Mineral fertilizers impact on white lupine yield when being cultivated in Central Black Earth region of Russia

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At the present developmental stage of the agro-industrial complex of the Russian Federation, considerable attention is paid to the problem of meeting the needs of the livestock industry in fodder protein as well as the search for effective ways to reduce the cost of its production. It is commonly known that to successfully solve the problem of fodder vegetable protein deficiency, it is necessary to expand the acreage for grain legumes, including lupine.
The object of research was a high-intensity variety of white Degas lupine. The subject of research was the Aquamix microfertilizer of the following brands: Aquamix-T (for seed treatment) and Aquamix-TV (for foliar application), macrofertilizers: potassium sulfate (K$_2$SO$_4$) and potassium monophosphate (KH$_2$PO$_4$).
Conclusions

- Our studies resulted in the assessment of the effect of pre-sowing seed treatment with chelated micronutrient Aquamix-T both separately and in combination with foliar fertilization with macro- and micronutrient fertilizers, on the growth, development and seed productivity of white lupine. The results obtained indicate that foliar feeding of lupine crops with Aquamix-TV micronutrient fertilizer, potassium sulfate and potassium monophosphate against the background of pre-sowing seed treatment with Aquamix-T micronutrient fertilizer are a justified element of the technology, since they contribute to an increase in the height, aboveground mass, size of the symbiotic apparatus of plants and harvest of seeds.

The greatest positive effect was obtained on options with pre-sowing seed treatment with micronutrient fertilizer Aquamix-T together with foliar application with a mixture of Aquamix-TV + potassium sulfate and Aquamix-TV + potassium monophosphate, in which the seed yield was 3.64 and 3.62 t/ha, respectively, which was 0.64 and 0.62 t/ha or 21.3 and 20.5% higher compared to the control.
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