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THE IMPORTANCE OF MICRONUTRIENTS IN PLANT LIFE. (IN THE EXAMPLE OF THE ELEMENTS BORON AND MANGANESE).

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Abstract:

After gaining independence, a number of measures have been taken to study the nature of our country, restore our national values and focus on agriculture. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan dated November 3, 2015 No 311 to radically improve the quality of training of highly educated personnel in agriculture and water management, the active introduction of advanced teaching methods using modern high-performance pedagogical and information and communication technologies. Much attention is paid to the training and retraining of teachers and specialists in agriculture and water management. All this is aimed at the development of agriculture, and this work continues to this day. On April 17, 2019, President Shavkat Mirziyoyev also signed a decree "On improving the system of public administration in agriculture." This is also an important focus on agriculture.

Keywords: Elements, microelements, manganese, specific, innovation, molybdenum, agricultural, sulfur, potassium, calcium, iron, chalk

Training and retraining of agricultural workers requires them to improve their knowledge and skills, to create new ideas and innovations. Taking advantage of such opportunities, every agricultural worker should make a worthy contribution.

Without the essential elements for plant nutrition, plants cannot complete their developmental cycles and cannot be replaced by another. With this in mind, it is necessary to provide the plant with the necessary nutrients, taking into account their need for nutrients at certain stages of development. Of course, we must not forget the need of plants for trace elements.

The amount of microelements in the various organs of plants is distributed according to a certain pattern. For example, manganese and molybdenum are found in large amounts in the leaves of plants, zinc, boron, cobalt, and copper in the vegetative and generative organs, in the grains of cereals, and in the vegetative organs of most legumes. Plants specific to different biological groups also vary depending on their demand for specific concentrations of microelements. For example, corn and tobacco are demanding of zinc, while cereals are demanding of manganese and molybdenum.

Although elements such as manganese, boron, molybdenum, copper, zinc, cobalt, iodine, vanadium are found in small amounts in plants, they play an important role in the basic biochemical and physiological processes that take place in the plant body. These elements are called microelements.

Sodium, magnesium, phosphorus, sulfur, potassium, calcium, iron, chalk, manganese, and other elements remain in the ash when plants are burned, so they are called ash elements.

Some varieties of sugar cane may contain more than 20% gray elements in the leaf.

At present, the development of scientific knowledge shows that 20 elements are the most essential elements for plant nutrition, 12 elements are conditionally necessary elements.

Fertilizers are created by providing plants with nutrients and creating a favorable environment to increase their productivity, mainly through the use of mineral, organic, lime fertilizers and fertilizers containing micronutrients. The use of fertilizers should not only increase crop yields, but also affect the continuous improvement of soil fertility.

When applying micronutrients, care should be taken that the field is supplied with micronutrients and the plant to be planted.

Manure contains trace elements, manganese, cobalt, copper, zinc and molybdenum. If 300 tons of manure is applied to 1 hectare, it will add 10 tons of ash, including 150 kg of nitrogen, 330 kg of phosphorus, 150 kg of potassium, 600 g of manganese, 100 g of barium, 600 g of calcium, 120 g of molybdenum, 60 g of cobalt. enters.

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Bor. Barium is present in very small amounts in plants. 1 mg per 1 kg of dry matter. Various plants consume from 20 g to 270 g per hectare. The lowest amount of bar is observed in grain content. Nevertheless, the synthesis of available carbohydrates, their change and movement in plants, the formation of genitals, fertilization, root growth, oxidation-reduction processes, protein and nucleic acid metabolism, synthesis and movement of growth stimulants have a major impact. The presence of boron is also associated with the activity of enzymes, osmotic processes and hydration of plasma colloids, drought and salt resistance of plants, the content of plant vitamins - ascorbic acid, thiamine, riboflavin. Absorption of boron by plants increases the consumption of other nutrients. This element is unable to pass from old plant tissue to young. Boron and Molybdenum - Accepted in plants in the form of boron and molybdate anions.

When there is not enough. The buds, veins, and leaves at the top dry out; flowering stops, the nodes shed. When the growth point in the tomato dries, many side shoots are formed, resulting in a gabitus (appearance) that grows in clusters on the plants. The leaves and stems of the plants become very mortal. The flowers in the bunches are shed. In the fruit bands close to the fruits appear paths of dried tissue in the form of brown spots. The stems are very brittle. In cucumbers, the space between the joints is very short, and the plants have the appearance of deafness (short stature). The first signs appear on the youngest leaves at the ends of the stems. They are orange in color and the edges bend downwards, thicken and harden.

With boron deficiency, plant growth slows, the growth points of buds and roots are destroyed, buds do not open, flowers fall, cells in young tissues break down, cracks appear, plant organs darken and take on an irregular shape.

Manganese. Manganese, like copper, plays an important role in redox reactions that occur in plants; these processes are part of the enzymes that occur. Manganese is involved in photosynthesis, respiration, carbohydrate and protein metabolism. It accelerates the flow of carbohydrates from the leaves to the roots. In addition, manganese is involved in the synthesis of vitamin C and other vitamins; it increases the amount of sugar in the roots of sugar beets, the protein in the grain.

Manganese starvation is most often observed in calcareous, peat, and highly calcareous soils.

The amount of manganese in plants varies. For example, winter wheat grain contains -60 mg / kg, sunflower seeds - 18 mg / kg, sugar beet leaves - 180 mg / kg (relative to the weight of dry matter).

The chemical composition of soils in Central Asia was found to contain 0.60% Mn.

Manganese is accepted in the form of both cations and anions.

Lack of manganese. Chlorosis occurs between the veins; the veins remain blue, and the leaf has a patterned colorful appearance. In tomatoes, initially the leaves in the middle joint and the leaf areas away from the main root turn yellow. Due to the excessive lack of manganese, tiny necrotic spots appear even near the main veins. Young leaves do not ring. A marble layer is formed on the cucumber leaf plates. Chlorosis is more pronounced at the edges and tips of leaves, necrotic spots resembling spots appear on the leaf plate. External signs (symptoms) appear more often on middle-aged leaves. In the absence of manganese, photosynthesis is reduced and the amount of chlorophyll in the cells is reduced. Lack of manganese leads to the formation of hungry spots on cereals. Black and brown spots appear on the pea grain.

With a deficiency of this element, the development of the root system and plant growth slows down and yields decrease. Animals that consume foods low in manganese suffer from weakening of the tendons, their skeleton is poorly developed. In turn, excessive amounts of soluble manganese observed in highly acidic soils can adversely affect plants. The toxic effects of excess manganese are eliminated by liming.

In conclusion, we can say that the plant needs less micronutrients than macronutrients. Yet how important these micronutrients are in plant life. When we grow a plant, we must take into account its need for micronutrients. Plants need to be provided with these elements in a timely manner. Then the needs of plants for these micronutrients will be met, and they will be able to get a quality and abundant harvest.

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