Bell Pepper x Continuμm™

Yuma, AZ Spring 2022

Trial Description & Methods

This trial took place in the spring growing season of 2022 in Yuma, AZ and was designed to test the effectiveness of Continuμm's microbial consortia on commercial bell pepper production. Yield was evaluated at two time points via pepper size, quality, and boxes per acre; and returns per acre were calculated (Figures 1-5). In addition, the growth-relevant trait of NDVI and the quality-relevant trait of % sunburn were evaluated (Figures 6 & 7).

With the exception of an Untreated Control (UTC), all plots received 100% grower standard (GS100) fertilization for the region (156 lbs/ac UAN 32, 36 lbs/ac O-Phos). GS100+1 qt/acre/month Toggle (seaweed extract) was compared to GS100+1qt/acre/month Continuμm treatments.

Data & Results

Growth

NDVI is a reflectance metric often correlated with crop health. Higher NDVI can indicate that pepper plants are healthier and will be more likely to produce higher and/or better quality yields. Initial NDVI, taken at the time of canopy closure, was higher for Continuμm-treated plants than Toggle-treated and UTC plants indicating they appeared "greener" compared to other treatments and suggesting a denser canopy and more chlorophyll. (Figure 6).

Quality

Fruit sunburn can be a problem in environments such as Yuma. Fruit on Continuμm-treated plants experienced far less sunburn compared to Toggle-treated and untreated controls (Figure 7). Researchers speculated that this might be attributed to observed increased canopy cover. In particular, the 'Courier' variety used in this trial tends to have a weak canopy which often performs better in coastal areas and is prone to sunburn in desert conditions. It is notable that Continuμm-treatment may enable more sunburn-sensitive varieties to be grown in a desert environment like the one at Yuma.

Yield

Continuμm-treated plants produced approximately 100 more boxes/acre of XL fruit at first and second harvest time points compared to the UTC and Toggle treatments (Figures 2&3). Similarly, a higher percentage of Continuμm-treated harvested fruit were XL and Large. Yield in total boxes (all sizes) was also increased for the Continuμm treatment at first and second harvests (Figures 4 & 5). In this season, prices were as follows: XL fruits yielded $27 per box compared to $25 and $20 per box for large and mediums, respectively. Taking all sizes into account, Continuμm-treated gross returns were $27.2K per acre compared to $25.7K for Toggle-treated and and $24.9K for the UTC (Figure 1).

*ROI was calculated as the difference between returns ($) of Toggle-treated and Continuμm-treated plants divided by total cost of treatment.

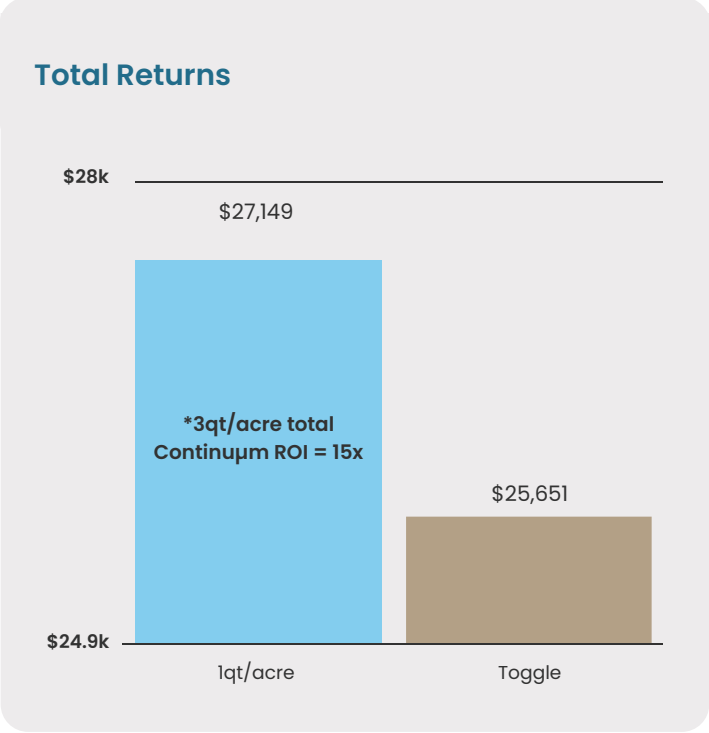

Fig.1: Program returns per acre in thousands of dollars, compared to UTC baseline ($24.9K).

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Key Trial Results

Treatment: UTC 1 qt of Continuum/acre Toggle

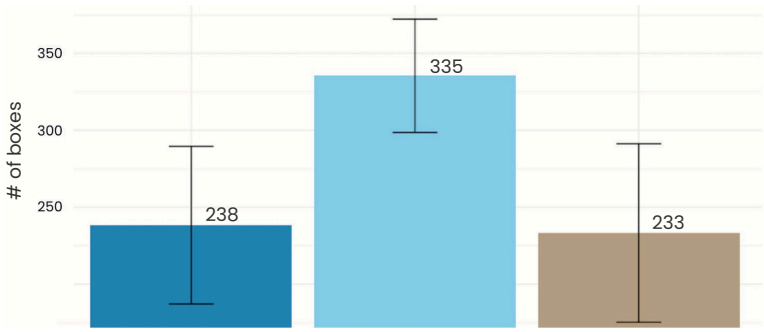

Fig.2: First Harvest - Size XL Peppers (Total Boxes)

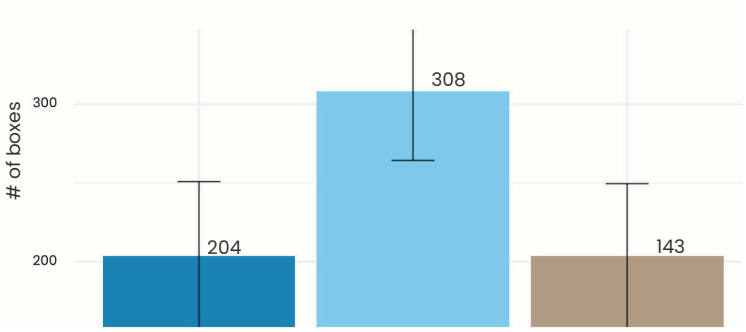

Fig.3: Second Harvest - Size XL Peppers (Total Boxes)

Figures 2 and 3. Continuum-treated groups demonstrated increased Extra Large (XL) boxes harvested per acre in both harvests.

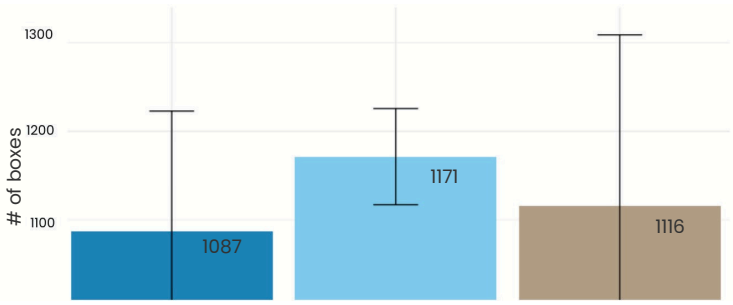

Fig.4: First Harvest - Boxes per Acre (all sizes)

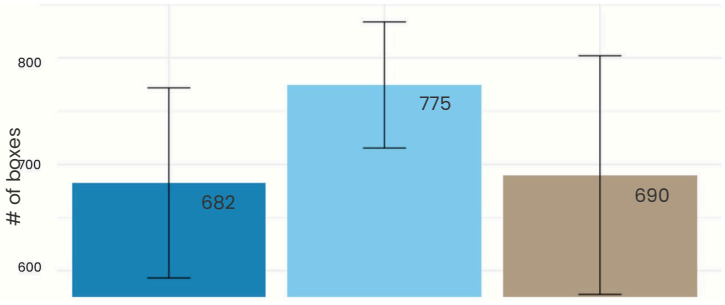

Fig.5: Second Harvest - Boxes per Acre (all sizes)

Figures 4 and 5. Continuum-treated groups demonstrated increased total boxes harvested per acre in both harvests.

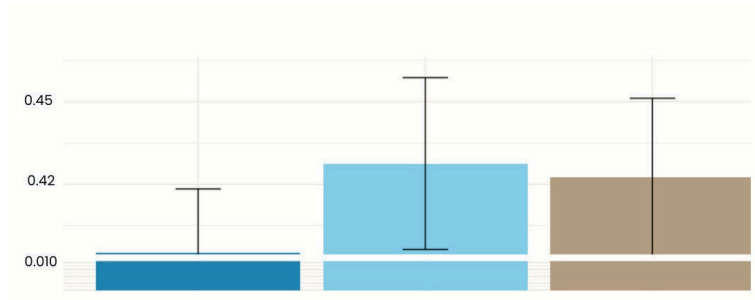

Fig.6: Initial Normalized Differential Vegetation Index (NDVI)

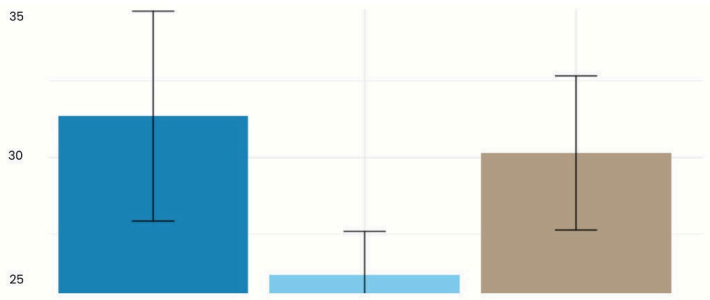

Fig.7: % Fruit with Sunburn

Figures 6 and 7. Continuum-treated groups showed and increased NDVI (greenness) compared to the untreated control. Continuum reduced incidence of sunburn on fruit on a sun-sensitive pepper variety.