

- (3) Providing growers will accept a percentage of ryegrass remaining after treatment if a rate of 1 lb active/acre (1.2 kg/ha) is used as a recommendation. Some 60-70% reduction in oven dry weight for ryegrass could be expected. Ridging and the presence of transplanted material can affect the percentage of ryegrass remaining.
- (4) Providing (under the current price regime) the crop has a yield potential if left untreated of at least 17½ bushels/acre (1,180 kg/ha).

FENOPROP FINDS NEW USES

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Although fenoprop (2-(2,4,5-trichlorophenoxy) popionic acid) was released as a herbicide in 1953, it was not widely tested in Australia at that time. For some years, it found a limited use for soursob (*Oxalis pes-caprae*) control in South Australia.

In Queensland, it has been tested widely on the nine important cactus species including *Harrisia cactus* (*Eriocereus martinii*), common pest pear (*Opuntia inermis*), spiny pest pear (*Opuntia stricta*), tiger pear (*Opuntia aurantiaca*), velvety tree pear (*Opuntia tomentosa*), drooping tree pear (*Opuntia monacantha*), westwood pear (*Opuntia streptacantha*), devil's rope pear (*Opuntia imbricata*) and sword pear (*Acanthocereus pentagonus*).

EXPERIMENTAL TECHNIQUES

Individual species trials were established to test formulations and concentrations of fenoprop applied at high volume rates to the point of 'runoff' (150 to 200 gallons per acre).

Formulations - fenoprop amine and sodium salts in water,
 fenoprop ester in water emulsion,
 fenoprop ester in oil/water emulsion.

Concentrations - 0.25%, 0.5%, 1.0% and 2.0%

Timing - summer, winter

Unit plot size was 20 plants, with a randomized layout.

Results assessed at 12 and 24 months by digging out plants for close examination.

RESULTS

Little difference was noted between summer and winter treatments. With all species of cactus, fenoprop ester in water is more effective than fenoprop ester in diesel distillate which in turn is more effective than amine and sodium salts in water. One per cent concentration gave optimum results in all species.

Results show considerable species differences. For the fenoprop ester in water treatments, the following conclusions have been reached

- (a) Highly susceptible species (90-100% kill) - *Harrisia* cactus, common pest pear and spiny pest pear, which will give 90-100% kill over all sizes and ages of cactus by thorough spraying (150-200 gallons per acre) with 1.0% fenoprop ester in water emulsion. It takes up to 9 months to kill the plants.
- (b) Moderately susceptible species (60-80% kill) - velvety tree pear, drooping tree pear, westwood tree pear and tiger pear, which will give 60-80% kill on plants up to 10 feet high by thorough spraying (up to 400 gallons per acre) with 1.0% fenoprop ester in water emulsion. It takes up to 12 months to kill the plants.
- (c) Resistant species (below 40% kill) - sword pear and devil's rope pear are both difficult species to control with fenoprop ester. The action of the chemical is very slow, taking up to 2 years to kill the sword pear. Several resprays are usually necessary.

Results of field trials have been encouraging enough to recommend fenoprop for the control of a least seven of the cactus species discussed. Results of large scale clearing operations have confirmed the observations taken in the initial field experiments. As a result, the usage of fenoprop has increased steadily with nearly 16 tons of fenoprop acid (as butyl and isoyutyl ester) being used in Queensland in 1969-70 financial year.