

# Biomin<sup>®</sup> Calcium Trial on Raspberries (2007)

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California Polytechnic State University Trial

Year 2007

## Aim

To measure the response of Raspberry plant nutrition and fruit characteristics to Calcium application

## Objective

To measure yield, Brix, pH and individual berry weights, to estimate the amount of various elements removed by harvested Raspberries, and to measure the elemental concentrations of leaves throughout the growing season

## Scope

- **Biomin<sup>®</sup> Calcium** was applied weekly for 14 weeks through drip irrigation
- **Biomin<sup>®</sup> Calcium** analysis: 5% glycine chelated Calcium
- Rate of application of **Biomin<sup>®</sup> Calcium**: 2 gallons/acre 1st week then 1 gallon/acre for next 13 weeks beginning with flower bloom initiation July 28, 2007
- Initial harvest date was September 15, 2007; Final harvest date was November 15, 2007
- Tissue analyses were taken weekly for the season
- Brix, individual berry weights, Raspberry juice pH were tested
- Total yield measured on a crate basis and extrapolated to a crate/acre basis. One crate = 4 pounds

## Results (See Fig. 1 & 2)

- Tissue samples indicated plants were not nutrient stressed
- **Biomin<sup>®</sup> Calcium** treated Raspberries yielded 426 more crates/acre, representing 10% increase in yield compared with common yields
- **Biomin<sup>®</sup> Calcium** treated Raspberries had lower Magnesium concentrations than did non-treated plants
- The Calcium/Magnesium ratio increased in the **Biomin<sup>®</sup> Calcium** treated plants demonstrating cation competition
- Brix, individual berry weights, and Raspberry juice pH were not statistically different

## Discussion

Fewer culled fruit and/or decreased flower abortion in the treated plants could cause the increased berry production. Individual berry weights were not significantly different and thus cannot explain the yield increase. Growth was not likely limited by any of the measured nutrients. The **Biomin<sup>®</sup> Calcium** application increased the Calcium/Magnesium ratio in the sampled florican leaves. The increased Calcium in the tissues relative to Magnesium could have increased the individual berry strength. If the berries were firmer, fewer berries would have been culled. Fewer culled fruit would result in more crates being produced. Flower abortion percentages were not measured, but perhaps should have been.

## Conclusion

Chelated cations have the benefit of being more plant available. **Biomin<sup>®</sup> Calcium** treated Raspberries increased yield by 10% compared to common yields without effecting brix, individual berry weights and juice pH.

Fig. 1

The 2007 Raspberry Crate\* Totals for treatments, plots, and per acre.

	Control		Treatment	
	Crates per plot	Crates per acre	Crates per plot	Crates per acre
09/15	18.17	348.07	18.08	346.48
09/22	24.33	466.23	22.42	429.50
09/29	32.58	624.30	30.75	589.17
10/06	16.08	308.16	23.00	440.68
10/13	25.67	491.77	29.17	558.83
10/20	17.25	330.51	25.75	493.37
10/27	5.83	111.77	7.00	134.12
11/03	3.67	70.25	6.50	124.54
11/10	4.08	78.24	6.50	124.54
11/17	1.67	31.93	2.42	46.30
<b>Total</b>	<b>149.33</b>	<b>2861.23</b>	<b>171.58</b>	<b>3287.54</b>
<b>Difference</b>	<b>22.25</b>	<b>426.31</b>		

\* 4 lb. crates (1.8 Kg).....1.8 x 426 = 767 Kg/.405 = 1893 Kg/ha

Fig. 2

Crates per Acre: Control Vs Biomin<sup>®</sup> Calcium Treatment

