions of Nurota district. In field experiments, bentonite clays were used for seed coating before planting and foliar feeding in combination with organo-mineral fertilizers.*

Key words: *dry land, winter wheat, crop elements, plant height, yield, bentonite clay, suspension.*

Today, it is known to everyone that the problem of providing food to the population is becoming more acute every year, due to the sharp increase in the population of the Dunes, and as a result, the gap between the volume of food production and growth.

Europe and Asia are home to 70% of the world's population, but this region contains 39% of the world's fresh water. If we take into account that only 40,000 km 3 of the existing 1.4 billion km 3 water reserves are suitable for consumption, and a large part of it is in glaciers, it becomes clear how serious the problem is. Because most of these waters are not used to irrigate the land. In our republic alone, more than 90% of water is used for land irrigation [2].

According to the FAO, in order to regularly provide the population with food products, soil protection and resource saving technologies in agriculture have been introduced in more than 190-205 million hectares of land in the world, which covers 14.7% of arable land in all continents and agricultural ecological regions [6].

Chronic cultivation of grain crops for many years, extremely inefficient use of local and mineral fertilizers, sharp reduction of leguminous crops and alfalfa areas planted on clean and busy plows, deep degradation (degeneration) of soils and many other natural and anthropogenic factors directly depend on the amount of precipitation. remains the same: the yield of grain crops is 6-8 t/ha in dry lands in years with good weather, and only 3-4 t/ha in dry years. Planting crops without cultivating the soil, leaving plant residues in the upper layers of the soil, diversifying crops and implementing other measures will provide an opportunity to fully meet the needs for growing agricultural products in the future by increasing the yield of grain crops grown in drylands.

It is known from many years of experience and observations that for many years, grain crops are planted, organic and mineral fertilizers are used in small amounts, and in the coming years, when the weather is dry, grain crops are affected by various diseases and pests, but no measures are taken against them [3].

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The introduction of agrochemical raw materials that do not contain enough macro and micronutrients for the production of new types of agriculture can improve soil fertility and increase productivity.

Natural minerals can be a worthy competitor to mineral and organic fertilizers, because such minerals contain a wide range of nutritional elements and do not require large amounts of money for their direct extraction and application in nearby areas.

Existing non-traditional mineral raw materials, due to their large reserves and low cost, are significant for their high efficiency in replacing some missing minerals in agriculture or as additional nutrients [5].

Bentonite sludge has a good effect on the water-physical and physico-chemical properties of the soil, and it contains 20-60% or more magnesium montmorillonite mineral.

In addition, bentonites are a source of nutrients for plants, they contain 0.3-4.7% carbon, 0.4-3.0% potassium, 0.3-1.0% phosphorus.

In addition, there are many microelements: copper, zinc, boron, cobalt, molybdenum, manganese, sulfur. Bentonite slurries from the soil layer where plant roots are spread prevent mobile nutrients and humus from being washed away by water and increase carbon, nitrogen, phosphorus and potassium reserves in the soil [7].

It has been established that agro-ores have a wide influence on physiological biochemical processes in plants. In particular, it increases the germination capacity of seeds by 10-12%, increases the amount of chlorophyll by 2.5-3.0 times and increases the productivity of photosynthesis. When bentonite slurry is used as a fertilizer, cotton yield is 2.5-9.3 t/ha, alfalfa mass is 78.4-98.7 t/ha, wheat yield is 4.4-5.1 t/ha, barley yield is 5 ,5-7.1 t/ha, mash grain yield 1.9-3.5 t/ha, sugar beet root yield increased by 18%.

In the cultivation of winter wheat, it is advisable to use the method of feeding the plant from the leaves in addition to the roots. Foliar feeding is effective in growing winter wheat, even under conditions of high grain yield [1].

1. In March, second feeding of grain with nitrogen fertilizers and foliar suspension treatment accelerates the development process of grain sprouts. Based on this, it is advisable to hold the suspension spraying event 2 times during the month of March. Foliar feeding accelerates the photosynthesis process of the plant, increases resistance to diseases and pests due to thickening of the leaf surface. The growth and development of plants accelerates as a result of the increase in organic matter produced in plant leaves. Therefore, in addition to macroelements of nitrogen, phosphorus and potassium, it is effective to sprinkle and feed with complex fertilizers, which contain microelements absorbed by plant leaves, such as boron, molybdenum, copper, iron, 2 times in March and 1 time in April using special spray devices [4].

In order to determine the effect of bentonite clay powder on growth and development, 4 replicates of 12 options were placed in one layer in the dry field of the Nurota district "Umrbek" farm.

In order to determine the initial agrochemical parameters of the soil of the experimental field, mixed soil samples were taken from 0-40 cm plowed and 40-70 cm under plowed soil layers from 5 points of the field in the general background before planting.

According to the results of the chemical analysis of the soil of the experimental field, the amount

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of humus in the soil of the 0-30 cm layer is 0.21%, total nitrogen is 0.020%, total phosphorus is 0.16%, nitrate nitrogen is 11.9 mg/kg, mobile phosphorus is 10.06 mg. /kg and the amount of exchangeable potassium was 72.1 mg/kg, the amount of these substances in the soil in the 30-50 cm layer was 0.07%, 0.008%, 0.087%, 8.8 mg/kg, 6.7 mg/kg and 61.8 mg/kg.

In the experimental field, the seeds of Surkhak-5688 variety of wheat, recommended for cultivation in dry conditions, were sown in the autumn period, coated with bentonite clay in different proportions.

During the growth period, wheat leaves were fed with a suspension of different composition 3 times in the tillering (autumn), tuber and spike phases, and the changes in growth development were recorded.

According to the results of the biometric measurements carried out in the experiments, the height of the plants changed to 9.3, 43.5, 63.9, 65.1 and 65.6 cm in the control option during the periods of budding, tuberting, spike flowering and ripening. kg/t was observed to change up to 10.5, 52.3, 74.1, 76.6 and 77.1 cm respectively in the control variant planted with husks.

The height of the plants in the stages of budding, earing and ripening is proportionally 12.2, 77, in the cases where the seeds were sown in a shell with bentonite clay at a rate of 50 kg/t and fed only with urea suspension (at the rate of 5-7 kg/ha depending on the growth period) and 80.3 and 13.2, 78.6 and 81.8 cm.

Similarly, in both types of seed planting, during the growing season, these indicators were 14.5, 81.2, and 14.5, 81.2, and 14.5, 81.2 It was found that it changed to 84.3 cm and 15.5, 83.7 and 85.3 cm.

The highest results were recorded in the variants where wheat seeds were sown in experimental fields covered with bentonite clay and "Hectar" complex preparation was used in foliar feeding together with bentonite clay powder. According to it, it was observed that the height of plants in 5 development phases reached 16.2, 62.8, 83.3, 85.5 and 86.0 cm.

The use of bentonite clays in shelling and foliar feeding of winter wheat seeds grown under dry conditions showed positive results in the formation of wheat crop elements.

In particular, the length of the spike is 0.9 cm longer, the number of spikes in the spike is 0.8, the number of grains in the spike is 3.0, the mass of grains in one spike is 0.1, and the mass of 1000 grains is 3.5. g was observed to be high.

In the variant that sowed its seeds without shelling, but used bentonite clay together with urea for foliar feeding, it was 3.9 pieces or 0.3 g more per spike than when only urea was used.

A positive result was observed in the variants fed from leaves with "Hectar" complex and bentonite mixed suspension in both shelling conditions. According to it, the length of the spike was 10.1 and 11.2 cm, the number of grains in the spike was 50.8 and 54.2, and their mass was 1.9 and 2.1 g.

In experimental fields, the use of bentonite clay suspension in combination with mineral fertilizer in shelling seeds with bentonite clay and foliar feeding played an important role in the high yield of winter wheat.

It was noted that 8.2 and 9.3 t/ha, i.e., 130.1 and 150.7% additional yield was obtained from plots using bentonite clays in combination with urea and "Hectar" complex in peeling and foliar feeding.

In the same suspension backgrounds, the result index in the seedlings planted without shelling

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was 6.6 and 7.0 t/ha, i.e., 104.7 and 111.1% additional yield compared to the control.

In conclusion, in our experiments, it can be stated that the use of bentonite clay seeds in shell and foliar feeding with organo-mineral fertilizers is effective for the growth of the Surkhak-5688 variety of winter wheat grown in dry conditions, the formation of crop elements and the yield index.

Bentonite clay's sorption property, rich in microelements, gave a positive result in the germination of seeds without stress when they were planted in the shell, and it was found that the same properties are enhanced when they are fed with fertilizers.

References

1. Vafoeva M. An innovative approach to increase the yield of winter wheat // Agro science - Agriculture and water management of Uzbekistan #3. 2020. P.28-29.

2. Muradov P.M, Isakhanov X, Khalikov Sh.Sh "Developments created by Namangan region" International scientific and practical conference 2020. 238 p.

3. Nurbekov A.I., Nurbekova R.A., et al. "Practical importance of soil protection and resource saving technologies in agriculture in dry regions of Uzbekistan" https://humoscience.com/index.php/pdce/article/download/1434/2566/1353).

4. Teshaev Sh., Siddikov R., Torakulov Q. Grain care is the land of abundant harvest // Agriculture and water management of Uzbekistan #3. 2020. P. 8-10.

5. Vakanjac Branimiz. New and unconventional non-metallic raw materials in Yugoslavia, 1988. P. 25-32.

6. Kassam, A., Friedrich, T. and Derpsch, R. 2021. Successful experiences and learnings from Conservation Agriculture Worldwide. Keynote Address, Sub-Theme. 8th World Congress on Conservation Agriculture, 21–23 June 2021, Bern, Switzerland (vol. 1).

7. Zookatalog.ru/index.php main, page.