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Balchem® Plant Nutrition Research Paper

EFFECTS OF METALOSATE® MULTIMINERAL ON YIELD AND TUBER SIZE ON LADY CRYSTAL POTATOES IN EGYPT

Felix Fares
Albion Advanced Nutrition
Beirut, Lebanon
Trial Carried Out at Daltex–Egypt
October 2004–January 2005

Introduction

Potato is a major crop in Egypt which planted about 85,000 hectares (210,000 acres) of potatoes in 2004, with a total production of 1,950,000 metric tons (2,149,507 tons).

The trial took place at Daltex, on a crop planted in sandy soil. (See Figure 1.) These soils have a high pH of 8.0 and above with very low organic matter and micronutrient content.

Figure 1. Potato Farm Daltex, Egypt

Daltex grows table potatoes for export to Europe. This study compared yield and tuber size differences on Lady Crystal potato variety between two plots, one treated with foliar Metalosate® Multimineral and a control.

Materials & Methods

1. One pivot with an area of 45 hectares (111 acres) was selected for the trial.
2. 22.5 hectares (55.6 acres) were treated and 22.5 hectares (55.6 acres) were left as control.
3. Both treatment and control sides received similar fertilizer and plant protection programs. The treated side received foliar Metalosate® Multimineral as a source of micronutrients. The control side received the farm's usual source of micronutrients.
4. Application of the Foliar Metalosate® Multimineral was done through the pivot irrigation system.
5. Planting date: October 24, 2004
6. Sampling date: January 30, 2005
7. Planting, Metalosate® Multimineral application, and data collection were all carried out by the farmer.
8. Metalosate® Multimineral was sprayed according to Table 1:

Table 1.
Spray Schedule

Date	Age	Application Rate	
		L/ha	fl. oz./acre
November 20, 2004	26 days	1.2	16
December 14, 2004	50 days	1.2	16

9. Sampling was done by randomly selecting 19 rows and dug 1 meter (3 ft.) of each row for the treated and same the control side. The tubers were graded and weighed per size. Estimates of yield were then calculated. (See Figure 2.)

Figure 2. Sampling Potatoes for Size and Yield.

Results

Table 2a and b shows the average yields and number of tubers per size for the 19 points surveyed for each of the treated and control side. The results show an increase in yield on the treated side of 27.9 percent over the control. The increase in yield in the treated side seems to come from an increase in the number of large tubers. Figures 3 and 4 show the distribution of tubers per size between the treated and the control sides.

Table 2a.
Average Yield and Tuber Numbers per Tuber Size
(Metric Units)

		Tuber Size								
		< 35 mm	35-40 mm	40-45 mm	45-50 mm	50-55 mm	55-60 mm	> 60 mm	Total	Estimated Yield (MT/Ha)
Average Weight (grams)	Treated	96.00	115.00	243.00	413.00	717.00	877.00	1,523.00	3,984.00	33.90
	Control	98.00	153.00	312.00	487.00	635.00	581.00	853.00	3,119.00	26.51
Average Tuber Quantity	Treated	7.00	3.20	4.50	5.60	6.60	6.50	7.40	40.80	
	Control	7.50	4.20	5.60	6.20	6.50	4.00	4.10	38.10	

Estimated Yield Increase: 27.9%

Table 2b.
Average Yield and Tuber Numbers per Tuber Size
(U.S.A. Units)

		Tuber Size								
		< 1.4 in.	1.4-1.6 in.	1.6-1.8 in.	1.8-2.0 in.	2.0-2.2 in.	2.2-2.4 in.	> 2.4 in.	Total	Estimated Yield (tons/acre)
Average Weight (grams)	Treated	3.39	4.06	8.57	14.57	25.29	30.94	53.72	140.53	37.37
	Control	3.46	5.40	11.01	17.18	22.40	20.49	30.09	110.02	29.22
Average Tuber Quantity	Treated	7.00	3.20	4.50	5.60	6.60	6.50	7.40	40.80	
	Control	7.50	4.20	5.60	6.20	6.50	4.00	4.10	38.10	

Estimated Yield Increase: 27.9%

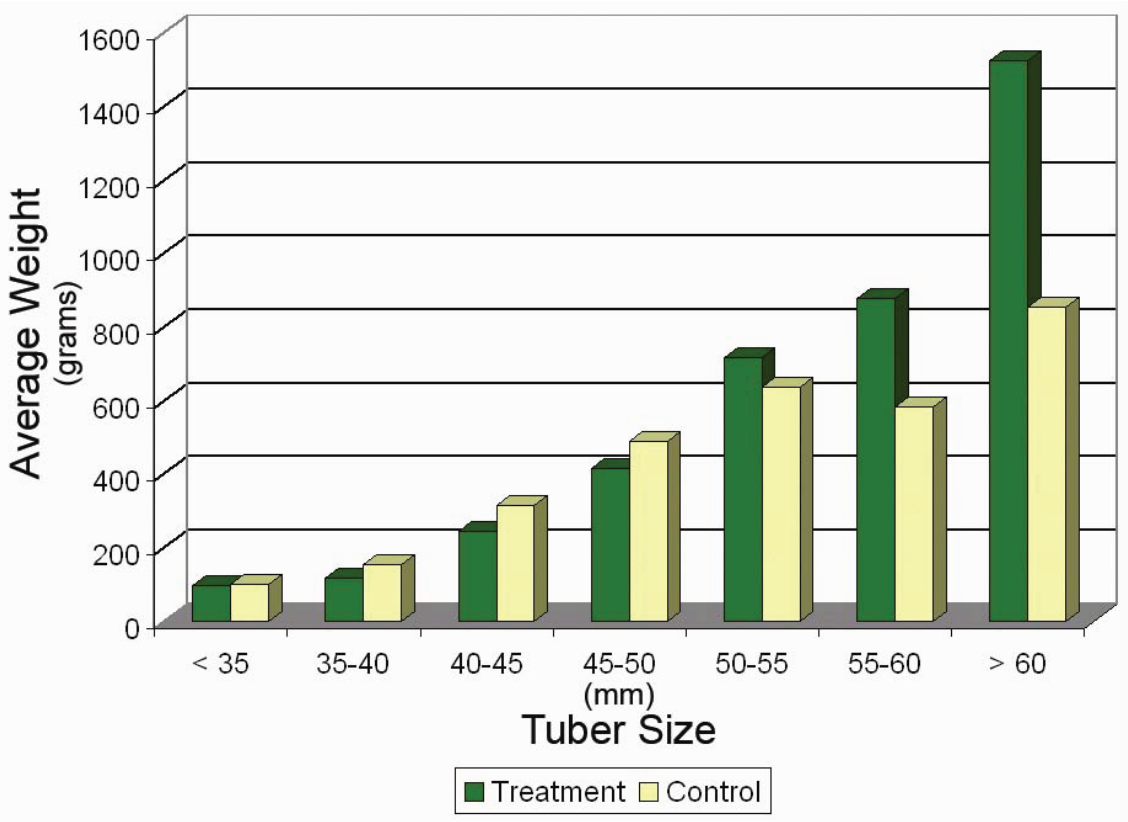

Figure 4. Average Tuber Weights per Tuber Size.

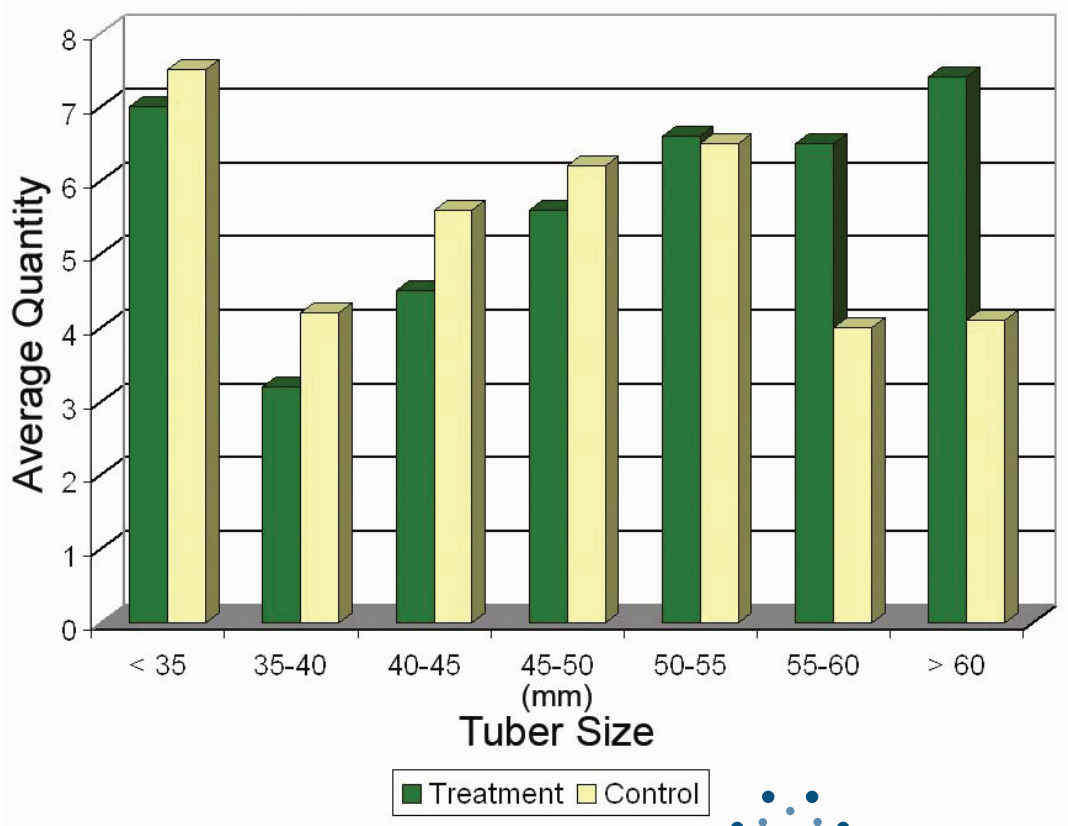

Figure 5. Average Tuber Quantity per Tuber Size.

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