

### Effect of Triazoles on Transpiration of Excised Gram (*Cicer arietinum* L.) Leaves.

KK Bora and Sudha Mathur

Department of Plant Physiology, Rajasthan College of Agriculture, Udaipur - 313 001 India

Recently triazoles have emerged as antigibberellins which control vegetative growth and development in plants (Davis *et al.* 1986). A little is known about its role on physiology of plants. This paper reports the effect of triazoles on transpiration in Chick pea (*Cicer arietinum* L.).

Plants of *Cicer Arietinum* L. were raised during rabi season 1989 in 30 cm earthen pots filled with 5 kg of alkaline calcareous soil. Three plants per pot were finally kept after emergence. After 42 days of sowing, the plants received soil application of 100 ml of 2 and 5 ppm of each per pot of paclobutrazol and XE-1019 and 100 ml of 10 and 15 ppm of

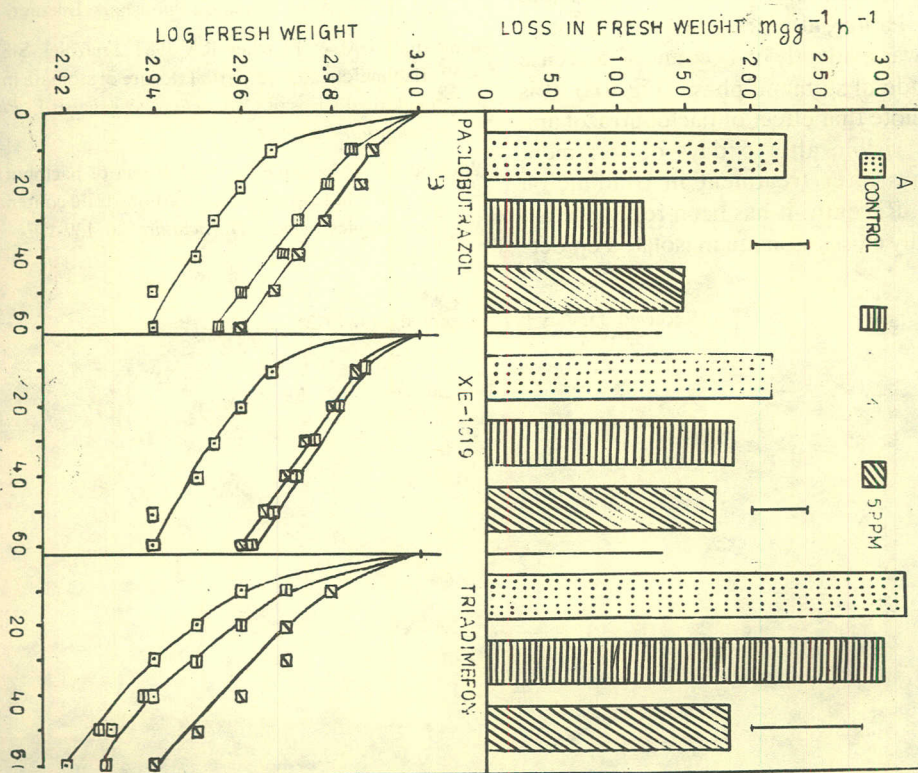


Fig.1 Effect of triazoles on transpiration rate (A), and transpiration decline (B) curves

triadimefon. Transpiration measurements were conducted at 3rd, 5th and 7th days of the treatments.

Transpiration rate was measured in triplicate according to the method described earlier (Bora & Mathur 1990).

Triazoles in general, reduced transpiration rate in chick-pea (Fig. 1A). The reduction in transpiration rate was 44.84-31.54 in paclobutrazol, 10.30-15.95 in XE-1019 and 7.24 - 41.44 in triadimefon treated plants respectively. Paclobutrazol seems to be more effective among chemicals used. The chemicals reduced transpiration rate through partial stomatal closure. The observation is substantiated by various transpiration decline curves. A perusal of Fig. 1 B shows the predominance of stomatal phase in control and treated plants. Hence, after treatment reduction in transpiration was evidently on account of decrease in the magnitude of stomatal phase (Fig. 1B). It is interesting to note that effect of paclobutrazol and XE-1019 was visible after 5 days of treatment whereas 7 days after treatment in triadimefon treated plants. Recently, it has been reported that triazole partially closes stomata in isolated epider-

mal strips of *Commelina bengalensis* L. (Santakumari & Fletcher 1987). Paclobutrazol treated plants showed high water potential in comparison to control (Wieland & Wample 1985). In conclusion, the use of triazoles as antitranspirant holds a great promise for inducing drought resistance by preventing water loss.

We acknowledge the generous supply of paclobutrazol & XE-1019 by Dr. Tim D. Davis, USA and triadimefon by Dr. Satish Lodha, CAZRI, Jodhpur.

### References

- Bora KK & Mathur S 1990 Effect of uniconazol on transpiration of excised soybean leaves. *Current science* **59** 167-168
- Davis TD, Sankhla N & Upadhyaya A 1986 Paclobutrazol : A promising plant growth regulator. *Hormonal Regulation of Plant Growth and Development*, (Ed. SS Purohit) Vol. III 311-331 Agro. Botanical Publishers, Bikaner, India
- Santakumari M & Fletcher RA 1987 Triazoles S-3307 and triadimefon induced partial closure of stomata in isolated epidermal strips of *Commelina bengalensis* L. *Physiology Plantarum* **71** 95-99
- Wieland WF & Wample RL 1985 Effect of paclobutrazol on growth, photosynthesis and carbohydrate content of delicious apples. *Scientia Horticulture* **26** 139-177

(Received January 1991 Accepted May 1992)