

**Possible Residual Effects of GA<sub>3</sub> and Gibberellin Biosynthesis Inhibitors on Sprouting,  
Early Bulbil Formation and Tuber Yield in Chinese Yam**

Sang-Kuk Kim<sup>1</sup>, Sang-Chul Lee<sup>2</sup>, Bong-Ho Lee<sup>1</sup> and In-Jung Lee<sup>2,\*</sup>

<sup>1</sup>Institute for Bioresources Research, Gyeongbuk Provincial Agricultural Technology  
Administration, Andong 760-891, South Korea

<sup>2</sup>Division of Plant Biosciences, Kyungpook National University, Daegu 702-701, South Korea

**Objectives**

The study focus on the possible residual effect of gibberellic acid and plant growth retardants (mepiquat chloride and trinexapac-ethyl), which had been used to Chinese yam plants in a previous year.

**Material and Methods**

An experiment period: two years (2001 and 2002)

Plant used: Chinese yam (*Dioscores opposita* Thunb. cv. Tsukune)

Concentration and chemicals: 50, 100, 250, 400, 500 ppm for the GA<sub>3</sub>, 50, 100, 200, 400, 600 ppm for mepiquat chloride and trinexapac-ethyl

Application of chemical: Foliar-sprayed twice on July 15 and Aug 15 at 1,004 l ha<sup>-1</sup>.

In 2002: Cultural practices were those commonly used for the cultivation of Chinese yam.

**Results and Discussion**

- GA treatment increased the ratio of bulbil size (> 4 mm) compared with the control. In particular, the highest GA treatment was five fold more increased than that of the control.
- Higher MC concentrations elevated the more the ratio of bulbil size (> 4 mm) increased. MC treatment enhanced bulbil formation in all concentrations. Tuber yield was similar to the control in the lowest MC concentration (50 p.p.m.).
- Bulbil yield was highest in the TNE concentration (200 p.p.m). The more elevated TNE concentrations significantly promoted the tuber yield compared with the control.

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Corresponding author: E-mail (ijlee@knu.ac.kr), Phone: 053-950-5708

Table 1. Residual effect of gibberellic acid on the size ratio and yield of bulbil, and tuber yield in Chinese yam (var. Tsukune)

GA <sub>3</sub> concn. (ppm)	Bulbil size ratio (%)			Yield (kg/ha)	
	<2mm	2-4mm	>4mm	bulbil	tuber
Control	75.6±1.6	18.1±2.8	6.3±1.9	8.6d	14,500b
50	52.1±0.9	27.1±1.8	20.8±2.3	11.4c	14,959a
100	49.5±1.6	24.2±1.3	26.3±2.1	15.2b	15,111a
250	45.2±1.1	24.4±1.4	30.4±1.1	13.8bc	15,378a
400	40.5±1.0	25.7±1.1	33.8±2.5	15.7b	15,145a
500	39.3±2.0	26.1±0.4	34.6±1.5	20.5a	15,223a

Data presented are mean values of four replicates±SE. Means with the same letter within a column are not significantly different (P<0.05).

Table 2. Residual effect of mepiquat chloride on the size ratio and yield of bulbil, and tuber yield in Chinese yam (var. Tsukune)

MC <sup>1</sup> concn. (ppm)	Bulbil size ratio (%)			Yield (kg/ha)	
	<2mm	2-4mm	>4mm	bulbil	tuber
Control <sup>2</sup>	75.6±1.6	18.1±2.8	6.3±1.9	8.6d	14,500c
50	32.1±2.0	22.8±2.4	45.1±4.1	75.2c	14,967b
100	27.5±1.5	23.6±1.1	48.9±2.5	95.4b	15,389ab
200	24.3±2.1	22.0±1.5	53.7±1.6	94.8b	15,756a
400	19.4±0.6	16.3±0.7	64.3±1.1	111.4a	15,545ab
600	14.6±1.9	7.3±2.9	78.1±2.8	94.7b	15,867a

Table 3. Residual effect of trinexapac-ethyl on the size ratio and yield of bulbil, and tuber yield in Chinese yam (var. Tsukune)

TNE concn. (ppm)	Bulbil size ratio (%)			Yield (kg/ha)	
	<2mm	2-4mm	>4mm	bulbil	tuber
Control	75.6±1.6	18.1±2.8	6.3±1.9	8.6c	14,500c
50	50.7±2.9	36.2±1.2	13.1±2.0	62.8a	15,378b
100	53.1±3.1	31.7±4.2	15.2±1.5	54.3b	15,656b
200	40.7±1.5	40.0±2.2	19.3±2.5	64.3a	15,589b
400	36.8±1.1	35.7±1.6	27.5±2.9	60.0a	16,111a
600	32.2±2.8	35.2±1.2	32.6±1.8	65.2a	15,978a