Teaching Methodology Based on Mutual Integration of Agrochemistry with Biological Sciences

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ABSTRACT

In this article, the teaching of agrochemistry in higher educational institutions is discussed in connection with biological sciences.

Keywords: Transpiration, ash, microelement, photosynthesis, root pressure, ATF, chlorophyll.

In the teaching of agrochemistry in higher educational institutions, it is considered appropriate to combine it with the science of plant physiology. For example, it is extremely important to measure the moisture content of the soil where plants grow when teaching the topic of determining soil moisture. by explaining the nature of the phenomenon of transpiration in plants, the science of agrochemistry is connected with plant physiology. Transpiration is the evaporation of water through the leaves of plants. Water evaporation of plants is a physical process, water becomes intercellular vapor of leaves, diffuses through leaf stomata and is released into the environment. The process of transpiration depends on the quantity and size (larger-smaller) of conducting tubes, the number of labia, the thickness of the cuticle layer, the state of protoplasmic colloids, the concentration of cell sap, etc. Water rises through the stem of the plant, as a result of transpiration, a suction force appears in the cell of the leaves, which absorbs water from the root hairs and reaches the leaf. For example, if we cut a branch and put it in water, it will not wither for a long time, the reason for this is transpiration and suction power. Another importance of transpiration is that along with water, mineral substances absorbed by root hairs are also transported. In addition, transpiration reduces the temperature of the leaves and prevents them from overheating. The influence of external environmental factors on the process of transpiration. The influence of the external environment. The process of transpiration is affected by factors such as light, temperature, wind, humidity. Sunlight ensures the opening of the leaf lobes, increases the permeability of the protoplasm, and contributes to the evaporation of water. Chlorophyll absorbs sunlight, raises the temperature of leaves and increases water evaporation. With increased transpiration, the temperature of the leaves decreases, as a result, the leaves that evaporate water do not heat up. During transpiration, the following changes occur: firstly, it cools, secondly, it prevents excessive turgor, thirdly, it helps the movement

of water towards the leaves, and fourthly, it redistributes and absorbs mineral substances. Evaporation of water from leaves takes place mainly through stomata. The number and size of mouths differ in different fruits. The water absorption of plants depends on the amount of water in the soil, the absorption power of the roots, the depth of placement and the number of root hairs. The force that pushes water to the top of plants is called root pressure. 1877- u. V. Pfeffer determined the osmotic pressure.

In addition, the importance of micronutrients in plant nutrition can be illustrated by the following information on the example of an agricultural crop, for example, potatoes.

chalk - 13,0 . Molybdenum -0,026. Marganets -3,5. Nickel - 0,026 .

Copper - 16,5. Aluminum - 1,05. Iron - 30,0. Kobalt - 0,015.

Rubidium - 5,0 . Iodine - 0,02 . Zinc - 3,0 Bromine - 0,1.

At the same time, in the subject of chemical analysis of plants in agrochemistry, the following information can be given about the chemical elements found in the composition of ash. Plant ash is also used as a fertilizer to feed plants. Because ash contains the following chemicals. In addition, ash is easy to use, store and receive - just burn wood or other natural material.

The exact composition of ash is difficult to determine, as it largely depends on the type of wood burned. The approximate chemical composition of ash is always the same, but the proportion of minerals can vary depending on the type of wood:

1. Calcium. Any kind of ash contains calcium carbonate, calcium silicate, calcium sulfate, calcium chloride. Calcium is necessary for normal plant growth. It is involved in the metabolism of carbohydrates and proteins, so young plants need it especially during the period of active growth. Calcium is also needed for normal functioning. It binds some acids and affects the acidity of the soil. Thanks to calcium, other minerals and nutrients are better absorbed and absorbed by plants.

2. Potassium. It is especially important to feed plants with potassium-containing fertilizer, because most of it is in the cell sap and is easily washed away by water during irrigation and rainfall. Potassium is necessary for the normal process of photosynthesis, carbohydrate metabolism, it increases the activity of enzymes and mainly determines the quality of the fruit.

3. Phosphorus. Phosphorus is an indispensable source of energy for plants. It plays an important role in metabolism, photosynthesis, is part of ATF. A sufficient amount of phosphorus is very important for the normal ripening of fruits. It affects the quality of the fruit and productivity.

4. Magnesium. Magnesium is necessary for the normal process of photosynthesis, it is part of chlorophyll. With a lack of magnesium, the leaves of the plant turn yellow and fall.

5. Sodium. Sodium is responsible for the transfer of carbohydrates, and also increases the resistance of plants to adverse environmental conditions and low temperatures.

In agrochemistry, the most important source of high yield in plants is light. Under the influence of light, plants take in water through the roots and carbon dioxide through the leaves, and carry out the photosynthesis reaction in chlorophyll. also collects nutrients. The fruits of plants grow and ripen due to this photosynthesis phenomenon. Russian scientist K.A. Timiryazev 1865-1875 - u. He recognized that the red spectrum rays absorbed by chlorophyll are the most effective photosynthesis and the cosmic role of green plants, and he defined chlorophyll as "The Sun, Life, Chlorophyll" in his work "Chlorophyll is the mediator of life between the sun and the Earth." gave

In this way, agrochemistry is taught in connection with the science of plant physiology in higher educational institutions, and biology is also taught as a second specialty subject in the chemical education direction of most higher educational institutions. (i.e. these students will become teachers of chemistry and biology). In this way, students will easily master the topics

of agrochemistry and repeat the topics of plant physiology.

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