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C. Purcell McCue Jr.

Virginia State Horticultural Society, Staunton, VA

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MOUSE DAMAGE, A SERIOUS PROBLEM FOR THE VIRGINIA APPLE INDUSTRY

C. Purcell McCue, Jr.
Executive Secretary, Virginia State Horticultural Society
Staunton, Virginia 24401

I found it quite distressing in my younger years to find nice 4 to 6 year old trees leaning over or wilted and finding that they had no roots. Sometimes the damage was due to Black Root Rot but most often to mice.

The 1972 Apple and Peach Tree Survey indicated that there were 1.6 million apple trees in Virginia. Dr. J. B. Bell and Dr. J. M. Johnson report that based on information from the Statistical Reporting Service and the Economic Research Service that the average per year market value of the 1973-74-75 Virginia Apple crop was \$109,160,000. This value consists of the farm value of \$28 million plus packing, storage, processing, and other marketing services.

It is estimated that mouse damage to apple trees reduces the output in Virginia by 10% per year or a potential loss of \$11,000,000 annually for the years 1973-75.

From 1967-74, the Virginia Agricultural Foundation provided \$50,576 for mouse control research in Virginia. The original grant of \$26,576 was from July 1, 1967 through June 30, 1970. That research was directed at determining if pine voles were developing a resistance to endrin, studying orchard cover crops and their inter-relationship with control. Dr. Ryland E. Webb reports that genetic resistance to endrin was developing, this being the first case of a mammal becoming resistant to a poison in its natural habitat. Gophacide and Chlorophacinone were studied with the latter showing more promise.

For the period July 1, 1973-June 30, 1974, \$6,000 was provided to refine the biochemical techniques for recovery of Chlorophacinone from apple fruits; to try Least Weasels as a predator; initiate chemical sterilization; study cultural management; develop an efficient trap; investigate mouse diseases; develop fumigation techniques; investigate two systemic organic phosphates; and continue investigation on encapsulation of baits.

Research results to date only appear to open the horizon to the great many things that we do not know about the pine vole. The funds from the Virginia Agricultural Foundation have been used to initiate research in all agricultural areas and these funds have proved invaluable in this case but if the problem is going to be solved, it will be necessary to have continuing funds from State or Federal sources. The Virginia Agricultural Foundation has not provided funds in the past three years for this much needed research and they feel additional funds should be provided by USDI, USDA or EPA for pine vole research.

Growers report that they are not at all happy with the use of endrin as it is not killing mice. Chlorophacinone sprays seem to work the first time used and anticoagulant baits are giving poor results because of high labor costs and the requirements for highly skilled labor. It appears that we yet must find a "radical" approach that will in some way disrupt the biology or habitat of the mice. Help is needed and we have made little progress with poisons in 30 years. We cannot continue to annually lose 10% of our potential apple production.