

## EFFECT OF THE APPLICATION OF METALOSATE<sup>®</sup> ON YIELD, AND FRUIT QUALITY OF STRAWBERRIES IN ÅHUS, SWEDEN JUNE 2005

Winnie W. Olsen  
Brenntag Nordic Agro  
Denmark

The Trial Was Run in Cooperation Between:  
Åhus Gront AB–Sweden  
ECONOVA Predator AB–Sweden  
Brenntag Nordic Agro–Denmark  
Albion Advanced Nutrition–U.S.A.

### Introduction

The aim of this trial was to demonstrate the efficacy of the Metalosate<sup>®</sup> products in a well designed program. The purpose of this micronutrient program was to increase the weight, firmness, and sugar content of the berries.



The use of Metalosate Crop-Up<sup>®</sup> is to supply a range of minerals to the plant at the flowering stage which is considered a critical stage with high stress to the plant. The use of Metalosate Calcium and Metalosate Potassium from the onset of flowering until harvest is to help reduce flower drop and later on to give firmness and increase sugar content in the fruit. Earlier studies were done in the U.S.A. on melons using Metalosate Calcium and Metalosate Potassium to improve the quality of the fruit<sup>1,2</sup>

**Figure 1.** Strawberry

### Materials and Methods

The trial was preformed in Åhus, Sweden on “Honeoye” strawberry variety. One hectare was treated with the Metalosate program, and one hectare was treated with the grower’s traditional program (inorganic Magnesium, Boron, and Potassium sprayed 17 May, 26 May, 6 June, and 21 June 2005). This was the control treatment. The data was collected from the second harvest of the season.

The treatment with Metalosate was made as follows:

1. Metalosate Crop-Up 2.00 litre/hectare (27.4 fluid ounces/acre) and Metalosate Boron 1.00 litre/hectare (13.7 fluid ounces/acre) at the flowering stage (17 May 2005).
2. At fruit set (26 May 2005), Metalosate Calcium 1.50 litre/hectare (20.5 fluid ounces/acre) and Metalosate Potassium 1.50 litre/hectare (20.5 fluid ounces/acre).

3. Two additional applications before harvest (6 and 21 June 2005) Metalosate Calcium 1.50 litre/hectare (20.5 fluid ounces/acre) and Metalosate Potassium 1.50 litre/hectare (20.5 fluid ounces/acre).

## Results and Discussions

Four sets of 10 plants per treatment were measured on 20 June 2005. The Brix value, the weight, and the firmness were measured for each berry collected. In addition, the number of berries per plant was counted. All the red berries on a plant were picked and the only berries left were the pale unripe ones.

### Fruit Size and Quality

Table 1 below shows the results related to fruit weight, firmness, and soluble solid content.

<b>Table 1</b>			
<b>Average Weight / Berry, Firmness, and Brix Value</b>			
<b>Treatment</b>	<b>Weight/Berry</b>	<b>Firmness</b>	<b>Brix Value</b>
Control	13.58 g (0.48 oz)	0.54	7.60
Metalosate®	20.18 g (0.71 oz) <sup>a</sup>	1.31 <sup>a</sup>	9.26 <sup>a</sup>

*a: Very strong significant difference  $p < 0.001$*

*The average weight of the berries increased by 32.7% from 13.58 grams to 20.18 grams (0.48 to 0.71 oz.). The firmness in the treated berries improved by 59% while the Brix value increased also by 18% as compared to the control.*

Table 2 shows the effect of the Metalosate program on the number of berries per plant as compared to the control.

<b>Table 2</b>	
<b>Effect of Metalosate® Treatment on the Number of Berries per Plant</b>	
<b>Treatment</b>	<b>No. of Berries/Plant</b>
Control	2.53
Metalosate®	2.63 n.s.

There was no significant difference in the number of berries per plant between the treated and the control plots.

Table 3 shows the effect of the Metalosate program on the estimated yield.

<b>Table 3</b>		
<b>Effect of Metalosate® Treatment on the Average Yield</b>		
<b>Treatment</b>	<b>Yield</b>	
	<b>kg/ha</b>	<b>lbs./acre</b>
Control	687.2	613.1
Metalosate®	1061.5	947.0

Considering that there is an average of 20,000 plants/hectare (8,097 plants/acre) and using the values of average weight per berry and average number per plants, we can estimate the average yield per hectare for this harvest as shown in Table 3. There is an increase in estimated yield of 35 percent for the Metalosate-treated plants.

Therefore, the Metalosate program yielded sweeter berries with a higher weight and increased firmness. These results could be interesting for the supermarkets and producers. More sugar is very important in the wet Danish and Swedish summers where the strawberries can have problems becoming sweet enough. This trial shows that two treatments with Metalosate Potassium increased the sweetness by almost 20 percent.

The number of berries was not increased with Metalosate treatments; however, the weight per berry was higher hence a higher yield per hectare.

The assessment was made on the second harvest. We anticipate that the results from the first harvest could have been even better.

## REFERENCES

1. Lester G.E. 2001. Shelf Life of Fully-Ripened Honeydew Fruit is Extended with Postharvest Calcium Applications—US Department of Agriculture—Weslaco, Texas
2. Lester G.E. 2004. Foliar Applied Potassium: Effects on Cantaloupe Quality, Sugar Content and Related Compounds—US Department of Agriculture