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COTTON FIELD TEST – SEEDTECH TEMED TREATMENT

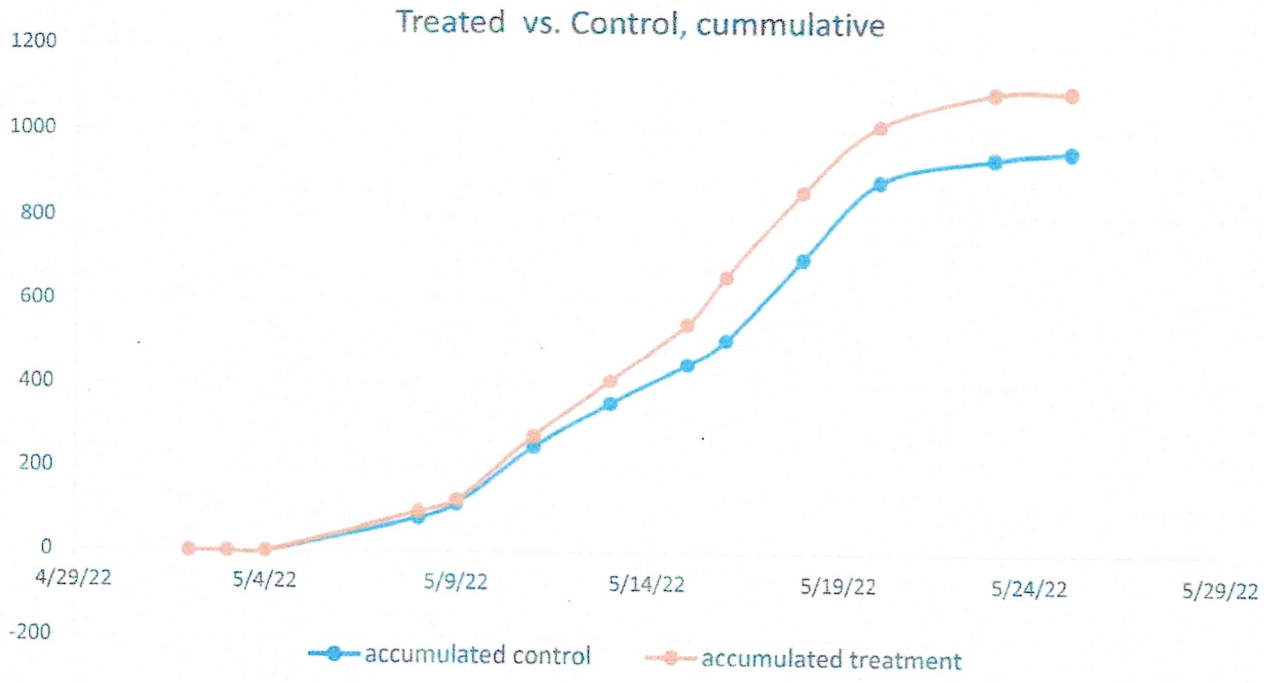
1. BACKGROUND
   Seed Tech Temed developed a special, water free, chemical free, very fast and energy efficient seeds treatment that results in faster emergence, stronger plants and increased yield. The treatment is very simple, seeds can be fed into a conveyor, move continuously, pass through a zone where it is illuminated by our special illumination device and exit straight into bags. Treatment time can be from 3 to 12 minutes, depending on crop, variety and other factors. STT has developed a unique protocol by which it tailors the treatment to different crops that enables quick adaptation of the parameters. This field test was conducted by treating the seeds with our newly designed, advanced illumination technology. To demonstrate the quality of the treatment applied in the new machine we agreed with a local cotton farming cooperative (Tsabar Kama) to perform a field test on a plot the size of ~2 hectares (~4.5 acres)
2. Materials
   About 30 Kg (66 lbs.) of cotton seeds of the HA-1432 variety were treated. The seeds were taken out of a bag that was used for planting the commercial field.
3. Planting
   The seeds were planted in the midst of a commercial field. The planter was equipped with precise GPS with about 1 meter (~3.3 ft) precision. The coordinates were precisely recorded. There were 18 treated rows and we decided to do the evaluation of adjacent 18 control rows. The planter was calibrated to plant 12 seeds per meter.
4. Irrigation
   Due to water line pressure the irrigation was on alternate rows with about 3 days between the first and second starts. This created two populations

reflecting the initial emergence stages, but we decided for simplicity to represent the cumulative emergence data.

5. Emergence counting

For the purpose of counting, we marked 10 meter segments about 15 meter from rows end of the treated and control. The number of seeds planted in a stretch of 10 meters is 120, and for 18 segments the total was 2160. The declared emergence % of the lot was 85. To validate our counting method we invited two independent observers, one a regional cotton expert employed by the consortium of Southern Israel Farming Organization and one a plant protection expert employed by the cooperative Tsabar Kama to participate in a number of the counting cycles.

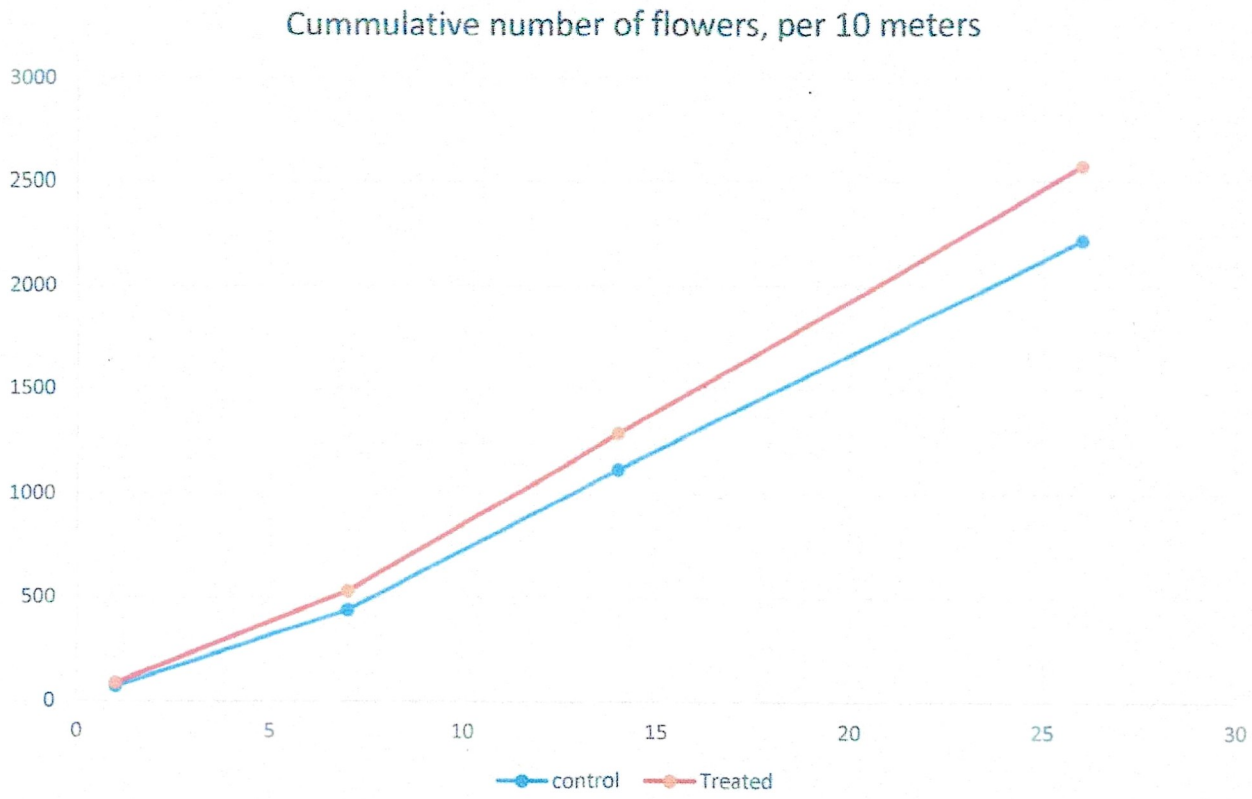
The results of the counting are best presented in the following graph:



The advantage at the end of the emergence is 1092 plants vs. 953, 14%.

6. Flowers counting

For the purpose of flower counting we marked again 10 meters segments in each row of the treated and the control. Counting flowers is a little tricky in cotton, because of the total length of the flowering period, some of older flowers partially dry and fade. Therefore, we decided to count only "live" flowers each time. The counting was done 4 times, at the start of observing flowering, after 1 week, 2 weeks and 26 days. The results are shown in the graph below:



The trend is clear here as well. The difference is 14%.

7. Harvesting

The harvesting of the treated lot was done using a GPS controlled harvester, and the entire planted area was harvested. The harvester produces a roll and ejects it when full, then a new roll is started. At the end of the treated area a partial roll was ejected.

Each roll gets a barcode. The barcodes of each roll were recorded.

Subsequently, the adjacent area to the treated (where the control counts were done) was also harvested. A total area of similar size was harvested. A partial roll was also ejected.

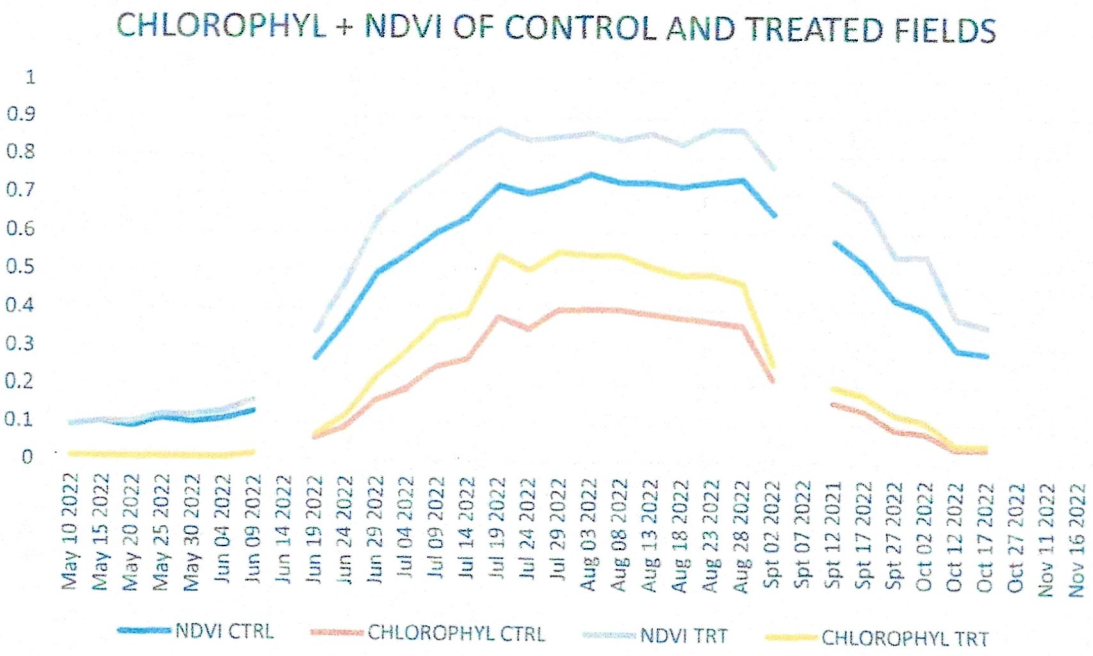
The total area of treated was calculated from the GPS coordinates as 1.90 hectare and the reference area was 2.07 hectare.

The rolls were brought to the mill and weighed. The results are tabulated below:

Type of plot	Harvested area	Raw cotton yield/hectare Kg	Yield/hectare, Kg
Control	2.07	10,070 (22,180)	4,865
Treated	1.90	9,890 (21,784)	5,205

The advantage is 6.99%, i.e. 7%.

8. <u>Additional scientific information.</u>
In Israel we can buy satellite data that records continuously a parameter of high value to farmers here. The data is chlorophyll activity of plants in the fields and NDVI, (Normalized Difference Vegetation Index). The data contains detailed global coordinates for each point on the maps they sell. By using our GPS coordinates of the two plots, the treated and the control, we were able to isolate two plots of 0.87 hectare each in the midst of the relevant area. The idea was to stay away from edges of the lots. We received the chlorophyll activity and NDVI for the two lots vs. time from planting to harvesting. The results are shown below.



The time period is from just before the planting to the harvesting. Dates with no data are dates when clouds interfered with the measurement. The difference is so obvious from the very beginning of the emergence and growth, to the time that the plants start to develop dry leaves and finally to the operation of total leaves removal before harvesting.
The difference in chlorophyll activity is illuminating the reasons why we get higher cotton yield. Obviously, not all the extra chlorophyll activity is converted into more cotton, some of it is converted into bigger plants, more seeds inside the cotton balls, etc.

9. Discussion

The field test results, along with the chlorophyll data confirm that our very low cost, chemical free, low energy consumption treatment accelerates germination, enhances plant vigor, and of course contributes to yield increase of at least 7%.

Signed:

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