# OREI HT Research Assessment Report

**11/5/2019**

**UF PSREU in Citra, FL**

Table 1, Plot Key of Experimental Treatments in the High Tunnel Pak Choi Trial

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Treatments** | | | |
| **Cover Crop** | **None** | | **Iron Clay Cowpea**  100 lbs/acre | |
| **Fertilization**  (N: 100 lbs/acre,  K2O: 120  lbs/acre) | **Preplant granular fertilizer**  Natursafe 10-2-8  K2SO4 (0-0-50) | | **Liquid fertigation**  Aqua power 5-1-1  K2SO4 (0-0-50)  applied weekly via irrigation | |
| **Compost** | **None** | **Cow manure**  10 tons/acre  15:1 (C:N) | **Vermicompost**  2.5 tons/acre 17:1 (C:N) | **Yard waste**  10 tons/acre  15:1 (C:N) |

|  |  |  |
| --- | --- | --- |
| **Plot** | **Fertilization** | **Compost** |
| 1 | Solid fertilizer | Cow manure |
| 2 | Solid fertilizer | No compost |
| 3 | Solid fertilizer | Yard waste |
| 4 | Solid fertilizer | Vermicompost |
| 5 | Liquid fertilizer | No compost |
| 6 | Liquid fertilizer | Yard waste |
| 7 | Liquid fertilizer | Vermicompost |
| 8 | Liquid fertilizer | Cow manure |

*Note*. The HT experiment was a randomized complete block design with six blocks total. Blocks I, III and V were planted with a cover crop. Blocks II, IV and VI were left fallow.

The details of each treatment are listed above the plot key including specific product information. The plot key includes specific treatments in each plot that make up the experimental research design of the high tunnel pak choi trial.

# High performance treatments:

* Liquid fertilizer, yard waste
  + Plot 6 (4 high performance choices, 1 low performance choice)
* Liquid fertilizer, cow manure
  + Plot 8 (4 high performance choices, 1 low performance choice)

# Low performance treatments:

* Solid fertilizer, no compost
  + Plot 2 (3 low performance choices)
* Solid fertilizer, vermicompost
  + Plot 4 (4 low performance choices)

*Primary Factors in Determining Plot Performance*

Best Performing Criteria

* Vibrant green color
* Larger plants
* Larger leaf area
* The number of leaves

Worst Performing Criteria

* Less green
* Inconsistency of color within the plot
* Smaller plant
* Inconsistency in size within the plot

Participants agreed that consistency of size among the plants matters to consumers more than size alone. Some other plot performance factors mentioned by participants were vigor, turgor and perceived level of maturity. Color was the factor identified by participants as the most important when considering best and worst performing plots.

*Insect Pest and Disease Observations*

There was consensus among participants overall that there was not much observable insect pest or diseases in the high tunnel. One participant mentioned whiteflies, another noticed a lot of flies in general and a third participant mentioned a green grasshopper-type bug that has stripes on its sides.

*Fertilization Regime*

Most Important Factors

* Immediate effects of nutrient regime
* Potential long-term effects of nutrient regime
* Nutritional quality of end product
* Price largely determines treatment choices **Recommendations for Future Research** *Treatments to Continue*
* Liquid fertilizer
* Cow manure

*Treatments to Eliminate*

* Continue everything
* Vermicompost

*Treatments to Add*

* Other manures (e.g., poultry litter)
* Compost tea

*Additional Data to Collect*

* Water quality (test water and soil)
* Nutritional value at end
* Interactions between location differences within the high tunnel and light exposure differences within and among plots
* Taste

# Discussion

In general, there was a clear split in participant assessment of performance by treatment. Liquid fertilizer and yard waste or cow manure were the best performing treatments while solid fertilizer and no compost or vermicompost were the worst performing treatments. This indicates that there were clear observable differences in treatments in the high tunnel. The limited insect pest and disease pressure likely contributed to the ability of participants to observe treatment differences clearly. One participant, however, wanted to eliminate the liquid fertilizer treatment because of potential negative long-term impacts on soil quality despite it being the best performing fertilizer treatment. Additionally, the factors participants expressed were important in assessing performance were consistent for both good and bad categories. For example, a vibrant green color was considered among one of the most important best performing criteria while less green was considered bad performing.

There was not any apparent treatment choice trend by block. This may indicate that the participants did not observe a treatment effect due to the presence of a cover crop or the block being left fallow. There was only one participant assigned to observe

each block, so this limits the ability to see a true cover crop treatment effect. Some participants reported seeing within plot differences in the plants and attributed this to inconsistent light exposure because these plots were located at the edges of the tunnel. This is likely why there were worst performing votes for plots that were overall observed to be best performing.