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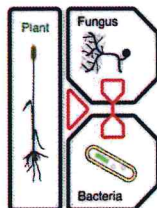
innovation in plant sciences



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Innovation:
5 questions in plant nutrition:

87



Abstract Book

Innovating Plant Nutrition

XVII Simpósio Luso-Espanhol de Nutrição Mineral das Plantas

Cristina Cruz, Teresa Dias, Joana Cruz, Juliana Melo
(Eds.)

Sociedade Portuguesa de Fisiologia Vegetal

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- Abstract Book -

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O14 - Effect of plant selection and fertilization on strawberry tree production

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Arbutus unedo L. is an autochthonous species, which became relevant for agroforestry systems, due to its drought tolerance, resistance active to fires and fruit production, with different commercial usages from processed to fresh fruit consumption. New orchards have been installed using seedlings without any vegetal material selection. Our team started a breeding program by: 1) the selection of adult plants; 2) the propagation of the selected material; 3) the prediction of clone adaptability to drought; 4) the evaluation of nutrients export by fruits; and 5) the establishment of field essays. Adult plants were selected, in different ecological conditions, according to their fruit production and quality (size, weight, firmness, °Brix, pH, titratable and total sugar content). Clones (25) were established *in vitro* and micropropagated; being 16 established in field (4 blocks) as seed orchard, by free pollination, for progenies tests establishment. The prediction of the adaptability of the different clones to drought was performed *in vitro* conditions, within a short time (3 months), considering their tolerance to the hydric stress, applied by osmotic stress, induced with sucrose (0.18; 0.29 M) and mannitol (0.14; 0.49; 0.69 M), comparing their survival to the control (0.09M sucrose). The evaluation of nutrients export by fruits was performed to support fertilization. To study the dynamics of nutrients in soil-plant system, nutrients in the soil, organic layer and leaves were quantified and correlated with the fruit production. The organic layer showed high relation C/N (57/orchards; 44/natural regeneration). Nutrients level in leaves and fruits are close to the lower range indicated for blueberries. The results obtained show that the nutrient content in the fruits occurs in the following decreasing order K>Ca>Mg>N>P. Clones showed higher fruit production compared to seedlings, proving a higher nutrients exportation. The results showed that plant vigour was directly related to the organic layer content and N P content in leaves, proving the relevance on maintaining the organic residues. Fruit production results are presented from 5-9 years old, of a clonal trial established on Cambisol / Lithosol (pH=4; clay content ≥50%; organic matter 7%; P₂O₅ and B very low levels). Clonal plants and seedlings were tested using 2 fertilization levels (compared to control). The trial consisted of 4 blocks with 5 plants per treatment in a total of 120 plants (2 plant material x 3 fertilization x 5 plants x 4 blocks; 1920

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m²; 4x4m²). The addition of fertilizer significantly improved the production and the total sugar content. The best results were observed with clonal plants. The clone tested proved to be stable, even in the worst block/site had higher production than seedlings, according to the *in vitro* results for drought screening. Our results suggest that the use of adult selected clonal plants and proper fertilization can lead to a greater fruit productivity and quality.

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