Effects of liming and nutrient management on yield and other parameters of potato productivity on acid soils in Montenegro

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Abstract: This study was conducted to evaluate the effect of liming (CaCO3 1000 kgha-1), and application of organic fertilizers (rotted farmyard manure 40 tha-1) and six different combination of mineral fertilizers: NPK 15:15:15 800 kgha-1 + KAN 240 kgha-1; NPK 15:15:15 400 kgha-1 + MCB (water-soluble mineral fertilizer NPK 13:11:20 + 2MgO + microelements + humic acid) 300 kgha-1 + KAN 125 kgha-1; MCB 400 kgha-1; MCB 400 kgha-1 + KMg (water-soluble mineral fertilizer Multi KMg 13:0:43 + 2MgO) 100 kgha-1; MCB 600 kgha-1 + KMg 100 kgha-1 and MCB 800 kgha-1 + KMg 100 kgha-1 on yield and other productivity parameters of potato (Kennebec variety). The experiments were carried out during 2015 and 2016 in the mountainous area of Montenegro, on acid-brown soil.

The results obtained suggested that in both years, the highest values for all studied parameters were measured on plots with combined application of liming, organic and mineral fertilizers. In addition, a significant influence on the increase in the number of tubers per plant, the average tuber weight and the total yield was also demonstrated in all individual trials of potato nutrition, as well as the interaction of organic manure and mineral fertilizer. Fertilizing with rotted farmyard manure had significantly increased potato productivity, with the effect more pronounced in treatments with liming. The highest number of tubers (6.2 and 7.2), average tuber weight (93.5 g and 101.0 g) and yield (27.6 tha-1 in 2015 and 34.8 tha-1 in 2016, respectively) were obtained using combinations of MCB 800 kgha-1 + KMg 100 kgha-1 on variants fertilized with rotted farmyard manure and liming.

Potato yield variations in productivity characteristics (average weight and number of tubers) ranged from 0.99911 (2015), to 0.99904 (2016). Multiple regression analysis showed that an increase in average weight and number of tubers in both examined years resulted in a statistically very significant increase in yield.

Keywords: potato, liming, nutrient management, potato productivity