

Effect of season, time of planting and plant density on the growth, yield and andrographolide content of Kalmegh (*andrographis paniculata nees*) under North Indian condition

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(Accepted : July 2005)

SUMMARY

A field experiment during the Kharif season of 2002-2004 in split plot design with 12 treatments and 3 replications, conducted at the Deptt. of Horticulture, Ch. Chhotu Ram P.G. College, Muzaffarnagar (U.P.) revealed that June 1st (M₁) sown plants were taller than the plants, which were sown late viz M₂, M₃ and M₄. The plants sown at a spacing of 15x15cm (S₁) resulted in the highest fresh and dry herb yield (1.25t and 0.75t, respectively) per hectare followed by S₂ (0.90t and 0.50t, respectively) while, the plants spaced at 30x30cm (S₃) recorded the lowest fresh and dry herb yield (0.59t and 0.33t, respectively) per hectare.

Key words : Kalmegh, yield , plant density, andrographolide.

Kalmegh (*Andrographis paniculata* Nees.) belonging to the family Acanthaceae is one of the nineteen species of the genus *Andrographis* indigenous to India and has been used in Indian systems of medicines since time immemorial. The plant is found growing in the plains throughout India and Sri Lanka. It is also reported from certain parts of China, Thailand and Bangladesh. In India, it is distributed in the states of Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh Chattishgarh, West Bengal and Himachal Pradesh (Vijaya and Nanavati, 1978).

The juice of Kalmegh leaves is prescribed with cardamom, cloves and cinnamon in the form of globules to infants for their relief of bowel complaints, irregular stools and loss of appetite. The plant is considered to be highly efficacious against chronic malaria (Vijaya and Nanavati, 1978). In India the entire plant is used to treat snake bites (Azimudeen *et al.*, 1978). The hot water extract of the whole plant is used for acute jaundice where the powder is mixed with garlic and 3 grams is given orally with butter milk for four days (Reddy, 1988) and also as febrifuge (Choudhury *et al.*, 1987) and as an antidysentiac agent (Sahu, 1984), while the extract of dried leaf is used to treat stomach worms (Deka *et al.*, 1983). The roots are used as antipyretic, alterative and cholagogue agents some cases of anaemia (John, 1984). In spite of its numerous medicinal values, the crop is not being grown on a commercial scale anywhere in India. At present it is being collected only from forest areas, in which lot of variation in the active principal contents could be seen. Moreover, the availability of the plant through natural sources has also diminished considerably due to unscrupulous exploitation, necessitating the cultivation of this crop for obtaining the drug required by the industry.

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MATERIALS AND METHODS

The present investigation on effect of best season and time of planting on the growth, yield and Andrographolide content of Kalmegh (*Andrographis paniculata* Nees) under North Indian condition was conducted during the year 2002-2004.

Experimental Site :

A field experiment in split plot design with 12 treatments and 3 replications was conducted at the Deptt. of Horticulture, Ch. Chhotu Ram P.G. College, Muzaffarnagar (U.P.) 251 001 during the Kharif season of 2002-2004. The experimental field is situated in the sub-tropical zone where maximum temperature during May-June is 40-45 °C and 3-4 °C during December and January. The maximum and minimum average relative humidity recorded annually is 80-90% and 20-25% respectively. The soil of the experimental field was exclusively loam in the texture, deficient in nitrogen (185 kg/ha) and organic matter (carbon) (0.62%), moderate in Phosphorus (28.8 kg/ha) and fairly rich in Potash (315 kg/ha) having slightly alkaline reaction. The seedlings were raised in the nursery by sowing the seeds in the nursery beds. The seeds were sown according to the date of sowing. The beds were watered daily until transplanted to the main field.

Forty days old seedlings were transplanted to date of sowing cum nutritional and spacing trial plots as per the treatments. In case of nutritional experiment, 40 days old seedlings were transplanted to the main field by adopting different spacing as given in the treatment details. When all the plants flowered, crop was harvested by cutting at ground level and dried under shade for 3-4 days before storage and processing.