Short Term Scientific Mission Report

COST 863 Euroberry 863 - Working Group 2

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'Determining the Flower Architecture of Strawberry Tray Plants'

Hosts: Prof. Davide Neri and Dr.Gianluca Savini.
Dept. of Environmental Science & Crop Production, Marche Polytechnic University, Ancona, Italy.

Date of STSM: Monday the 27th November 2006 to Saturday the 2nd December 2006.

Objective:

The main aim was to improve my understanding of the physiological control of axillary meristems in the strawberry plant. With this in mind a STSM was undertaken to learn the laboratory skill involved in the dissection of strawberry plant material and to draw and map the plant and flower architecture that is found by using a stereo microscope. This was a specific laboratory skill that will bring immense benefit to my present research and to the work involved in the present COST action.

Work undertaken

To begin with I had to learn the process involved in the proper dissection of strawberry plant material. A number of control plants were firstly dissected under the careful guidance of Dr.Gianluca Savinni and Prof. Davide Neri. The whole plant is carefully dissected and each and every plant part is recorded for the drawing of the complete architectural model.

Upon dissection, the plant consists of a number of dead leaves with latent buds, stolons, axillary dormant buds with/without expanded leaves, lateral crowns with/without expanded leaves. Each crown is carefully dissected to finally reveal leaves and inflorescences at various stages of development. The development stage of the primary inflorescence can be determined by using a pictorial development stage chart (Plate 1). The development stage of the secondary, tertiary and quaternary flowers can also be determined but is more difficult due to the minute size of the flowers.

When the plant was fully dissected and all the data was recorded, this information was then entered into a software package (Corel draw) and a visual representation of the plants full architecture was achieved (Diagram 1).

Once I was familiar with how to dissect the plants, record the observations and use the software package, I began to dissect the strawberry tray plants from my own research project in Ireland.

Main results obtained

I am now fully trained in strawberry plant dissection and determining the full architecture of the plant. The whole method is a very effective method of determining the quality of any strawberry plant material. The information obtained by dissection and the architectural model is of great benefit not only to the strawberry propagator, but also to the strawberry grower purchasing the plants.

A propagator can use this method from the beginning to the end of the plant production period. Plant quality changes on the nursery from year to year due to production practices and the climate. Therefore, a plant one year will be a totally different plant the following year. This has major repercussions for subsequent strawberry fruit production. The main achievement for the propagator is a greater understanding of how one can change or improve the way the plant is grown each season.

For example, a plant produced on a nursery may have over 50 flowers one year and 35 another. With dissection, the propagator can then inform the grower to change that he must adjust the planting density accordingly.

By using the skill I have learnt through this STSM I can now dissect and map the full architecture of the strawberry tray plants. The plant architecture analysis will add weight

to my trial results and should give a clearer picture as to why some treatments may be having a particular effect. The method will allow for the completion of my main research aim. This is to produce research results which show how to grow high quality strawberry tray plants to suit a growers cultural system and for a specific part of the growing season.

Future collaboration and projected publications

This is very important work which must be continued. With this in mind Dr.Gianluca Savini may apply for a STSM to complete some work where my trials are conducted at Kinsealy Research Centre in Dublin.

A number of joint grade A peer reviewed scientific papers will be published.

My sincerest and grateful appreciation to both Dr.Gianluca Savini and Prof.Davide Neri for hosting and looking after me so well during my week in Ancona.

Confirmation by host institute of successful STSM completion.

15th December 2006

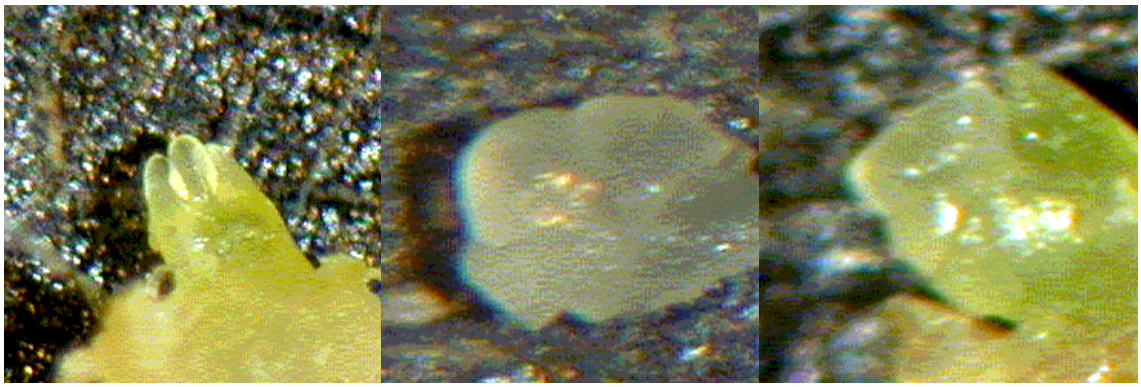
Dear Prof.Mezzetti,

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

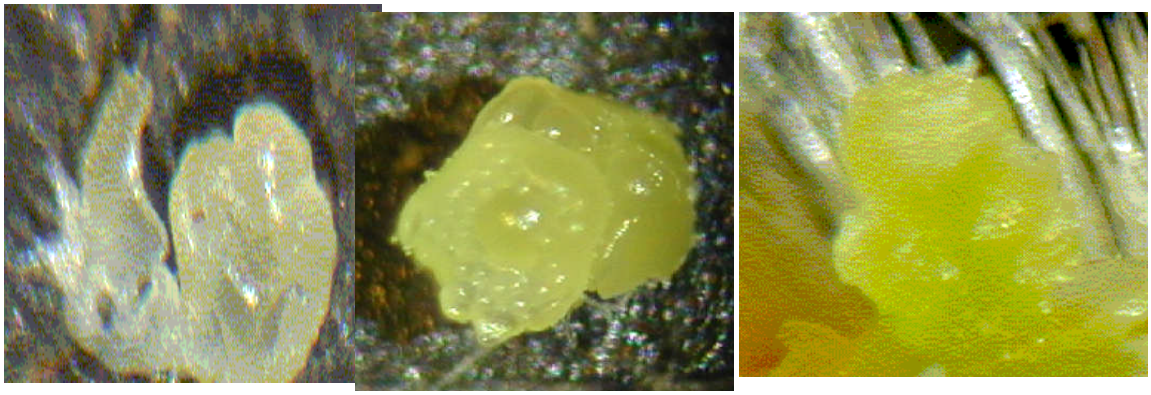
Yours Sincerely

Prof.Davide Neri
Department of Energetics
Marche Polytechnic University
Ancona
Italy

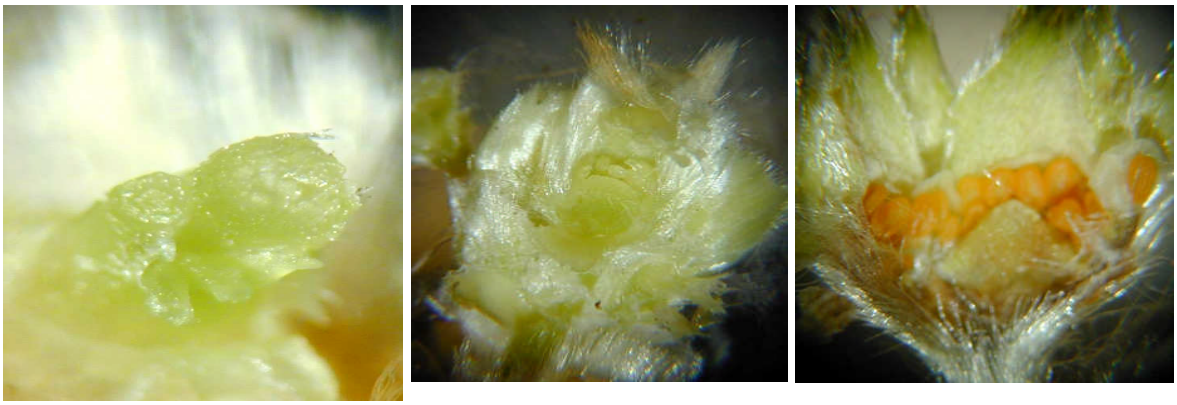
Plate 1.



PHASE 0 (VEGETATIVE) PHASE A PHASE B



PHASE C PHASE D PHASE E



PHASE F PHASE G PHASE H

Diagram 1. Schematic drawing of five dissected strawberry plants.