

Case Study on Sweet Potato (*Ipomoea batatas*) Plants Treated with UNLEASH™



Mature Unleash™-Treated Sweet Potato Field

I. Introduction

Sweet Potatoes (*Ipomoea batatas*) are a growing crop all over the world due to their high profit margin and nutritional value including complex carbohydrates, proteins, vitamins A and C and minerals such as iron and calcium. On April, 2012 it was agreed to do a trial with **Unleash™** on a four dunam (4,000 square meters) field at Ozer Farm, in the Gan Sh'muel area in Israel.



II. Trial Design

1. Applications were done on April 2012, June 2012 and July 2012, with the last treatment after the field was already in the flowering stage.
2. Two different irrigation valves covering a little more than one hectare were injected with the **Unleash™** solution prepared according to directions. As the sweet potatoes were planted on elevated beds with sprinklers covering four beds, the samples were taken from the two middle beds.
3. Although the quantity of **Unleash™** was the recommended dosage for the whole area covered by the sprinklers, the measurements were taken from a limited sample area.
4. The area selected for the measurements was the equivalent of 10 sq. meters from inside two of the middle beds. There were four (4) measurements done in 9 different beds. Two of them were done at 100% of the manufacturer recommended dosage on different dates on the same stage of development of the crop and two were done using different quantities of **Unleash™** at 50% and 200% of the manufacturer recommended dosage.
5. Because some samples were taken on different dates there are slight variations in climate for these samples.
6. It should be noted that plants in both the **Unleash™** treated areas as well as the untreated areas looked healthy and vigorous. The development of the roots into bulbaceous bodies happens quite late in the plant grow cycle.



Addition of the Unleash™ Solution to the Fertilizer Tank

III. Results

The different fields were ready for harvest after 5 ½ months and the measurements were done with each collection.

First Plot: Harvested on September 1st 2012

Unleash™ usage was 100% of recommended dosage

	Weight of 10mts ² of Unleash™ treated (Kg)	Weight of 10mts ² of Untreated (Kg)	Weight Difference (Kg)	Difference (Percentage)	Weight for 1,000mts ² (tons) Unleash™ treated	Weight for 1,000mts ² (tons) Control
bed 1	107.5	83			10.6	8.2
bed 2	99.5	73			9.9	7.2
Mean weight	103.5	78	25.5	33%	10.2	7.7



Second Plot: Harvested on October 1st, 2012
Unleash™ usage was 100% of recommended dosage

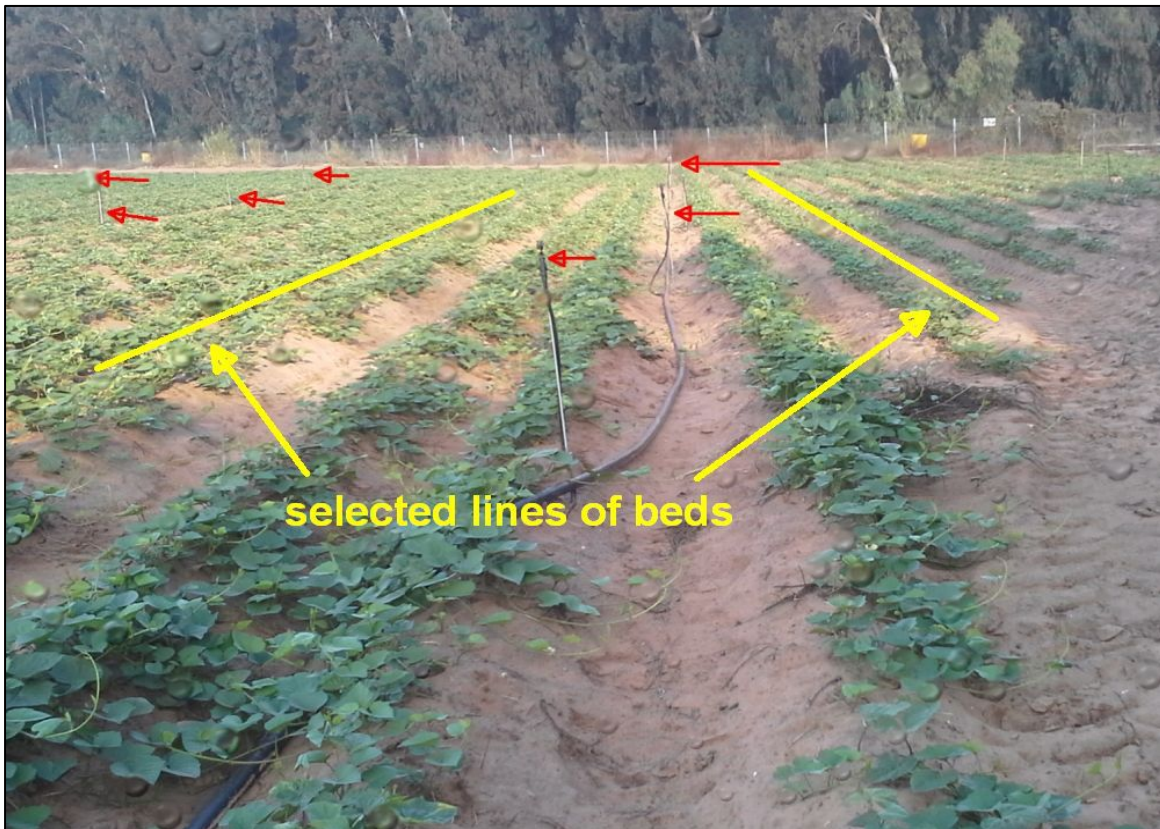
	Weight of 10mts ² of Unleash™ treated (Kg)	Weight of 10mts ² Untreated (Kg)	Weight Difference (Kg)	Difference (Percentage)	Weight for 1,000mts ² (tons) Unleash™ treated	Weight for 1,000mts ² (tons) Control
bed 3	86	81			8.5	8.0
bed 4	79	54			7.8	5.3
bed 5	95	80			9.4	7.9
Mean weight	87	72	15	21%	8.6	7.1

Third Plot: Harvested on October 1st, 2012.
Unleash™ usage was 50% of recommended dosage

	Weight of 10mts ² of Unleash™ treated (Kg)	Weight of 10mts ² of Untreated (Kg)	Weight Difference (Kg)	Difference (Percentage)	Weight for 1,000 mts ² (tons) Unleash™ treated	Weight for 1,000mts ² (tons) Control
bed 6	38.5	38	0,5	1.32%	3.8	3.8

Fourth Plot: collected on October 1st, 2012.
Unleash™ usage was 200% of recommended dosage

	Weight of 10mts ² of Unleash™ treated (Kg)	Weight of 10mts ² of Untreated (Kg)	Weight Difference (Kg)	Difference (Percentage)	Weight for 1,000mts ² (tons) Unleash™ treated	Weight for 1,000mts ² (tons) Control
bed 1	59	58		2%	5.8	5.7
bed 2	63.5	45		41%	6.3	4.5
bed 3	88.5	66		34%	8.8	6.5
bed 4	66	59		12%	6.5	5.8
Mean weight	69	57	12.25	21%	6.9	5.6



Young Unleash™-treated plants with the irrigation pattern and the harvest area indicated.

IV. Conclusions:

- a. A simple comparison of the yields of the **Unleash™** treated beds with the control shows a significant increase in yield of between 21% – 33% in Unleash-treated crops compared to the untreated control.
- b. The results from the use of 50% of the recommended dosage shows no yield increase over the untreated plot, suggesting that using Unleash™ at the recommended dosage is essential for the benefits of Unleash™ treatment to be seen.
- c. The results from the use of 200% of the recommended dosage shows similar yield improvements as treating with 100% of the recommended dosage, suggesting that there is no significant benefit to using more than the recommended amount of Unleash™ for sweet potatoes.
- d. For the final return on investment, the market value of the sweet potato crop for the farmer was ₪3,00 (Israeli Shekel) per kilo. This means **Unleash™** treatment had an increase of between ₪3,138 (US\$900) to ₪7,074 (US\$2,000) for a 1,000 sq. meter plot.