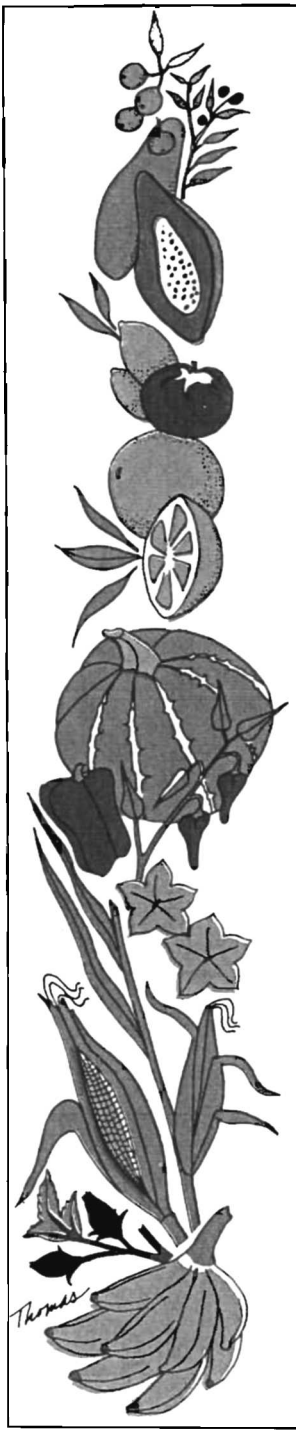

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EFFECT OF KINETINE, FOLCISTEINE AND HUMIC ACID ON THE YIELD OF "JIRA" EGGPLANT (*SOLANUM MELONGENA* L.)

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ABSTRACT

The effect of spraying a cytokinin (*kinetin*) and two biostimulants (humic acid and folcisteine) on the yield of "Jira" eggplant was evaluated. The best yield response was obtained with folcisteine at 15 ppm, being significantly higher than the yield obtained with 7.5 ppm of the same product. Results were not significantly different at rates 7.5 and 3.75 ppm of folcisteine. The yields obtained in control plants and those treated with humic acid (7.5, 15.0 and 30.0 ppm), kinetin (200 and 400 ppm) and 3.75 ppm of folcisteine were not statistically different.

RESUMEN

Se evaluó el efecto de la aspersión de una citokinina (kinetina) y dos bioestimulante (ácido húmico y folcisteína) sobre el rendimiento de la berenjena "Jira". Los mejores resultados se obtuvieron al aplicar 15 ppm de folcsitcína, siendo significativamente diferentes a los rendimientos obtenidos en las demás dosis. No hubo diferencia significativa eb la productividad de las plantas tratadas con 7.5 ó 3.75 ppm de folcisteína. Los rendimientos de las plantas control y de las que recibieron los tratamientos de kinetina (200 y 400 ppm), ácido húmico (7.5, 15 y 30 ppm) y 3.75 ppm de folcisteína no fueron estadisticamente diferentes.

INTRODUCTION

Eggplant (*Solanum melongena* L.) is one of the most popular vegetables in the Dominican Republic. The area dedicated to this crop is close to 900 hectares per year. As in any other fruit-producing vegetable, the yield potential in eggplant is very high, and yield can be improved through a number of ways, including more effective plant protection, adequate plant nutrition and the use of plant growth regulators and plant stimulants.

A series of experimental works have been conduted and published in relation to the practical possibility of using this kind of compound to enhance yield and/or quality of eggplant in the Dominican Republic (Moscat, 1992; Morales-Payán, 1990; Morales-Payán, 1991; Morales-Payán, 1993) and other countries (Nickell, 1982; Nothmann, 1985), according to which folcisteine and (GA_3) have resulted in better yields.

Several commercial products containig humic acid, kinetine, and other active ingredients with regulatory effects have entered the agri-chemical market in the Dominican Republic, creating the need for the evaluation of their effectiveness as yield enhancers.

Folcisteine is a plant stimulant. Its mode of action is the activation of anabolic enzymes through the slow liberation of thiolic groups (-SH) and the action of those groups on enzyme molecules. The mode of action of humic acid has not been completely explained. There is some evidence that it also works at an enzymatic level. As with folcisteine, an overall plant stimulation is expected to be the effect of humic acid application. Kinetine is a cytokinin, working primarily on cell division. When applied to fruit-bearing plants, kinetine should promote cell division in the forming fruit, and thus induce the formation of larger fruits. The

objective of the experiments presented in this paper were to determine the effect of commercial products containing humic acid, kinetine and folcisteine on the yield of eggplant (Solanum melongena L.) "Jira" when applied during flowering, and to determine the best rates for yield improvement in the conditions of San Cristóbal, Dominican Republic.

MATERIALS AND METHODS

The experiment was conducted in the Central Experimental Station of the Centro Sur de Desarrollo Agropecuario (CESDA) (Southern Center for Agricultural Development) in the outskirts of the city of San Cristóbal, Dominican Republic. Three simultaneous field experiments were carried out side by side, to provide the same climatic, soil and technical management conditions. A ramdomized complete block design with four replications was used. "Jira", the major eggplant variety in the Dominican Republic, was used in all experiments. Plants were grown according to the technical recommendations for the crop in that region, and treatment was given when plants were in the full flowering stage.

Treatments consisted of single sprayings of aqueous solutions of either folcisteine (FOLC), humic acid (HUM) or kinetine (KIN) directed to the upper leaves and to the flowers. The rates tested were 3.75, 7.50 and 15.00 parts per million (ppm) for FOLC, 200 and 400 ppm for KIN, and 7.5, 15.0 and 30.0 ppm for HUM, and a control treatment. Commercial yield (weight of commercial fruits per area) was the only variable evaluated. Seven partial harvests were made during the experiments.

RESULTS AND DISCUSSION

The summarized results of the experiments are presented in table 1. Yield values are the added weights of the seven partial harvests.

According to these results, humic acid and kinetin had no signifficant effect on yield at any of the rates tested, showing yields statistically equivalent to those of the control plants. FOLC at rate 3.75 ppm did not significantly differ from the control or from FOLC at rate 7.50 ppm in terms of yield, although 7.50 ppm FOLC resulted in significantly higher yield than the control.

The best results for yield were obtained with 15.00 ppm of FOLC, being significantly superior than all the other treatments tested in these experiments. There are no previous reports of the effects of HUM or KIN on "Jira" eggplant for the comparison of results. Based on the results of our experiments, there seems to be no effect either product on the yield of this crop. Nevertheless, more rates of both compounds will be included in future research work to cover a wider range for possible response.

The results for FOLC are in agreement with those previously reported in "Jira" eggplant grown in the same area (Morales-Payán, 1990). The fact that the highest rates resulted in yields significantly higher than those of the control, and that the rate of 15.00 ppm was statistically better than the rate of 7.50 ppm, suggests the possibility that higher rates of FOLC might stimulate the plants to produce higher yields. A series of higher rates will be include in future experiments, with the objective of determining the maximum yield response of "Jira" eggplant to FOLC rates.

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Table 1. Effects of Kinetine, Folcisteine and Humic Acid on "Jira" Eggplant yield.

Treatment	Yield (Tons/Ha)
15.00 ppm Folc	a 9.12
7.50 ppm Folc	b 8.01
3.75 ppm Folc	bc 7.63
Control	c 6.82
200 ppm Kin	c 6.73
400 ppm Kin	c 6.70
30.0 ppm Hum	c 6.66
15.0 ppm Hum	c 6.62
7.5 ppm Hum	c 6.59