74	93	ARB
74	supersedes 90	ARB

Arboriculture Research Note

Issued by the DOE Arboricultural Advisory and Information Service,

Protecting Trees from Field Voles

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Summary

Field votes strip bark off' the lower stem and roots oh voting trees, which are often killed thereby. Small plastic guards are usually cheaper and more effective than other methods of protection. Voles seem reluctant to cross bare ground, so weed-free trees suffer less damage than unweeded trees.

Introduction

1. The field vole (*Microtus agrestis*) is a common resident of rough grassland. Its presence is betrayed by a network of runs, containing small piles of grass clippings and droppings, on or just below the surface of the ground. Although grass is its main food, it also eats the bark of the lower stem and roots of young trees. Small trees may be girdled, or felled when their stems are gnawed through. The largest tree we have seen felled in this way was 27mm diameter oak (Quercus sp.). (Vole damage found above the level of the surrounding herbage is usually caused by Bank voles *(CIethriononiys glareolus)*; Field voles rarely climb,).

2. Vole populations undergo fluctuations. Damage to trees is most likely when numbers are high and food is scarce, but serious damage can occur at any time of year. All tree species may be damaged but broadleaves are generally preferred to conifers.

3. Over five years, the effects of different weeding regimes and treeshelters on vole, damage were observed in arboricultural experiments) on road verges and other grassy sites. These observations are summarised in paragraphs 4-8 below. The recommendations in paragraph 12 are based on experiments to test the effectiveness of plastic guards.

The influence of herbicides on vole damage

4. Trees surrounded by bare soil suffer less damage than those growing in weeds. Voles seem reluctant to cross open ground, presumably because they would be vulnerable to predators. In one experiment, for example, 86 per cent of unweeded sycamore *(Acer pseudoplatanus)* were damaged; whereas, of the trees growing in 0.25, 0.5 and 1.0 m diameter weed-free spots, 86, 75 and 47 per cent respectively were damaged. The effect of weeding was more pronounced than these figures suggest: the damage to trees in the larger spots was generally slight; whereas many of the unweeded trees and those in 0.25m spots were killed.

The influence of snow on vole damage

5. Prolonged snow cover while vole numbers are high can result in severe damage despite the trees being surrounded by bare soil. Voles tunnel under the snow from where they gain access to the trees.

The influence of hoeing and mowing on vole damage

6. Both hoeing and mowing remove the cover that would allow voles to approach trees safely, and both techniques have been found to reduce the incidence of vole damage. But since mown grass

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competes strongly with young trees, herbicides or hoeing are preferable (Davies, 1987).

The influence mulches on vole damage

7. Voles often nest beneath polythene and other sheet mulches. From this protected position they gnaw the trees at about soil level. Such damage can be reduced by placing clods of earth, or other weights, on the sheets around the trees. (A surer method is to use plastic guards [see paragraphs 12 and 13] which should go through the sheets and be pressed into the soil). Voles may burrow in organic mulches, such as peat. Again, a plastic guard through the mulch will prevent damage.

The influence of treeshelters on vole damage

8. On a number of sites treeshelters reduced the incidence of damage. But on one site trees in shelters suffered more damage than those without shelters. Once voles get inside a shelter they frequently build a nest there, and severely damage or fell the tree. Even if the shelters are pressed firmly into the soil, it is impossible to make them vole-proof: slight windblow may leave a gap at the base on the windward side; rain running down the shelters may erode the soil at the base, and voles burrow to some extent anyway. If vole numbers are high, it may be necessary to use plastic guards (see paragraph 12) inside the treeshelters.

Methods of controlling damage

9. Trapping. Voles, like most rodents, are easy to trap. But as a method of controlling damage, it is inordinately laborious and quite impractical.

10. Chemical repellents. Trees can be painted or sprayed with the animal repellent Aaprotect[3]. To provide continued protection the chemical must be re-applied every six months. The technique is therefore labour intensive.

11. Plastic guards. Voles may gain access to trees through the mesh of guards, between the spirals of spiral guards, or through any ventilation holes in guards. They can also gnaw these guards, enlarging the gaps. Plastic tubes without ventilation holes are better. These polyethelene or polypropelene tubes, when split longitudinally, spring in on themselves to form smaller tubes about 50mm in diameter[4]. They should be pushed into the soil about 5mm. Being only 50mm in diameter is rare for voles to burrow up inside them; voles cannot gnaw or climb the smooth walls. Guards of 200mm height are often adequate. But if poor weed control, tree stumps, rocks, mole hills or other irregularities give the voles extra height, 250 or 300mm guards should be used.

12. Since 1983 several thousand split-tube guards have been used. No serious adverse effects have been noticed on trees. Stem abrasion has been negligible. Ants sometimes nest in the guards but have not caused damage. As the trees grow they are able to open the guards and push them off.

NOTE:

13. Poisoning. Warfarin poisoning of voles is not approved under the Pesticides Registration Scheme.

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[3] Aaprotect is supplied by Universal Crop Protection Limited, Park House, Cookham, Berkshire SL6 9DS

[4] A supplier of suitable split plastic tubes is:- J. Toms Ltd., Grigg Lane, Headcorn, Ashford, Kent TN27 9XT

Conclusion

14. Split plastic tube guards, without ventilation holes and at least 200 mm tall, are usually cheaper and more effective than other methods of protecting trees from voles. Effective weed control, intended primarily to reduce competition with young trees, also reduces the incidence and severity of damage.

Acknowledgement
This work was partly funded by the Department of the Environment.

Further reading

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Published by: January 1993

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