STRAWBERRY PRODUCTION IN SOIL-LESS SUBSTRATE TROUGHS
– PLANT GROWTH

Magdalena Zazirska Gabriél1,2*, Dong Wang1, James Gerik1 and Jim Gartung1,
1USDA/ARS San Joaquin Valley Agricultural Sciences Center, Parlier, CA.
2University of California, Riverside, CA.

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

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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).