ZADCO FOR QUALITY GRO PTY LTD.

CALCIUM TRIAL ON CAPSICUMS

CALCIUM TRIAL ON CAPSICUMS IN AYR COMPARING DIFFERENT CALCIUM TREATMENTS FOR FRUIT YIELD AND LEF CALCIUM LEVELS

PRELIMINRY REPORT ONLY

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FOR
ZADCO FOR QUALITY GRO P/L

Calcium Trial on Capsicums in Ayr (QLD)

AIM

1) To identify if using a Calcium chelate will result in better leaf levels of calcium and have any effect on yield and fruit quality.

2) To identify if there are any effects of using "Bio-Size™" on capsicums for yield improvements and fruit size improvements.

MATERIALS AND METHODS

The trial was conducted by Landmark Ayr in conjunction with Mr. Vince Zabbala.

Treatment 1: No Calcium has been applied to this block at time of sampling

Treatment 2: Grocal MGB (3L/ha) at flowering only

Treatment 3: Biomin Calcium (2kg/ha) + Bio-Size (2.5L/ha). Product application date was 17/05/04. At time of sampling, this block was due for first harvest **as reds**.

Treatment 4: Biomin Calcium (2kg/ha) + Bio-Size (2.5L/ha) (applied on 20/04/04). Application was repeated on 10/05/04. At time of sampling, crop was 3 weeks off harvest.

Leaf samples were taken 20 days after treatment and sent to CSBP laboratories in Western Australia. The data was then put through a patented analysis program (Balanced Analysis) which compares nutrient interactions.

Yield data is still being collected from the grower.

RESULTS AND DISCUSSION

The table shows that there was a difference between all blocks.

Treatment	Calcium level (%)
1) No Calcium	1.48
2) GroCal at flowering	1.328
3) Biomin Calcium x 1 Bio-Size x 1	1.951
4) Biomin Calcium x 2 Bio-Size x 2	2.067

■ *Table 1: A comparison of Leaf Calcium levels (%) in Capsicums between 4 treatments.*

The control had better levels of Calcium than the Grocal MGB block. The control block was slightly younger than the Grocal MGB treated block and younger plants tend to have slightly higher levels of calcium than older fruiting plants.

This however works against the Grocal MGB with regards to Calcium levels as the Biomin treated blocks were at harvest and had been bearing fruit for quite some time. The demand of fruit for Calcium in capsicum plants is high and the Biomin treated blocks have much better Calcium levels and readings than do to other two treatments.

The third treatment which consisted of Biomin Calcium™ and Bio-Size were being harvested as reds. This generally indicates that the fruit has been left on the plants for longer than normal periods of time. The requirement for Calcium at such a stage is generally extremely high and capsicum losses due to decaying fruit are generally high also due to insufficient levels of Calcium for keeping quality. The level of calcium in this block was very good, especially for the age of the crop, and was higher in Calcium than the control and the Grocal MGB. No yield data is available at present.

The fourth treatment included two applications of Calcium and Bio-Size (3-4 weeks apart) and the results for this block were very god also. This block was three weeks from harvest and had higher levels of calcium than all other blocks (see figure 1). No yield data is available at present.

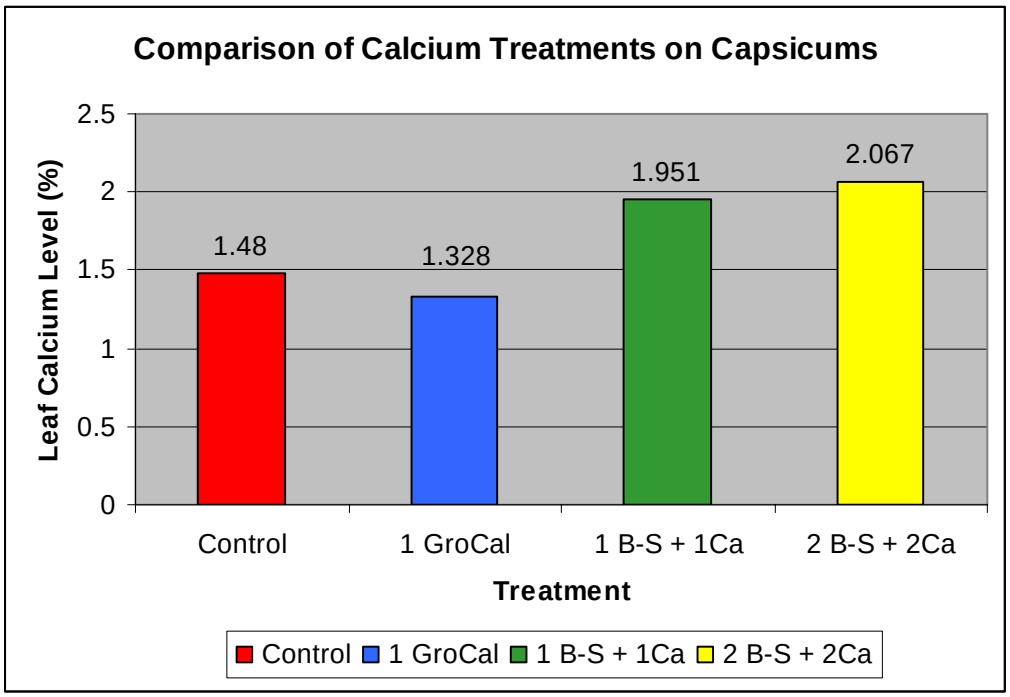

Figure 1: Graphical representation of Calcium levels within plant tissues of Capsicum plants

Yield data is extremely important for this trial as it will further illustrate the benefits of applying Biomin Calcium™ to Capsicum plants. The grower has noted improvements in yield as well as fruit quality.

For many years, there has been increasing interest in the use of Calcium foliar sprays because of the effect Calcium has on fruit quality and shelf life.

Calcium is an extremely important element in maintaining the strength of stems and stalks of plants. This mineral also regulates the absorption of nutrients across cell membranes. Calcium plays an important role in plant cell elongation and division, structure and permeability of the cell, nitrogen metabolism and

carbohydrate metabolism[1]. Calcium is non-toxic, even in high concentrations and serves as a detoxifying agent by tying up toxic compounds and maintaining the cation-anion balance in cells. Further to this, Calcium is part of the cell wall and acts as the cement that binds the cell walls together it is one of the most significant factors affecting firmness and storage life of fruit.

There are a myriad of different formulations of Calcium available to growers with Calcium Chloride being amoung the least expensive and most commonly used. Biomin™ Calcium is a true chelate produced by J.H Biotech, Inc. which was specifically designed for use on plant crops. However, the methods of delivery of this element are not conventional, like the delivery methods of products such as Calcium Nitrate and Calcium Chloride. The latter products can marginally reduce a Calcium deficiency, but the speed by which the Calcium released from these products and transported into the growing points (such as fruit) is very slow compared to the transportation of the associated ions such as the nitrate or chloride components of these products which have negative effects on fruit quality.

Biomin™ Calcium is the only product on the market that can effectively and economically deliver Calcium to the growing points of the crop without the risk of phytotoxicity. Biomin™ Calcium is a Glycine chelated product. This means that every Calcium ion is bonded with two Glycine molecules creating a fully chelated Calcium product. The plant recognizes this molecule as a proteinaceous molecule allowing it to travel in the phloem instead of forcing it to use the xylem where Calcium is normally transported. This allows the Calcium to be a mobile element in the Glycine chelated form. This is the edge Biomin™ Calcium has over all other products existing in the marketplace.

Further to the above, as capsicum plants mature and bear fruit, the demand on calcium increases dramatically and fruit quality is compromised if supplementation of calcium is not provided. Biomin Calcium™ has a role to play in capsicum production by providing adequate levels of calcium to the plants to support fruit production as well as yields and post harvest shelf life of fruit. Biomin Calcium™ is a justifiable product in capsicum production due to the economic importance of better fruit size, increased yields and longer shelf life.