



Improving the efficiency of boron application on the vineyards during NPK fertilization

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The effect of different doses and time of boron fertilization on growth and development of grape plants were studied on the soils of Terek-Kumskiy sands of Chechen Republic, Russian Federation. The studies have shown that sandy soils of pilot area have a low content of main macronutrients except of potassium. The boron content in the sandy soils varies within wide limits and characterizes this soil as lack of boron content especially in water-soluble boron distribution through the soil profile. It was developed a technique for roots feeding of grapes for the first time, that allows to control chemical processes the NPK uptake by plant roots. The studied process realized by implementation of optimum amount of boron in plant-available form, introduced in a certain phase of plants growth. It helps to improve the efficiency of nitrogen, phosphate, potassium using. It was found that boron improves the movement of growth substances and ascorbic acid from the leaves to the fertile parts and cannot be replaced by other nutrients.

The plants need of boron throughout the growing season. Boron plays an important role in cell division and protein synthesis is an essential component of cell membranes. The use of boric acid as a fertilizer to increase the number of ovaries on grape plants, stimulating the formation of new points of stems and root growth, increased the number of shoots, improved growth, increased the sugar content of the grapes and taste of the fruit, which is a result of more active uptake of boron by grapes. The optimal dose of boron fertilization on the sandy soil and the comparative agroecological and economic evaluation of its application presented in the research. The use of boron fertilizers allowed to increase the sugar content, acidity, tasting score grapes up to 12-38%. The greatest effect of boron fertilization achieved by application to the phase start of sap flow in a dose of 3 kg/ha in the background N90P90K90. The developed technique for sandy soils fertilization allows to increase a quality of grapes, their properties also allow to improve a costs of produced grape material.

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