

## Effects of Triacontanol on the Yield of *Raphanus acanthiformis* and *Brassica campestris*

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무우와 배추의 收量에 미치는 트리아콘타놀의 影響

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### ABSTRACT

The results of the research on the yield of Chinese Cabbage and Chinese Radish by triacontanol treatment showed an increase of 83% in Cabbage and that of 108.4% in Radish.

### INTRODUCTION

Triacontanol (Triacon) was discovered by Ries (1977) and synthesized by Welebir (1981) of Biochemical Research Co-operation, Falls Church, Virginia (BRC). Triacon was used by the author successfully in the culture of various crops. This hormone to be sprayed at the initial stage of growth (3~4 leaves) is considerably cheap in price (3~5 cents per acre) and brings about an epochal increase in the yield of crops. According to Welebir (1981), it showed an increased yield of 90% in bean, 72% in pepper, 69% in radish and 70% in watermelon. Ries (1978) indicated that tissue culture in vitro showed an increased yield of more than 30~40% in barley, wheat and corn. Therefore,  $Ca^{++}$  (or  $LaCl_3$ ) and pH are very important in this hormone which is different from the conventional one. Triacon is very sensitive according to its concentration.

The author obtained successful results in preliminary experiments and there by it can be fully expected that the yield of crops will be further increased by being cultured with a new formula of Triacon.

The production of agricultural products by using hormone has become the most crucial issue of the world of today, and the hormone most highlighted in the culture of crops is Triacon. This hormone available at a low price can be simply used and seems to have the tolerance of blight and harmful insects to some extent. Triacon is regarded as an epochal hormone which has increased the yield of a good many crops with improved quantity and quality. Though there are various raw materials of food, it is most desirable to solve the problems of yield and quality by using Triacon in radish and cabbage.

### MATERIALS AND METHODS

Radish(Summer Chinese)

Radish(Summer Chinese) was sown on April 5. Triacon A(control), B(0.1 mg Triacon/L+5mM, CaCl<sub>2</sub>), C(0.1 mg Triacon/L+10 mM CaCl<sub>2</sub>), and D (0.1 mg Triacon/L+15 mM CaCl<sub>2</sub>) were sprayed at the stage of 3~4 leaves and fertilizer used was amino acid fertilizer (Cheil Sugar Co.). It was harvested on May 28 (9.3 pH). Four replications and 4 treatments were applied, and a randomized block design was treated.

#### Cabbage(Spring Chinese)

It was sown on March 19, and A(control), B(0.1 mg/L+5 mM CaCl<sub>2</sub>), C(0.1 mg/L+10 mM CaCl<sub>2</sub>), and D(0.1 mg/L+15 mM CaCl<sub>2</sub>) were sprayed at the stage of 3~4 leaves. Amino acid fertilizer was used and treated with a randomized block design. It was harvested on June 19(9.3 pH), and 4 replication, and 4 treatments were applied.

## RESULTS AND DISCUSSION

According to Ries, however, the yield of other crops is far greater in the United States than that in Korea. This may be considered attributable to soil, temperature and seed. It may be expected that the yield of crops will be more increased in case the formula of Triacon is modified.

In conclusion, Triacon can be fully presumed to play an epochal role in the production increase of good grains. It is interesting to note that Triacon differs from conventional hormones in that it increases both the quantity and quality of food grains and that it can be used with the mixture of Ca<sup>++</sup> and IAA. pH is regarded as an important factor in the application of Triacon which is also different from other hormones. According to Kim(1982), saponin of Ginseng was increased by 2.50~3 times and the yield of comfrey and clover was also increased. Therefore, Triacon is considered to have a significant effect on all farm products and its cheap price and simpleness in application will make it a most promising hormone in the future.

**Table 1.** Fresh weight(g) of cabbage harvested.

Treat.	Rep.			
	1	2	3	4
A	527.5	530.5	525.7	531.0
B	735.4	730.0	725.7	737.4
C	827.4	831.5	810.5	823.7
D	976.3	981.5	955.6	957.8

Anova Table

Resource	DF	SS	MS	F
Total	15	406281.30		
Replication	3	476.81	158.9	3.39
Treatment	3	405382.10	135127.4	2881.20**
Error	9	422.40	46.9	

A: Control, B: 0.1 mg Triacon/L+5 mM CaCl<sub>2</sub>  
 C: 0.1 mg Triacon/L+10 mM CaCl<sub>2</sub>  
 D: 0.1 mg Triacon/L+15 mM CaCl<sub>2</sub>

In Anova table, Block D is highly significant. It is increased 83% than control.

**Table 2.** Fresh weight(g) of radish harvested

Treat.	Rep.			
	1	2	3	4
A	285.5	301.2	273.4	295.6
B	355.7	362.4	375.2	347.8
C	367.7	382.5	392.0	385.5
D	597.5	600.3	603.7	605.2

Anova Table

Resource	DF	SS	MS	F
Total	15	219789.82		
Replication	3	253.97	84.65	0.80
Treatment	3	218585.13	72861.71	689.72**
Error	9	950.72	105.64	

A: Control, B: 0.1 mg Triacon/L+5 mM CaCl<sub>2</sub>  
 C: 0.1 mg Triacon/L+10 mM CaCl<sub>2</sub>  
 D: 0.1 mg Triacon /L+15 mM CaCl<sub>2</sub>

In Anova table, Block D highly significant. It is increased to 108.4% than control.

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#### 摘 要

입춘 가락배추와 하지무우를 포장에 심어 3~4 엽때 Triacon 을 살포한 실험결과 배추는 83%, 무우는 108.4% 증가 하였다.

#### REFERENCE

- Hangertu, R. and S. K. Ries, 1978. Effect of triacontanol on plant cell culture in vitro. *Plant Physiol.*, 61 : 855~857.
- Lim, Ung-Kyu, 1983. Studies on the effect of Triacontanol on the growth and yield rice plants. *Korean J. Ecology*, 6(1) : 14~17.
- Ries, S. K., 1983. Effect of Triacon (not printed).
- Welebir A. J., 1981. Triacon (not printed) BRC UA.

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