RECENT DEVELOPMENTS IN WEED CONTROL IN AERIAL-SOWN RICE

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Abstract. Approximately 52% (50,000 ha) of the southern N.S.W. rice crop is aerially sown. The aquatic weeds, dirty Dora, *Cyperus difformis*, and starfruit, *Damasonium minus*, are well suited to the permanently flooded conditions associated with this technique and are major weed problems. Control can be attempted with MCPA but this has inherent disadvantages. Because of constraints imposed for crop safety, MCPA cannot be applied to control these weeds before rice has reached the mid-tillering stage of growth; this means that considerable yield loss could already have occurred. Crop damage (yellowing and severe root stunting) can occur even when MCPA is applied at the recommended stage of growth. Spray drift during application can damage neighbouring, non-target, crops. Application can be delayed to avoid these conditions and so minimize the drift hazard, but this also prolongs the duration of weed competition.

A current research objective is to identify and develop an alternative treatment to MCPA. Ideally control of a broad weed spectrum will be possible with an early post-emergence treatment application, with residual activity to control futher weed germinations until the crop canopy has closed.

Several candidate compounds have been tested. Thiobencarb offers a partial alternative, and it has the added advantage of controlling barnyard grass, *Echinochloa* spp. Although generally regarded as a terrestial plant, barnyard grass can establish in aerial-sown rice where paddy water management is below optimum and aerobic conditions allow weed seeds to germinate. Control is therefore often desirable. However, thiobencarb will not control starfruit and its use requires careful water management to ensure crop safety. A mixture of thiobencarb and simetryne increases the spectrum of control but causes unacceptable levels of crop phytotoxicity.

Promising results have been obtained with bensulfuron-methyl (DPX-F5384). This chemical is currently under development as a rice herbicide in the USA and Japan. In field tests at Yanco and in the Murray Valley, direct application onto the flooded field over a range of post-emergence growth stages has given highly selective control of dirty Dora and starfruit. There was however, little evidence of activity on barnyard grass, although application timing appeared flexible enough to suit tank mixes with grass herbicides for early post-emergence application. Water plantain, *Alisma lanceolatum*, was not controlled in trials in the Coleambally Irrigation Area. Control of dirty Dora in the Murray Valley was markedly reduced in turbid water, posssibly as a result of chemical adsorption onto suspended clay particles.