

Effect of MH-30 and Cycocel on growth and dry root yield of aswagandha (*Withania somnifera* Dunal)

N. V. UPADHYAY, K. V. PATEL, S. J. MACWAN, D. H. PATEL AND S. SRIRAM

See end of article for authors' affiliations

Correspondence to :
N.V. Upadhyay
Department of Medicinal and Aromatic Plants,
Gujarat Agricultural University,
ANAND (GUJARAT) INDIA

Accepted : December, 2006

ABSTRACT

A field experiment was conducted to study the influence of MH-30 and Cycocel on growth and dry root yield of aswagandha (*Withania somnifera*) at University Farm by spraying different concentrations of MH-30 (300, 400 and 500 ppm) and Cycocel (100, 150 and 200 ppm) thrice at 45 days interval. The growth attributes viz., plant height, root length and root girth were not significantly influenced but MH-30 (400 ppm) and Cycocel (150 ppm) were found to be effective for higher dry root yield as well as good quality of aswagandha.

Key words : MH-30, CCC, Growth attributes, Root quality, Aswagandha, Ginseng, Withanolide.

Aswagandha (*Withania somnifera* Dunal, Family: *Solanaceae*) is one of the most valuable herbs of drier zones of India (Pal, et al., 1994). It is used in Ayurvedic System of Medicine as a general tonic and in the treatment of various nervous disorders. It is used as an alexipharmic, astringent, deobstruent, diuretic, hypnotic, sedative, narcotic and restorative, the roots are similar to ginseng roots (Anon. 1976; Dey, 1980 and Tripathi *et al.* 1996). Madhya Pradesh dominates in its cultivation (Nigam *et al.*, 1984) while in Gujarat it is now introduced in scattered area. Root is the economic part used in many herbal preparations. The active ingredient of the plant is withanoloids, somnifirin and several other alkaloids present in roots. It is a late kharif crop, sandy loam or light redsoil with pH 7.5 to 8.0 with good drainage is suitable for its cultivation (Anon, 2005) Plant growth retardant like CCC (Chlorocholine chloride/ Cycocel) increases in branch and leaf number and also increased yield have been reported in safflower plants (Kar *et al.*, 1989). The Maleic hydrazide (MH 30) is also known to have an interesting chemical effect on plant growth and flowering. Its application in inhibiting the terminal growth and stem elongation in destroying the apical dominance are the unique feature (Malik and Srivastava, 1982). The present study was aimed to analyse the effect of MH 30 and Cycocel on growth modification and dry root yield of aswagandha.

MATERIALS AND METHODS

Aswagandha variety Jawahar Asgandh -20 was studied at AICRP on Medicinal and Aromatic Plants Project, Anand Agricultural University, Anand in a

randomized block design (RBD) with three replication. The gross plot size was 5.0 x 1.0 m², while spacing was 30 cm. Sowing was done @ 6.0 kg/ha seed rate. Other agro technological aspects were followed as suggested by Patel *et al.* (2001).

MH-30 was sprayed in concentration of 300, 400 and 500 ppm whereas Cycocel in 100, 150 and 200 ppm concentration. These growth inhibitors sprayed thrice at an interval of 45 days each (i.e. 45, 90 and 135 days after sowing). The trial was started from the month of September with three consecutive year during 1999-2000, 2000-01 and 2001-02. The root samples were analysed for the content of total withanolide (Majmudar, 1955) and starch.

RESULTS AND DISCUSSION

The sprayings did not influence root girth, dry root yield, withanolide content and starch content during individual and on pooled analysis (Table 1 and 2). However, there was a significant influence of growth inhibitors on plant height during 1999-2000, 2000-01 and on pooled basis. During the year 2001-02 the results were non-significant. Plant growth inhibitors does not influence root length during individual years, but, it showed significant difference on pooled basis.

The plant height, root length, root girth and dry root yield are presented in Table 1. The result showed that the plant height reduced at lower concentration but increased at higher concentration of MH 30 while it was vice versa in case of CCC i.e. plant height increased at lower concentration and reduced at higher concentration in pooled analysis. The influence of growth retardant CCC in reducing plant height is reported by Kar *et al.* (1989).