

Short Term Scientific Mission Report COST 863 Euroberry 863 - Working Group 2

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Correlation between architectural analysis and productivity of strawberry Tray Plant

Hosts: Dr. Eamonn Kehoe

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Ireland.

Date of STSM: 04th April 2007 to 14th April 2007.

Objective:

The main objective was to improve the understanding of strawberry flower induction and differentiation in different nursery conditions and treatments.

With this in mind a STSM was planned to check plant architecture by the dissection of different strawberry plant materials. In particular, the observations will be performed on tray plants produced in different nurseries treatments.

This STSM may complete some work started in Ancona (Italy) with Dr. Eamonn Kehoe, and leads to a better understanding of strawberry production in Ireland.

Material and methods

The tray plant cv. Elsanta was rooted in summer 2007 on two different dates in July and August in two different substrates. During the summer and autumn they were grown in different conditions inside the greenhouse and outside. After cold storage the plants were transplanted into plastic troughs (6 plants) and laid out in the glasshouse.

During my STSM period the plants were starting to bloom. This was an excellent time to analyse the architectural model without destroying the plants. For every plant that had been analysed the number of leaves, the numbers of crowns, the number of inflorescences, the petiole length and the stage of inflorescence were documented.

Main results obtained

The method is capable of determining the quality of strawberry plant material. The result obtained by the architectural model is of great benefit for the strawberry grower purchasing the plants and also for the strawberry propagator. The main problem with the tray plant is that plant quality will vary from year to year. The forecast of the strawberries fruit production is very difficult and very risky for the growers.

The architectural analysis on nursery plant material before the cold storage or in the blooming stage, can give the grower crucial information. For example, he may have to change the planting density, irrigation intensity and or the mineral solution in correlation to the crop load. .

The environmental condition during the nursery season (summer and fall) is very important and can alter the plant quality. Figure 1 shows that the number of crowns per plant averaged 2 in the plants that were planted early and grown outside. The other treatment are not modified the lateral crown.

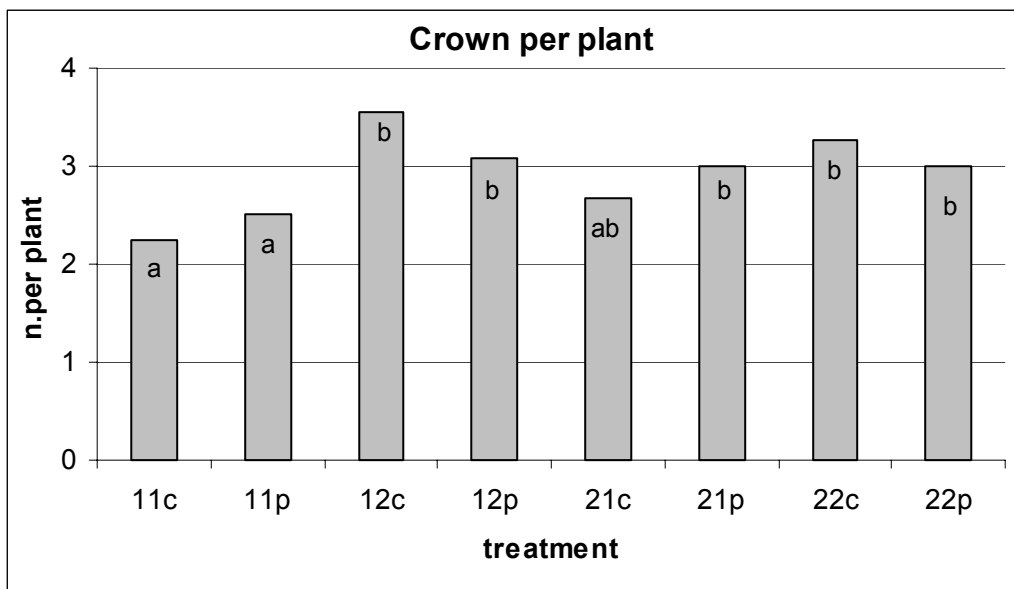


Fig. 1 Number of lateral crowns per plant grown in different condition and substrate. Different letters are significantly different according to SNK-test at P < 0.05 level.

Also the position of lateral crown is very important, with the basal crown producing in the same period as the apical inflorescence, while the apical crown produces later than the main inflorescence. The plant like e.g. 2.2 C and P have will have concentrated production in a short time (2-3 week) while the plant e.g. 11 will crop for 3-4 weeks.

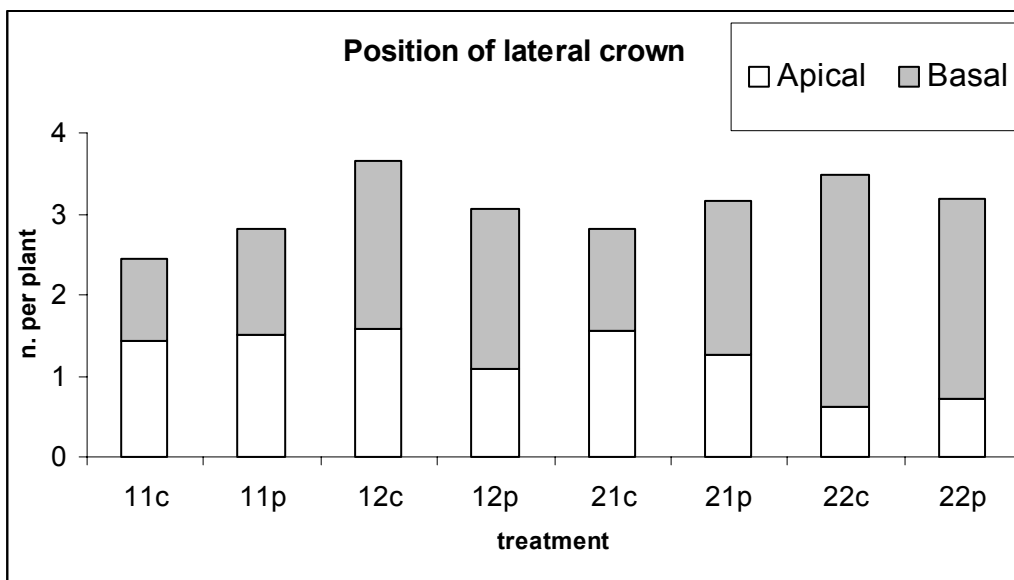


Fig. 2 Position of lateral crowns per plant grown in different condition and substrate.

The treatment are modified in the blooming season and probably the cropping season: fig. 3

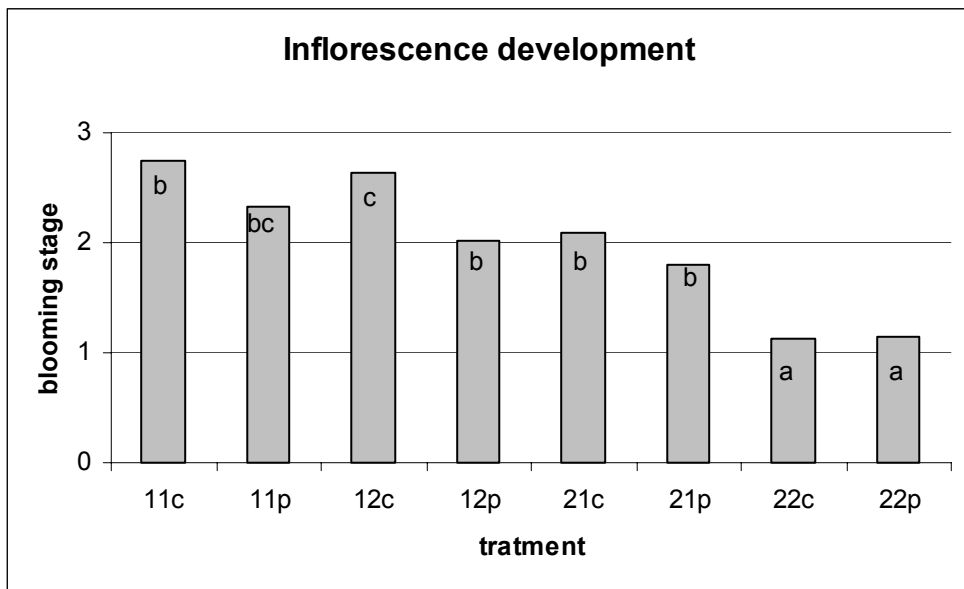


Fig. 3 The inflorescence development in different condition and substrate. 1= Blooming start; 2= king flower full open; 3= all flower open. Different letters are significantly different according to SNK-test at P < 0.05 level.

The leaf number per plant is very important for fruit quality and is generally correlated at the crown number and the flower induction time. The good crop load depends on the leaf/fruit ratio. The next step with fruit production analysis (Kinsealy May-June 2007) it will be useful to understand what the best plant model will be in the climate of Ireland.

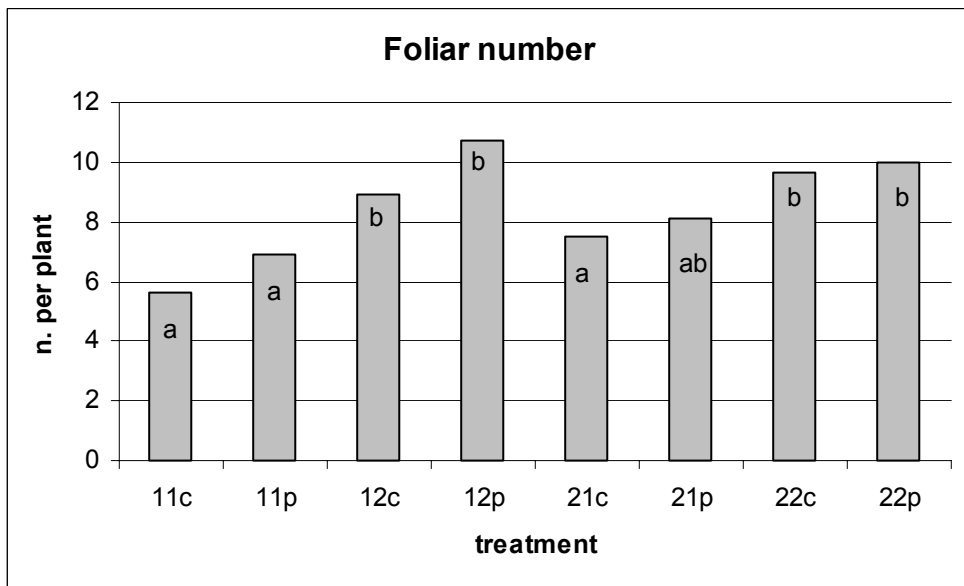


Fig. 4 The leaf number per plant in blooming season, development in different conditions and substrates. Different letters are significantly different according to SNK-test at P < 0.05 level.

Future collaboration

This is very important work which must be continued to affirm the architectural model for the control of the strawberry plant quality. This collaboration will result in the publishing of at least one scientific paper.

A particular thanks to Eamonn for his hospitality and the friendship.

Confirmation by host institute of successful STSM completion.

8th May 2007

Dear Prof.Mezzetti,

This is to confirm that the STSM of Dr.Gianluca Savini was executed as described in the original STSM application.

Yours Sincerely

Eamonn Kehoe B.Agr.Sc Ph.D. (C Hort)
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