

UPLAND WEED MANAGEMENT IN MAHAWELI SYSTEM C

By

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ABSTRACT

A weed survey and three upland field experiments were conducted in zone 2 of Mahaweli system C, in maha 1986/87, yala 1987 and maha 1987/88.

Imperata cylindrica accounted for 25% of the weed weights in the survey of farmers' fields. Digitaria spp., Dactyloctenium aegyptium and Brachiaria spp. were the dominant grasses, whilst Ageratum conyzoides, Commelina bengalensis, Tridax procumbens, Mimosa pudica and Boerhavia erecta were the main broad leaf weeds. The Cyperus rotundus population was high at one site with a long cropping history. Panicum maximum was dominant only in fields recently brought under cultivation.

Six pre emergent herbicides were tested for maize, namely: atrazine + ametryne, metribuzin, methabenzthiazuron, simazine, oxyfluorfen, alachlor and one post emergence herbicide, ametryne. Simazine, atrazine + ametryne controlled weeds as well as mammotying (hoeing) and caused no crop toxicity. Methabenzthiazuron did not control grasses, whilst alachlor was not effective against Euphorbia heterophylla or Boerhavia erecta. Metribuzin pre emergence reduced maize germination when rainfall or irrigation occurred a few days after spraying. Oxyfluorfen caused transient scorching of leaves. Ametryne post emergence caused damage only if it came in contact with the crop.

In the second experiment imazapyr and glyphosate control of I. cylindrica were compared in no-till and tilled plots. A frequent dry tillage was also included as a treatment. Cowpea was planted 20 days after spraying. Imazapyr produced toxicity symptoms on newly emerged cowpea, but yield was reduced in only a few plots. Slow action of this chemical also hindered planting in no-till plots. Even at 0.5 kg ae ha⁻¹, imazapyr followed by tillage controlled Imperata completely, yet glyphosate at 2.0 kg ae ha⁻¹ prior to tillage provided incomplete control. Frequent dry tillage partially controlled Imperata. Tilled plots had double the yield of the no-till, but there was no consistent improvement in yield with pre-tillage application of either herbicide. At one site there was a trend towards lower yields in no-till plots where imazapyr had been applied: stand had been reduced through seedling toxicity. Conversely, at the other site the trend was

to greater yields from imazapyr treated no-till plots: the advantage of better weed control outweighed the disadvantage of toxicity.

Experiment three was a study of imazapyr toxicity on maize and cowpea. Toxicity differed for the same period from spraying, however rainfall and toxicity of imazapyr were related: about 200 to 300mm was needed for safe planting.