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ORIGINAL PAPER

The effect of nitrogen-fixing microbiological preparation on the yield and selected features of potato tubers*

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Abstract

As a result of a 2-year field study on light soil, the effect of foliar application of microbiological preparation BlueN® on the yield and content of selected features of potato tubers was determined. The microbiological preparation used in the experiments at a dose of 333 g ha^{-1} contained *Methylobacterium symbioticum* bacteria with nitrogen-fixing properties. The experimental factors were: potato varieties (Hermes, Tajfun), objects (control object – where no of microbiological preparation BlueN®, was used, object were BlueN® was used), doses of mineral nitrogen (basic dose – 100 kg ha^{-1}, dose reduced by 30% – 70 kg ha^{-1}). The studies assessed the level of total tuber yield and the content in tubers of dry matter, starch, vitamin C, nitrates, total nitrogen, and the uptake of this component with the tuber yield. The highest increase in tuber yield in the object where microbiological preparation was used was recorded after the application of a nitrogen dose of 70 kg ha^{-1} to the Tajfun variety. After the application of the microbiological preparation in the object, the tuber yield was higher by 6.1% compared to the control object, where no microbiological preparation was used. The BlueN® significantly reduced the content of nitrates, increased dry matter and total nitrogen in tubers and the uptake of this component with the yield as compared to the control object. Based on the yield of tubers, it was demonstrated that the use of microbiological preparation BlueN® allowed for the reduction of the dose of mineral nitrogen by about 30 kg ha^{-1}.

Keywords: nitrogen, nitrogen-fixing bacteria, tuber quality, yield, potato

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