

EVALUATION OF FOUR HERBICIDES FOR CONTROL OF BROAD LEAF WEEDS IN RUBBER

Conventional manual weeding accounts for about 34 per cent of the total cost of cultivation of rubber during the immature phase, which is generally seven years, and is the costliest single input. A herbicide based integrated weed management system has been reported to reduce this cost considerably (Mani et al, 1987). Since the weed flora composition in rubber plantations varies widely, a combination of herbicides is necessary for effective weed control (Anon. 1984). Currently the recommended herbicides used in rubber cultivation are Glyphosate, Paraquat, 2, 4-D Sodium Salt and Dalapon in various combinations. There is, however, a need to find out an alternative to 2, 4-D Sodium Salt for enhanced control of broad leaf weeds, especially hardy perennials.

A field experiment to evaluate four herbicides for control of broad leaf weeds in rubber was laid out at the Central Experiment Station of the Rubber Research Institute of India at Chethackal in November, 1985, to identify an alternative to 2, 4-D Sodium Salt. Spraying was confined to planting strips with a plot size of 25 m². The area selected was infested by both broad and narrow leaf weeds. The predominant weed flora in the experimental area were *Lantana camara* L, *Sida rhombifolia* L, *Mimosa pudica* L, *Hemidesmus indicus* L, *Chromolaena odorata* L, *Axonopus compressus* (SW) Beauv, *Digitaria adscendens* (H. B. K.) Henr, *Borreria ocymoides* DC and *Paspalum conjugatum* Berg.

There was some variation in the broad leaf weed flora composition, with perennials like *Lantana camara*, *Sida rhombifolia*,

Hemidesmus indicus, *Mimosa pudica* etc. becoming predominant in some plots. The average height of weeds at the time of spraying was 15 to 30 cm. The four herbicides evaluated were Dicamba at 0.96, 1.44 and 1.92 kg ai/ha, 2, 4-D Sodium salt at 0.80, 1.60 and 2.40 kg ai/ha, 2, 4-D ethyl ester at 1.02, 1.36 and 1.70 kg ai/ha and 2, 4-D dimethylamine at 1.08, 1.44 and 1.80 kg ai/ha. The trial consisted of 13 treatments, including a no herbicide control, in a randomised block design with three replications. The herbicides were sprayed at a constant spray volume of 400 l ha⁻¹. Spraying was done with a lever operated knap sack sprayer at a constant pressure of 1 kg cm⁻² with a WFN-40 floodjet nozzle. The spraying was done at an average height of 30 cm from the weed canopy. Weed canopy coverage was visually rated and expressed in percentage (0 = total absence of weeds and 100 = complete weed coverage). Observations on percentage overall, broad leaf and narrow leaf weed coverage at 30, 60 and 90 days after spraying (DAS) were recorded. Statistical analysis of pre and post-treatment observations was done after angular transformation of the data. The data on pre-treatment weed coverage did not show any significant differences.

At 30 DAS all herbicide treatments gave a significantly superior broad leaf weed control as compared with the control, except 2, 4-D Sodium salt at 2.40 kg ai/ha (Table 1). The relatively poor performance of 2, 4-D Sodium salt at the highest level (2.40 kg ai/ha) on broad leaf weed control could be due to the relative abundance of perennials (*L. camara*, *C. odorata*, *S. rhombi-*