

## Effect of Converted Organics™ LC on the Yield of Pima Cotton

Cotton field crops (lint and seeds) in California represent the 11<sup>th</sup> largest agricultural commodity according to the California Department of Food and Agriculture statistics (2003).



At over \$760 million sales annually it is a major crop for the State, ranking behind Hay (#10) and before Broccoli (#12). Growers are constantly looking for ways to improve harvest yields, crop quality and plant uniformity, in addition to

reducing fertilizer and pesticide usage plus protecting the largest investment of all – their soil.

### BACKGROUND

Large scale testing was conducted on Pima cotton in the San Joaquin Valley of Central California over a two year period. The primary objective was to evaluate the benefits of a microbially-based organic fertilizer product (*Converted Organics™ LC*) against the growers' standard program and quantify the effects on cotton production.

The field trial was divided into two regions, a 75.9 acre untreated control area and a 79.0 acre treated area. Both regions utilized the growers' standard program consisting of a preplant of 10-34-0 at a rate of 40 gallons per acre (gpa). This was followed by a sidedress application of UN32 at a rate of 32 gpa. The treated region had the same 32 gpa UN32 application, but 10 gpa of *Converted Organics™ LC* was mixed with the UN32 prior to sidedress (see Table 1).

**Table 1: Cotton Trial Conditions**

Irrigation Schedule	Sprinkler
Planting Date	04/01/03
Application Date	06/03/03
Application Schedule	10 gpa with UN32
Growers Standard Program	Preplant – 40 gpa 10-34-0, Side dress – 32 gpa UN32
Application Method	Side dressed
Treatment Location	East to West, Rows 1 to 428 treated (79.0 ac). Rows 429 to 840 (75.9 ac) untreated
Harvest Date	11/16/04 through 11/19/04

### DATA COLLECTION and ANALYSIS

Two weeks before harvest, one row from the treated plot and one row from the control area were sampled and compared. Approximately every 250 feet of the 2100 foot long rows, a 50 inch bed length was measured and the total number of cotton plants was counted. Additionally, the total number of open cotton bolls was counted for each sampling site and fruiting position for each plant taken. A total of 14 sampling sites of 50 inch bed length were evaluated in both the untreated and treated areas. The average number of open bolls per plant was calculated (see Table 2). During harvest the grower kept the *Converted Organics™ LC* treated block separate from the control block and provided pay-out records from the gin for each of the areas (see Table 3).

**Table 2: Pre-harvest open bolls comparison<sup>1</sup>**

Testing Site	# Plants	Bolls Open/Plant	Total Open Bolls	Avg. Plant Height	Avg. # Fruiting Branches/Plant
Untreated	107	8.47	906	31.17	7.15
Converted Organics™ LC Treated	78	9.72	758	31.44	7.51
Untreated (sandy soil)	14	5.14	72	23.43	4.78
Converted Organics™ LC (sandy soil)	12	7.17	86	21.83	6.33

**Table 3: Lint and seed yields for Pima cotton<sup>1</sup>**  
(from ginning records)

Seed	Treated	Control	Gain (Loss)
Yield (lb/acre)	2,848	2,616	232
Turnout (%)	51.66	50.88	1.40
Revenue (\$/acre) <sup>2</sup>	\$242.08	\$222.36	\$19.72/acre
<b>Lint</b>			
Yield (lb/acre)	1,977.45	1,836.88	140.57
Turnout (%)	33.57	34.60	(1.03)
Revenue (\$/acre) <sup>3</sup>	\$1383.90	\$1,285.12	\$98.78/acre

<sup>1</sup> Data was collected from Row 408 of *Converted Organics™ LC* treated cotton and Row 458 of control. It includes 19 modules from the *Converted Organics™ LC* area and 16 modules from the control area.

<sup>2</sup> Price of cotton seed used in this calculation was \$170.00/ton.

<sup>3</sup> Price of cotton lint used in this calculation was \$0.70/lb.

### CONCLUSIONS

Comparing open bolls that appear on the cotton plants just before harvest is a reliable way of approximating the effect of *Converted Organics™ LC* treatment on the yield of cotton (see Table 2).

Crop mapping of the data taken in Table 2 shows the following results as compared to the untreated area; Plant height 0.86% less, number of open bolls per plant 12.86% increase, the number of fruiting branches per plant showed an increase of 4.79%, and the percentage of plants with more than one open boll per branch increased by 3.68%.

*Converted Organics™ LC*, when applied at the rate of 10 gpa with UN32, **increased lint and seed yields**. Lint yield increased by 98.78 lb/acre (7.14% by weight). Seed yield increased by 232 lb/acre (8.15% by weight). Turnout for seed increased by 2.71% and turnout for lint decreased by 2.98% (see Table 3). Therefore, if the price of seed was \$170/ton, the price of lint \$0.70/lb and the cost of *Converted Organics™ LC* was \$2.00/gallon, the **net return to the grower would be \$98.50/acre** when 10 gpa of *Converted Organics™ LC* are applied with UN32.