

PP36. Cones and essential-oil production in hop with different nitrogen levels in the south of Brazil

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Hop crop requires a substantial amount of nitrogen (N) to meet growth and quality of production. Despite the increase of hop cultivated areas in Brazil in the last years, there is scarce information about hop nutrient requirements for soils of different regions of the country. The main objective of this work was to evaluate the effect of nitrogen levels in hop-cone production and its essential-oil yield and composition in the south of Brazil during the first year of cultivation. The field experiment was carried out in completely randomized blocks by comparing five nitrogen doses (50, 100, 150, 200 and 250 kg ha⁻¹) to non-fertilized plants, with four replications, each one with six plants. Urea was used as the nitrogen source being applied 20 kg ha⁻¹ for the fertilized treatments at the moment of planting which was complemented with a second dose 30 days after planting. Essential oil samples were obtained by hydrodistillation for two hours and their components were identified and quantified by GC/MS. The highest cone number per plant was obtained when 100 or 150 kg N ha⁻¹ were applied (2,677,066 and 2,518,082 cones ha⁻¹, respectively). Plants fertilized with 100 kg N ha⁻¹ had the greatest biomass (dry matter, DM) production (219.1 kg DM ha⁻¹), but with no statistical difference compared to plants fertilized with 150 or 200 kg N ha⁻¹ (210.1 and 199.6 kg DM ha⁻¹, respectively). The cone essential-oil yield varied from 0.46 to 0.69% but no statistical differences were found comparing all treatments. The major constituents of the essential-oil samples were myrcene (35.1-56.7%), (*E*)- β -farnesene (14.9-22.9%), β -selinene (6.6-11%), δ -selinene (7.2-12%), (*E*)-caryophyllene (3.5-2.6%) and linalool (0.28-0.47%). The results show that 100 kg N ha⁻¹ can be recommended for the first year of hop cultivation in the south of Brazil to obtain a greater cone number and biomass production with no effect on the essential-oil yield and composition.

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