# THE EFFECT OF FLORAHUMUS AND ELICE VACCINES ON THE YIELD AND NUTRITIONAL VALUE OF SWEET POTATO

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## *INTRODUCTION*

The total global yield in 2020 was 89.5 million tonnes, grown on 7,400,472 hectares, with an average yield of 11 tonnes per hectare (Fao, 2021).

Sweet potatoes can be grown in a wide range of soils, even in nutrient-poor soils, and yields are satisfactory in these areas (Chipangura and Jackson, 2003). They are excellent in sandy areas, are undemanding crops and do not require much nutrients. Ahmed (2017) and colleagues found that humic acid application significantly increased the total tuber yield and all measured growth parameters of sweetpotato. Several researchers have found that sweetpotato yield can be between 30 and 73 tons per hectare (Hossain et al., 1987; Siddiqe, 1988; Hall and Harmon, 1989; Bhagsari and Ashley, 1990). In Hungary the yield can be 30-40 tons/ha. Jin-Young Moon and colleagues concluded that nutrient application with foliar fertilization had a greater impact on sweetpotato yield (Jin-Young Moon, 2019).

## *MATERIALS AND METHODS*

The experiment was set up in Zákányszék, which is located in South Hungary. The soil is sandy soil. The area of the experiment is 133 $m^2$. A soil sample was first taken in March and sent for testing. The propagating material was provided by the Bivalyos Farm, from whom we received the cuttings the day before planting. In all cases, nutrient application to the experimental plots was carried out with a backpack sprayer. The first plot was the control area. Florahumus (humic acid) was applied to the second plot as a foliage conditioner at two times, the first time when the plants were in a few leaves and the second time when they were in flower stage. In the third plot, Florahumus was used as a soil conditioner in a single application, it was applied on the firt of June . The fourth treatment the Elice vaccine was applied. Two applications were made, the first before flowering and the second after flowering. The tuber content measurements were carried out on the 22 of September in 2023 from the harvested sweetpotato tubers.

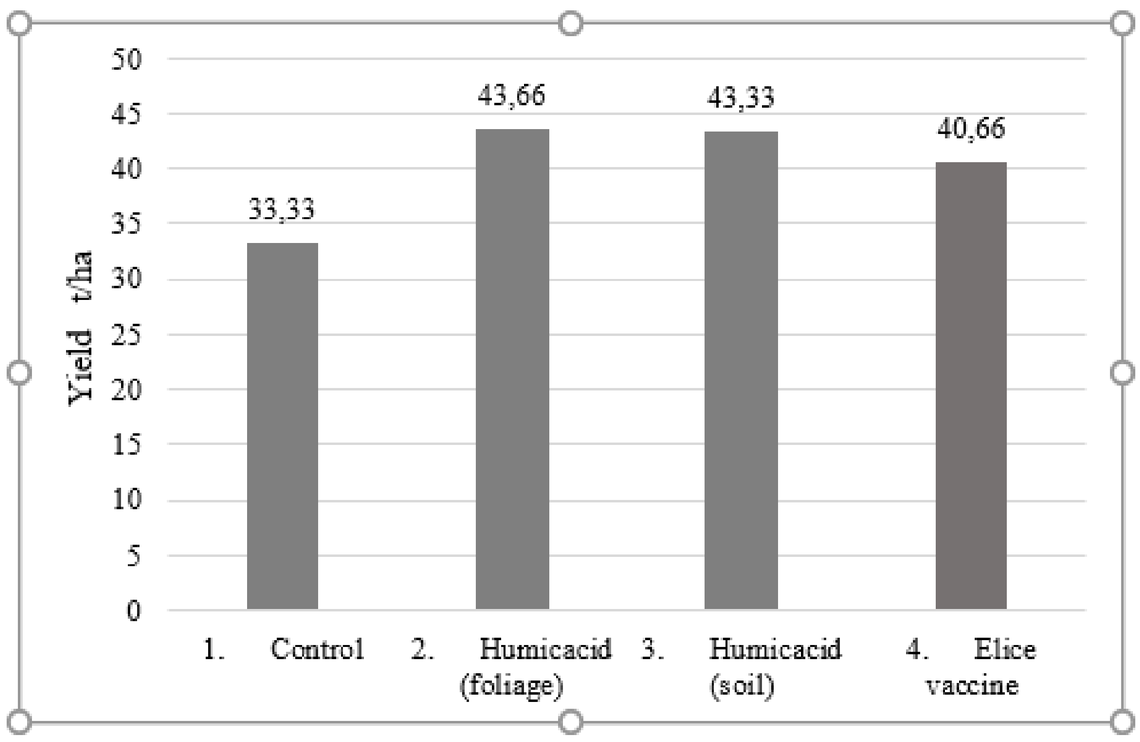


*Figure 1.* The effect of different treatment on sweet potato yield (t/ha) (Zákányszék, 2023)

## REASULTS AND DISCUSSIONS

We tested whether there was a significant difference between the control and the other three treatments (Florahumus applied to the soil, Florahumus applied to the foliage and Elice vaccine) in the sweet potato nutritional composition (dry matter, %; crude fat, g/kg; crude protein, g/kg; crude fibre, g/kg; crude ash, g/kg). Statistical methodology the x2 trial was used (Tables 1). It was found that none of the sweetpotato content indices of the control and the other three treatments showed significant differences. This means that none of the treatments applied is relevant either in terms of increasing sweetpotato yield or in terms of significantly improving the content indices.No significant differences were found between the yields of plots treated with different plant conditioners when examining the data for the given year. When the yields in kg/ha are converted to tonnes/ha, it can be seen that the highest yield was 43.66 t/ha of Humicacid foliage (treatment 2), followed by 43.33 t/ha of Humicacid soil (treatment 3) and 40.66 t/ha of Elice vaccine. The control plot yielded the lowest yield of 33.33 t/ha (*Figure 1*). The difference in yield between the control plot and Treatment 2 was 10.33 t/ha.

## CONCLUSIONS

The study show that there were no significant differences between treated and control plots, but more yield was obtained between all treated plots compared to the control plot. The difference in yield between the control plot and Treatment 2 was 10.33 t/ha. It's very important to use plant conditioners, because we can achieve more yields and more income. In the future, it is recommended to set up further trials, in which plant physiological parameters such as shade, water and soil moisture utilization should be investigated. Further nutritional studies should also be carried out to investigate how carotene content is affected by plant conditioners. We hope that our research has highlighted the need for further studies in sweet potato, as there are still some gaps in nutrient status.

Table 1: The analysis of the nutritional value of sweet potato 1000 g

| | **Dry content. (%)** | **Crude fat (g/kg)** | **Crude protein (g/kg)** | **Crude fiber (g/kg)** | **Crude ash (g/kg)** |
|---|---|---|---|---|---|
| 1. | 16,77 | 0,79 | **10,20** | 7,87 | **8,21** |
| 2. | 14,98 | 0,85 | 8,24 | **8,38** | 8,20 |
| 3. | 14,96 | 0,75 | 7,95 | 7,96 | 7,31 |
| 4. | **17,71** | **1,05** | 7,92 | 7,05 | 7,08 |

*1: Control, 2: Humicacid (foliage), 3: Humicacid (soil), 4: Elice vaccine*