

Managing rabbit problems associated with horticulture

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The European rabbit (*Oryctolagus cuniculus*) has once again established itself as the major vertebrate pest of UK horticulture, agriculture and forestry, causing economic losses estimated to be in excess of £100M annually. Unfortunately, numbers are on the increase and the total pre-breeding population is estimated to be 37+ million. This is primarily due to a weakening of the myxoma virus and increased levels of genetic resistance. The potential for damage to horticultural interests is therefore likely to increase and it is essential that growers are aware of the various control strategies available, not only to minimise the impact of rabbits but also because they have a statutory responsibility to manage rabbits on their land.

Damage

Rabbits cause significant damage to a wide variety of plants and trees. Problems can range from the digging up of flower bulbs and the undermining of root systems to the eating of young seedlings and leading shoots of nursery stock and the browsing and bark stripping of more mature fruit trees. The greatest horticultural threat, however, is to field vegetables and in particular brassica crops to which rabbits can cause serious economic losses as high as £8,000/ha. Crops in unprotected fields can be devastated within only a few hours of planting while replanting is both expensive and time consuming. Most damage to field vegetables appears to occur early in the growing season when young plants are easily damaged or completely eaten. Young rabbits have even been observed to nip the growing tips from rows of young plants without actually eating them.



1 The European rabbit (*Oryctolagus cuniculus*)



2 The rabbit menace – populations can reach epidemic levels if suitable control measures are not put in place

General management principles

Effective rabbit management depends on:

- good planning
- careful evaluation of the management options available
- competent implementation of the most suitable control options



3 Typical rabbit damage to a young cauliflower plant

Rabbit populations are very resilient and can withstand high mortality. Consequently, the effort required to achieve complete eradication may be impractical. Instead, the aim should be to reduce rabbit numbers to levels at which the damage they cause is economically acceptable. If rabbits cannot be removed permanently, temporarily denying them access to vulnerable plants and trees may have the effect of reducing damage to below critical thresholds.

Timing of control

Most rabbit damage to horticultural crops occurs during the early part of the growing season and growers may be tempted to concentrate their control measures around this time. However, the most effective time to control rabbits is between the beginning of November and the end of March when rabbit numbers are naturally at their lowest (up to 90% of young rabbits die before reaching nine months of age) and populations are therefore most vulnerable to further reductions. Action at this time will also reduce the adult breeding population before the next breeding season begins (the removal of a single doe can mean 20

fewer rabbits born during the summer) and vegetation will have died back, allowing easier access to burrows.

Block control

When one rabbit population is removed, the range it inhabited may soon be re-colonised. To reduce the rate of re-invasion, rabbit control should be conducted in a co-ordinated way to ensure that adjoining tracts of land are treated simultaneously. Co-ordinated action will also remove animals that have burrows in one area and feed in another.

Habitat manipulation

The quality and amount of rabbit harbourage are major factors that can determine the number of rabbits in a particular area. Habitat management should therefore play an integral part of any rabbit control programme. For example, it may be desirable to thin scrub and ground cover in order to reduce potential harbourage and, where practicable, burrow systems should be destroyed following control operations. Appropriate measures should be taken to minimise damage to other wildlife and habitats.

Control

Non lethal

Fencing - general

Fencing is a particularly useful method of protecting vulnerable crops where the use of other control techniques is impractical or when complete exclusion is the aim.

Note

- It is important when fencing to remove individuals that may become trapped within the protected area (cage trapping and shooting are most suitable for this purpose). In many situations, fencing can be a more cost-effective long-term damage prevention measure than others that are undertaken year after year.

- When crops reach a stage in their development when they are no longer vulnerable to attack by rabbits an electric fence can be removed thereby reducing maintenance costs. For example, cauliflower planted in the summer need not be protected after November as grazing after this time has little effect on the curd produced.

Benefits and drawbacks of fencing options

| | Effectiveness % | Life span | Benefits | Drawbacks |
|-------------------------------------|-----------------|-----------|--------------------------------------------------------------|---------------------------------|
| Permanent wire-netting fence | 85–95% | 10 years | Lower maintenance | Expensive to purchase and erect |
| Temporary electric fencing | 85–95% | 10 years | Cheaper to purchase & erect. Portable – target problem areas | Maintenance costs are high |

Wire-netting

In Britain, wire-netting fences have long been used to protect crops although their use declined in the years immediately after the spread of myxomatosis. They should be erected along the boundary between the crop to be protected and the warren. If the crop is not to be completely encircled, the fence should extend beyond the ends of the problem area by about 150 m.

The stakes can be placed up to 15 m apart although ground undulations may dictate closer spacing. End posts (2.1 m long, 100–125 mm diameter) need be placed only at the ends of the fence and at bends. When installing wire-netting fences it is worth considering the installation of drop box traps at the same time.

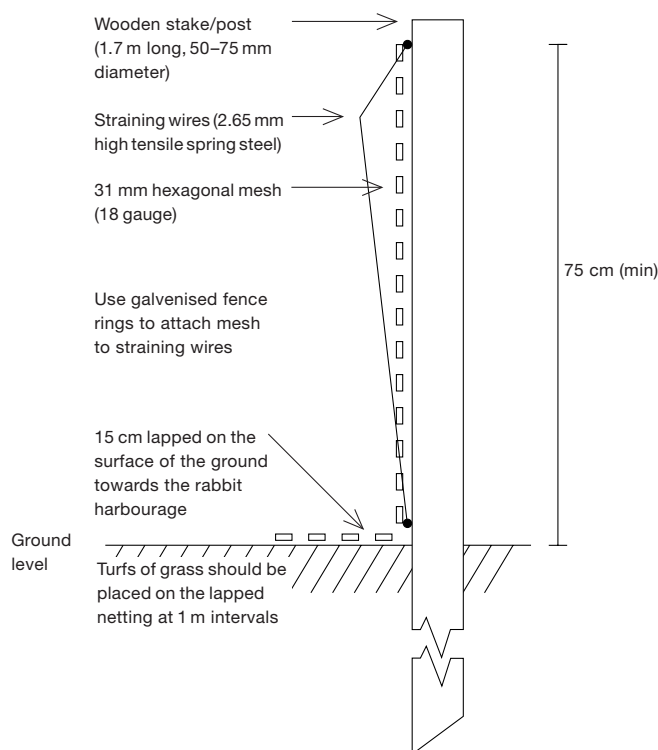
Particular attention must be paid to potential weak spots in fences such as dry stone walls and ditches. In areas of extensive crop damage, or where rabbits are known to be climbing over fences, the fence specification can be improved by including an out turn at the top of the fence. It is recommended that any proposed changes to the specification are first discussed with one of Defra's National Wildlife Management Team advisors.

The number of gates in a fence should be kept to a minimum because they make maintenance more difficult. They should be hung on supports, which are independent of fence straining posts, as the latter will inevitably move and so affect the hang of the gates. A wooden sill must be dug into the ground to prevent burrowing underneath and each gate should shut against a post.

Where badgers are present, and fences are erected across their runs,

Diagram 1

Cross section through a wire-netting fence



Note – It is important to ensure that the mesh conforms to the appropriate British Standard that measures mesh size across the widest part of the hexagon. Others, such as the European DIN standard, measure across the narrowest. Consequently 31 mm DIN mesh is wider than 31 mm BS mesh and can allow young rabbits to squeeze through.

holes are likely to be torn in the netting allowing rabbits access to the crop. The careful installation of badger gates at the points where the newly erected fence crosses badger runs can prevent this type of damage from occurring. An advisory note, describing the design and installation of badger gates in rabbit-proof fencing (Advisory leaflet

TAN11, *Badger gates in rabbit-proof fencing*) is available from Defra.

Regular monthly inspections and maintenance of fences is essential to block burrows dug under the fences and to repair damage caused by farm machinery, fallen tree branches and vegetation. This safeguards the long-term effectiveness of the fence.



4 In the long term, permanent wire-netting can be a very cost-effective method of rabbit management

Electric fencing

The use of electric fencing as a barrier to wildlife has been successful only with the development of low-impedance, high-voltage energiser units. There are two types of electric fence in common use: netting and strained-wire. The strained-wire design offers advantages over netting in terms of durability and versatility. It can also carry a higher voltage than netting. Netting can occasionally cause the deaths of hedgehogs, frogs and toads that can become entangled in the mesh.

Ideally, as for wire-netting fences, electric fences should be erected to surround fully the area to be protected. If this is not practical a strip fence,

which extends at least 150 m beyond either end of the problem area, may be used. Prior to erection, a 0.5 m wide strip should be mown along the fence line or the vegetation killed off using an approved herbicide. This ensures that the conducting wires are kept clear of vegetation that would otherwise short-circuit the system thereby draining power and reducing effectiveness. Initially, fences should be inspected every few days but this can later be extended to 2–3 week intervals.

Electric netting

Electric netting fences are available in a number of commercial designs. Basically, they all consist of a mesh made of heavy-duty polythene twine in which the horizontal strands are interwoven with electrically conductive stainless steel-wire. To prevent shorting, the steel-wires are omitted from the bottom strand. They vary in height from 50 cm to 85 cm and in mesh size from 7.5 x 6.5 cm to 50 x 5 cm. Most

designs are supplied in 25 m or 50 m rolls fitted with spiked posts at regular intervals and a clip at each end to join rolls together. Pegged guy ropes are also supplied with each roll to support the fences at the ends and at bends. This type of fence is very easy and quick to erect and take down.



5 Healthy cauliflower crop protected by an electric netting fence

Electric strained-wire system

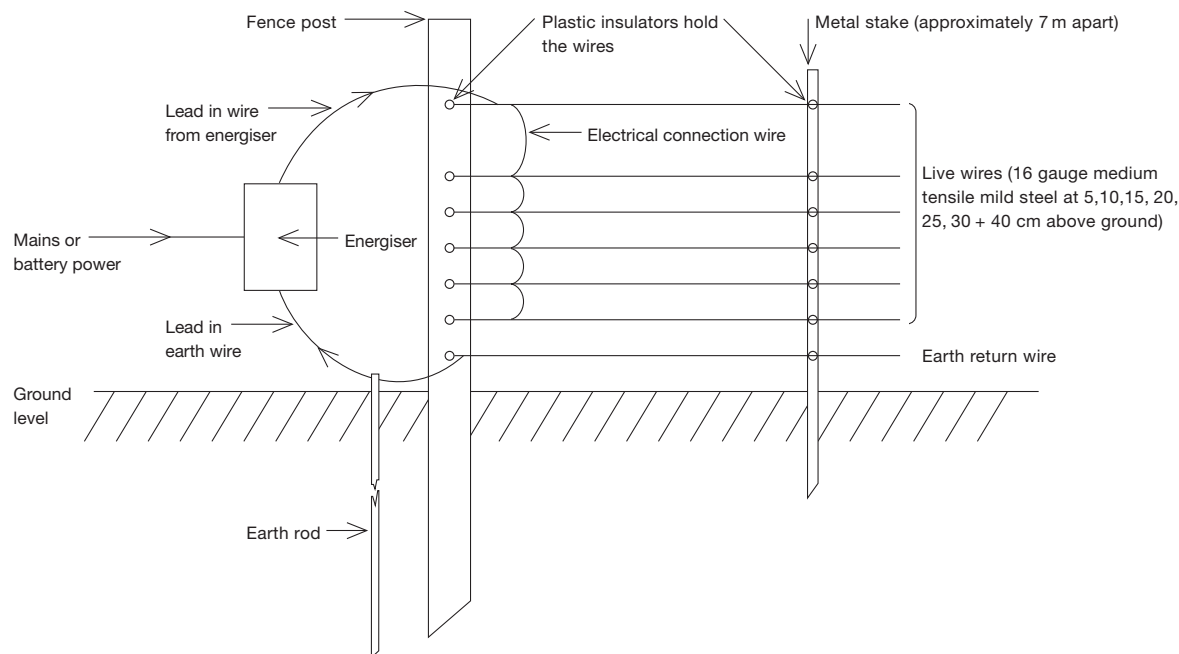
The electric strained-wire system has to be assembled from component parts (diagram 2). Where the fence line bends, anchor posts replace the normal metal stakes. The whole system is tensioned at a reel post placed at the end of the fence.



6 Electric strained-wire fences have proved an efficient method of protecting vulnerable crops from rabbit damage

Diagram 2

Strained-wire electric fence components



Power supply to electric fences

Both electric fence types must be powered by an energiser capable of producing an output of at least 1 Joule when measured into a 500 ohm resistance. Most mains-operated energisers and the more powerful battery-powered units have this capability. Batteries should be changed regularly (a fully

charged 70 Ah battery will need to be changed every 2–3 weeks). A wide range of energisers is available and users are advised to discuss specific requirements with their supplier. To effectively deter rabbits, it is important to maintain a minimum of 2.5 kV throughout the fenceline. A good earthing system is essential to achieve this.

A more detailed advisory note on the use of fencing to reduce rabbit damage (Advisory leaflet TAN16, *Rabbits: use of fencing to prevent agricultural damage*) is available from Defra.

Tree-guards and shelters

Individual tree guards and shelters can be used to protect young fruit trees from rabbit browsing and bark stripping where it is impractical or uneconomic to enclose them with fencing. There are many types of tree guard available including plastic net guards, split plastic tubes, spiral plastic sleeves and welded wire-mesh cylinders. Net and weld mesh guards require a stake to support them, the others require no additional fixing. Net guards are available either individually or in rolls that can be cut to size. In recent trials, spiral plastic sleeves were

found to be the least effective tree guards because they tended to be displaced by wind or animals. Split plastic sleeves and net guards were the most effective, perhaps because they are more robust. To effectively reduce rabbit damage, tree guards should be at least 60 cm high. Shelter guards and tree shelters are primarily intended to promote the rapid establishment of young trees, but will also protect them from damage by rabbits.

Repellents

The protection of vulnerable fruit trees and shrubs with chemical repellents

can be expensive and does not always provide long term protection from attack by rabbits. Any benefit they can provide is often offset when, as is often the case, repeated applications are necessary. The use of repellents should, therefore, be restricted to small plantations or to areas that cannot be protected in any other way. Only repellents approved under the *Control of Pesticides Regulations 1986* can be used. Directions for use and statutory instructions must be complied with.



7 Rabbits can cause a substantial amount of damage to fruit trees



8 Individual tree guards can be used to protect young trees from browsing and bark stripping by rabbits

Lethal

Fumigation

Fumigation is the most effective way of reducing rabbit numbers where burrows are accessible. When used correctly, fumigation can reduce the rabbit population by 80 – 90%. However, effectiveness decreases in porous soils, when air temperatures fall below 5 °C or when soil moisture is very low. For best results, it is important to drive rabbits to ground, using trained dogs, before gassing and to find and treat every burrow entrance. Selective scrub clearance may be necessary to gain access to burrows. Before embarking on a fumigation programme, attention should be paid to the possible presence of badger setts and fox earths, as it is illegal to gas these animals. Burrows in and around setts and earths should not therefore be treated.

The only gassing compounds currently available consist of a number of metallic phosphides that generate phosphine gas on contact with moist air or soil (e.g. Phostoxin, Rentokil Initial UK Ltd.; Talunex, Luxan UK Ltd.). The gas is extremely toxic to rabbits and inhalation results in rapid death. All fumigants must be approved under the *Control of Pesticides Regulations 1986* and used according to label instructions.

Gassing should only be carried out by operators who have been properly trained and equipped in the use of aluminium phosphide, and must be risk assessed as required by the *Control of Substances Hazardous to Health Regulations 1999*.

As gassing compounds are activated by moisture, they should never be used in wet or windy weather or stored in damp conditions. Full safety

guidance is given in the Health and Safety Executive Agriculture Information Sheet No. 22 *Gassing of Rabbits and Vertebrate Pests*.

The most commonly available phosphine generating formulations are Phostoxin and Talunex.

Phostoxin is formulated as a spherical 3 g tablet and can be introduced into the burrow system either by hand (protected suitable gloves) or with an applicator. Before treating the infestation, the area should be divided into distinct sections and each section treated in turn, taking care to work into the wind to ensure that those sections previously treated are downwind. One tablet should be inserted to each hole. This should then be sealed with a piece of turf, grass side downwards. Care must be taken not to drop soil onto the tablet.

The maximum concentration of phosphine is reached after 8–10 hours depending on temperature and humidity.

Talunex consists of 0.6 g pellets that are injected into burrows and tunnels using a Topex applicator, specifically designed for use with the product. The Talunex container threads onto the Topex applicator, and by a simple trigger action releases pellets into the target hole. The system has the advantage of minimising operator exposure to the formulation. Treatment of infested areas is the same as with Phostoxin, with the exception that 4 or 5 pellets should be introduced into each hole.

Follow-up action

During any gassing treatment, it is inevitable that some rabbits will escape by digging themselves out. Alternatively, neighbouring rabbits may later dig themselves into treated warrens. The effectiveness of all gassing treatments should therefore be monitored by inspecting treated areas for signs of fresh activity 48 hours after the initial treatment. In many situations, a follow-up treatment of reopened holes may be necessary to deal with these animals. Ideally, the procedure should be repeated until no reopened burrows are found.

Cage trapping

This technique involves the live capture of wild rabbits in galvanised wire-mesh cages baited with carrot. Rabbits entering the traps to feed are captured when they depress a treadle thereby activating a free-falling mesh door. The traps should be placed within the area of rabbit damage or between the damage and rabbit harbourage. They should be sited in lines about 10 m apart, parallel to, and about 3 m from, the harbourage from which the rabbits are coming. Carrot is the best bait (apple may also be used), and the inside of the trap should be baited with six pieces (about 8 x 1.5 cm in size) behind the treadle, two just in front of the treadle and two just inside the entrance to the trap. Two pieces of carrot should also be placed just outside the trap and another three placed at 1 m intervals leading away from the trap. In areas where rabbits



9 Phostoxin tablets generate poisonous phosphine gas on contact with moist air or soil

have not experienced carrots before, a period of pre-baiting may be necessary to enhance the capture rate.

The technique can be used throughout the year but is especially effective for catching adult rabbits during the winter months when they can be most easily attracted to the bait. Additional benefits are that control can be exercised at the site of damage (access to burrows is not necessary) and non-target species can be released unharmed. Traps should be checked twice a day, early morning and late afternoon and captured rabbits dispatched humanely. Cage trapping can reduce rabbit numbers by about 65%. Due to the manpower required, the technique is most appropriate where relatively few rabbits are causing damage to small areas of high value crops. It is also a useful technique to remove rabbits from within cropped areas encircled by fencing and to

catch individual rabbits that persistently burrow under fences.

An advisory note detailing the use of cage trapping is available from Defra's Rural Development Service Wildlife Management Team (Advisory leaflet TAN17, *Rabbits: use of cage trapping to prevent agricultural damage*).

Multi-capture trapping

The use of drop or box traps can be an effective method of capturing rabbits in situations where fences are newly erected and where rabbits are passing through holes in established fences to feed on adjacent crops. They can also be used to remove rabbits from within crops protected by fences. The trap consists of a tunnel, with a trapdoor floor, positioned over large holding box from which captured rabbits can be removed. The trapdoor floor of the tunnel can be set open or closed.



10 Cage trapping can reduce rabbit numbers by up to two thirds



11 Drop traps used in conjunction with traditional wire netting can capture a substantial number of rabbits

Rabbits are captured when they enter the tunnel and fall, through the trapdoor, into the holding box. The lid returns into place by means of a counterbalance weight fixed to it. The holding box must be buried so that the top is at ground level, and the tunnel is lying flat on the ground. If the trap is being used in conjunction with a newly erected fence the tunnel should be positioned parallel, and adjacent, to the fence line, on the harbourage side of the barrier. Alternatively, if the trap is to capture rabbits crossing established fences, the tunnel should be positioned at right angles to the fence line, preferably at a point where rabbits are entering the cropped field to feed. The number of boxes required is dependent upon the size of the rabbit population and the length of fencing involved. As a general rule, one trap should be installed for every 100 m of fencing.

Before setting the trap to catch rabbits, the trapdoor should be set closed to allow rabbits to pass freely through the tunnel. When they have become accustomed to using the tunnel (usually after about a week) the trapdoor should be set to open for a 24 hour period. Any rabbits using the tunnel during this time will fall into the holding box from where they can be collected later. This procedure should be repeated on a regular basis until no more rabbits are captured, or until the damage caused by them has been reduced to an acceptable level.

It is a legal requirement that drop traps should be visited at least once a day when set, preferably early morning. Captured animals must be dispatched humanely. Traps should not be placed

where they may be at risk from flooding. There is little information available regarding the effectiveness of drop-box trapping but permanently sited traps can take substantial numbers of rabbits and are widely used by farmers. However, the capital cost can be high and considerable effort is required to site the traps and to subsequently move them.

Shooting

Shooting is a popular method of rabbit control with farmers and is most effective when conducted at night, using a spotlight. The efficient use of dog and gun can also be an effective method of dealing with surface-living rabbits, which are often abundant in woodland and shrub. However, single shooting operations reduce rabbit numbers by only about 30% and the technique should only be used as an adjunct to more effective control

methods or to remove problem individuals that cannot be disposed of by other means. Furthermore, shooting tends to select for adult males and therefore has a relatively limited effect on the breeding potential of the population the following spring unless considerable time and effort are expended. In order to remove substantial numbers of rabbits, it is necessary to make regular visits to several places in turn. However, rabbits surviving shooting operations become more wary and will soon learn to avoid showing themselves during subsequent shoots. Shooting can be a humane control method in skilled hands, but unless carried out systematically, it is relatively ineffective. Despite its limitations, this method is used frequently, mainly because many enjoy it as a field sport.

Ferretting

This involves the introduction of ferrets into the burrow system. The ferrets drive rabbits into nets placed over the burrow entrances, or to waiting guns that shoot them as they bolt from the tunnel entrances. It is seldom possible to bolt all the rabbits present, and often the ferret, which may have killed a rabbit or driven it into a corner, must be dug out. This is laborious but may benefit long-term control by destroying part of the burrow system. Ferretting is most effective outside of the breeding season and, having the advantage of capturing more females than males, may serve as a valuable technique for dealing with intransigent residual populations. However, the method is time consuming and when used in



12 Ferretting is unlikely to achieve effective rabbit control when used in isolation

isolation is unlikely to reduce rabbit numbers by more than about 35%. Although the cost of keeping ferrets can be high, those undertaking ferreting as a sport often give their time freely.

Long netting

As a method of control, long netting has only a very limited application and is perhaps better described as a sport for enthusiasts. However, it can still be used profitably to surround an isolated warren that is being ferreted, or as part of a rabbit drive. The technique is best suited for small areas with numerous rabbits.

Long nets vary in length but are usually between 50 and 150 m long. They should be 90 cm high with a mesh size of between 25 and 40 mm. Ideally, they should be set at night, after rabbits have been allowed sufficient time to leave their harbourage for the crop on which they are feeding. They should be positioned between the burrows and the crop, about 10 m from the edge of the harbourage from which the problem rabbits are emerging. When the nets are in position, men and dogs are used drive the feeding rabbits towards their burrows and the animals become trapped in the nets from which they can be removed and humanely dispatched.

Because of the manpower required for successful long netting, it is a viable management option only if operators are prepared to give their time and expertise free of charge.

Spring-trapping

Only traps approved to catch and kill rabbits humanely under the *Pests Act 1954* can be used as a means of rabbit control. Those currently approved by the Spring Traps Approval Order 1995 are the: Imbra Trap mark I and II; Juby T; Fenn Rabbit Trap Mark I, Fenn Vermin Trap Mark VI (multi-purpose); Springer Mark VI (dual purpose); Victor Conibear 120-2 and the BMI Magnum 116.

Most traps consist of a pair of clamps that are triggered to catch any rabbits that step onto a plate mechanism. To minimise the risk to non-target animals, livestock and pets, traps should only be set within the overhang of natural or artificial tunnels. The *Protection of Animals Act 1911* requires that all traps are visited at least once a day. Because of the



13 A Fenn Vermin Trap Mark VI – all spring traps used for rabbit control must be approved under the *Pests Act 1954*

inherent risks associated with the use of spring traps, they are recommended as **a means to control rabbits only when other methods have been tried and found to fail.**

Snaring

Rabbit snares are constructed from stranded brass wires that run freely through a small eye made in one end of the wire. The looped end of the wire (10 cm diameter), into which the rabbit places its head, is positioned about 9 cm above the ground using a short notched stick (the 'pricker' or 'teeler') and the free end of the wire is securely tethered with a strong chord to a peg which is driven firmly into the ground. This prevents captured animals from escaping. Snares should be set on well-used rabbit runs, in short vegetation, close to the harbourage from which rabbits are gaining access to crops.

When rabbits are numerous, the use of well-placed snares can catch the animals quickly and efficiently, but results are poor during dry weather or frost. However, **snaring is not recommended as a means of rabbit control as it is unselective and considered by many to be inhumane.** Their use should only be contemplated in situations where all other methods have been unsuccessful. The *Wildlife and Countryside Act 1981* prohibits the use of self-locking snares and requires snares to be visited daily. As most

rabbits are caught at night, dusk and dawn inspections are preferable. Care is needed in the positioning of snares and all reasonable precautions should be taken to avoid catching protected species, livestock and domestic pets. Because of the skill required to set snares, the technique should only be used by operators with considerable experience.

Developing a cost-effective management strategy

The economics of any pest problem is one of the major factors to consider when embarking on a management programme, as the cost of control should clearly not exceed the cost of the damage caused by pests. Growers must be aware therefore of the size of their potential rabbit problem in order to make an informed decision regarding the most suitable management strategies. Central to this decision is a reliable estimate of the cost of rabbit grazing based on the number of rabbits present, the value of the crop under attack and the extent of the crop damage. This figure must be balanced against the cost (Table 1) and efficacy of control, taking into account maintenance costs and the available manpower. A decision can then be made as to which control method offers the best cost-benefit ratio to deal with the specific problem.

Table 1 Cost implications of the rabbit management techniques available to horticultural growers. (all costs are approximate, based on 2004 prices)

| Non-lethal | | |
|------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Method | Material costs (excl. VAT) | Other cost considerations |
| Wire netting | £1.80/m | Erection (approximately the same cost as the materials) Maintenance and repair (monthly visits) |
| Electric netting | £1.55/m* | Erection (quick and easy) Maintenance (initially every 2 days, 2–3 week intervals later) Spraying (with an approved herbicide once a year to prevent shorting-out) Removal and storage of fences (when not in use) |
| Electric strained-wire | £1.50/m* | Preparation of fence components (insulators must be positioned on the stakes) Erection (slightly more time consuming than electric netting) Maintenance (initially every 2 days, 2–3 week intervals later) Spraying (with an approved herbicide once a year to prevent shorting-out) Removal and storage of fence components (when not in use) |
| Tree guards | £0.60/tree | Time and labour (to fit guards to trees) Replacement of damaged guards |
| Repellents | £0.30/tree/year | Time and labour (to apply repellent) Annual re-applications |
| Lethal | | |
| Phostoxin | £0.50/burrow | Time and labour (two people required for Phostoxin use) Dogs required to drive rabbits to ground Scrub clearance (may be necessary to provide access to burrows) Follow up treatments (may be necessary) |
| Talunex | £0.65/burrow | Time and labour (two people required for Talunex use) Dogs required to drive rabbits to ground Tubex applicator required (£90) Scrub clearance (may be necessary to provide access to burrows) Follow up treatments (may be necessary) |
| Cage trapping | £20/trap | Time and labour (to position and set traps) Period of pre-baiting (may be required) Two daily visits to check traps when set Removal and storage of traps (when not in use) |
| Drop box trapping | £60/trap | Time and labour (to bury and set traps) Daily visit to check traps when set |
| Shooting | £0.12/cartridge | Time and labour (often given freely) |
| Ferretting | Cost to buy, train and house ferrets | Time and labour (often given freely) |
| Long netting | £62/50 m | Time and labour (vary labour intensive technique) Requirement for dogs |
| Spring-trapping | £5 – 8/trap | Time and labour (to position and set traps) Daily visit to check traps when set |
| Snaring | £1/snare | Time and labour (to position and set snares) Daily visit to check snares when set |

*Calculated as cost to erect 1000m of fencing

Legal considerations

An Order has been made under Section One of the *Pests Act 1954* by which England and Wales (except for the City of London, the Isles of Scilly and Skokholm Island) have been declared a Rabbit Clearance Area in which every occupier of land is responsible for destroying wild rabbits on his land. Where it is not reasonably practicable to destroy them, occupiers must take steps to prevent damage. Defra has powers to require rabbit control to be carried out; if this is not done, they may arrange for the necessary work to be undertaken at the expense of the occupier, who could also be liable to a fine.

To help manage infestations the *Ground Game Act 1880* gives every occupier of land a limited right to kill and take rabbits and hares concurrently with the right of any other person entitled to do so on the same

land. An occupier may use any legal method to kill rabbits, such as gassing, trapping, ferreting, shooting, snaring, netting and, with the exception of shooting, he may authorise other persons to assist him. The Ground Game Act exempts an occupier, and persons authorised by him to kill rabbits, from the need to hold a game licence.

The Ground Game Act 1880 also gives an occupier the right to shoot rabbits on his land during the day and to authorise in writing one other person to do so. The person must be a member of the occupier's household or staff, or be employed for reward. An occupier may apply to the Department for authority to use a reasonable number of extra guns, if the owner of the shooting rights will neither permit the occupier to bring on extra guns, nor undertake to destroy the rabbits himself. Under the Ground Game Act as amended by the *Wildlife and Countryside Act 1981*, the following are allowed to shoot at night:

- An owner-occupier with shooting rights.
- A landlord who has reserved his shooting rights.
- A shooting tenant not in occupation who has derived his shooting rights from the owner.
- An occupier or one other person authorised by him provided he has written authority from another person with shooting rights.

The *Firearms Acts 1968 – 1997* requires any person possessing, purchasing or acquiring a shotgun to obtain a shotgun certificate from the police. A Firearms Certificate is required for rifle use.

Under the *Wild Mammals (Protection Act) 1996* it is an offence to intentionally inflict unnecessary suffering on any wild mammal as specified by the Act. This legislation may need to be considered where the destruction of occupied warrens and burrow systems is being contemplated.

Further information

Further advice regarding rabbit damage and management can be obtained by contacting the Department for Environment, Food and Rural Affairs (Defra) Wildlife Management Team at:

Wildlife Administration Unit
Defra, Burghill Road
Westbury-on-Trym
Bristol, BS10 6NJ
Telephone 0845 601 4523 (local rate)
Web address
<http://www.defra.gov.uk/wildlife-countryside/vertebrates/default.htm>

The Forestry Commission also produces a number of publications relating to rabbit management :

Forestry Commission
Forest Research Station
Alice Holt Lodge
Wrecclesham
Farnham
Surrey, GU10 4LH
Telephone 01420 23337
Web address
<http://www.forestry.gov.uk/forestry/infdef-53ceun>

Additional detailed technical information on electric fences is available in the *Electric Fence Reference Manual* available from:

Library at Defra
Nobel House
17 Smith Square
London, SW1 3JR
Telephone 020 7238 6572
Web address
<http://www.defra.gov.uk/wildlife-countryside/vertebrates/reports/Electric-fencing-manual.pdf>

Useful contacts

Fencing

Wire-netting
The TWIL Group
PO Box 119
Shepcote Lane
Sheffield, S9 1TY
Telephone 0114 256 1561

Electric fencing
AEC Electric Fencing Ltd.
Hotline Works
Brunel Road
Newton Abbot
Devon, TQ12 4PB
Telephone 01626 331 188

Bramley and Wellesley Ltd.
Unit C, Chancel Close Trading Estate
Eastern Avenue, Gloucester, GL4 7SN
Telephone 01452 300 450

Drivall Ltd.
7 Rock Close
Oulton
Stone
Staffordshire, ST15 8UH
Telephone 0121 423 1122

Gallagher UK Ltd.
Curriers Close
Canley
Coventry, CV4 8AW
Telephone 0870 201 0101

Rappa Fencing Ltd.
Steepleton Hill
Stockbridge
Hampshire, SO20 6JE
Telephone 01264 810 665

Rutland Electric Fencing Co. Ltd.
Pillings Road Industrial Estate
Oakham
Leicestershire, LE15 6QF
Telephone 01572 722 558

Fumigation

Phostoxin
Rentokil Initial plc.
Felcourt
East Grinstead
West Sussex, RH19 2JY
Telephone 01342 833 022

Talunex
Luxan (UK) Ltd.
Sysonby Lodge
Nottingham Road
Melton Mowbray
Leicestershire, LE13 0NU
Telephone 01664 820 052

Cage traps

Janus
Mounts Barn
Shalford Road
Rayne
Braintree
Essex, CM7 5XA
Telephone 01376 342 111

Solway Feeders Ltd.
Main Street
Dundrennan
Kirkcudbright
Scotland, DG6 4QS
Telephone 01557 500 253

The Trap Man
Smithy Lane
Holmeswood
Ormskirk
Lancashire, L40 1UH
Telephone 01704 821 136

Multi-capture traps

Flintwood Countryside
Flintwood Cottage
Broom Hill
Fakenham Magna
Thetford
Norfolk, IP24 2QY
Telephone 01359 269 612

Lauderdale Engineering (Leader rabbit
box trap)
Whitlaw Road Industrial Estate
Lauder
Berwickshire, TD2 6PA
Telephone 01578 718 718

The Trap Man
Smithy Lane
Holmeswood
Ormskirk
Lancashire, L40 1UH
Telephone 01704 821 136

Others

The remaining materials for rabbit
management can usually be obtained
from local agricultural merchants or
field sport suppliers.

