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# Bio-efficacy and Phytotoxicity of Clomazone+2, 4-DEE for Weed Control in Transplanted Rice

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Weeds cause 18-20% yield losses under transplanted situation though the average loss due to weeds in paddy is around 42% (Bhan, 1997). Increase of literacy percentage, changing of rural social life and gradual migration of people from rural to urban areas cause unavailability of labours in most of the rice growing areas. Herbicides appear to be a good substitute for mechanical-cum-manual method of weed control.

The field experiment was carried out during **kharif** 2000 and *boro* 2000-01 at Viswavidyalaya Farm of Bidhan Chandra Krishi Viswavidyalaya, Kalyani, Nadia, West Bengal. The soil of the experimental field was typical Gangetic Alluvium (Entisol) sandy loam with a pH of 6.9. The experiment was laid out in randomized block design with nine treatments replicated thrice. The treatments comprised unweeded control, two hand weedings at 20 and 40 days after transplanting (DAT), mixture of three doses of clomazone (150, 175 and 200 g $ha^{-1}$) with two doses of 2, 4-DEE (180 and 270 g $ha^{-1}$) applied at 3 DAT. The required quantity of commercial formulation was applied by using a knapsack sprayer fitted with a nozzle–WFN 040 with 500 l water $ha^{-1}$. The rice variety, IET 4786 was transplanted during the last week of July in **kharif** and second week of February in boro. All other recommended package of practices were followed uniformly to raise the crop.

The predominant weed flora comprised *Echinochloa crusgalli* (15%), *Leersia hexandra* (13%), *Cyperus iria* (43%), *Fimbristylis littoralis* (6%), *Ludwigia parviflora* (7%) and *Marsilea quadrifolia* (16%). Hand weeding at 20 and 40 DAT reduced the weed infestation during both the seasons to the greatest extent. This was closely followed by clomazone at 200+2, 4-DEE at 180 g $ha^{-1}$ (Table 1) due to its broad spectrum weed control.

Clomazone caused phytotoxicity to rice leaves to the extent of 6.7 to 36.7% depending upon the dose. All the injured plants recovered within 15 days after spraying in **kharif,** whereas in *boro* season it took six more days for complete recovery. Unweeded control significantly reduced the number of panicles, grains and yield of rice. Hand weeding recorded the maximum values of yield parameters and yield by reducing the weed biomass most effectively which was closely followed by clomazone at 175+2, 4-DEE at 270 g $ha^{-1}$ during **kharif** and clomazone at 200+2, 4-DEE at 180 g $ha^{-1}$ during boro season.

## REFERENCE

Bhan,V. M., 1997.*Vision-2020.* National Research Centre for Weed Science. Perspective plan. pp. 53.

Table 1. Effect of treatments on weed and rice crop

| Treatment | Dose | Weed biomass (g $m^{-2}$) 50 DAT | | Panicles (No. $m^{-2}$) | | Grains $panicle^{-1}$ | | Grain yield (kg $ha^{-1}$) | |
|---|---|---|---|---|---|---|---|---|---|
| | (g $ha^{-1}$) | Kharif | Boro | Kharif | Boro | Kharif | Boro | Kharif | Boro |
| Unweeded control | - | 26.9 | 58.2 | 81.2 | 344.5 | 35.9 | 75.2 | 1376 | 3985 |
| Hand weeding | - | 2.6 | 1.2 | 131.5 | 489.0 | 44.7 | 94.0 | 2215 | 6241 |
| Butachlor | 1250 | 9.3 | 7.3 | 123.2 | 405.5 | 42.2 | 82.2 | 1948 | 5240 |
| Clomazone+2, 4-DEE | 150+180 | 9.2 | 10.1 | 124.1 | 428.0 | 43.1 | 82.6 | 2000 | 5278 |
| Clomazone+2, 4-DEE | 150+270 | 5.5 | 8.2 | 125.5 | 433.0 | 44.4 | 82.7 | 2107 | 5407 |
| Clomazone+2, 4-DEE | 175+180 | 5.8 | 6.1 | 128.7 | 439.0 | 43.4 | 84.9 | 2039 | 5463 |
| Clomazone+2, 4-DEE | 175+270 | 4.9 | 7.4 | 130.4 | 450.0 | 43.2 | 85.8 | 2128 | 5574 |
| Clomazone+2, 4-DEE | 200+180 | 3.3 | 3.2 | 123.2 | 480.0 | 40.5 | 90.3 | 1820 | 5722 |
| Clomazone+2, 4-DEE | 200+270 | 3.4 | 5.6 | 124.5 | 473.0 | 42.3 | 90.3 | 1974 | 5648 |
| LSD (P=0.05) | - | 1.9 | 3.4 | 3.5 | 2.7 | 1.1 | 4.9 | 223 | 750 |