

INFLUENCE OF SOIL PROVISION WITH PHOSPHORUS AND NITROGEN FERTILIZERS ON BIOELECTRIC POTENTIALS

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The introduction to Japanese Sophora of ammonium sulphate, especially carbamide-formaldehyde fertilizer, with medium phosphorus availability, accelerates the regenerative, i.e. the synthetic ability of cells, which is reflected in the control of such integral indicators of intensity and directivity of metabolic processes, such as oxidation-reduction potential (Eh), pH value and index of prevailing processes (rH_2). Studies have shown that with increasing provision of soil with phosphorus, regardless of the form of nitrogen fertilizers, the dry mass of buds and flowers, as well as the maintenance of routine in them, increases. It should be emphasized that the increase in the biomass of buds and flowers, as well as the maintenance of routine in them, depending on the provision of phosphorus in the medium and high, are not significant.

Key words: phosphorus, nitrogen, ammonium sulfate, synthetic processes, regenerative processes, mineral fertilizers, organic fertilizers, potentiometer.

Introduction. We set out to study the effect of mineral nutrition on the bioelectrical potentials of Sophora Japanese leaf cells, which play an important role in regulating the growth, development, productivity and intensity of biosynthesis of biologically active substances in its raw materials.

Place and methods of research. The experimental work was carried out during 2007-2014 at the agricultural experimental station of the Tashkent State Agrarian University and at the experimental site of the Department of Ecology and Microbiology of the Tashkent Pharmaceutical Institute. To obtain more products, including routine plant were placed according to the scheme 6x6, 6x8 and 8x8m. The plants were grown on the experimental site, in small-scale experiments in a four-fold repetition. The size of each plot has the following values:

- 1) 2160m² (60x36m)
- 2) 2880m² (80x36m)
- 3) 3840m² (80x48m)

Mineral and organic fertilizers were applied in the following doses: N-200 kg /ha, P-180 kg/ha, K-100 kg /ha and semirot manure-20 tonnes /ha.

In the experiments, the following types of nitrogen fertilizers were used: ammonium, nitrate, urea, ammonium sulfate and carbamide-formaldehyde fertilizers. Superphosphate was used as a phosphate fertilizer, and potassium in the form of potassium chloride.

In buds and flowers, the maintenance of routine was determined by the method described in SP XI edition. The pH, Eh and rH_2 values were subjected to the cell juice squeezed from the pre-fixed hot steam of Sophora Japanese leaves. The values of the oxidation-reduction potential Eh and the pH value of the cell sap of the leaves of the above-named plant were determined on a potentiometer LPM-60M with a glass electrode. The rH_2 value was calculated by Clark's formula (Serdobolskiy I.P. 1965)

$$rH_2 = \frac{Eh}{30} + 2pH$$

Results of the research. The results of the studies indicate that the dry seeds of *Sophora Japanese* were not expected to show a difference in the bioelectrical potentials of the embryo-endosperm. They arise only when swelling. Only after this (after 22-24 hours of swelling), the seeds vary in electrical polarity. The potential difference in *Japanese Sophora*, regardless of the forms of nitrogen fertilizers, varies from ± 2 to 35 mv. Regular differences were observed both in the total biomass of the fruit bodies and in the content of biologically active substances in them under the influence of various forms of nitrogen fertilizers.

Studies have shown that with increasing soil availability with phosphorus, regardless of the form of nitrogen fertilizers, the dry mass of buds and flowers, as well as the maintenance of routine in them, increases. It should be emphasized that the increase in the biomass of buds and flowers, as well as the maintenance of routine in them, depending on the availability of phosphorus in the medium and high, are not significant. Such regularities are also observed with respect to the pH, Eh and rH_2 values of the cell sap of leaves, depending on the amount of phosphorus in the soil.

In this regard, we can assume that further increase in the availability of phosphorus from medium to high does not lead to a further increase in the values of the above indices. It should be noted that when introducing ammonium sulphate and carbamide-formaldehyde fertilizer, generative organs are more formed and routinely synthesized, in comparison with other forms of nitrogen fertilizers. This indicates that the synthetic processes and outflow of photosynthetic products from leaves and other plant organs, in this case to the fruiting organisms, are associated with oxidation-reduction potential.

Conclusions.

The introduction to *Japanese Sophora* of ammonium sulphate, especially carbamide-formaldehyde fertilizer, with medium phosphorus availability, accelerates the regeneration, i.e. the synthetic ability of cells, which is reflected in the control of such integral indicators of intensity and directivity of metabolic processes, such as oxidation-reduction potential (Eh), pH value and index of prevailing processes (rH_2).