Huma® Nutrient and Fumigation Replacement Program Increases Strawberry Yields

Field Trial

Conducted by: Pacific Ag Research
Huma® Products: Ultra-Precision Blend™ (Fresca CA Strawberry Mix), Promax®, Zap®

Objective

This field trial assessed the effects on strawberry yields of replacing field fumigation with periodic applications of Huma® Promax® and Zap® and replacing a grower's standard fertilizer program with irrigation-applied Ultra-Precision™ blended liquid Huma® crop nutrition products.

Materials & Methods

This trial was conducted in Arroyo Grande, Calif., using Portola strawberries planted in 40' x 3.33' plots. There were 4 treatment programs studied, set up in a randomized-block design replicated 6 times. The strawberries were planted on June 30 and harvested weekly from Sept. 18 through Dec. 19.

The four trial programs compared pre-plant fumigation (PicClor 60) with periodic applications of Huma® Promax® and Huma® Zap®. It also compared a Grower's Standard fertilizer program with a pre-mixed Ultra-Precision™ blended liquid fertilizer program of Huma® products (Fresca CA Strawberry Mix Ultra-Precision™ Blend) selected specifically for strawberries and applied through drip irrigation.

The Grower's Standard fertilizer program included the following: 18-6-12 Osmocote Slow Release, 600 lb/ac, applied 1x; CAN 17, 10 gal/ac, 4x; 7-7-7, 20 gal/ac, 2x; Calcium nitrate, 10 lb,ac, 8x; Multi K (13-0-46), 10 lb/ac, 8x; Microplex, 1 lb/ac, 8x; Monterey Maxi (6-30-30), 10 lb/ac, 3x; and 20-20-20, 10 lb/ac, 3x.

The 4 trial programs were as follows:

1
- No fumigation—Promax® at 2 gal/ac, soil-applied pre-plant and 5 additional times during the season. Zap® at 1 gal/ac applied 1 week after each Promax® application.
- Huma® Ultra-Precision™ Blend at 5.32 gal/ac irrigation-applied twice a week for 22 weeks beginning July 6 until final harvest.

2
- Fumigation—PicClor 60 at 25 gal/ac applied once 3 weeks prior to planting
- Huma® Ultra-Precision Blend at 5.32 gal/ac irrigation-applied twice a week for 22 weeks beginning July 6 until final harvest.

3
- Fumigation—PicClor 60 at 25 gal/ac applied once 3 weeks prior to planting
- Grower's Standard fertilizer program

4
- No fumigation—Promax® at 2 gal/ac, soil-applied pre-plant and 5 additional times during the season. Zap® at 1 gal/ac applied 1 week after each Promax® application.
- Grower's Standard fertilizer program

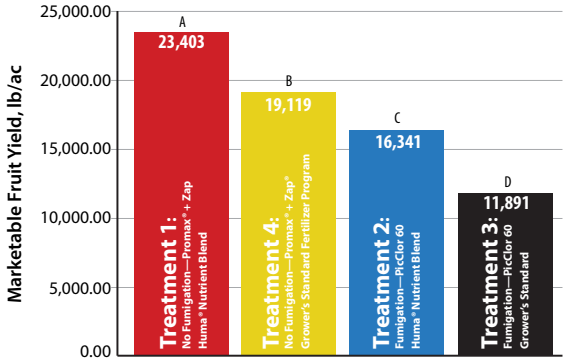

Figure 1. Total Marketable Strawberry Yield lb/ac, by Treatment

The strawberries were picked 14 times during the growing season, and measurements were made at each picking with results calculated cumulatively of trays picked per acre, marketable utilization of berries, yield (by weight), and price paid per yield.

Results

As can be seen in Figure 1, Treatment 1 (all Huma®, no fumigation) produced the highest marketable yield (23,403 lb/ac) when compared with the control, Treatment 3 (fumigation plus grower's standard fertilizer program, with a yield of 11,891 lb/ac). Treatment 4 had the second highest marketable yield in the trial (19,119 lb/ac), also using the Huma® fumigation replacement of Promax® and Zap® but using the Grower's Standard fertilizer program. (See page 2 for additional results.)

Conclusions

This trial and others demonstrate that the ***use of Huma® Promax® and Zap® can achieve high yields on Portola strawberries in California, even without traditional fumigation.*** Treatments with Promax® and Zap®, which were applied via irrigation, have the advantage over traditional fumigation in that they are nontoxic, have no reentry interval, and could be applied at any time during the growing season. This is a tremendous advantage over traditional fumigation.

This trial also demonstrates that the Huma® Ultra-Precision™ blend of liquid fertilizers applied through irrigation resulted in yields superior to the grower's standard fertilizer program. The combination of Huma® Ultra-Precision™ blend of liquid fertilizers plus the Huma® fumigation replacement products of Promax® and Zap® (Treatment 1) ***increased yields by over 11,000 lb/ac compared with the control*** (Treatment 3).

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Page 2: Supplemental Data

Additional Results and Conclusions

Treatment 1—which had the highest yields—was also all applied via irrigation, making it ***the easiest treatment of the four to apply.***

Figure 2 and Table 1 demonstrate that for the two trials that used PicClor preplant field fumigation (Trial 2 and Trial 3), weekly yields began dropping off at week 11/6, while the trials that replaced preplant field fumigation with periodic applications of Promax® and Zap® (Trial 1 and Trial 4) continued to produce at relatively high levels until the end of the season.

About Ultra-Precision™ Blending

Ultra-Precision™ Blending is a service provided by Huma, Inc., to create custom crop nutrition and protection blends—from our line of over 70 liquid Huma® conventional and organic crop input products—that are unique to grower, location, crop, and crop stage.

Ultra-Precision™ Blending formulations are created using grower data collected from plant sap or tissue analysis to meet specific, immediate crop needs. These blends are shipped to the grower ready for application through any established fertigation system (flood, furrow, pivot, drip, foliar, etc.). No on-site mixing or special application equipment are required. These custom blends include our proprietary Micro Carbon Technology®, a nutrient carrier designed to provide highly effective nutrient uptake.

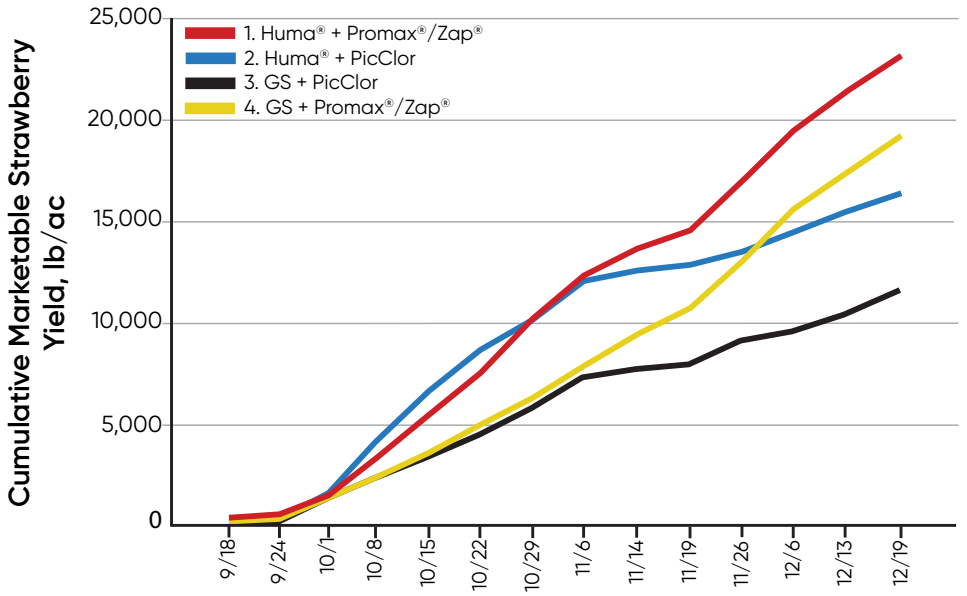

Figure 2. Cumulative Marketable Strawberry Yield lb/ac, by Date and Treatment

Table 1. Pounds/Acre Harvested Marketable Strawberries by Date and Treatment Group

Treatment	Pounds/Acre Harvested by Date													
	9/18	9/24	10/1	10/8	10/15	10/22	10/29	11/6	11/14	11/19	11/26	12/6	12/13	12/19
1. Huma® + Promax®, Zap®	177.8	290.8	921.6	1,851.7	2,319.1	2,219.4	2,321.5	2,129.3	1,499.6	1,100.7	2,286.7	2,617.2	1,754.4	1,913.0
2. Huma® + PicClor	141.8	243.9	1,163.2	2,626.8	2,563.1	2,037.9	1,762.8	1,479.2	523.9	325.6	699.3	966.1	915.6	891.6
3. GS + PicClo	106.9	334.1	788.3	1,405.9	902.4	1,192.0	1,195.6	1,574.1	516.7	361.7	1,032.2	443.4	883.2	1,154.8
4. GS + Promax®, Zap®	193.5	266.8	662.1	1,234.1	1,344.6	1,151.2	1,437.2	1,623.4	1,535.7	1,355.4	2,319.1	2,677.2	1,457.6	1,861.3

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