

KERB REDUCES STEM GIRDLING BY MEADOW VOLES

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Background

Stem girdling by meadow voles (*Microtus pennsylvanicus*) is a serious problem in young forest plantations and orchards in southern Ontario (1). Dense, continuous sod cover provides ideal habitat for meadow voles, and patches of even a few square meters of grass or broadleaf weeds may support a few voles. As long as there is an ample supply of succulent herbaceous vegetation, voles do not feed on tree bark. However, when the population has outgrown the food supply, or during the winter when normal food is not available, voles eat the bark of young trees (fig. 1). Large populations of voles invariably cause extensive damage; but even as few as 4 to 6 voles per acre (10 to 15 voles per ha) can cause severe damage by girdling the stems of all trees within their radius of activity (2).

The best way to control voles is to eliminate all weeds (4) so as to deprive the voles of shelter and food. However, maintaining complete weed control is very expensive and may not be environmentally desirable. Placing plastic tree guards around the stems or painting repellents on them effectively reduces damage but the cost of material and labor is very high. Broadcasting mouse poison generally provides only temporary relief since the vacuum created by eliminating the resident population is quickly filled by voles from

Broadcast application of 2 lb/acre (2.2 kg/ha) of active Kerb in November greatly reduced stem girdling by meadow voles during the winter following application.



Figure 1.—White ash stem girdled by meadow voles.

the surrounding area (1). Installation of 10 to 20 poison-grain feeder stations per acre (25 to 50 per ha) provides more lasting control than broadcast application (fig. 2), but the cost of the stations and the labor required to install and service them make this method economically unattractive.

Observations

Recent observations have shown that trees in a hardwood plantation, broadcast-sprayed in November with 2 lb per acre (2.2 kg/ha) of active Kerb, sustained very little, girdling damage, while trees of the same species growing in an adjacent plantation were severely girdled.

Basswood (*Tilia americana* L.), white ash (*fraxinus americana* L.), black walnut (*Juglans nigra* L.), black locust (*Robinia pseudoacacia* L.), sycamore

(*Platanus occidentalis* L.), silver maple (*Acer saccharinum* L.), red oak (*Quercus rubra* L.), white oak (*Quercus alba* L.), European mountain ash (*Sorbus aucuparia* L.), catalpa (*Catalpa speciosa* Ward.) and black cherry (*Prunus serotina* Ehrh.) were planted in the spring of 1974 on 5 acres (2 ha) of former agricultural land with a clay loam soil. The area was plowed and disked in the summer prior to spring planting. Despite applications of 3 lb per acre (3.3 kg/ha) of active Princep (Geigy) shortly after planting and in the spring of 1975, a dense cover of quackgrass (*Agropyron repens* L. Beauv.) became established during the summer of 1976 and competed vigorously with the tree seedlings. During the summer of 1976 numerous meadow voles and extensive runways were observed in the plantation. To eliminate the quackgrass, 2 lb per acre (2.2 kg/ha) of active Kerb 50W were broadcast between the rows of trees in November 1976.

Assessment in the spring of 1977 showed that less than 1 percent of the trees were girdled during the winter in the Kerb-treated plantation while 18 percent of the trees were girdled in an adjacent plantation of the same species. The seedlings in this plantation were planted in the spring of 1975 and no Kerb was applied in the autumn of 1976 because the plantation was relatively weed-free.

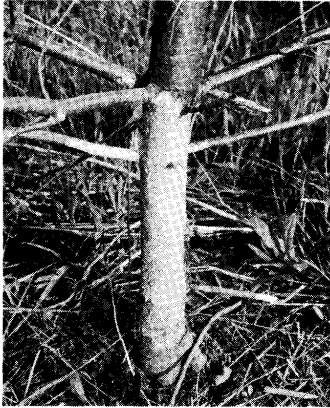


Figure 2.—White pine stem girdled by meadow voles.

Discussion and Conclusion

The only explanation for the difference in girdling damage between the two plantations is a possible repellent effect of Kerb on voles. Under normal conditions girdling damage should have been much higher in the plantation with the dense sod than in the relatively weed-free plantation.

After this observation two other hardwood plantations that had been treated with Kerb were surveyed. Again girdling damage was minimal in the Kerb-treated plantations while up to 15 percent of the trees in plantations located in the same general area but not treated with Kerb were partially or totally girdled by voles.

No feeding studies have been carried out to document whether Kerb really has vole repelling properties but until the apparent existence of such a repellent effect has been disproved these observations suggest a partial solution to the economic control of quackgrass and simultaneous protection of trees seedlings from girdling by meadow voles.

Literature Cited

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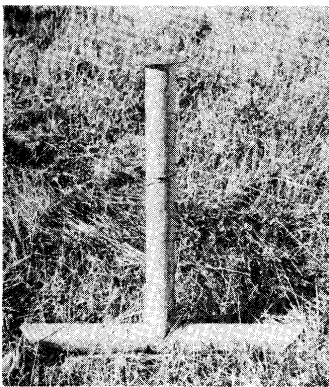


Figure 3. — Poison-grain feeder station.