

Experiment Info:

Exper.: 13-204

TransPl.: 5-13-13

Variety: H3406 and H5108

Population: 700

Plot Size 5 ft x 30 ft

Replications: Four

Harvest: 9-26-13

Soil Test Values (ppm):

Farm / Field 205

pH 6.1

CEC 7

OM 1.9

P1 42

K 111

S 11

% K 4.7

% Mg 14.6

% Ca 66.7

% H 13.6

% Na 0.4

Zn 1.8

Mn 13

Fe 84

Cu 0.4

B 0.4

Objective:

Determine if nitrogen type in two different fertility programs can impact the growth, development and ultimately the yield of processing tomatoes.

Materials & Methods:

- During the Week of May 13th the beds for evaluating two fertility programs on Heinz tomatoes for processing were prepared according to the information in Table PT1. The specified treatments were broadcast and/or banded down the center of each plot and then the bed layer was used to incorporate the fertilizer and covered these raised beds with plastic mulch. On May 14th, approximately 4.1 oz. of transplant solutions was applied to each plant according to the rates shown in Table PT1 as they were planted. The 30 foot long plots were planted on alternating sides of the central drip line having a 10.5 inch inter-row spacing and 34 plants per plot.
- This trial was planted with two Heinz tomato varieties, H5108 (early) and H3406 (later). Each variety was used to plant two of the four replications in this study. As this trial was hand harvested, using two different maturities provided a wider harvest window for picking without them being over ripe.
- Adequate Irrigation water was applied by drip irrigation through-out the entire season. Fungicides, insecticides and herbicides were applied uniformly to all plots throughout the season as necessary. Starting on Sept 26, the earliest tomatoes reached a sufficient level of maturity to begin harvesting. Over the next week, all tomatoes in this trial were harvested.

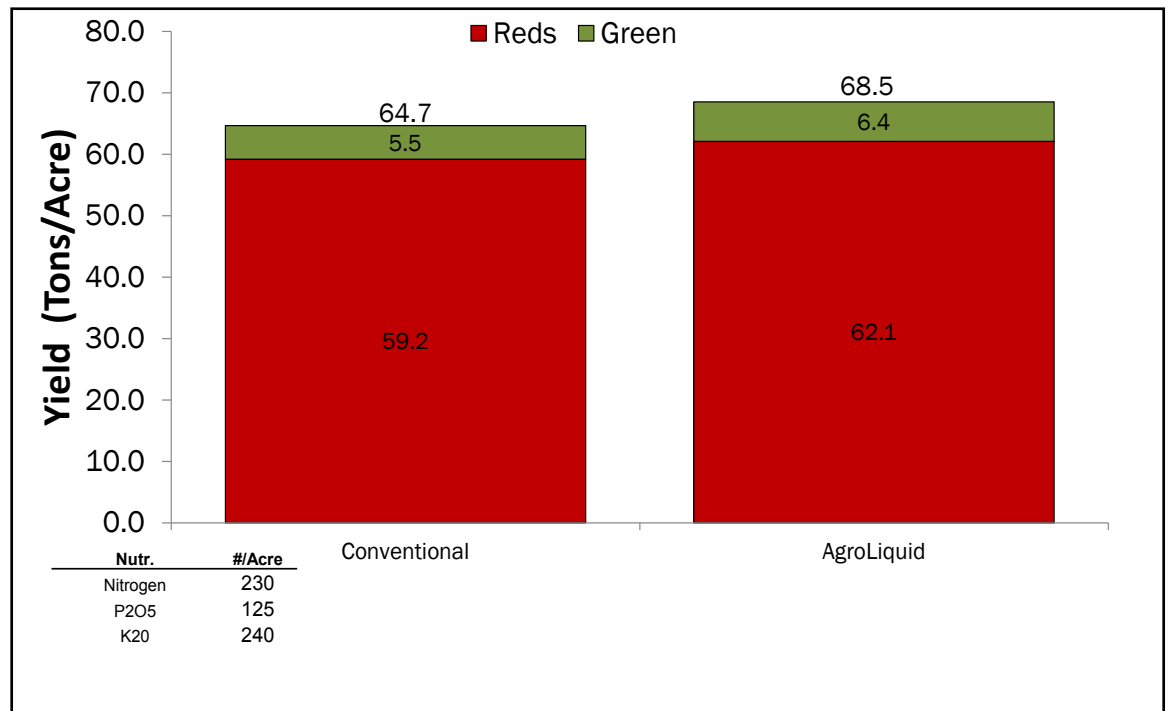


Figure PT1. Effect of the fertility program on the yield of H5108 Processing Tomatoes.

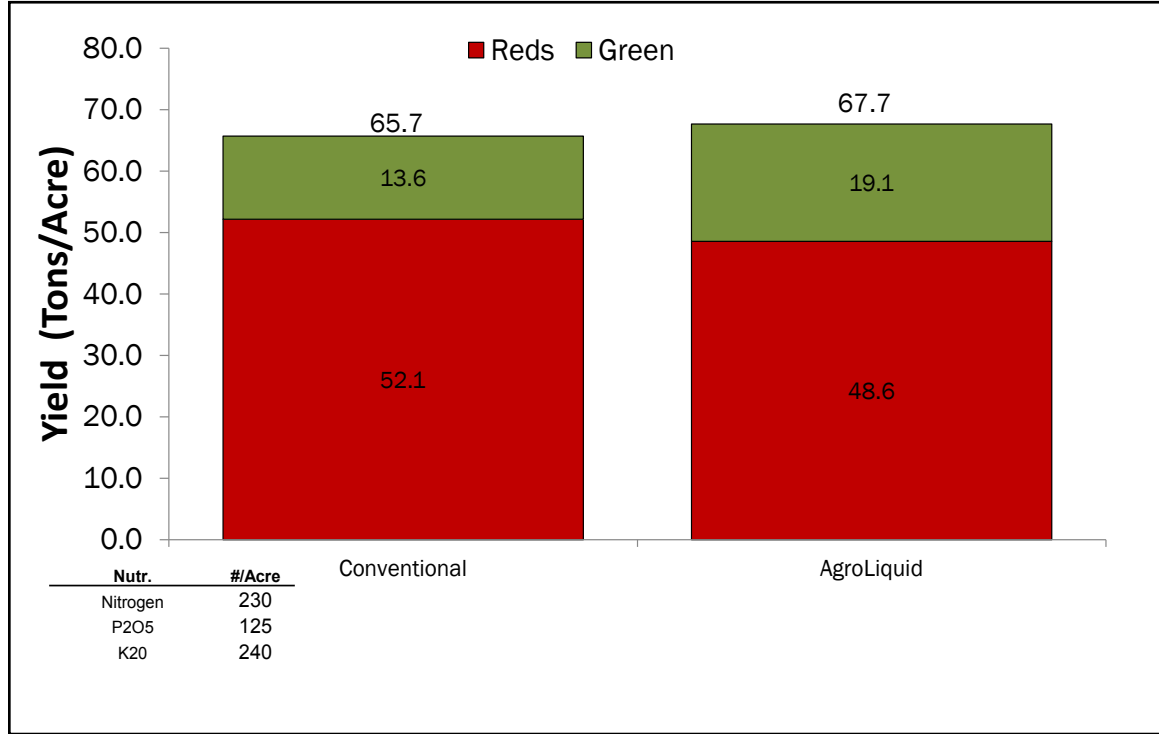


Figure PT2. Effect of the fertility program on the yield of H3406 (later maturity) Processing Tomatoes.

Table PT1. Fertility program comparison on total yield. Average of two Heinz processing tomato varieties, 13-204, H5108 & 3406

Treatment		Rate/A (gal or lb/A)	"Method of Application"	Nut. *	NUE**	Red	Green	Total
				lbs/A		Tons/A	Tons/A	Tons/A
1	0-0-60 + Mn + B + Zn 10-34-0 28% UAN + 10-34-0	400# + 5# + 1# + 4# 6 85 + 40	PPI Transplant band	618.8	214.6	54.5	11.9	66.4
2	PG + SK + Micro 500 + B + Mn HN + SK + PG	2 + 1 + 1, + 1 pt + 1pt 51 + 26.1 + 8.5	Transplant PPI/band	212.1	640.7	53.1	14.9	68.0

*Micronutrients not included in total fertilizer per acre calculations. **NUE = Nutrient Use Efficiency = Lbs Yield / Total Lb. N,P,K&S as Fertilizer Applied, HN = High NRG-N, PG = Pro-Germinator, SK = Sure-K, PPI = preplant incorporated

Conclusions:

- The basic yield response for total yield for both Heinz tomato varieties was very similar for both fertility programs even though the AgroLiquid program applied only 34% of the amount of nutrients in the conventional program (Figure PT1 and PT2) . The tomatoes produced with the AgroLiquid products had the highest total yields. When averaged over both varieties, there was a 1.6 ton per acre advantage for the AgroLiquid program for total yield (Table PT1).
- The tomatoes were allowed to ripen naturally and not treated with any ripening agents. The level of green tomatoes therefore is a reflection of natural maturity at the time of harvest. Had a ripening agent been used in this trial, the green tomato yield values would have likely been lower and red tomato yields increased to a higher percentage of the total yield. Therefore, total yields are likely the best reflection of yield potential for these fertility programs.
 - The earlier variety, H5108, had 8.5% and 9.7% green tomatoes for the conventional and AgroLiquid fertility programs, respectively. Statistically these were similar as were the values for total yield.($P < 0.10 = 8.7$ ton/A)
 - There were a higher percentage of green tomatoes for the later maturing variety, H3406. However, the total yields were similar to the H5108 for both fertility programs. While, the AgroLiquid Program had numerically lower red tomato yield for this variety, the use of a ripening agent or additional time for natural maturity would have shifted the greens into reds and total yield values would have likely remained fairly constant. There was no statistical difference in total yield ($P < 0.10 = 7.6$ ton/A) or yield by maturity for this variety ($P < 0.10 = 8.4$ ton/A)
- The overall Nutrient Use Efficiency (NUE) for the AgroLiquid program was approximately 3X that of the conventional fertilizer program. Therefore, approximately 1/3 of the actual amount of nutrients was needed to produce a slightly higher yield when the products were from AgroCulture Liquid Fertilizer.