STRAWBERRY PRODUCTION IN SOIL-LESS SUBSTRATE TROUGHS – PLANT GROWTH

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Introduction. Strawberries grown in coastal regions of California are an important agricultural crop. However, their production depends on pre-plant fumigation with methyl bromide or on finding an alternative method to protect roots from soil-borne pathogens. Soilless substrates made of peat moss, coconut coir, perlite, rockwool or bark are pathogen free and they have been used in strawberry production in Europe in troughs or containers. Open field strawberry production in soilless substrate is new to California growers. The objective of this study was to compare growth characteristics of strawberry plants in different soilless substrates.

Materials and Methods. A field trial was conducted in the 2008-2009 strawberry season in a grower's field located near Santa Maria, CA. The trial site was imbedded within a 392-acre strawberry field. Beds were 64-inch center to center with two half-moon shaped troughs per bed. In October 2008 the troughs were constructed and lined with a landscape fabric to prevent root penetration and filled with following substrates: 60% Peat:40% Perlite, 67% Peat:33% Rice Hulls, 67% Coir:33% Rice Hulls, 100% Coir, 100% Peat, and 100% Field Soil. The substrate treatment was implemented on 11 field beds each about 380 feet long and alternating between a green mulch and a skunk mulch. Only green mulch was used for the 100% peat treatment. Three strawberry varieties: *'Camino Real', 'Albion'* and *'Ventana'* were planted each occupied a third of eh bed length.

Strawberry fruit yield was collected approximately twice a week by the grower's harvesting crew. The yield weight measurement was divided into marketable and non-marketable fruit, respectively.

Field canopy cover was measured once a month using a TetraCam infrared camera mounted on a frame 3 m above the bed center. Field measurements were carried out near solar noon to minimize shadowing effect.

At the end of the season, 10 strawberry plants (without the fruits and roots) were collected randomly from each treatment, dried in a forced-air oven biomass assessment.

Results. Preliminary data from the *'Ventana'* variety indicated that comparable fruit weight was obtained for the substrate media, except for peat moss with the green mulch. Biomass of *'Ventana'* indicated that larger plants grew in substrates

containing peat and rice hulls and 100% coir (Figure 1). Strawberry plants that grew in troughs filled with field soil had the lowest biomass.

Figure 1. Biomass of *'Ventana'* strawberry plants growth in soilless substrates at the Santa Maria site during the 2008-2009 season. Error bars are standard errors (n = 10).