

## Herbal pelleting as a pre-sowing treatment on growth and yield in cowpea cv. CO 6 [*Vigna unguiculata* (L) Walp]

K. SUJATHA\* AND K. RAMAMOORTHY

Seed Science and Technology Unit, Department of Plant Breeding and Genetics, Agricultural College and Research Institute, MADURAI (T.N.) INDIA

(Accepted : March, 2008)

### SUMMARY

Experiments were conducted to identify the effect of herbal pelleting of seeds using vitex and calotropis leaf powders with acacia and maida gum as adhesives in cowpea cv. CO 6. An enhancement in physiological and yield attributes were observed when pelleted with calotropis or vitex @ 100 g/ kg using 15% maida or 30% acacia gum followed by drying.

**Key words :** Cowpea, Herbal pelleting, Physiology, Yield.

Seed pelleting is a process of enclosing a seed in an inert material for precision sowing which also enables external application of required substances for added benefits during field performance that can influence the seed at the seed soil interface (Abdul-baki and Anderson, 1973 and Scott, 1989). To overcome these environmental and management crisis, which delay or prevent germination and establishment of the seedlings, seed coatings materials were reported to improve the germination ability and to increase seedling emergence at changing soil moisture especially in the suboptimal range (Mucke, 1987). Seed coating has been reported to increase the germination and better establishment and yield of blackgram (Kuppusamy *et al.*, 1982), and soybean (Sabir-Ahmed, 1999 and Jeyabal *et al.*, 1992). The present study was made using calotropis and vitex herbal powders with maida and acacia gum to assess their efficacy as a pre-sowing treatment on growth and yield attributes of cowpea.

### MATERIALS AND METHODS

Air dried leaves of calotropis (*Calotropis gigantia*) and vitex (*Vitex negundo*), were powdered and sieved through 60 mm mesh sieve and used for coating seeds. Fresh acacia gum and maida were used as coating agents.

Graded seeds (12/64) of cowpea cv.CO 6 obtained from National Pulses Research Center, Vamban, Pudukottai, Tamil Nadu were pelleted for the study. For every 100 g of seeds, 10 g of dry herbal powder in each of calotropis and vitex separately was used for coating with acacia (10, 20 and 30%) and maida gum (5, 10 and 15%) at different concentrations and the pelleted seeds were shade dried. Field experiments were conducted at Agricultural College and Research Institute, Madurai

(90°5' North and 78.5' East and altitude of 147 MSL). A spacing of 30x10 cm was adopted with other recommended crop management practices in a randomised block design replicated thrice. The trial was conducted during *kharif* 2005 and *rabi* seasons 2006 with the plot size of 2x2 m<sup>2</sup>. Observations on dry weight (g) after drying at 80°C for 16 h, leaf area index (LAI), leaf area duration (LAD) after Power *et al.*, (1967), relative growth rate (RGR) after Williams (1946), total number of pods and single plant grain yield (g) were recorded. Except LAD, RGR which was recorded between 40-60 days, the other parameters were recorded on 60 days after sowing. For individual observation, ten plants per plot at random were taken. Mean data were analysed after Snedecor and Cochran (1961) statistically.

### RESULTS AND DISCUSSION

Among the herbal powders and gums, seed pelleting using calotropis with 15% maida gum proved efficacious followed by vitex coating. The physiological parameters *viz.*, dry weight, LAI, LAD, RGR and yield parameters *viz.*, total number of pods and grain weight were higher in pelleted seeds. Maximum dry weight (20.57 and 20.28 g), leaf area index (3.43 and 3.32), leaf area duration (57.1 and 54.6), RGR (43.2 and 44.1mg), total number of pods (22.0 and 17.5) and grain yield (19.20 and 17.0 g) for calotropis with 15% maida gum and vitex with 30% acacia gum could be observed (Tables 1, 2, 3). Other concentrations of acacia gum with the same herbals had an advantage but the effect was less than that of maida gum but always better than untreated control. The untreated control recorded (15.15 g for dry weight, 2.95 for LAI, and 51.1 for LAD, 41.4mg for RGR, and 13.0 for total number of pods and 13.80 g for grain yield Tables

\* Author for correspondence.