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How rabbit poisoning methods work

While the “rabbit plagues” of the past are a distant memory for most farmers, rabbit numbers must still be controlled in many parts of Western Australia. Rabbit control techniques rely heavily on poisoning, which given the right conditions can kill a high percentage of rabbits at risk.

By
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Recent research by the Agriculture Protection Board has been aimed at determining how different poisons, baits and poisoning methods work. By knowing in detail how each method works and what influences its results, we can choose the best control method for a particular place and time, avoid costly failures, and increase the effectiveness of rabbit control.



■ Rabbits used in trials are fitted with radio-collars (above left) so that they can be tracked.

Esperance study

Studies were carried out in the Esperance area to find out how four poisoning methods work.

They were:

- Conventional 1080 (carrot bait)
- Conventional 1080 (oat bait)
- One-shot 1080 (oat bait)
- Pindone (oat bait)

In conventional baiting, rabbits are free-fed unpoisoned carrots or oats in a furrow for several nights to accustom them to feeding on the bait. Individual rabbits (shy feeders) may hesitate for several days before feeding at a bait trail. Then a poisoned trail, where each oat or piece of carrot contains 1080, is laid. This method is widely used in eastern Australia where summer rain may occur, and can be used by farmers in Western Australia.

One-shot baiting is the standard method used by the Agriculture Protection Board for contract poisoning. Poisoned oats which contain more than enough 1080 in one oat grain to kill a rabbit are mixed with unpoisoned oats in a ratio of 1:99. The unpoisoned oats act as a free-feed, and the high level of 1080 in the poisoned grains guards against rabbits getting a sublethal dose and becoming bait-shy. The bait is laid in one operation, without prior free-feeding, so the costly labour input of the conventional methods is eliminated. The quantity of bait material is also lower.

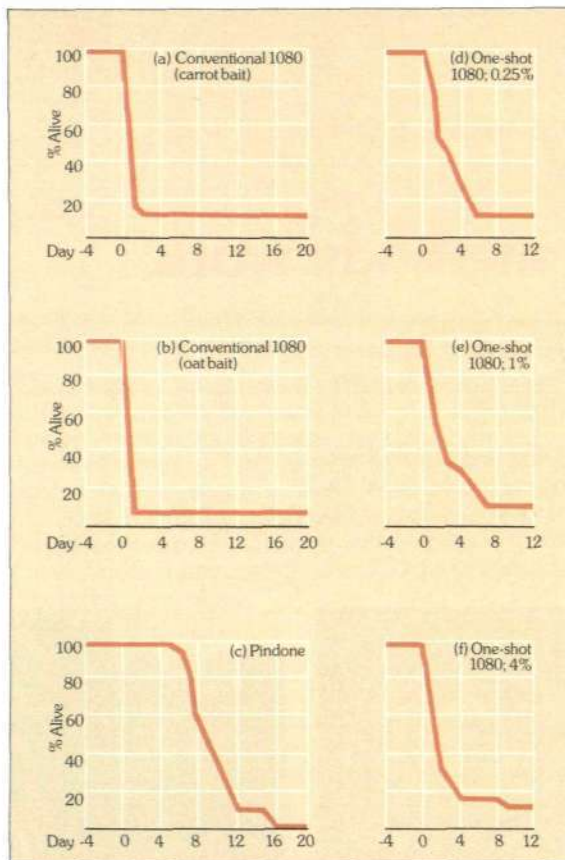
Pindone is an anticoagulant poison (similar in action to warfarin in rat baits) which is registered for use against rabbits in Western Australia. It is a slow acting poison which has to be eaten over several days before it takes effect, and is much more toxic to rabbits than to sheep, cattle, dogs and man. It is safer to use than 1080 but is more expensive as larger quantities of bait are needed.

As one-shot 1080 is highly toxic to stock, dogs and man, only the minimum amount required to obtain good rabbit control should be used. Unfortunately, there is a tendency when using pesticides to use more than the recommended dose in expectation of better results. This is more expensive than necessary and can increase the risks from use of the pesticide.

The recommended bait ratio is 1 per cent (1 poisoned oat grain: 99 unpoisoned oat grains) but some people believe that a 2 per cent ratio could produce better kills. This is not supported by any concrete evidence. In fact, previous trials showed no difference in effectiveness between 0.5 per cent, 1 per cent and 2 per cent ratios. In these earlier trials, spotlight counting was used to measure the final kills, but gave no information on how they were achieved.

In the trials reported here, where the objective was to show how the method works, one-shot 1080 was tested on three adjacent sites using the more widely separate ratios of 0.25 per cent,

Figure 1. The percentages of rabbits alive during different poisoning treatments. The poisoned baits were laid on day 0.



1.0 per cent and 4.0 per cent. These were chosen so that any differences had the maximum chance of showing up.

The daily mortality of rabbits in the trials was determined using radio tracking. Rabbits were captured, fitted with collars containing radio transmitters and released. Each transmitter had its own radio frequency, which was received on a 40 channel citizens band receiver equipped with directional antenna. Rabbits were located each day for up to a week before the poison bait was laid and for several days after baiting.

Results

The results of all the trials are shown in Figure 1. The mortality patterns of conventional 1080, one-shot 1080 and pindone baiting are different, and these differences are important in deciding the most appropriate control technique for differing environmental conditions.

All the methods gave high kills (86 per cent or more) and it is difficult to decide between them on this basis.

The kills from conventional 1080 poisoning were virtually instantaneous (Figure 1—a,b). Although 1080 is soluble in water and is rapidly washed out of conventional bait by rain, this technique can be used in winter if it is not raining the night the poison is laid. This night can be chosen carefully by extending the free-feeding period if necessary.

Pindone, on the other hand, is almost insoluble in water, so is leached out of the bait slowly. In the pindone trial, 98 millimetres of rain fell from the day the bait was laid to the day the last rabbit died. Thus pindone can be used at any time of the year; previous field trials have shown that pindone is equally effective in winter and summer. The slow-acting nature of pindone poison is shown in Figure 1—c; the first rabbit did not die until day six.

The full effect of one-shot 1080, which was laid during dry weather, was not achieved until six to nine days after the bait was laid (Figure 1—d,e,f). Had heavy rain fallen, particularly in the days immediately after laying the bait, it is likely that final kills would have been less because of loss of 1080 from the oats. Previous field trials have shown that one-shot 1080 is less effective in winter than in summer. For full effectiveness this method is restricted to dry periods of not less than 10 days.

Despite the 16-fold difference in the concentrations of poisoned oats in the one-shot baits, the final kills in the three one-shot trials were similar. There were slight differences in the mortality patterns: the 0.25 per cent bait produced a slower but steadily maintained kill; the 4 per cent bait produced a faster initial kill which tailed off markedly; and the 1 per cent bait gave an intermediate picture—a moderate initial kill and later a more steadily maintained rate.

The increased hazard of high concentrations of 1080 is not offset by an increase in final kill or in the overall time taken to reach it. In the 4 per cent trial the last rabbit died on the ninth day, in the 0.25 per cent trial the last rabbit died on the sixth day.

The concentration used in the field should be as safe as possible while still being effective. It appears that one-shot bait containing less than the current standard of 1 per cent poisoned grain would still give good results.

Poisoning guidelines

The studies of mortality patterns of rabbits have led to the following recommendations:

One-shot 1080

- Do not use this method except when a dry period of not less than 10 days is anticipated.
- Do not use a concentration greater than 1 per cent. Less than this may be equally effective.

Conventional 1080

- Use this method at any time of the year. If used in winter, poisoned bait must be laid on a night when it is not raining.

Pindone

- This method can be used effectively at any time.



■ Chopping carrots for poisoned baits.