Strawberry Cultivation Techniques for Season Extension. (i) Plant quality and cultivar types

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The potential of out-of-season production is dependent on plants of good quality, cultivar types and environmental conditions. The extension of the production to autumn and winter season can be achieved with different cultivars and cultivation systems. Two trials were performed to evaluate: a) autumn and winter strawberry production with day-neutral cultivars in two cultivation systems under protected cultivation and (b) autumn and spring production with short-day tray plants under glasshouse cultivation.

(a) Autumn and winter production

In July of the first year of the project a field trial was established in the southwest coastal area of Portugal with five day-neutral cultivars from different origins. Plants were cultivated in raised beds covered with black polythene in a greenhouse (soil production system) and in substrate bags in a high multi-tunnel structure (soilless production system). Plant density was 7 and 14 plants per m², respectively for soil and soilless production system.

(b) Autumn and spring production

In November tray plants of short-day cultivars (Elegance, Elsanta and Figaro) of two nursery proveniences were cultivated in containers filled with a commercial substrate (mixture of peat and coconut fiber) under a glasshouse structure with heating (temperature was not allowed to go under 8 °C) in a randomized block design with 5 replicates. Yield and fruit quality parameters were assessed for autumn and spring production. At the end of the growing cycle several plant growth and flowering parameters were recorded.









MAIN RESULTS

(a) Autumn and winter production

Plant growth and flowering were not affected by cultivation systems or cultivars. On contrast fruit yield varied between cultivars and production systems. Cultivars had higher yield per plant in the soil system than in substrate system. However, the yield per unit area (kg.m⁻²) was not affected by the production system. The cultivation system did not change the pattern of fruiting of dayneutral cultivars. Fruits from soil crop were more sweetness and less sourness while fruits from soilless crop were of greater size, more red and with better commercial quality. In both systems, there were differences in phenolic content and antioxidant capacity of fruits between cultivars.





CONCLUSIONS

For strawberry season extension in Portugal, cold stored bare root plants of day-neutral varieties and tray plants of short-day varieties can be used for autumn production. However, we found that for day-neutral cultivars planted in June high values of temperature are crucial for a good crop establishment, particularly in soil cultivation system. It is possible to harvest two crops with tray plants of short day varieties; however fruit size quality depends on cultivar.

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(b) Autumn and spring production

During the autumn cycle, 'Elegance' and 'Figaro' developed 3 inflorescences per plant while 'Elsanta' produced only 1.6. At the end of the spring cycle 'Elegance' produced more inflorescences than 'Figaro' and 'Elsanta'. All cultivars produced two harvest crops and the higher yields were obtained with 'Figaro' trav plants in both production seasons.

In all cultivars, allowing the plants to produce a second crop yield induced higher percentage of unmarketable yield and fruit size decreased. This fact was particularly marked in 'Elsanta'.



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