November 18, 2013

Case Study on Chili Peppers (Paprika) Treated with Unleash™

Close-up of Chili Peppers drying in the field at Kibbutz Shoval, Israel.

I. Introduction

In 2013, Mr. Dudi Koren of Kibbutz Shoval, Israel, agreed to conduct a trial of **Unleash™** on the kibbutz' chili pepper (paprika) field. The full size of the chili pepper field is 600 dunam (approx. 150 acres).

II. Test Process

- Mr. Koren activated **Unleash™** according to directions. The first application was done immediately after the chili pepper seedling transplant.
    - Two lots of 1.6 dunam (approx. 0.4 acres) each were treated
    - 1st Application: May 8, 2013
    - 2nd Application: May 16, 2013
    - Treatment amount: 500 mL/acre each application

- A first harvest occurred on October 2, 2013. Mature peppers from four beds 8 meters long were selected. Peppers from the treated beds, as well as from the control, were weighed and recorded. The first harvest showed a yield increase of 33%.

- The final harvest occurred on November 13, 2013. Chili peppers harvested from four beds 2 meters long were randomly selected from the Unleash™ treated and untreated control beds. The final harvest showed a yield increase of 28%.

- Mr. Koren's representatives and Mr. Nissim Barnea and Mr. Shimon Ben Haim of AquaBella Israel were present for the harvests and measurements.

III. Results

- **First Harvest:**

  - Results for **Unleash™** treated plants:

	Bed 1	Bed 2
Number of Plants	120	104
Number of Peppers	2,212	2,208
Total Weight	**13.48 kg**	**14.06 kg**

  - Results for **Untreated Control** plants:

	Bed 1	Bed 2
Number of Plants	112	120
Number of Peppers	1,920	1,840
Total Weight	**10.00 kg**	**10.65 kg**

  - **Summary of the Results of the First Harvest:**

	Unleash™	Control	**Difference**
Number of Plants	224	232	**-4%**
Number of Peppers	4,420	3,760	**18%**
Total Weight	27.54 kg	20.65 kg	**33%**
Average Pepper Weight	6.23 g	5.49 g	**13.5%**

- **Final Harvest:**

  - Results for **Unleash™** treated plants:

	Bed 1	Bed 2
Number of Plants	65	74
Number of Undamaged Peppers	889	954
Number of Damaged Peppers	85	78
Weight of Undamaged Peppers	**4.50 kg**	**5.55 kg**
Weight of Damaged Peppers	150 g	300 g
Total Weight	4.65 kg	5.85 kg

  - Results for **Untreated Control** plants:

	Bed 3	Bed 4
Number of Plants	61	70
Number of Undamaged Peppers	699	745
Number of Damaged Peppers	80	79
Weight of Undamaged Peppers	**4.07 kg**	**3.80 kg**
Weight of Damaged Peppers	250 g	150 g
Total Weight	4.32 kg	3.95 kg

  - **Summary of the Results of the Final Harvest**

	Unleash™	Untreated	**Difference**
Total Number of Plants	139	131	**6%**
Number of Undamaged Peppers	1,843	1,444	**28%**
Total Undamaged Weight	10.05 kg	7.87 kg	**28%**
Average Pepper Weight	5.45 g	5.45 g	**0%**

- **Final Results**

	Unleash™	Untreated	**Difference**
Total Number of Plants	363	363	**0%**
Number of Peppers	6,263	5,204	**20%**
Total Weight	37.59 kg	28.52 kg	**32%**
Average Pepper Weight	6.00 g	5.48 g	**9.5%**

Weighing Unleash™-Treated Chili Peppers in the Field

IV. Conclusions:

- Overall, the increase in yield for Unleash™-treated chili pepper (paprika) plants over untreated plants was 32% by total weight, with a 20% increase in the total number of peppers harvested in treated plants.

- Much of the high yields by Unleash™-treated plants were seen in the early harvest, where a 33% yield increase by weight was found, while a 28% yield increase in the late harvest was found.

- In the early harvest, yield improvements by Unleash™-treated plants were due to a combination of more total peppers being produced (18%) and a higher average pepper weight (13.5%).

- In the late harvest, yield improvements by Unleash™-treated plants were due entirely to more total peppers being produced (28%), as the average pepper weight was the same for both treated and untreated pepper plants.

- The farmer noted that he could visually see the higher density of peppers in the Unleash™-treated field, as the field had a greater intensity of red color.