

## Evaluation of Carfentrazone-ethyl 40 DF and Glyphosate as Tank Mixture for Weed Control in Tea

D. J. Rajkhowa, R. P. Bhuyan and I. C. Barua

Department of Agronomy  
Assam Agricultural University, Jorhat-785 013 (Assam), India

Weed is the number one pest and can reduce the productivity of tea by 10-50% (Rao *et al.*, 1977) depending on the intensity of weed growth, extent of competition, weed species and the competitive ability of clone. Weeds, besides competing for different growth factors, also cause discomfort to pluckers and harbour a number of insect-pests and pathogens that indirectly lead to poor productivity of the crop. Being a perennial crop, tea needs to be fully protected from weed competition particularly in young stage to allow the bushes in developing its strong frame as well as for obtaining good harvest. Presently, tea growers are dependent on the tank mixture of glyphosate and 2, 4-D (Sodium salt) for broad-spectrum weed flora occurring in tea fields (Satyanarayana *et al.*, 1994) and have limited choice of herbicides. Continuous use of the herbicides with same mode of action has already led to the problem of herbicide resistance in weeds of tea (Ilango and Sreedhar, 1997). Hence, evaluation of new herbicide mixture is very much required for effective control of diverse weed flora in young tea.

The field experiment was conducted at the tea garden of Assam Agricultural University during rainy season, 2004. The soils of the experimental area was acidic, pH 5.2 and had 210 kg N ha<sup>-1</sup>, 21 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> and 132 kg K<sub>2</sub>O ha<sup>-1</sup>. The experiment with nine treatments and three replications was conducted in randomized block design (Table 1). Herbicides were applied twice on 23 April 2004 and 13 July 2004. The observations on weed count and weed dry matter accumulation were recorded at 30 and 60 days after application (DAA) of herbicides. The herbicides were applied on actively growing weeds with a knapsack sprayer fitted with a flood jet nozzle.

The major weed flora observed in the experimental field were *Borreria articularis* (12%), *Axonopus longifolia* (46%), *Cyperus brevifolius* (22%), *Ageratum houstonianum* (16%), *Eleusine indica* (2%) and *Scorporia dulcis* (2%).

Glyphosate (0.72 kg ha<sup>-1</sup>)+carfentrazone (0.015 kg ha<sup>-1</sup>)+2, 4-D (0.111 kg ha<sup>-1</sup>) resulted in the highest control of *B. articularis* followed by glyphosate (0.72 kg ha<sup>-1</sup>)+carfentrazone (0.020 kg ha<sup>-1</sup>). Glyphosate alone resulted in the lowest per cent control (48%) of *B. articularis*. All the herbicide treatments resulted in 100% control of *C. bravifolius* and *A. houstonianum*. The per cent control of *B. articularis* after second round of herbicide application was also highest with the treatments receiving glyphosate (0.72 kg ha<sup>-1</sup>)+carfentrazone (0.015 kg ha<sup>-1</sup>)+2, 4-D (0.111 kg ha<sup>-1</sup>) and was closely followed by the treatment that received glyphosate (0.72 kg ha<sup>-1</sup>)+carfentrazone (0.020 kg ha<sup>-1</sup>).

No phytotoxicity symptom was observed due to application of herbicides. Regrowth of weed was noticed after about 45 days of application of herbicides, highest being with the treatment receiving glyphosate alone.

### REFERENCES

- Ilango, R. V. J. and C. H. Sreedhar, 1997. Control of some of the paraquat resistant weeds. *UPASI Tea Res. Inst. Newsl.* 6 : 2.
- Rao, V. S., F. Rahman, S. N. Sharma and H. S. Singh, 1977. Control of persistent weed of tea. *Proc. 25th Tocklai Conf.* pp. 61-63.
- Satyanarayana, N., R. V. J. Ilango, C. H. Sreedhar and V. S. Sharma, 1994. Weeds in tea fields : Multidimensional weed management programme. *Planter's chron.* 89 : 527-531.

Table 1. Per cent control of weed at 30 DAA of 1st and 2nd round of herbicide application (Mean of three replications)

Treatment	Dose (kg ha <sup>-1</sup> )	<i>B. arifoliaris</i>		<i>Axonopus longifolium</i>		<i>C. brevifolius</i>		<i>A. houstonianum</i>	
		1st round	2nd round	1st round	2nd round	1st round	2nd round	1st round	2nd round
Untreated control	-	-	-	-	-	-	-	-	-
Glyphosate+2,4-D	0.72+1.12	82	88	98	96	100	100	100	100
Glyphosate+Carfentrazone	0.62+0.015	70	63	92	92	100	100	100	100
Glyphosate+Carfentrazone	0.62+0.020	82	84	92	91	100	100	100	100
Glyphosate+Carfentrazone	0.72+0.015	85	95	100	100	100	100	100	100
Glyphosate+Carfentrazone	0.72+0.020	95	89	100	100	100	100	100	100
Glyphosate+Carfentrazone+2,4-D	0.62+0.015+0.111	92	95	95	100	100	100	100	100
Glyphosate+Carfentrazone+2,4-D	0.72+0.015+0.111	98	98	100	91	100	100	100	100
Glyphosate alone	0.615	48	44	95	91	100	100	100	100