

Effect of Converted Organics™ LC on the Yield of Processing Onions (1)

California is the largest producer of Onions in the United States with 44,000 acres and more than 950,000 tons harvested each year according to the California Department of Food and Agriculture statistics (2003). At over \$200 million sales annually it is a major crop for the State, ranking behind Celery (#24) and before Cauliflower (#26). 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

Commercial field trials were conducted on conventional processing onions in the Central Valley region of California. 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 onion production.

The field trial was conducted on sandy loam type soil conditions and divided into two regions, 95 rows (~ 21.0 acres) of treated area and the remainder of the 764 rows was untreated. Both regions utilized the growers' standard program consisting of a preplant of 10-34-0 at a rate of 26 units per acre (upa) of Nitrogen with 1 gpa of 6% chelated zinc solution. Approximately 5 months later, this was followed by 25 upa of UN32, then 16 days later with an application of 30 upa of CAN 17. Four days later 153 upa of Urea was air applied, and two more applications of CAN 17 of 30 upa each occurring 35 days and 49 days thereafter. The treated region had the same fertilization program, but with the addition of two applications of *Converted Organics™ LC* at 8 gpa each, occurring two weeks apart at onset of bulbing (see Table 1).

Table 1: Conventional Processing Onions Trial Conditions

Product Tested	Converted Organics™ LC
Crop	Processing Onions
Soil Type	Sandy Loam
Irrigation Schedule	Once/week, 12 hours (3.5 af)
Planting Date	01/07/04 to 01/16/04
Application Date	06/04 (onset of bulbing)
Application Schedule	2 x 8 gpa, 2 weeks apart
Growers Standard Program	10/10/03: 10-34-0, 26 upa N +1 gpa of 6% chelated Zn solution; 3/10/04: 25 gpa UN32; 3/26/04: 30 gpa of CAN 17; 3/31/04: 153 gpa Urea – air applied; 5/4/04: 30 gpa CAN 17; 5/18/04: 30 gpa CAN 17.
Application Method	Solid-set sprinklers fed at 8 gpa
Treatment Location	East to West, Rows 121 to 216 treated (~ 21.0 acres). Remainder of region was control, 764 rows.
Harvest Date	9/9/04

Onions were planted on 40 inch sprinkler irrigated beds. One week before harvest, sampling sites were at 500 feet bed length, 1000 feet bed length and at 1500 feet bed length. At each sampling site, all bulbs were dug out from 48 inches of bed length in quadruplicate. Two control samples were taken East of treated area and two control samples were taken West of treated area at the corresponding bed lengths. All bulbs were counted and weighed. Comparison of mean sample weights for each sampling site was done by 2-Way *Between Subjects* ANOVA. Effect of *Converted Organics™ LC* application and field location (500 feet, 1000 feet and 1500 feet field length) was tested (see Table 2).

Table 2: Effect on Yield of Onions Using 2-way ANOVA Results

Factors	n ¹	Mean, lb/site ²	tpa ³	SD ⁴	F	p
Fertilizer					11.56	0.0032
Converted Organics™ LC	12	15.85	20.7	1.54		
Control	12	12.99	17.0	2.55		
Field Location					1.55	0.2401
500 feet	8	13.57		2.57		
1000 feet	8	15.37		1.36		
1500 feet	8	14.32		3.26		
Location x Fertilizer					0.98	0.3928

¹ Number of sites evaluated

² One site consists of 48 inch length of a 40 inch wide bed

³ Assuming that 80% of the total field area is under onion crop

⁴ Standard deviation

CONCLUSIONS

It is 99.68% ($p = 0.0032$) certain that *Converted Organics™ LC* improves significantly the conventional process onions yields when applied at the rate of 8 gpa, two times during the growing season (see Table 2). *Converted Organics™ LC*, when use at 16 gpa increased the yield of conventional processing onions by approximately 3.7 tons per acre (see Table 2). At the current market price of onions of \$88.00/ton, this amounted to \$325.60 per acre. Subtracting total cost of *Converted Organics™ LC* of \$32.00 per acre, a **net gain of \$293.60 per acre was realized.**

Statistically, there was no effect of field location on the yield of onions, indicating that the test field was nutritionally uniform (see Table 2). Therefore, the only significant statistical difference was a **result of the application of *Converted Organics™ LC*.**