

Experiment Info:

Exper.:	ACL-1401
Planted:	29-Aug-14
Variety:	Telluride
Population:	26,136 (12" spacing)
Plot size:	3.3 ft x 50 ft
Replications:	Four
Harvest:	27- Oct -14

Soil Test Values (ppm):

Soil	Sandy Loam
pH:	7.3
CEC:	6.1
%OM:	0.20
Bray P1:	18 ppm
Bicarb P:	-
K:	60 ppm
S:	25 ppm
%K:	-
%Mg:	19.10%
%Ca:	76.80%
%H:	-
Na:	1.50%
Zn:	0.5 ppm
Mn:	2.0 ppm
Fe:	9.0 ppm
Cu:	0.4 ppm
B:	0.3 ppm

Objective:

Determine the impact of a 20% reduction in nitrogen on lettuce yields and whether current or experimental AgroLiquid products can be used to maintain or enhance yields.

Materials & Methods:

- On August 14, 2014, the plot was established in a sandy loam soil near Guadalupe, CA. Telluride head lettuce was planted in plots 39" wide and 50 ft. long plots with 12" in-row spacing. The planting rate was approximately 26,136 plants/acre. Each plot was replicated four times in a randomized complete block design.
- A pre-plant treatment of 6-24-24 (300 lb/a) was incorporated prior to planting along with drip application of 17-0-0 prior to planting for treatments 1-3. 17-0-0, eNhance or N-14 were applied at thinning and every other week after that. Crop growth and yield characteristics were measured. Stand counts were not significantly different between treatments and crop vigor was very good for all treatments. See Table L1.
- Remote sensing equipment was used to objectively measure leaf greenness (NDRE) and canopy coverage (NDVI). Each measurement increased as the season progressed, indicating healthy growth, but no single treatment provided a boost to either growth response. Canopy Chlorophyll Content Index (CCCI), a measure of the greenness of the actual canopy present did not show significant difference between treatments (data from NDRE/NDVI).
- Lettuce heads were harvested October 27 and separated by large (18/carton), medium (24/carton) and small (30/carton) or cull (unmarketable, damaged, blemished). Gross returns were based on local pricing on the day of harvest, \$9 per 20 pound carton.

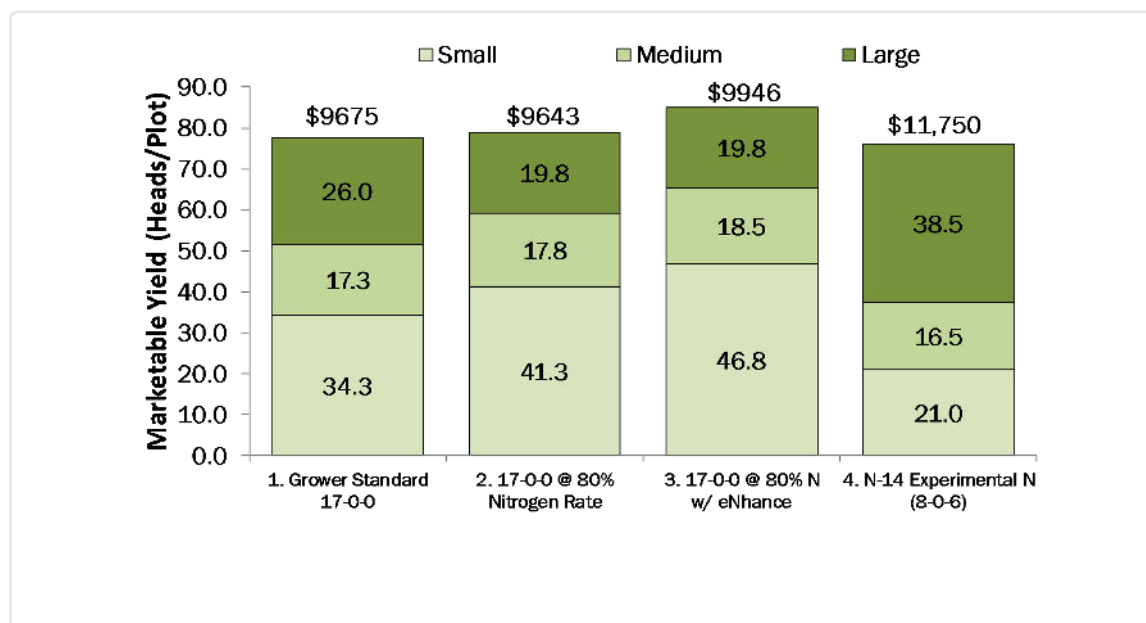


Figure L1. Effect of fertility programs on the size, yield and market value of head lettuce.

Table L1. Fertility program comparisons for head lettuce production, Guadalupe, CA 2014

Trt No.	Treatment Name	N Conc	Form Unit	Form Type	Rate Rate	Appl Code	Application Description	Total N Lbs/Acre	Market Value \$/A
1	6-24-24	6 %		GR	300 lb/a	A	Preplant Incorp		
	17-0-0	17 %		L	30 gal/a	B	Preplant Drip		
	17-0-0	17 %		L	16.2 gal/a	CDE	At Thinning, BiweekPostThin		
Grower Standard Program								187 Lb	\$9,675
2	6-24-24	6 %		GR	300 lb/a	A	Preplant Incorp		
	17-0-0	17 %		L	24 gal/a	B	Preplant Drip		
	17-0-0	17 %		L	12.9 gal/a	CDE	At Thinning, BiweekPostThin		
Grower Standard - 80% Nitrogen rate								153 Lb.	\$9,643
3	6-24-24	6 %		GR	300 lb/a	A	Preplant Incorp		
	17-0-0	17 %		L	24 gal/a	B	Preplant Drip		
	eNhance	0 %		L	113 fl oz/a	B	Preplant Drip		
	17-0-0	17 %		L	12.9 gal/a	CDE	At Thinning, BiweekPostThin		
	eNhance	0 %		L	61 fl oz/a	CDE	At Thinning, BiweekPostThin		
80% Nitrogen w/ eNhance								153 Lb.	\$9,946
4	6-24-24	6 %		GR	300 lb/a	A	Preplant Incorp		
	N-14	8 %		L	64.5 gal/a	B	Preplant Drip		
	N-14	8 %		L	34.8 gal/a	CDE	At Thinning, BiweekPostThin		
N-14 Experimental Nitrogen (8-0-6)								153 Lb.	\$11,750

Conclusions:

- The treatment with the highest yield of large sized heads and the greatest market value (\$11,750/A) was in the plots treated with N-14. While the total number of marketable heads was similar to the Grower Standard (Trt #1), this nitrogen program produced as much as 20% more large heads than other treatments and thus greater value per acre with 20% less actual nitrogen per acre. This treatment had 1-2% more culls than other treatments.
- Gross return estimates for Treatment 1,2 &3 were \$9675/acre, \$9643/acre and \$9946/acre respectively. Treatment #3 where the plots were treated with 17-0-0 and eNhance did not differ very much in terms of total yields, but the small yield increase provided and economic advantage of \$270/acre over treatments #1 while using 20% less nitrogen. When treatment #3 is compared to treatment #2 with the same nitrogen rates, the advantage from including eNhance was estimated at \$303/Acre due to more marketable heads being produced.
- The addition of eNhance to a 80% nitrogen program or the use of N-14 nitrogen, both with 153 lbs. N per acre, resulted in greater gross returns per acre than the grower standard program utilizing 187 lbs. of nitrogen.
- Differences in head size can be tied to crop maturity, so difference in fertility may have also influenced crop maturity. Therefore, it will be important to monitor changes in maturity when adjusting nitrogen fertilizer products.
- Additional details for the remote sensing data collected for as well as weather and specific irrigation information for this trial are available upon request, these pages are intended to summarize key points from this contract research trial by Pacific Ag Research, San Luis Obispo, CA