

EVALUATING

SEA-CROP®

by AMBROSIA TECHNOLOGY LLC

***At Experimental GREENHOUSE
On ZUCCHINI***

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AMBROSIA TECHNOLOGY, LLC
RAYMOND, WA 98577

SEA-CROP in Zucchini Grown in Soilless Experimental Design

❖ Zucchini crop grown under greenhouse

- Cultivar of Zucchini: *Apus*(dark green)
- Substrate used: Bags of Coco Peat
- Date of planting: 13 December 2007
- Planting density: 1 plant per bag

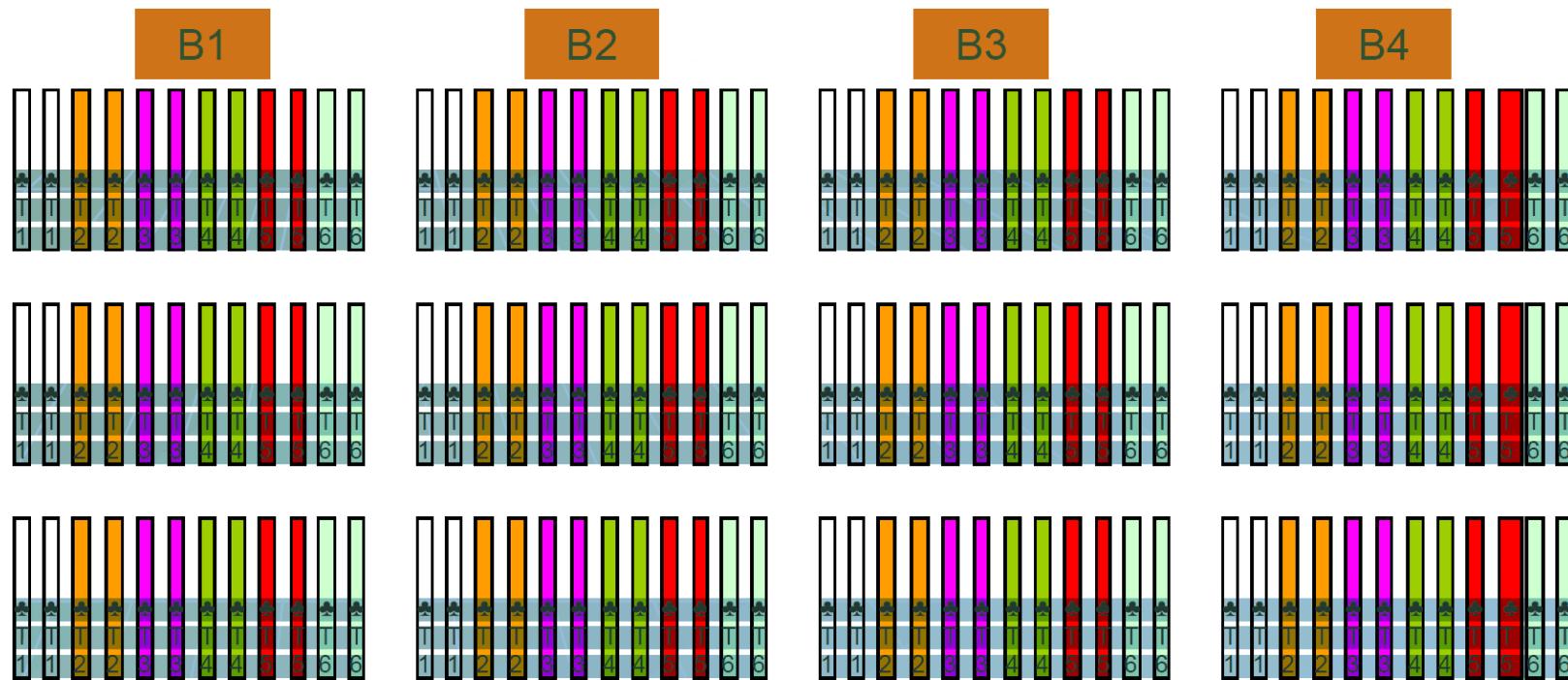
❖ Treatments evaluated

- T1: Negative control
- T2: SEA-CROP applied once as Drench (0.15%)
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- T5: SEA-CROP applied once as Foliar (1%)
- T6: SEA-CROP applied twice as Foliar (1%) (6 weeks apart)

❖ Experimental Design

- CRBD
- 4 Replicates per treatment
- 1 Replicate = 5 plants

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Planting the Crop

Plantlets from Nursery



The Set Up



Preparing the two Greenhouses

November 2007

Soilless Greenhouse
NEW Coco Peat Bags



Soil Greenhouse



Zucchini in Soilless 9 January 2008

1 Replicate= 6 Plants



1 Treatment= 24



Zucchini in Soilless 21 January 2008

**Introduction of Bumble Bees for
Pollination**



**One hive of bumble bees every 6
weeks**



Zucchini in Soilless 25 January 2008

Bumble Bee in action



Bumble Bee's Hive



SEA-CROP in Zucchini Grown in SOIL

Experimental Design

Zucchini crop grown under greenhouse

- Cultivar of Zucchini: *Apus* (Dark green)
- Date of planting: 28 November 2007
- Planting density: 1 plant per bag

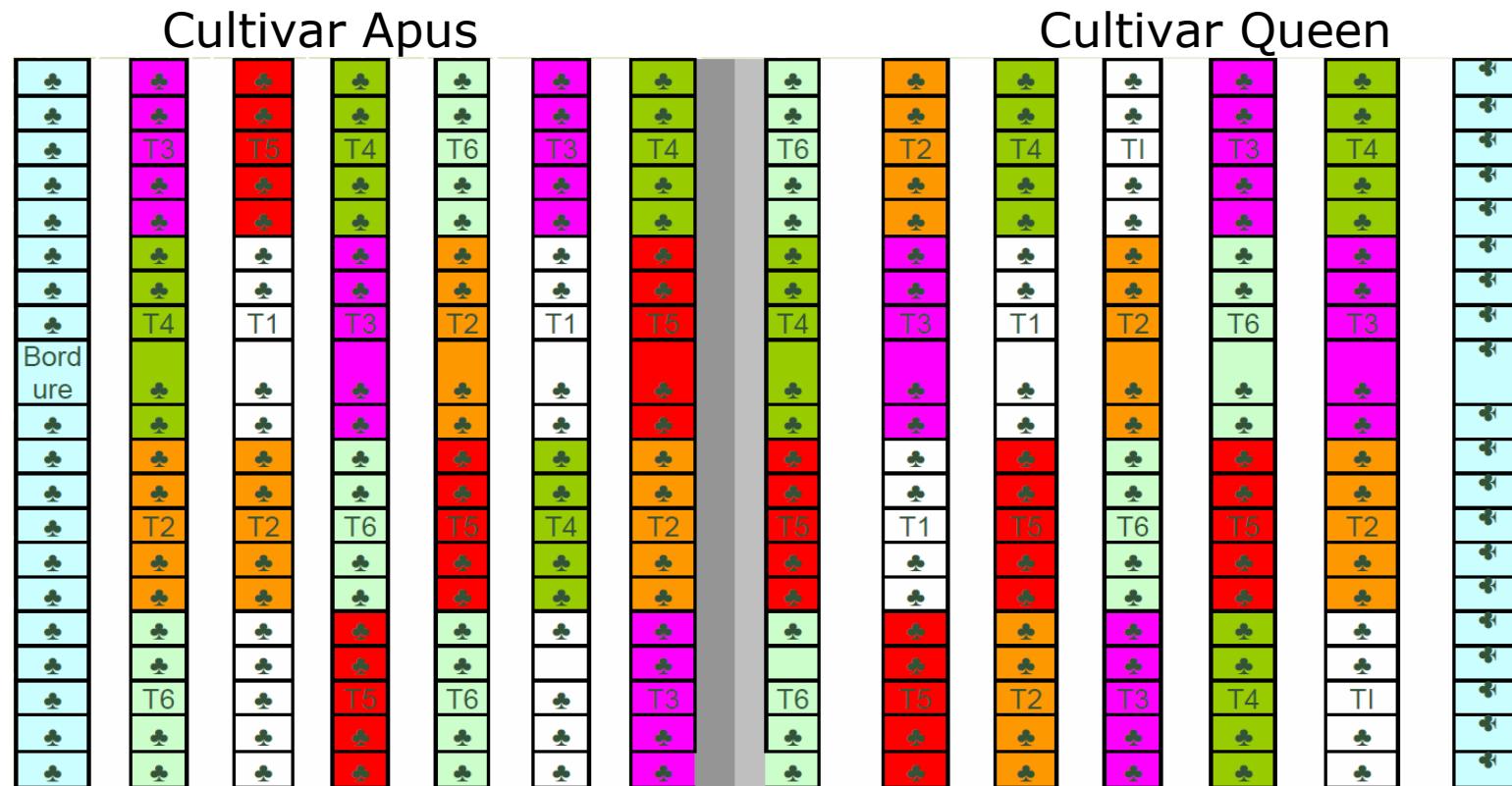
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SEA-CROP in Zucchini Grown in SOIL Experimental Design



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SEA-CROP in Zucchini Grown in SOIL Experimental Greenhouse

New Insect Net Installed



Soil Greenhouse Preparation



SEA-CROP in Zucchini Grown in SOIL

Experimental Design

Planting the Crop in soil



**Planting density 1 m on row;
2 m between rows**



SEA-CROP in Zucchini Grown in SOIL

21 January 2008

Leaf Measure: Length and Width



SEA-CROP in Zucchini Grown in SOIL

21 January 2008

Leaf Measure



SEA-CROP in Zucchini Grown in SOILLESS 26 January 2008

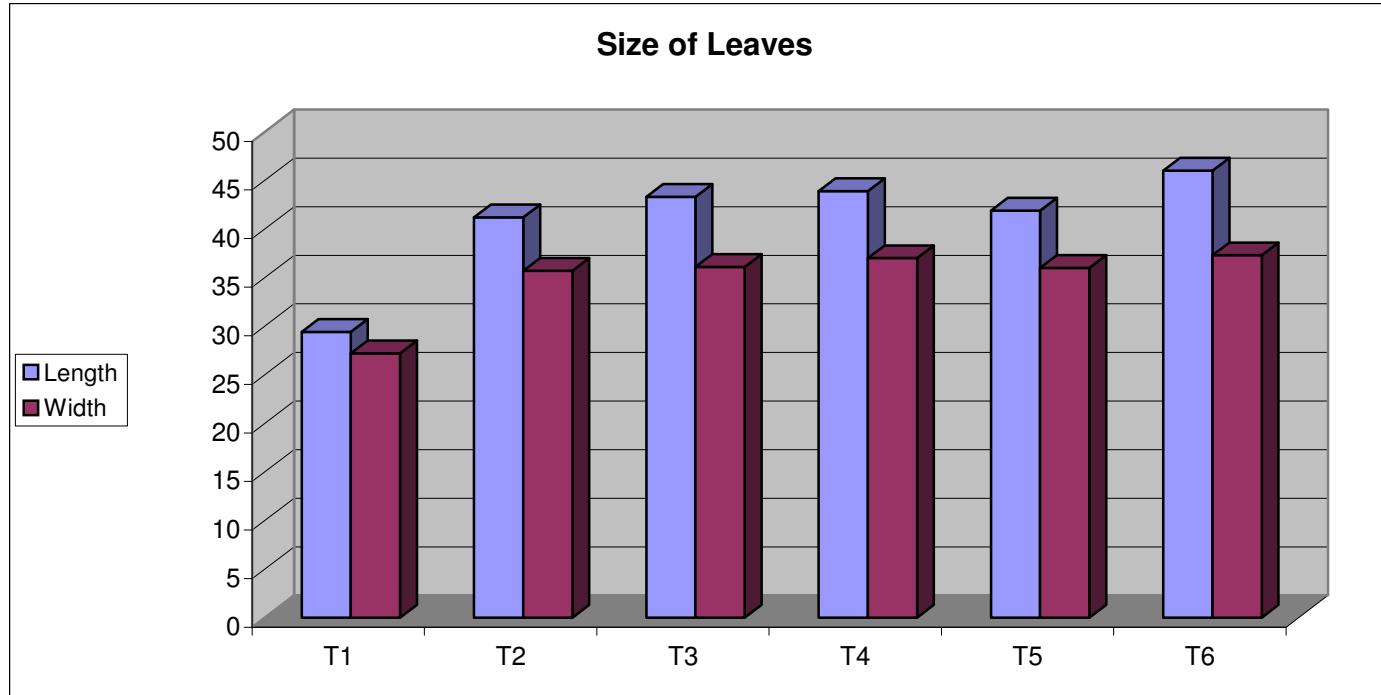
SEA-CROP Impact on Leaf Size



Impact of SEA-CROP on leaf size of Zucchini(cv. Apus) grown in soilless

Length (L) and width (W) in cm of Leaves of Zucchini (cv. Apus) grown in Soilless

| Treatment Replicate | T1 | | T2 | | T3 | | T4 | | T5 | | T6 | |
|------------------------|------|------|------|------|------|------|----|------|----|------|------|----|
| | L | W | L | W | L | W | L | W | L | W | L | W |
| 1 | 24 | 26 | 33 | 37 | 34 | 40 | 32 | 43 | 34 | 37 | 34 | 44 |
| 2 | 24 | 29 | 37 | 48 | 35 | 41 | 38 | 47 | 39 | 47 | 32 | 43 |
| 3 | 24 | 28 | 35 | 40 | 36 | 44 | 35 | 41 | 37 | 46 | 38 | 48 |
| 4 | 27 | 33 | 37 | 40 | 37 | 40 | 37 | 49 | 36 | 41 | 35 | 48 |
| 5 | 24 | 29 | 38 | 50 | 35 | 44 | 38 | 47 | 41 | 47 | 36 | 46 |
| 1 | 25 | 32 | 37 | 46 | 38 | 41 | 38 | 46 | 22 | 25 | 38 | 48 |
| 2 | 27 | 34 | 36 | 45 | 37 | 39 | 39 | 45 | 37 | 49 | 38 | 47 |
| 3 | 27 | 28 | 34 | 40 | 35 | 40 | 38 | 39 | 39 | 44 | 41 | 48 |
| 4 | 27 | 34 | 38 | 44 | 35 | 45 | 39 | 45 | 36 | 40 | 39 | 47 |
| 5 | 36 | 31 | 37 | 43 | 36 | 45 | 36 | 44 | 36 | 46 | 34 | 42 |
| 1 | 28 | 26 | 40 | 39 | 37 | 47 | 35 | 42 | 36 | 45 | 39 | 46 |
| 2 | 32 | 38 | 39 | 38 | 42 | 52 | 35 | 43 | 40 | 44 | 37 | 43 |
| 3 | 27 | 29 | 37 | 43 | 36 | 41 | 36 | 40 | 34 | 41 | 38 | 47 |
| 4 | 28 | 27 | 33 | 39 | 36 | 47 | 36 | 44 | 40 | 45 | 39 | 48 |
| 5 | 27 | 28 | 36 | 39 | 36 | 42 | 36 | 43 | 38 | 42 | 37 | 47 |
| 1 | 27 | 28 | 29 | 35 | 33 | 40 | 36 | 43 | 20 | 20 | 39 | 47 |
| 2 | 28 | 28 | 32 | 35 | 34 | 44 | 35 | 39 | 36 | 46 | 38 | 48 |
| 3 | 28 | 26 | 34 | 40 | 36 | 42 | 36 | 45 | 36 | 44 | 37 | 45 |
| 4 | 27 | 27 | 36 | 45 | 38 | 49 | 40 | 47 | 37 | 43 | 38 | 47 |
| 5 | 27 | 26 | 36 | 38 | 35 | 42 | 36 | 45 | 39 | 46 | 39 | 47 |
| Average | 27,2 | 29,4 | 35,7 | 41,2 | 36,1 | 43,3 | 37 | 43,9 | 36 | 41,9 | 37,3 | 46 |

Impact of SEA-CROP on leaf size of Zucchini(cv. Apus) grown in soilless**Length (L) and width (W) in cm of Leaves of Zucchini (cv. Apus) grown in soilless**

T1: Negative control

T2: SEA-CROP applied once as Drench (0.15%)

T3: SEA-CROP applied once as Drench (0.30%)

T4: SEA-CROP applied twice as Drench (0.30%) (6 weeks apart)

T5: SEA-CROP applied once as Foliar (1%)

T6: SEA-CROP applied twice as Foliar (1%) (6 weeks apart)

Some concluding remarks regarding the impact of SEA-CROP on leaf size of Zucchini

Major Conclusions

1. SEA-CROP application improved leaf size especially leaf length.
2. The impact of SEA-CROP was highest when SEA-CROP was applied twice as foliar (T6) (1%) or when SEA-CROP was applied once as foliar or as a drench to the soil (0.3%) (T3 and T4).



Evaluating the impact of SEA-CROP on Zucchini yield

First Zucchini Harvest



Spectacular Impact of SEA-CROP on Early Harvest

Note the low yield of the control (T1) as compared to SEA-CROP in the first harvest

SEA-CROP = Early and High Production



Evaluating the impact of SEA-CROP on Zucchini yield

Measuring the fruits on 28 February 2008



Impact of SEA-CROP on yield of Zucchini (cv. Apus) grown in soilless system

| Date | Harvest | T1 | T2 | T3 | T4 | T5 | T6 |
|------------|---------|----------|--------------|----------|--------------|----------|--------------|
| | | Fruit NB | Fruit Weight | Fruit NB | Fruit Weight | Fruit NB | Fruit Weight |
| 26/01/2008 | R1 | 1 | 2 | 0,31 | 2 | 0,4 | 0,46 |
| 28/01/2008 | | 2 | 2 | 0,35 | 4 | 0,734 | 0 |
| 29/01/2008 | | 3 | 0 | 0 | 0 | 0,6 | 0,6 |
| 31/01/2008 | | 4 | 4 | 1,5 | 1 | 0,25 | 0,25 |
| 02/02/2008 | | 5 | 3 | 0,63 | 2 | 0,5 | 0,63 |
| 04/02/2008 | | 6 | 3 | 0,7 | 4 | 0,9 | 0,7 |
| 06/02/2008 | | 7 | 4 | 0,98 | 3 | 0,75 | 0,98 |
| 08/02/2008 | | 8 | 4 | 0,95 | 5 | 1,2 | 0,95 |
| 10/02/2008 | | 9 | 5 | 1,02 | 4 | 0,89 | 1,02 |
| 13/02/2008 | | 10 | 4 | 0,78 | 5 | 0,98 | 0,78 |
| 15/02/2008 | | 11 | 1 | 0,2 | 1 | 0,18 | 0,2 |
| 17/02/2008 | | 12 | 2 | 0,4 | 1 | 0,2 | 0,4 |
| 26/01/2008 | R2 | 1 | 2 | 0,51 | 2 | 0,5 | 0 |
| 28/01/2008 | | 2 | 2 | 0,42 | 1 | 0,15 | 0 |
| 29/01/2008 | | 3 | 2 | 0,33 | 1 | 0,2 | 0,15 |
| 31/01/2008 | | 4 | 3 | 0,7 | 2 | 0,49 | 1,8 |
| 02/02/2008 | | 5 | 2 | 0,46 | 1 | 0,2 | 0,2 |
| 04/02/2008 | | 6 | 5 | 1,12 | 4 | 0,89 | 3 |
| 06/02/2008 | | 7 | 4 | 0,99 | 3 | 0,68 | 0,65 |
| 08/02/2008 | | 8 | 5 | 1,2 | 4 | 0,83 | 1,11 |
| 10/02/2008 | | 9 | 4 | 0,89 | 4 | 0,8 | 1,25 |
| 13/02/2008 | | 10 | 3 | 0,6 | 5 | 0,97 | 1,01 |
| 15/02/2008 | | 11 | 3 | 0,62 | 4 | 0,46 | 0,68 |
| 17/02/2008 | | 12 | 2 | 0,44 | 3 | 0,65 | 0,45 |
| 26/01/2008 | R3 | 1 | 0 | 0 | 2 | 0,356 | 1 |
| 28/01/2008 | | 2 | 3 | 0,5 | 1 | 0,15 | 0,22 |
| 29/01/2008 | | 3 | 2 | 0,33 | 0 | 0 | 0,346 |
| 31/01/2008 | | 4 | 1 | 0,27 | 2 | 0,596 | 1 |
| 02/02/2008 | | 5 | 3 | 0,7 | 4 | 1,1 | 0,22 |
| 04/02/2008 | | 6 | 1 | 0,2 | 2 | 0,48 | 0,48 |
| 06/02/2008 | | 7 | 4 | 0,94 | 7 | 1,69 | 6 |
| 08/02/2008 | | 8 | 3 | 0,68 | 4 | 0,84 | 1,38 |
| 10/02/2008 | | 9 | 4 | 0,9 | 5 | 1,04 | 8 |
| 13/02/2008 | | 10 | 5 | 1,02 | 7 | 1,46 | 1,03 |
| 15/02/2008 | | 11 | 3 | 0,6 | 4 | 0,47 | 6 |
| 17/02/2008 | | 12 | 3 | 0,63 | 3 | 0,65 | 1,23 |
| 26/01/2008 | R4 | 1 | 0 | 0 | 2 | 0,34 | 0 |
| 28/01/2008 | | 2 | 3 | 0,63 | 1 | 0,183 | 0 |
| 29/01/2008 | | 3 | 2 | 0,4 | 1 | 0,215 | 0,33 |
| 31/01/2008 | | 4 | 0 | 0 | 0 | 0 | 0,18 |
| 02/02/2008 | | 5 | 2 | 0,44 | 3 | 0,8 | 1 |
| 04/02/2008 | | 6 | 2 | 0,42 | 3 | 0,65 | 0,3 |
| 06/02/2008 | | 7 | 1 | 0,28 | 6 | 1,42 | 0,52 |
| 08/02/2008 | | 8 | 4 | 0,86 | 5 | 1,1 | 0,52 |
| 10/02/2008 | | 9 | 3 | 0,63 | 4 | 0,98 | 0,89 |
| 13/02/2008 | | 10 | 4 | 0,81 | 5 | 1,03 | 5 |
| 15/02/2008 | | 11 | 4 | 0,82 | 3 | 0,62 | 0,81 |
| 17/02/2008 | | 12 | 4 | 0,85 | 1 | 0,2 | 0,64 |

Impact of SEA-CROP on Yield of Zucchini cv. Apus grown in Soilless system

Average number of fruits and yield per period of harvest

| Harvest Dates | 26-31 January 2008 | | 2-6 February 2008 | | 8-13 February 2008 | | 15-17 February 2008 | |
|---------------|--------------------|----------------|-------------------|----------------|--------------------|----------------|---------------------|----------------|
| | Number of Fruits | Average Weight | Number of Fruits | Average Weight | Number of Fruits | Average Weight | Number of Fruits | Average Weight |
| T1 | 1,75 | 0,39 | 2,8 | 0,7 | 4 | 0,86 | 2,75 | 0,57 |
| T2 | 1,3 | 0,31 | 3,5 | 0,8 | 4,8 | 1 | 2,5 | 0,5 |
| T3 | 1,5 | 0,34 | 3,25 | 0,8 | 4,7 | 1 | 2,9 | 0,6 |
| T4 | 1,4 | 0,31 | 4,3 | 1 | 5,3 | 1,1 | 2,6 | 0,5 |
| T5 | 1,6 | 0,39 | 2,8 | 1 | 5,6 | 1,2 | 3,3 | 0,5 |
| T6 | 1,3 | 0,3 | 3,3 | 0,7 | 6 | 1,2 | 2,9 | 0,5 |

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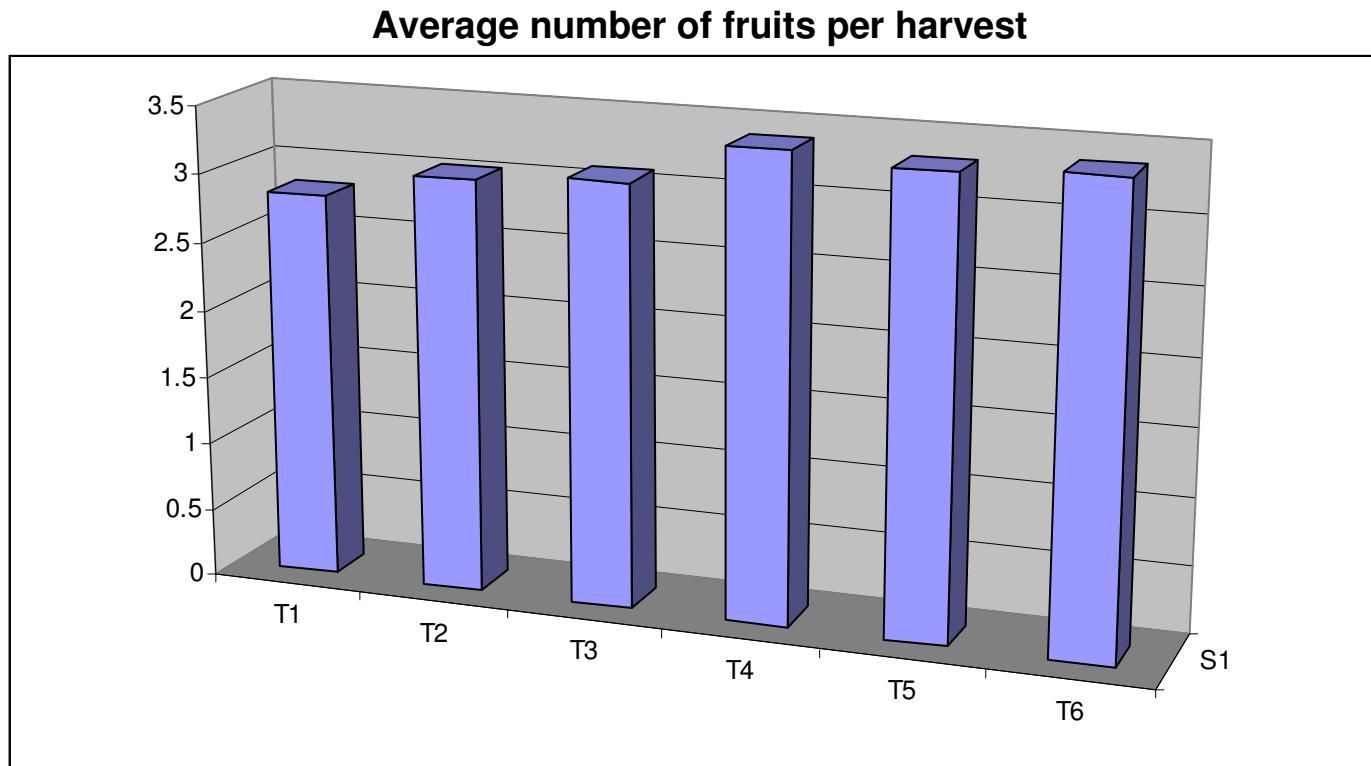
T3: SEA-CROP applied once as Drench (0.30%)

T4: SEA-CROP applied twice as Drench (0.30%) (6 weeks apart)

T5: SEA-CROP applied once as Foliar (1%)

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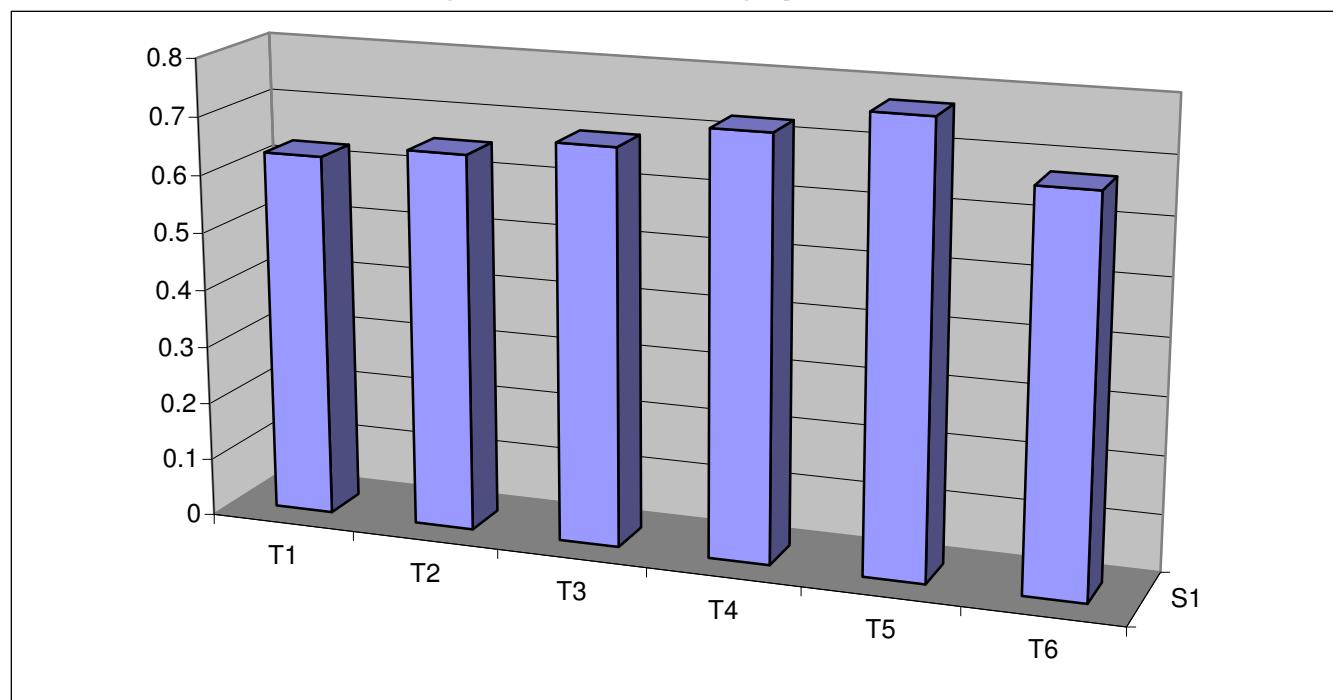


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Impact of SEA-CROP on Yield of Zucchini cv. Apus grown in Soilless system

Average Fruit Yield (Kg) per Treatment



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Impact of SEA-CROP on Root of Zucchini cv. Apus grown in Soilless system

Harvesting the Root System



Impact of SEA-CROP on Root of Zucchini cv. Apus grown in Soilless system

Harvesting the Root System



Impact of SEA-CROP on Root of Zucchini cv. Apus grown in Soilless system

Harvesting the Root System 27 February 2008



Impact of SEA-CROP on Root of Zucchini cv. Apus grown in Soilless system

Washing the Roots from the Substrate



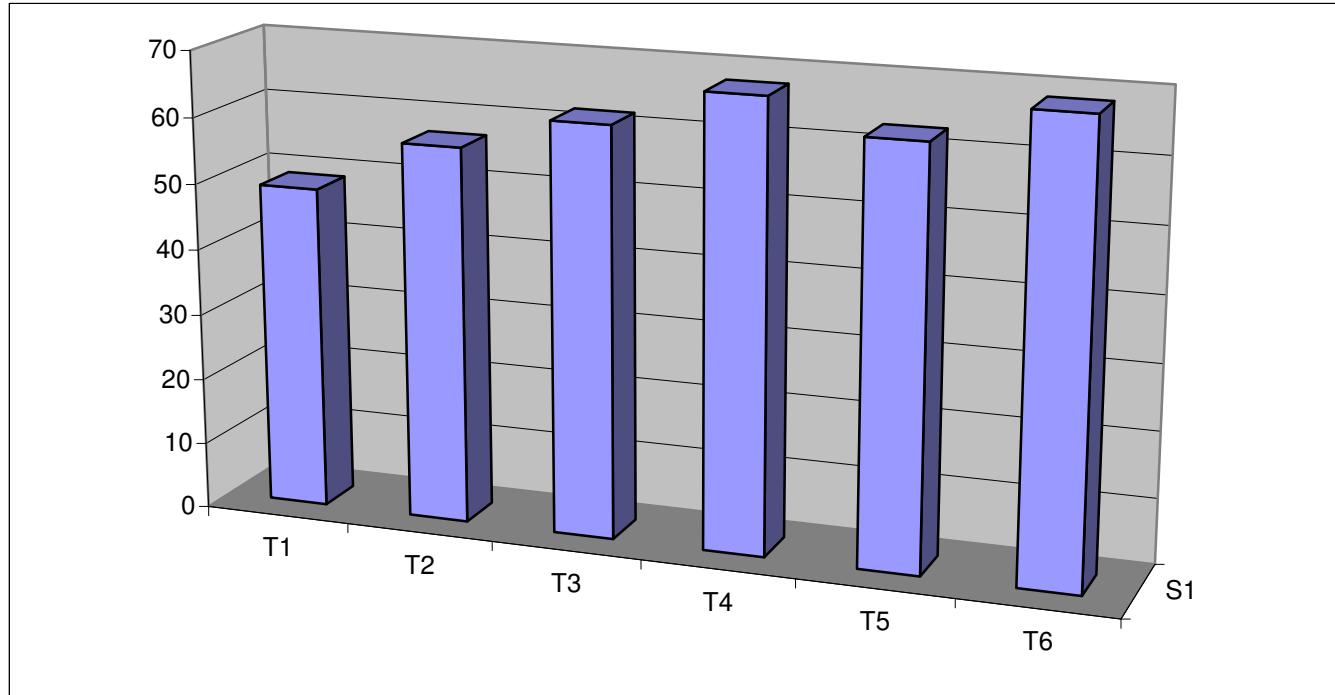
Impact of SEA-CROP on Root of Zucchini cv. Apus grown in Soilless system

Harvesting the Root System 27 February 2008



Impact of SEA-CROP on Root of Zucchini cv. Apus grown in Soilless system

Dry Weight (g) of 8 Root Systems/Treatment



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Some Concluding Remarks concerning SEA-CROP and Zucchini grown in Soilless System

- ❖ All SEA-CROP Treatments have improved leaf size, number of fruits and total yield
- ❖ All SEA-CROP treatments have caused an early flowering and consequently an early production as compared to the control
- ❖ The best performance in terms of fruit number and fruit yields were achieved in the treatment which received two foliar applications of SEA-CROP (1%) followed by the treatment which received two applications as drench (0.30%).
- ❖ Even one foliar application of SEA-CROP (1%) achieved better results than drenching (0.15% or 0.30%).
- ❖ The concentration of 0.15% of SEA-CROP produced slightly better results than the negative control.
- ❖ SEA-CROP enhanced root volume and root dry weight. Again two foliar applications (1%) and two drench applications (0.30%) produced the largest root system.
- ❖ PS: Data relative to the two cultivars grown in soil was not presented in this report because of severe powdery mildew which affected the results of the trial in soil