

WEED MANAGEMENT IN DRY SELDED BUNDED RICE

BY

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ABSTRACT

Four experiments were conducted to study the effects of time of weeding, number and timing of tillage operations, seed rates and nitrogen levels and herbicides on grain yield and weed control in dry seeded bunded rice (rainfed and irrigated) grown on the loamy-sand alluvial soils of Paranthan, Sri Lanka, during maha 1983/84 (wet season), yala 1984 (dry season) and maha 1984/85.

In the first experiment a short erect BG34-6 and a leafy intermediate statured 62-355 were kept weed free and weed infested for 20, 40 and 60 DAE during the wet season and 25, 35 and 45 DAE during the dry season. With respect to both cultivars, in the wet season optimum yields and significant weed control were achieved by keeping the field weed free from 20 to 40 DAE. For both cultivars plots weed infested beyond 40DAE caused yield reductions by 83 and 30% respectively, indicating that competition from weeds commenced after 40DAE. In the dry season weed free periods upto 45 DAE and 25 DAE were required by BG34-6 and 62-355 respectively, to ensure optimum yield and weed control.

In the second experiment, in addition to a zero tillage with 0.6kg ai/ha paraquat (1), also tested were: three tillage operations before rains (2, 3 and 4) and twice tilled before rains and once after (5 and 6). The other six treatments were a replication of the first six (7 to 12) followed by hand weeding at 3 and 6 WAE. The cultivar used was BG34-6.

In the maha two cultivations before rains and one after had significantly superior yields to the zero tillage and the single tillage treatments by 37% and 46% respectively. Hand weeding did not improve grain yields significantly, except with a single tillage. In the yala, though the trend was the same, tillage did not improve yields or weed weights significantly, whereas hand weeding at 3 and 6 WAE significantly increased yields by 170% and decreased weed weight by 86%.

In the third experiment, seed rates of 100, 200, 300 and 400 kg/ha were tested at nitrogen levels of 0, 90 and 180 kgN/ha using the cultivar BG34-6. In the yala experiment, where the crop underwent 12 days of drought stress 6 DAE, seed rates did not have any impact on grain yields, while increases in nitrogen fertilizer to 90kgN/ha and from 90 to 180kgN/ha increased yields by 67 and 54% respectively. Increases in N fertilizer decreased the population of Cyperus iria significantly. In the maha the trend was also the same, yield increases by 121 and 27% were observed for the same N levels. The dry weight of Cyperus iria again decreased by a significant 47% when nitrogen was increased from 0 to 90kgN/ha. The weed weight of Echinochloa colona decreased by a significant 50%, on increasing the seed rate from 100 to 200kg/ha.

In the fourth experiment, the following were tested: butachlor as a pre emergent herbicide at 0.90, 1.05 and 1.20kg ai/ha and in sequential combination with MCPA (0.80kg ai/ha); post emergence, sequential combination of propanil (3.24kg ai/ha) and MCPA (0.80kg ai/ha); three hand weeded treatments (3 WAE, 3 and 6 WAE and weed free) and an unweeded control. In the wet season the butachlor-MCPA sequential treatment resulted in the best grain yield and the lowest weed weight, significantly superior to hand weeding at 3 WAE. In the

yala all treatments were significantly superior to the unweeded control though the same trend was observed.