Summary  Herbicide availability in lettuce crops in Australia is currently very limited with pendimethalin and propyzamide the only available options. The data presented here are from a preliminary screening trial evaluating a number of new herbicide options in transplanted iceberg lettuce. Other trials to further evaluate these products are currently being conducted.

All herbicide treatments provided effective control of *Solanum nigrum* L. with dimethenamid-p and pendimethalin followed by phenmedipham providing the most effective control of this weed.

Pendimethalin at 990 g a.i. ha⁻¹ tank mixed with diflufenican at 100 g a.i. ha⁻¹ applied pre-transplant caused some bleaching of the crop soon after transplanting, however the bleaching was not evident at harvest. All treatments which had phenmedipham applied at 785 g a.i. ha⁻¹ at 21 days after planting showed minimal crop effects throughout the period of the trial however, the average head weight in these treatments was significantly less than the hand-weeded control and other herbicide treatments.

**Keywords**  Lettuce, herbicides, weed management.

**INTRODUCTION**

Currently, the herbicide propyzamide is used predominantly for pre- or early post-transplant weed control, while pendimethalin is also used. The use of these few herbicides has resulted in the build up of a number of weed escapes. Common escapes include groundsel (*Senecio vulgaris* L.), stinging nettle (*Urtica urens* L.), mallow (*Malva* sp.), summer grass, pigweed (*Portulaca* sp.) and potato weed (*Galinsoga parviflora* Cav.). To control these escapes, growers are faced with the expensive options of inter row cultivation, which is difficult due to potential damage to root systems, or labour intensive hand weeding.

**MATERIALS AND METHODS**

This work was conducted as a small plot trial on a ferrosol soil at Forthside Vegetable Research Station at Forth in north west Tasmania. The plot size was 1.6 m (3 rows) by 6 m and each treatment was replicated three times. Herbicide treatments were applied with a pressurised knapsack sprayer fitted with flat fan nozzles, applying a water rate of 250 L ha⁻¹ at an application pressure of 280 kPa. The herbicides were either applied pre-transplant, post-transplant pre-weed emergence or early post-weed emergence when the weeds were at the two leaf stage. The crop was iceberg lettuce (cv. Magnum) and was transplanted on 19 November 2003. Assessments were conducted as whole plot subjective ratings using the European Weed Research System (EWRS) scales for weed control efficacy (1 = total weed control, 9 = no effect on weeds) and crop tolerance (1 = healthy plant, 9 = crop killed) (Puntener 1981). Yield was measured by harvesting all marketable heads within the plot and counting and weighing them at harvest. Yield data were subjected to analysis of variance in Statgraphics.

**RESULTS**

**Crop safety**  There were two herbicide treatments which showed phytotoxic effects in this trial (Table 1). Pendimethalin at 990 g a.i. ha⁻¹ tank mixed with diflufenican at 100 g a.i. ha⁻¹ applied pre-transplant caused some bleaching of the crop particularly at 15 days after planting (DAP). This bleaching was not evident at harvest. Pendimethalin at 990 g a.i. ha⁻¹ tank mixed with chlorthal-dimethyl at 4500 g a.i. ha⁻¹ applied pre-transplant caused some minor stunting of the crop at 15 DAP however the crop recovered from this stunting and had an average head weight of 520 g at harvest which was not significantly different to the hand-weeded control (Table 1). All treatments which had phenmedipham applied at 785 g a.i. ha⁻¹ at 21 DAP showed minimal crop effects throughout the period of the trial however the average head weight in these treatments was significantly less than the hand-weeded control and other herbicide treatments.

**Weed control**  *Solanum nigrum* L. was the only weed of significance in this trial and it occurred at a density of approximately 25 plants m⁻². All herbicide treatments provided effective control of *Solanum nigrum* with dimethenamid-p and pendimethalin followed by phenmedipham providing the most effective control of this weed. At 33 DAP the trial was hand-weeded to prevent weed competition affecting yield (Table 2).

**DISCUSSION**

This trial was conducted as part of a national project evaluating new herbicides for use in lettuce crops. Products were identified from literature reviews (White 1999, Umeda 2000) and from overseas registrations. Initial screening trials identified a number of potential products which are currently being further
evaluated in major lettuce production regions throughout Australia.

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