

Effect of FULZYME PLUS on Potato in Syria 2003

~ A. B. Ismail, M. Subai, J. Shammat

Bacillus subtilis and *Pseudomonas putida* have been used widely in crop production to improve growth and increase crop yields. FULZYME PLUS contains both *Bacillus subtilis* and *Pseudomonas putida* and is recommended for agricultural uses. The purpose of these experiments was to investigate the effect of FULZYME PLUS on the growth and yield of potato under field conditions.

Material and Methods

1. Seven field trials were conducted in two potato regions of Syria in 2003, four in Hama/Ghab region and three in Damascus/Sa'asa region.

Crop	Total Area of Treated Plots (Ha)	Region / Site	Timing of Applications	
			1st	2nd
Potato	1	Hama/Ghab	15/03/03	12/05/03
Potato	1	Hama/Ghab	15/03/03	13/05/03
Potato	1	Hama/Ghab	15/03/03	03/05/03
Potato	1	Hama/Ghab	None	23/04/03
Potato	1	Damascus/Sa'asa	11/04/03	02/06/03
Potato	1	Damascus/Sa'asa	14/04/03	02/06/03
Potato	1	Damascus/Sa'asa	21/04/03	10/06/03

2. FULZYME PLUS, containing 2×10^{10} /gram *Bacillus subtilis* & *Pseudomonas putida* + 0.3% bio-stimulants, was applied as a soil treatment by injection through the irrigation system. The product was applied at 1 kg per hectare per application. The treatments for each plot included the following:

Treatment	Description
1. FULZYME 1	1 Application of FULZYME PLUS
2. FULZYME 2	2 Applications of FULZYME PLUS
3. Control	No FULZYME PLUS

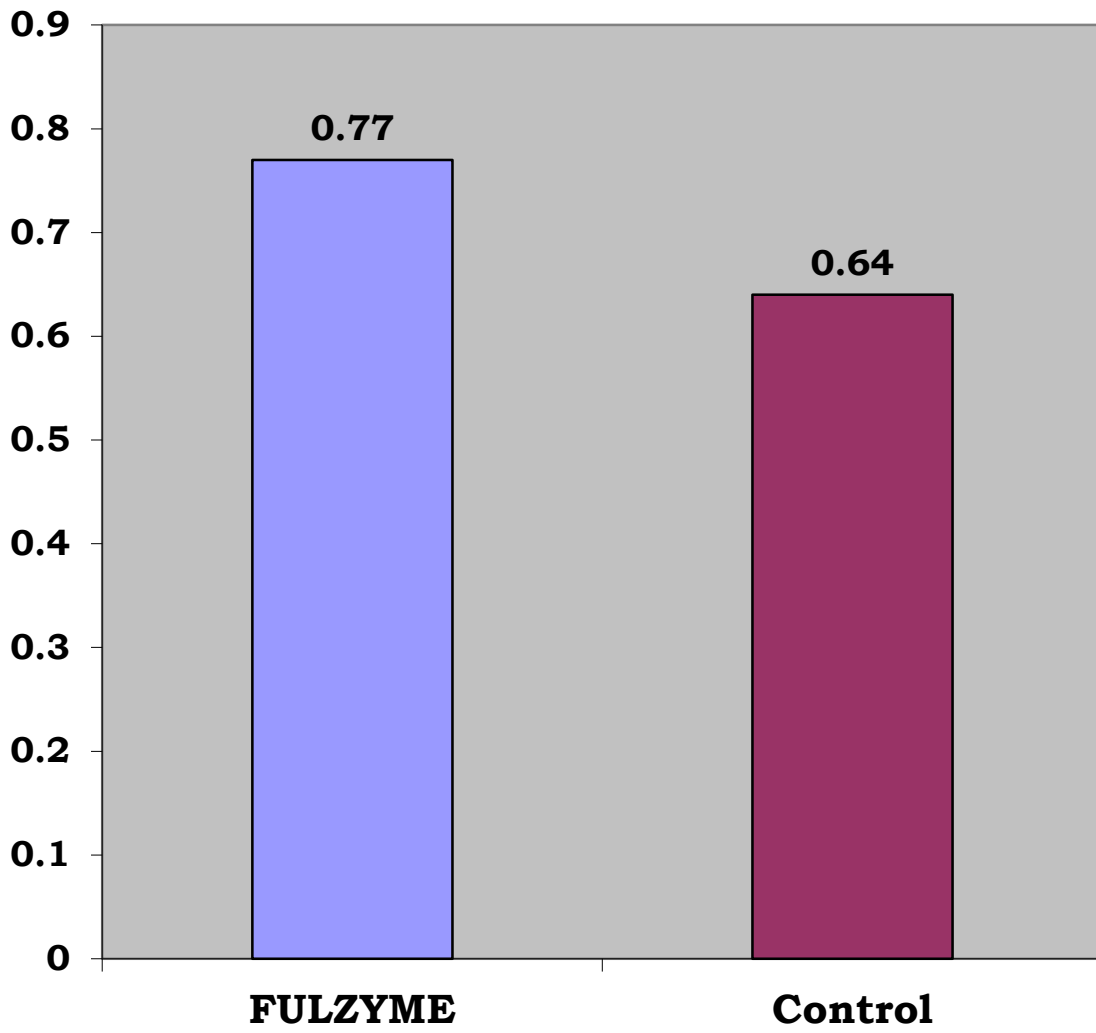
- a. 1st application of FULZYME PLUS was effected immediately before planting.
 - b. 2nd application of FULZYME PLUS was effected 45 days after planting at the start of tuberization.
3. All three treatments received the same amount of fertilizers during the season.
 4. Total area of the treated plots in both regions: 7 hectares.
 5. Total area of the control plots in both regions: 7 hectares.
 6. Readings that were taken from each plot of the three treatments.
 - a. Average % germination.
 - b. Average height of plants in cm.
 - c. Average number of tubers per plant.
 - d. Average number of tubers per plant (86 mm diameter & higher).
 - e. Average number of tubers per plant (70-85 mm diameter).
 - f. Average number of tubers per plant (60-69 mm diameter).
 - g. Average number of tubers per plant (50-59 mm diameter).
 - h. Average number of tubers per plant (40-49 mm diameter).
 - i. Average yield (tons/hectare).
 7. Calculations.
 - a. Calculation of averages.
 - b. Calculation of percentages.

Summary of the Results

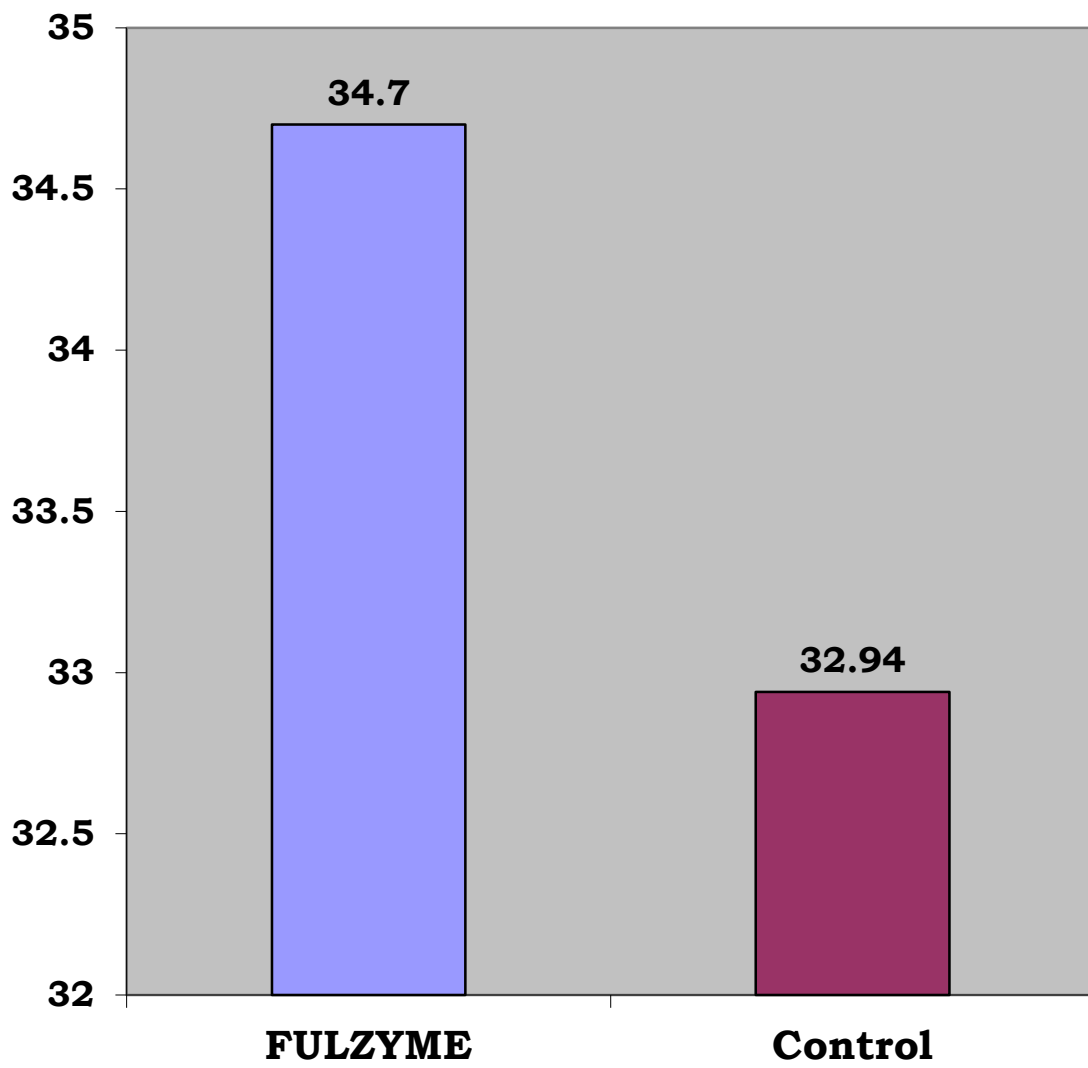
All the results are shown in the attached charts. The results show the following:

1. Both treatments of FULZYME PLUS increased germination by about 20%.
2. Both treatments of FULZYME PLUS improved plant growth by about 5%.
3. Both treatments of FULZYME PLUS increased the total number of tubers per plant by about 50%.
4. 1 application increased the number of tubers of 86 mm diameter and higher by about 50% and 2 applications increased it by 37%.
5. 1 application did not increase the number of tubers of 70-85 mm diameter. However, 2 applications reduced the number of tubers of 70-85 mm diameter by about 5%.
6. 1 application increased the number of tubers of 60-69 mm diameter by about 25% and 2 applications increased it by 75%.
7. 1 application reduced the number of tubers of 50-59 mm diameter by about 37% and 2 applications reduced it by 44%.
8. 1 application reduced the number of tubers of 40-49 mm diameter by about 4% and 2 applications reduced it by 8%.
9. 1 application increased the yield by about 28% and 2 applications by 9.5%.

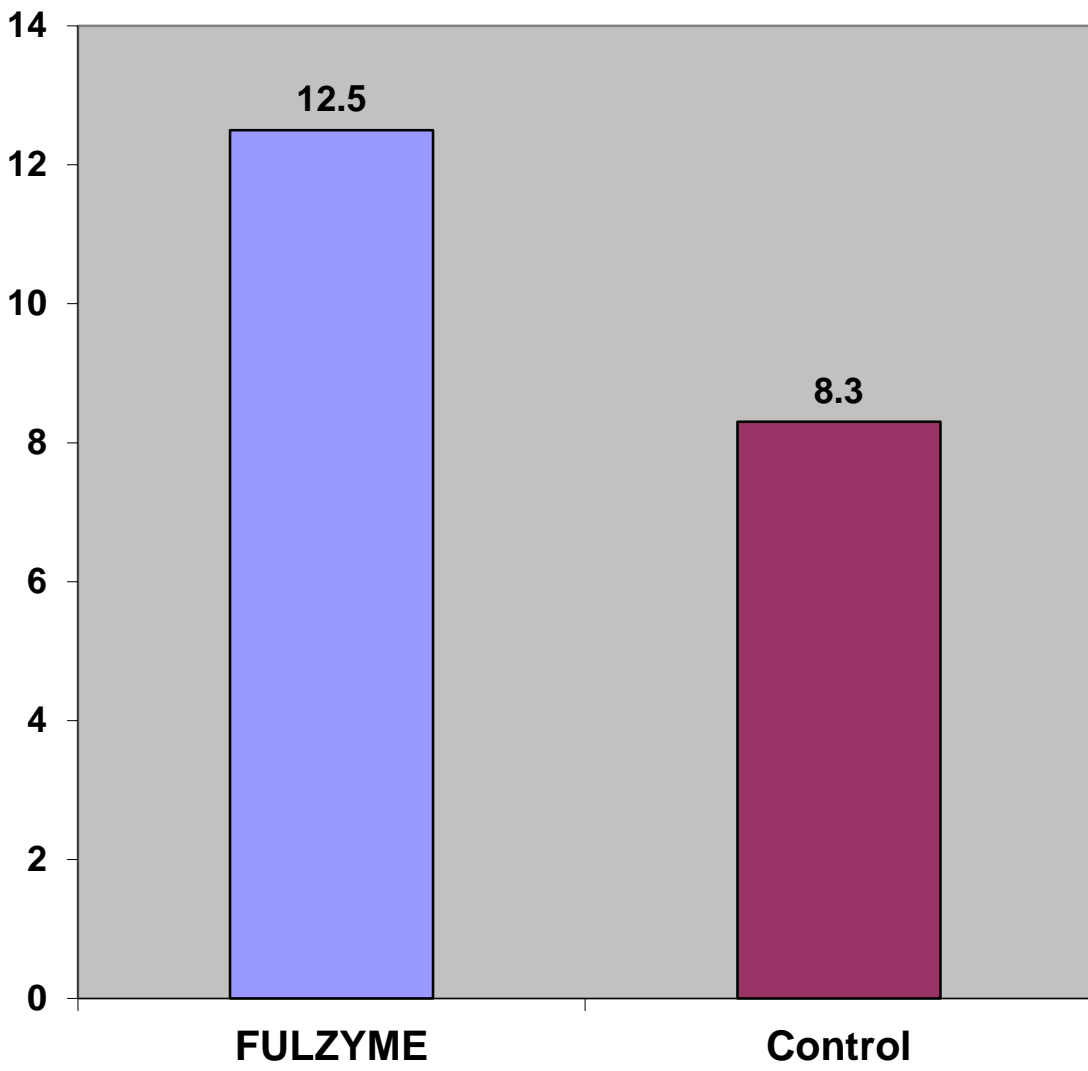
% Germination



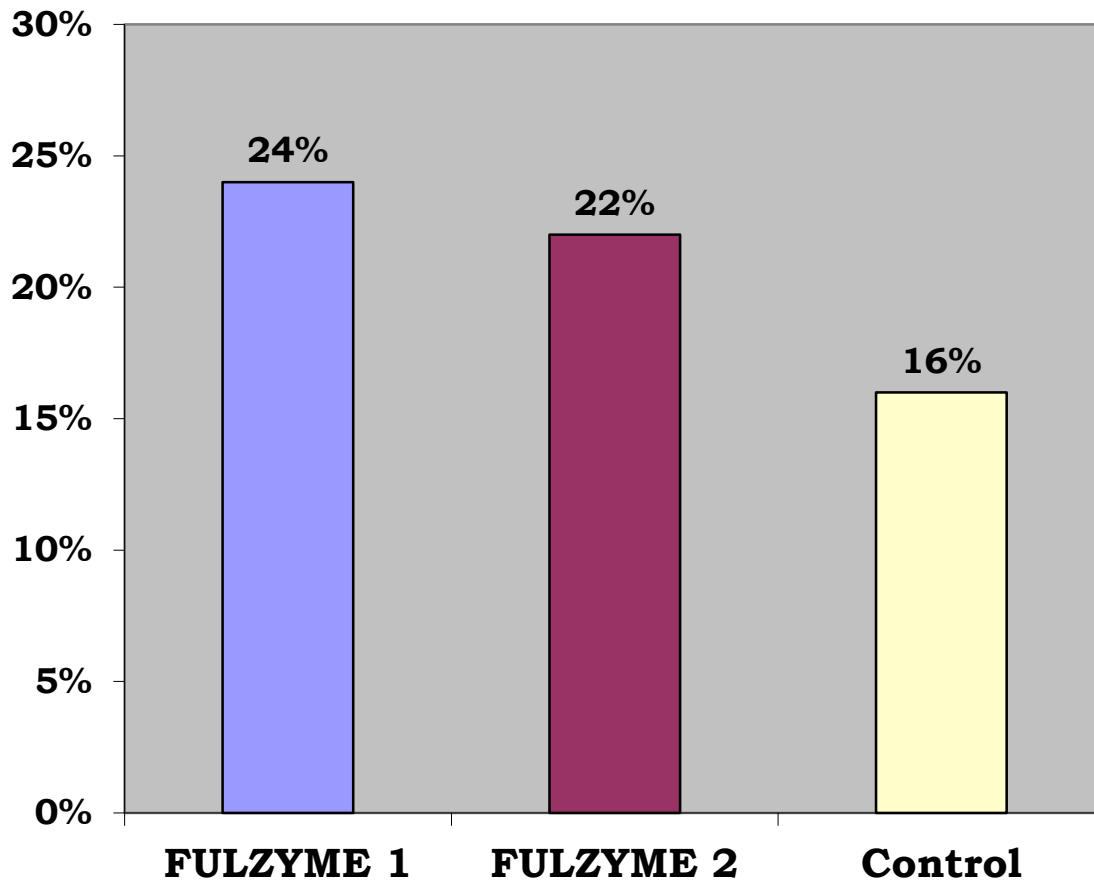
Average Plant Height (cm)



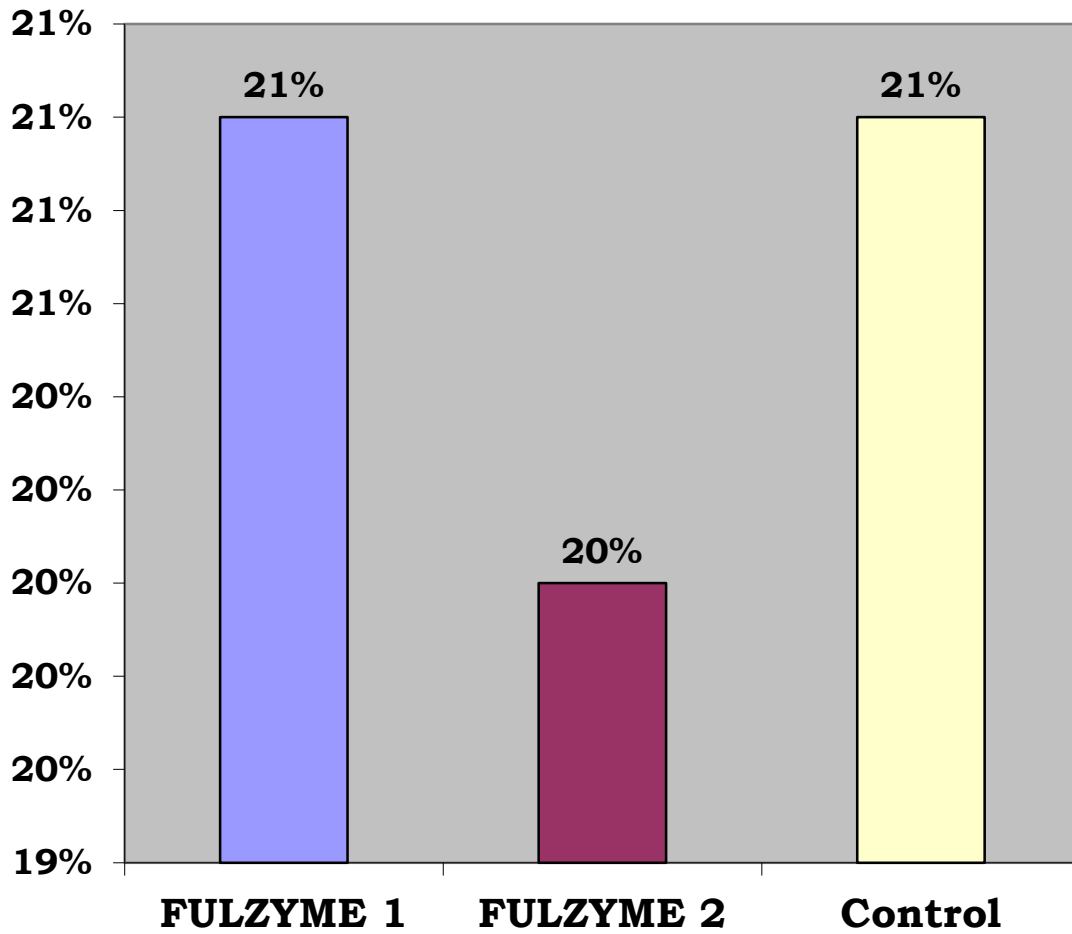
Average No. of Tubers per Plant



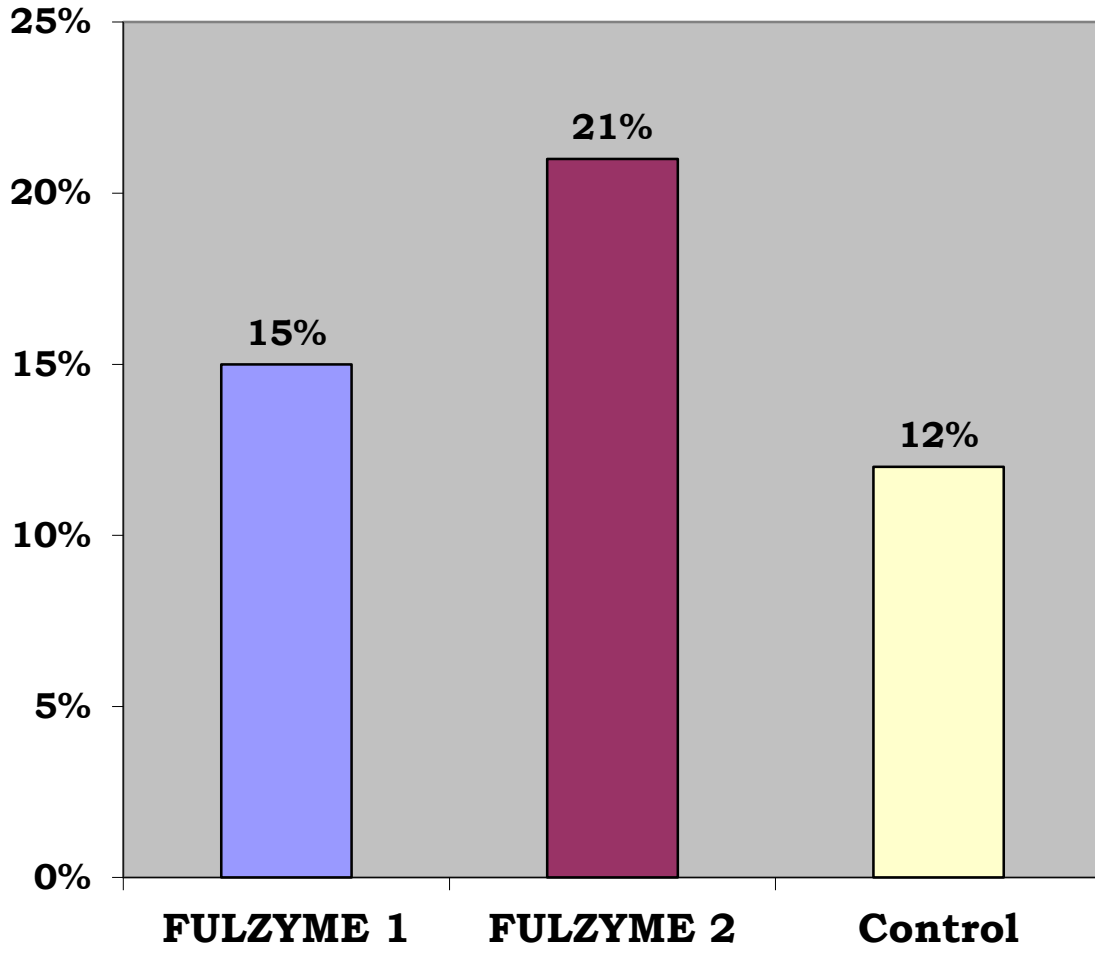
**Average No. of Tubers per Plant
(86 mm Diameter & Higher)**



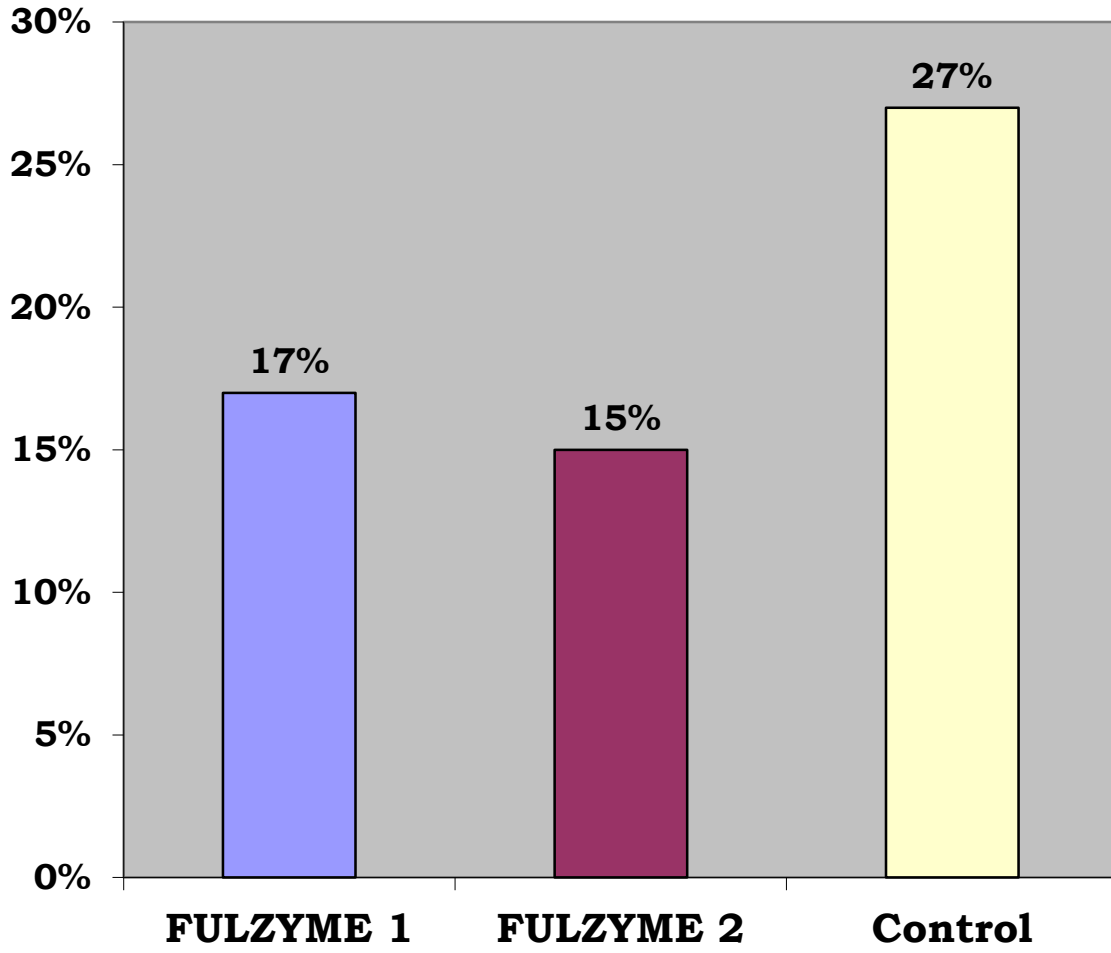
**Average No. of Tubers Per Plant
(70-85 mm diameter)**



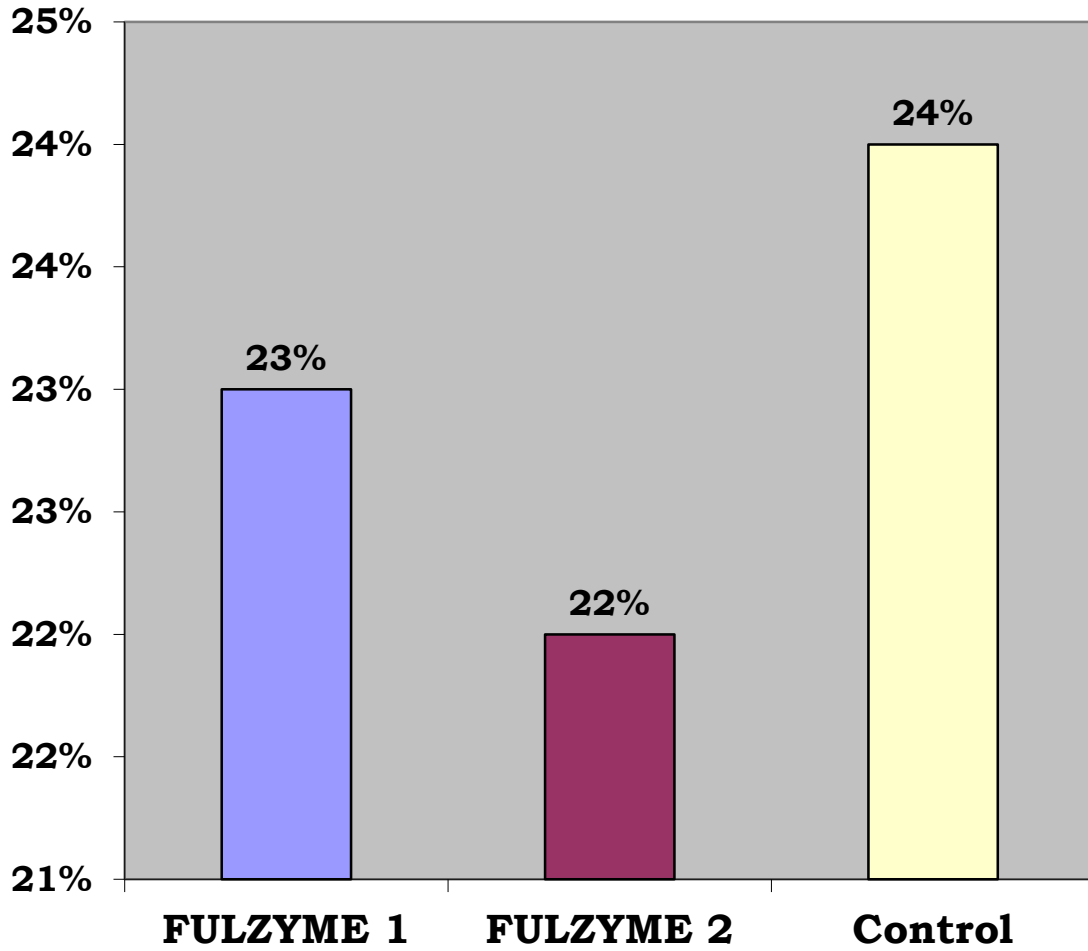
**Average No. of Tubers Per Plant
(60-69 mm diameter)**



**Average No. of Tubers Per Plant
(50-59 mm diameter)**



**Average No. of Tubers Per Plant
(40-49 mm diameter)**



Average Yield (tons/hectare)

