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Research Article

GROWTH AND DEVELOPMENT OF AGRICULTURAL PLANTS OF ELECTROIMPULSE TILLAGE

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ABSTRACT

This article discusses the effect of electroimpulse tillage on the growth and development of agricultural plants. Soil fertility refers to its ability to provide plants with water and nutrients. Soil fertility improves when the land is treated wisely, and on the contrary, it decreases when it is improperly cultivated. Soil fertility is divided into natural and artificial types. Natural fertility occurs under the influence of natural factors. Gray lands that have not yet been touched by human hands have natural fertility. Such productivity can be high or low depending on the natural conditions and factors in the process of soil formation, as well as the organic and mineral composition, chemical and biological properties of the soil.

KEYWORDS

Scientific tillage, fertilizing, melioration, washing harmful salts, draining excess water, agrophysical methods, chemical and biological, electroimpulse.

INTRODUCTION

Soil fertility is divided into potential and effective fertility. Potential fertility indicates the total amount of nutrients in the soil. This includes all the nutrients that plants cannot absorb and easily absorb. Effective

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productivity is determined by the amount of nutrients that plants can absorb in the soil. Fundamentally improving soil properties through scientific tillage, fertilizing, melioration, washing harmful salts, draining excess water, watering when there is not enough moisture, excess Activities such as eliminating alkalinity or acidity, preventing and stopping erosion, convert potential productivity into effective productivity. Cultivated soil is soil that has created favorable conditions for the growth and development of plants and has been cleaned of harmful organisms. The soil is cultivated by biological, agrochemical and agrophysical methods. The biological method includes controlling the synthesis of organic substances in the soil, crop rotation, and the use of bacterial fertilizers. The chemical method includes gypsum for alkaline soils, liming for acidic soils, and fertilizing. Cultivation of the soil by agro-physico-chemical method means leveling of the land, tillage, lowering the level of seepage water with the help of ditches, removing excess water and salt washing, Soil culture is assessed by biological, chemical and physical indicators. Subsoil structure and its importance. The ratio of the volume of the solid phase of the soil and the volume of voids in it is called the structure of the arable layer. Pores in the soil with a diameter of less than 1-2 mm are called capillary, and larger ones are called non-capillary. Water moves only downwards through non-capillary pores. If the capillary porosity increases, that is, if the soil becomes denser, the upward movement of water accelerates. When the ratio of capillary and non-capillary porosity is 1:1, the water, air and nutrient regime of the soil is the most favorable. Air, water, food and heat regimes of the soil depend on the structure of the plowed layer. Soil consists of three phases: solid, liquid and air.

The ratio of the weight of dry soil with a certain structure to the volume it occupies is called the volume mass of the soil and is expressed in g/cm3. Volumetric mass of gray soils is around 1.2-1.4 g/cm3 in the arable layer.

With the help of processing, the plowed layer is given the desired structure. Different plants have different requirements for soil density. Most plants grow well when the soil density is 1.2-1.3 g/cm3. Soil structure and methods of its improvement, the formation of aggregates (lumps) of different sizes by sticking small dust particles together is called soil structure. In the formation of the structure, the organic substance acts as an adhesive, the more humus, the better the soil structure. Depending on their size, the fragments are divided into the following: megastructure (diameter more than 10 mm), macrostructure (diameter 10-0.25 mm) and microstructure (diameter less than 0.25 mm). Microstructure, in turn, is divided into coarse microstructure (0.25-0.01) and fine microstructure (less than 0.01 mm). Lumps with a diameter of 1-3 mm are considered the best lumps. Soils consisting of water-resistant particles are called structurally stable. Soil granularity affects water, air, heat and nutrient regimes. The structure is destroyed under the influence of mechanical, physical, chemical, biological factors.

Mechanical factors include the crushing of grains by the wheels of agricultural machines, working bodies and other forces. The physical factor includes the destruction of the structure as a result of water compressing the air in the soil under pressure during irrigation. Monovalent cations (H+, NÍ4+, K+ , Na+) destroy the soil structure, which is a chemical factor. The biological factor is the breaking down of organic matter by microorganisms. The soil structure is restored by applying organic fertilizers, crop rotation, i.e. by increasing the amount of organic matter.

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Reducing the number of tillages is important in preserving the soil structure

THE MAIN FINDINGS AND RESULTS

If there are not enough nutrients absorbed by the plants in the soil, it is impossible to get the desired harvest from the crops. Nutrients and water are the main elements of soil fertility. The requirement of plants for nutrients depends on the type, variety, and productivity of crops. Meeting the demand of plants in this area is one of the main issues in agriculture.

Nutrition is the basis of growth and development of any living organism, including plants.

The amount of absorption of nutrients in the soil depends on the type, variety, yield of crops and the conditions under which they grow.

Cotton is a very demanding plant for nitrogen, phosphorus and potassium. For example: 56 kg of nitrogen, 23 kg of phosphorus and 53 kg of potassium are required to grow 1 ton of cotton.

Sunflower is also a demanding plant for nitrogen, phosphorus and potassium. 50 kg of nitrogen, 27 kg of phosphorus and 22.8 kg of potassium are consumed from the soil for 1 t of sunflower crop. Roots and nodules require potassium more than phosphorus and nitrogen. Usually, the total amount of nutrients is several tons per hectare of land. For example, according to observations, one hectare of typical gray soil under irrigated farming for more than 100 years contains an average of 59.1 tons of humus, 4 tons of nitrogen, 8 tons of phosphorus, and 28 tons below that. - 73.5 in the 100 cm layer according to the above; 4.97 and 16 tons of nutrients.

The nutrition of plants through the roots depends not only on the fertilizers applied to the ground, but also on the soil environment, the activity of microorganisms, the decay of organic matter, and the use of agrotechnical measures aimed at improving the water, air, and heat regime of the soil.

Plant nutrition is divided into 3 types: autotrophic, microtrophic and bacteriotrophic methods. In autotrophic nutrition, plants absorb oxidized mineral salts dissolved in water from the soil. This method of nutrition is the main one for plants.

Microtrophic nutrition occurs with the help of mycorrhizae.

Nutrition of plants with the help of bacteria is called bacteriotrophic nutrition. Nodule bacteria in the roots of leguminous crops transfer free nitrogen into a form that can be absorbed by plants. Nitrogen is one of the most mobile and important plant nutrients in the soil. Plant roots absorb nitrogen in the soil from nitrates, (NO_2, NO_3) and ammonium (NH_4) salts, which are important sources of nutrition.

The process of decomposition of organic matter and formation of ammonia is called am-monification.

The process of oxidizing ammonia into nitrite and nitric acids is called nitrification.

When plants lack phosphorus, reddish and brown spots appear on the leaves and trunk, the lower leaves fade early, turn dark brown and fall.

Potassium activates the process of photosynthesis, the formation and movement of carbohydrates in plants. Accelerates the growth and development of plants and increases their resistance to adverse conditions. All activities in the management of soil nutrition can be divided into the following groups:

1) Enriching the soil with nutrients;

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2) Transfer of nutrients in the soil that are difficult for plants to absorb to easily absorb them;

3) Creating conditions for plants to easily absorb nutrients;

4) Fight against nutrient depletion in the soil.

Applying mineral and organic fertilizers to the earth, liming acidic soils, plastering alkaline ones, crop rotation, quality work of the soil, improving the structure, maintaining sufficient moisture, and managing the nutritional regime are the main activities.

When manure is added, the natural properties of the soil are improved, that is, the mechanical structure softens heavy soils, and the mechanical structure increases the viscosity and graininess of light soils. Planting leguminous crops as a layer fertilizer has a good effect. Soil water status. Water appears in the soil in the following forms:

1. It is in the state of a chemical compound. It is a crystallization water that enters into the composition of mineral substances and participates in soil formation. It separates from the soil only at high temperature.

2. Evaporative water is formed from the evaporation of moisture in and on the soil. In the soil, steam moves by diffusion, that is, from a place where there is a lot of (dark) steam to a place where it is less. Atmospheric moisture rises up during the day, and partially moves to the soil at night. The transition of water vapor into a liquid state is called condensation. In this way, 70-80 mm of moisture can accumulate in the deserts during the summer months. This condition is especially noticeable in sandy deserts. Therefore, there are more plants in them compared to clay deserts. We passed Mohonkol in the morning with an empty car, studied the soil, and when we returned in the afternoon, the car could not pass the place it had passed in the morning and got stuck in the sand. (Nazarov I.)

3. Sorption combined water. These are waters formed due to molecular attraction of soil particles. This water is of 2 types:

A) hygroscopic water - formed due to adsorption (absorption) of vaporous water on the surface of soil particles. Since hygroscopic water strongly binds to soil particles, it is necessary to heat the soil to 1050 to separate it from the soil. Plants cannot use this water.

B) The surface water is attracted by the soil particles with less force. This is called loosely coupled or veiled water. This water moves slowly and covers the soil particles.

3. Capillary water is free water in the soil, which moves from the bottom up (Minisk gravity) and from the top down through the void. It rises to a height of 5-6 m in the soil and is the main water source for the plant.

4. Gravitational water - water that filters down under its own gravity and reaches the impermeable (waterproof) layer.

Moisture capacity of the soil is the ability of the soil to retain moisture.

Capillary moisture capacity of the soil is the retention of water in the capillary pores of the soil.

The field moisture capacity of the soil is the amount of moisture that is retained for a long time when the soil is naturally wet. It depends on the depth of seepage water, mechanical composition and amount of humus.

The standard moisture capacity of the soil is equal to 50%.

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Evaporation of water from the soil depends on its mechanical composition, structure, wind speed, air temperature and exposure to the sun. The capillary layer reduces evaporation. The amount of soil moisture that is sufficient for each plant is different for each plant. The plant dries up when the moisture content of sandy soils is 2-3%, loamy soils are 4-6%, loess soils are 7-9%, clay soils are 12-15%. (Pankov 1970).

CONCLUSION

In short, annual changes reach a depth of several meters. (Thermal properties, water properties, condition and order of soils are covered in future lectures.)

Wind is one of the main factors in the formation and development of soil, especially active wind (when the speed is 5 m/sec or more). This process is especially important for desert zones.

Wind erosion is commonly referred to as deflation. Erosion is a Latin word meaning "decay". Erosion is directly related to formation of sandy deserts or eolian processes. Desertification, i.e. soil impoverishment, occurs in the desert zone due to salt and dust migration, accumulation, stripping of the soil surface. This process is causing great economic damage to the regions located in the island basin in the following years

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