

**YIELD AND SEED QUALITY OF CHILLI (*CAPSICUM ANNUUM* L.)  
AS AFFECTED BY DIFFERENT GROWTH REGULATORS**

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**Abstract**

A pot experiment was conducted during 2004-2005 rabi season at BARI, Joydebpur, to evaluate the effects of three growth regulators on yield and seed quality of chilli. Treatment of 10 ppm NAA gave significantly highest fruit yield (277.8 g/plant). Second highest fruit yield (221.1 g/plant) was obtained due to 100 ppm Ethephon and it was followed by 500 ppm Ethephon, 1000 and 5000 ppm KNap treatments. The lowest yield (146.6 g/plant) was recorded from control plants. Seeds harvested from 10 ppm NAA treated plants showed highest germination percentage followed by 100 ppm Ethephon. Lowest germination percentage of seed was recorded in control. Seedling vigor was highest in 10 ppm NAA followed by 50 ppm NAA and 100 ppm Ethephon.

Chilli is a valuable spice and also an important cash crop in Bangladesh. About 170041 hectares of land of Bangladesh is under chilli cultivation in both rabi and kharif seasons and the production is about 137,000 M ton (BBS 2004). Though the area and production have been raised but per unit yield of chilli is very low. In many countries, by spraying different plant growth regulators, higher yield has been achieved in many vegetables including chilli. Yield of chilli was increased by using different growth regulators such as NAA, TIBA, 2,4-D and Ethephon (Indira *et al.* 1985, Doddamani and Panchal 1989, Singh and Lal 1995). The present experiment was conducted to study the effect of different concentrations of three growth regulators, NAA, Ethephon and KNap, on yield and seed quality of chilli.

The experiment was conducted at Seed Technology Division, Bangladesh Agricultural Research Institute (BARI), Joydebpur, Gazipur, Bangladesh during rabi 2004 - 2005. Four weeks-old seedlings of chilli cv. Bangla lanka-1 were transplanted in 30 cm diameter pots of 18 inches of height on 20 November 2004. The soil of each pot was fertilized with 500.0 g cow dung, 10.0 g urea, 6.0 g TSP, 3.5 g MP and 1.0 g gypsum. Entire amount of cow-dung, TSP and gypsum were mixed thoroughly during soil preparation and urea and MP were divided in three equal parts and applied at 25, 50 and 75 days after transplantation (DAT). The treatments were T<sub>0</sub> = distilled water spray (control), T<sub>1</sub> = 10 ppm NAA, T<sub>2</sub> = 50 ppm NAA, T<sub>3</sub> = 100 ppm Ethephon, T<sub>4</sub> = 500 ppm Ethephon, T<sub>5</sub> = 1000 ppm KNap, and T<sub>6</sub> = 5000 ppm Knap. The experiment was laid out in a randomized complete block design with three replications for each. Seedlings were sprayed two weeks after transplantation using separate spray machines. Data on plant height, number of branches /plant, number of green fruits/plant, fruit length and width and fruit yield/plant, were noted. Seeds were harvested from ripe chilli fruits and stored for one month in the laboratory and then germination percentage and seedling vigour was evaluated as per ISTA 1985 procedure. Data were analyzed following MSATC program.

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**Yield:** Yield contributing characters and seed qualities of chilli were significantly influenced by different concentrations of growth regulators as shown in Table 1. Plant height was significantly increased in T<sub>1</sub> and followed by T<sub>3</sub>. Number of branches/plant was found maximum with T<sub>1</sub> and T<sub>3</sub> and followed by T<sub>4</sub> and T<sub>5</sub>. Significantly highest number of fruits/plant was obtained in T<sub>1</sub> followed by T<sub>4</sub>. The length and width of fruit increased following T<sub>3</sub> treatment. Yield of green chilli recorded significantly highest in T<sub>1</sub>. Second highest yield was obtained in T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub>. Munsri and Sadhukhan (1998) reported higher yield of chilli following application of 40 ppm NAA and 200 ppm Ethephon. Lyngdon and Sanyal (1992) also reported that higher, number of fruits/plant; fruit weight and yield of chill were improved by spraying NAA, Kn, GA<sub>3</sub> and Ethrel.

**Table 1. Effect of growth regulators on yield and yield contributing characters and seed quality of chilli (*Capsicum annuum* L.)**

Treatments	Yield and yield contributing characters						Seed quality	
	Plant height (cm)	No. of branches/plant	No. of fruits/plant	Fruit length (cm)	Fruit width (cm)	Fruit yield/plant (g)	Germination (%)	Seedling vigour
T <sub>0</sub>	33.0 cd	10 b	71.0 d	5.5 b	0.81 b	146.6 d	65.0 d	275.5 d
T <sub>1</sub>	44.0 a	12 a	136.3 a	5.3 b	0.93 ab	277.8 a	92.0 a	589.1 a
T <sub>2</sub>	35.5 bcd	10 b	91.3 c	4.6 c	0.86 b	176.4 c	82.0 bc	522.5 ab
T <sub>3</sub>	39.0 ab	12 a	107.7 b	6.0 a	1.00 a	221.1 b	87.0 ab	518.8 ab
T <sub>4</sub>	36.3 bc	11 a	112.3 b	5.9 ab	0.80 b	206.0 bc	79.0 c	409.5 bc
T <sub>5</sub>	36.0 bc	11 ab	104.3 b	5.4 b	0.86 b	202.0 bc	78.0 c	254.1 d
T <sub>6</sub>	30.0 d	10 b	103.7 b	5.5 ab	0.90 ab	189.4 c	79.0 c	358.6 cd
LSD (0.05)	5.66	1.147	10.19	0.38	0.17	29.65	7.14	129.9
CV(%)	8.92	6.06	5.61	3.97	2.69	8.35	5.05	13.73

T<sub>0</sub> = Distilled water (control), T<sub>1</sub> = 10 ppm NAA, T<sub>2</sub> = 50 ppm NAA, T<sub>3</sub> = 100 ppm Ethephon, T<sub>4</sub> = 500 ppm Ethephon, T<sub>5</sub> = 1000 ppm KNap, T<sub>6</sub> = 5000 ppm KNap.

Doddamani and Panchal (1989) found that 10 ppm NAA had significant effect on fruit length and thickness of chilli. Seeds harvested from 10 ppm NAA treated plants had significant higher germination percentage and it was followed by T<sub>2</sub> and T<sub>3</sub>. The seedling vigour was observed significantly maximum from seeds collected from plants treated with 10 ppm NAA and followed by T<sub>3</sub>. Shaikh *et al.* (2002) reported higher germination and seedling vigor in harvested seeds of onion sprayed with GA<sub>3</sub> and NAA. The results of this experiment revealed that 10 ppm NAA was beneficial and gave significantly higher yield, germination percentage and seedling vigour of chilli.

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