Researching overseas methods

Brush weeding has benefits

Brushweeding is widely used overseas, particularly in Europe, by both conventional and organic producers as a mechanical weed control alternative to herbicides, particularly in vegetable crops. The brushweeder uses a series of spinning brushes to remove small weeds from between the rows of crops such as onions, peas, carrots, lettuce, beans, potatoes and brassicas. Using a brushweeder can significantly reduce the need for post-emergence herbicides, although repeated use may damage surface soil structure.

Brush weeding a carrot crop.

The crop before (centre) and after brushweeding.

The brushweeder has a series of brushes mounted on a horizontal axle at right angles to the direction of the row. The brushes are positioned along the axle to weed the area between the rows. The crop is protected from the turning brushes by metal guards. The guards and brushes can be manually changed to suit the row spacing and the specific growth stage of the crop. Brushweeding usually begins after emergence and can continue until the crop becomes too large for the guards to pass over the rows without causing damage.

Soil conditions at the time of weeding have a large influence on the success of the operation. Soil that is too wet will allow weeds to re-strike and will also clog the brushes. Soil that is too dry can be easily eroded by the wind. Also, weeds are often more difficult to remove from dry soil. Slightly moist soil tends to suit the brushweeder best.

The number of times a crop will need to be brush weeded depends on weed density and the rate of crop canopy growth, but up to four passes may be required. The brushweeder is not suitable for removing intra-row weeds (the weeds between plants along the row). When the crop is very young, the brushes and guards can be set to weed very close to the row, but the brushweeder has no capacity to impact on the weeds in the row.

Intra-row weeds are difficult to manage mechanically without causing damage to the crop. In many European countries, changes to planting architecture have been made to enhance physical intra-row weed management. Single row planting, as compared to twin rows, can reduce intra-row weeds and enable more efficient inter-row weeding. Flame weeding before crop emergence may also reduce intra-row weeds.

Brush weeding may also eliminate some soil-borne pests, such as cutworm. The brushes are thought to pulverise the grub, which sits on or just below the soil surface during the day.

Although a number of factors will affect the cost of operation, an indicative cost for a single brush weeding operation is about $155/hectare. This includes labour for two people (one to drive the tractor, the other to operate the weeder) and the tractor running costs. The use of guidance system technology could reduce the labour input and probably allow faster work rates. ■

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Vertical brushweeder, Sweden. Picture: Andrew Bishop, Tasmanian Department of Primary Industries, Water and Environment.