

# EFFECTIVE WEED CONTROL THROUGH WEEDICIDES IN PLANTATION CROPS

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Nutmeg (*Myristica fragrans* L.) is generally cultivated in Kerala as a mixed crop in coconut plantations. Since the plants are widely spaced ( $9 \times 9$  m) till the trees grow and the canopies cover, there is abundant weed growth in the interspaces. Plantation crops such as coconut, cocoa, nutmeg etc. require a long period for growth and establishment before they start yielding. These crops being planted at wider spaces till the trees grow and the canopies cover, there is abundant weed growth in the interspaces. The problem becomes acute if the plantation is started after clearing the forest area. They not only compete for water and nutrients in the initial years but also smother the growing seedlings. Manual weed control requires lot of labour and the frequency of weeding especially during monsoon period becomes an expensive operation. In order to evolve a better weed control strategy, the effect of two weedicides viz., Gramoxone (Paraquat) and Feronoxone (2, 4-Dichloro phenoxy acetic acid) alone and different combinations were tried (Table 1). The experiment was conducted at the National Research Centre for Spices Experimental Farm, Peruvannamuzhi in a coconut-nutmeg mixed crops plot. Each experimental plot consisted of  $10 \times 10$  m area replicated thrice. Weeds

were slashed to ground level and weedicides applied after 10 days of growth (about 6" tall). Spraying was done with a rocker sprayer with a deflector nozzle to prevent the spray drift falling on the coconut and nutmeg plants. The common weeds found in the plots are presented in Table 2. Within 24 h. after weedicide application, weeds started wilting and within 72 h. complete drying was noticed. During the experimental period, intermittent rains and good sunlight provided optimum conditions for weed growth. A total of 1649.8 mm of rain in 46 rainy days were received (from December 1987 to June 1988). Within a period of two months the weeds have grown to a height of 4 feet, and completely covered the entire experimental area in control plot. Whereas in Treatment 4, (Gramaxone and Feronoxone 5 ml and 5 g/litre (2.25l and 2.25 kg/ha, respectively), initial application followed by spot application after 45 days, not a single weed sprouted. At the end of six months weed growth in different treatments are presented in Table 3.

The economics of weed control using herbicides and manual weed control are compared and found that weed control through herbicides was effective and less expensive than manual weed control.

## Economics of weed control using herbicides as compared to manual slashing (per hectare)

Manual A	Labour charges for slashing weeds = @Rs. 565.00/ha atleast 5 times year.	Rs. 565.00 $\times$ 5	Rs. 2,825.00
Herbicides B	Initial slashing (manual)	Rs. 565.00	
	Gramaxone 2.25 l. $\times$ Rs. 110		Rs. 247.50
	Feronoxone 2.25 kg $\times$ Rs. 60		Rs. 135.00
	Labour charges for application		Rs. 150.00
			Rs. 532.50
	Rs. 532.50 $\times$ 3*sprays		
	Rs. 1,597.50 + Rs. 565.00 =	Rs. 2,162.50	
	A—B=Rs. 2,825.00 — Rs. 2,162.50 =	Rs. 662.50	

\*Since weed growth after six months is also negligible a third spraying may be required after about

six months after the second spraying. Hence, a total of 3 applications are required in the first year. Even

then weed control through herbicides works out to be less expensive. Besides, if herbicides are applied regularly the weed growth will not be much and there will be saving in the quantity of herbicides to be used.

Weed control through these herbicides could be tried in areas where plantations are raised after clearing forest lands or in the initial years of afforestation programme when weed growth is abundant.

Table 1—Details of the treatments

Treatment	Name of chemical	Concentration	Frequency of spray
T <sub>1</sub>	Gramaxone (Paraquat)	2.25 kg/ha	Once
T <sub>2</sub>	Feronoxone (2,4-D)	Do.	Do.
T <sub>3</sub>	Gramaxone + Feronoxone	2.25 kg + 2.25 l per ha	Do.
T <sub>4</sub>	Do.	Do.	First spray followed by spot appln. after 45 days.
T <sub>5</sub>	Control	..	..

Table 2—Dominant weed flora of coconut and nutmeg mixed crop plot

1. <i>Ageratum</i> sp.	11. <i>Chromolena odoratum</i>	21. <i>Phyllanthus</i> sp.
2. <i>Alysicarpus</i> sp.	12. <i>Helicteres isora</i>	22. <i>Pteris</i> sp.
3. <i>Ammannia baccifera</i>	13. <i>Ipomaea</i> sp.	23. <i>Peperomia pellucida</i>
4. <i>Borreria</i> spp.	14. <i>Emilia</i> sp.	24. <i>Sida cuneifolia</i>
5. <i>Colocasia</i> sp.	15. <i>Lygodium</i> sp.	25. <i>Scoaria aduleis</i>
6. <i>Commelina</i> sp.	16. <i>Euphorbia hirsuta</i>	26. <i>Physalis</i> sp.
7. <i>Convolvulus</i> sp.	17. <i>Melastoma malabathricum</i>	27. <i>Waltheria indica</i>
8. <i>Cyperus rotundus</i>	18. <i>Mimosa pudica</i>	28. <i>Cymbopogon</i> sp.
9. <i>Centella</i> sp.	19. <i>Mimosa invisa</i>	29. <i>Cynodon</i> sp.
10. <i>Capparis</i> sp.	20. <i>Pavonia prucumbens</i>	30. 'Wynad grass'

Table 3—Weed growth in different treatments after six months

Treatment	Weed growth		Name of spp. (cumulative of 3 replications)
	Extent of growth in 10 × 10 m area (Av. of 3 replications)	Height of growth (ft.)	
T <sub>1</sub>	65%	2	Mono and dicot equal
T <sub>2</sub>	90%	3	Grass dominant
T <sub>3</sub>	10%	1	Grass, <i>Borreria</i> , <i>Phyllanthus</i> , <i>Chromolena</i>
T <sub>4</sub>	3%	Just sprouted	<i>Ageratum</i> , <i>Lygodium</i> , <i>Colocasia</i> , <i>Euphorbia</i>
T <sub>5</sub>	100%	> 4	All