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RESPONSE OF TWO MAIZE VARIETIES TO CHLORMEQUAT APPLICATION

Sultan Ahmad, N. A, Baig & F. Baig
Department of Botany, University of Agriculture, Faisalabad

In a field trial the effect of chlormequat applied by two modes was studied on two varieties of maiz (*Zea mays* L.) Viz. Akbar and Sultan. The chemical shortened the internode and stem length. It brought about a significant increase in leaf area, cob size, number and weight of grains and yield. The two varieties exhibited similar response. Foliar spray proved more useful than seed soaking method.

INTRODUCTION

For a better crop production suitable amount of growth is essential and a shift on either side may be harmful. Growth retardants like chlormequat have been used in cereals to reduce the stem length and thus preventing lodging (nafziger) *et al.*, 1986). Earlier application of chlormequat has been reported to increase grain yield in wheat (Pinthus and Rudich, 1967) and barley (Koranteng and Matthews, 1982). Chlormequat chloride has relatively wide spectra of activity and often even different varieties of the same species are found to react in different ways(Cathey, 1964) while the response of plant is also affected by various factors as mode of application of chlormequat and age of plant (Cathey, 1964., Lang, 1970). This chemical is applied as seed soaking, soil drench or foliar spray.In the present investigation the effect of chlormequat was studies on to two varieties of maize when applied as seed soaking and as foliar spray.

MATERIALS AND METHODS

In a field trial conducted at the University of Agriculture, Faisalabad during 1986, two varieties of maize (*Zea mays* L.) viz. Akbar and Sultan were treated by two modes of chlormequat application in quadruplicate . In soaking treatment the seeds were soaked for 24 hours in three concentrations of the chemical i. e., 600 ppm, 1000 ppm and 1400 ppm. In the second treatment the seeds were soaked for 24 hours in distilled water and were treated by the above - mentioned concentrations of chlormequat as foliar spray, applied 21 days and 42 days after the completion of germinafion of crop. The data collected at maturity were subjected to statistical analysis (Steel and Torrie, 1980).

RESULTS AND DISCUSSION

The perusal of Table 1 indicates that chlormequat treatment caused a significant effect on almost all characters of maize. A great decrease was noted in the length of internodes and consequently in total plant height. Thus chlormequat deserves a special merit because height in many crops including maize becomes a demerit as it induces lodging, particularly in rains occurring towards maturity of this crop. Similar decrease has been noted to be beneficial in many other crops (Waddington and Cartwright, 1986., Ashraf *et al.*, 1987). The number of leaves was not changed in maize but the leaf area was much enhanced by chlormequat application and a significant increase of 24.2% was recorded in foliar spray by 1000 ppm.

The number of cobs per plant was not altered but a statistically significant icrease was registered in cob size, yielding increased number of grains per plant. The grains were also of bigger size in treated plants and overall an increased yield upto 106.7g was noted in treated plants as com-

Table 1. Effect of chlormequat on various characters mean values of maize

		Seed soaking in chlormequat			Foliar spray with chlormequat			Varieties means	
	Control	600 ppm	1000 ppm	1400 ppm	600 ppm	1000 ppm	1400 ppm	Akbar	Sultan
Plant height (cm)	201.61 a	192.83 ab	185.06 bc	188.34 abc	182.28 cd	163.44 e	173.45 d	185.52 a	182.10 a
Length of internodes (cm)	15.48 a	14.80 ab	14.19 bc	14.46 bc	13.81 cd	12.52 e	13.32 d	14.22 a	13.95 a
Number fo leaves plant $^{-1}$	12.00 a	11.94 a	11.89 a	12.00 a	11.94 a	11.78 a	11.89 a	11.94 a	11.90 a
Leaf area (cm2)	4145 f	4316 e	4442 d	4352 e	4731 c	5105 a	5050 b	4608 a	4575 a
Size of cobs (cm)	19.14 e	20.11 d	21.13 bc	20.75 cd	21.39 bc	22.63 a	21.69 b	20.92 a	21.03 a
Number of grains plant $^{-1}$	470.72 e	424.39 de	437.00 c	428.17 d	443.72 a	473.11 a	462.89 b	442.27 a	440.59 a
1000 grain wt. (g)	200.75 d	208.20 c	211.52 c	209.81 c	212.07 c	226.09 a	218.70 b	212.30 a	212.60 a
Yield plant^{-1} (g)	84.46 f	88.34 e	92.17 cd	89.83 de	93.71 c	106.71 a	100.78 b	94.04 a	93.40 a

Means sharing a common letter differ non–significantly.

pared to 84.5 g in control. Increase in yield was also reported for various other crops by (Mc Donald. (1985) and Ashraf *et al.* (1987).

Both the varieties behaved similarly and no significant difference was observed for all the characters studied. One of the possible reasons for this similarity may be the tall habit of both the varieties. Foliar spray of chlormequat proved better and in all the characters it exhibited better result as compared to seed soaking method.

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