

Response of two strawberry cultivars to the application of silicon

Reakcja dwóch odmian truskawki na stosowanie krzemu

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The aim of the experiment was to examine the effects of silicon (Si) on the growth and cropping of strawberry plants (*Fragaria ananassa*) and on the quality of the fruit. The study was conducted in 2013–2015 in the Experimental Orchard in Dąbrowice, belonging to the Research Institute of Horticulture in Skierniewice. The experimental objects were plants of the strawberry cultivars 'Elkat' and 'Elsanta', growing in a podzolic soil, low in humus, with the granulometric composition of light loam in the surface layer and with an average level of available nutrients. For each cultivar, the experiment was designed in randomised blocks with three replications. An experimental plot was comprised of 20 strawberry plants planted at a spacing of 0.25 × 1.0 m. The plants were treated with silicic acid, potassium silicate and calcium silicate. The preparations were applied annually to the soil in early spring (before the beginning of vegetation) at a dose of 90 kg Si ha⁻¹. Control plants were not treated with silicon. The results of the experiment were analysed statistically using the analysis of variance method. The differences between means were evaluated with Duncan's t-test at a significance level of 5%.

The results showed different responses of the tested strawberry cultivars to the silicon preparations used. In the case of 'Elsanta', the highest fruit yield was recorded in the plots where calcium silicate or potassium silicate were applied to the soil. It was also found that the use of potassium silicate, calcium silicate and silicic acid reduced the occurrence of grey mould on the fruit of the cultivar 'Elsanta', but the differences as compared to the control were not statistically significant. The plants of the strawberry cultivar 'Elkat' treated with silicic acid produced the highest fruit yields, and the fruits were the least affected by grey mould. None of the silicon preparations affected the number of runner plants or the weight of the runners, nor the chlorophyll content of the leaves. It was also found that the use of the silicon preparations had no impact on the refractometric index of the fruits or their firmness. In both cultivars, the plants treated with silicic acid produced fruit with the highest Si content. The silicon content of the leaves of the tested strawberry cultivars was different for the individual years of the study. Depending on the year, the highest silicon content was found in the leaves of the plants treated with calcium silicate and silicic acid.

Preparations containing silicon can be used in the commercial production of strawberry to reduce the occurrence of grey mould, but they cannot completely replace the chemical plant protection products designed for this purpose.