

Influence of growth regulators on growth, flowering and fruit yield of gherkin (*Cucumis anguria* L.)

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ABSTRACT

An investigation to study the influence of Gibberlic acid (GA_3), Ethrel and Maleic hydrazide (MH) on vegetative growth, flowering and fruit yield of gherkin cv. Calypso was conducted for three years during 1995-1997. Application of GA_3 increased the length of primary shoot, branches and internodes, by promoting cell elongation. But it reduced the number of branches as well as fresh and dry weights of plants. Contrary to the effects of GA_3 , both ethrel and MH reduced the length of primary shoot, branches and internodes, but increased the number of branches thereby enhancing the fresh weight and dry weight of plants. They also enhanced the number of pistillate flower and fruit set. Spraying of MH at 100 ppm followed by 150 ppm concentrations and also ethrel at 150ppm concentration are found effective in enhancing the growth, flowering and fruit yield in gherkin cv. Calypso.

Key words : *Cucumis anguria*, Gherkin, Growth regulators, Yields.

Gherkin (*Cucumis anguria* L.) commonly called as 'pickling cucumber' is an important vegetable crop and its unripe fruits are used for processing as pickles. The market demand is on the increase in America and Australia. It was introduced to India during late 80's and is gaining popularity. Though it is being cultivated in India since more than a decade, no significant research work on any aspect of its production technology has been reported (Anonmyos, 1995).

Under commercial cultural conditions in cucurbits, Arora and Satishsiyag (1989) noticed that the gynocious character is not completely stable and sex ratio is highly sensitive to climate, soil moisture, nutrient application and management practices. Certain growth regulators have been reported to influence the sex expression in various cucurbits leading to either suppression of male flowers or an increase in the number of female flowers (Siambhi, 1974; Arora *et al.*, 1996).

However little information is available regarding the effect of growth regulators on the growth and yield of gherkin. The present investigation was therefore, undertaken to evaluate the influence of gibberlic acid (GA_3), ethrel (CEPA) and Maleic hydrazide (MH) on the growth, flowering and yield of gherkin cv. Calypso.

MATERIALS AND METHODS

The investigations were conducted (during April – June of 1995, 1996 and 1997) for three years with Gherkin (*Cucumis anguria* L.) cv. Calypso. The experiment was

laid out in a randomized complete block design with three replications. The number of plants per treatment was 20 with a spacing of 90 cm between the rows and 22.5 cm between the seeds. The plot size was 4.05 sq.m. Each plot was supplied with 10 kg of farmyard manure and normal doze of chemical fertilizer.

The treatment beside control (sprayed with distilled water) were 1000, 1500 and 2000 ppm GA_3 ; 150, 200, 250 ppm of ethrel and 100, 150 200 ppm of MH. Tween-20 at 0.005% was used as a surfactant for uniform spread of the spray solution on the leaves. Two aqueous sprays of each treatment were made at 2 and 4 leaf stages. Observations were recorded on various growth, flowering and fruit yield characters which are listed in Table 1 and Table 2. Total sugar content in fruit was estimated by adopting the method as suggested by Somogyi (1953).

RESULTS AND DISSCUSSION

The results have been explained on the basis of average data of three years and are presented in Table 1 and Table 2. GA_3 treatments significantly increased the length of primary shoot and branches and also number, length and girth of internode. Such growth stimulating effect of GA_3 has also been reported in summer squash (Arora, *et al.*, 1982), ridge gourd (Arora *et al.*, 1987), pumpkin (Arora *et al.*, 1988) and also in many leafy vegetables (Nirmal Singh and Arora, 1995). The increase in shoot length by GA_3 may be due to promotion of cell elongation (Sarkar *et al.*, 1989). On the other hand, GA_3 treatments reduced the number of branches and leaves, fresh weight and dry weight of plants. This may be because of apical dominance due to gibberellic acid, as