March 1977

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Melvin H. Kolbe, Extension Horticulturist (tree fruits) has worked with the Agricultural Extension Service, North Carolina State University from July 1, 1955 to date. Previously, I worked eight years at West Virginia University in Morgantown, West Virginia.

The N. C. 1972 survey lists 15,290 acres planted to apples; the acreage may be 18,200 today. These trees are producing 6,000,000 to 8,000,000 bushels annually with a potential of 10,000,000. The crop is valued at $25,000,000 or better most years.

Apples are the most important fruit in North Carolina production, and vary from 1st to 3rd place yearly as the most important horticultural crop. Most years, North Carolina ranks 7th nationally in producing apples. In the early 1950's, we were only in the one million bushel production class, but growth has been rapid since 1958.

I started work in North Carolina in 1955. That year we had no apple crop due to a late freeze. I do recall seeing apple trees with yellow leaves in July, later I realized that many apple trees were showing trouble in mid summer, especially if the season was dry. This damage was very similar to what I had seen in my home community in northern Ohio and in the apple area of West Virginia.

In North Carolina, I worked very closely with Larry Whitehead of the Fish and Wildlife Division. We set up demonstrations and workshops for extension agents and growers, and used poison oats and other grains plus zinc phosphide on apple cubes to reduce the vole population. According to Mr. Whitehead, and later, Rew Hanson and Vernon Cunningham, all with the Fish and Wildlife Division, by trapping and checking they thought we were doing some good, but we still had a lot of damage.

It was not until the late 1950's when Dr. Horsfall of V.P.I. treated the R. N. Barber orchard in Waynesville, N. C. with Endrin that we started to control the pine and meadow vole.

Voles damage trees in several ways. They eat the roots, and if the damage is light the apple tree may not show any obvious problem, but the amount of yield loss can be great. If the voles girdle the tree (cut the bark at or near the soil line), they cut the xylem tubes and this will reduce the amount of water and nutrients taken into the tree. When this happens and moisture stress is high, the tree will turn yellow in July (summer months). If injury is serious, the tree top may die, and if the girdling is severe, little or no food (carbohydrates) will be returned to the roots, so the roots die. Usually, the whole tree dies in six months, a year, or sometimes two years.

Control, in my opinion, has been very effective since Endrin has been used. Only once in a while do I see a dead or dying tree in an Endrin-treated orchard. We use only the recommended rates and time. I assume I visit more apple orchards per year than any one person, and to date, I have never seen any dead wildlife in any treated orchard. Accord-

ing to the reports I have seen, there is no fool-proof chemical available that will be as effective as Endrin. Our growers know Endrin is expensive and dangerous and if they had any other material as good or better, they would already be using it. At this time, I see no replacement for Endrin. Materials suggested as possible replacements have not had the test of time.

If Endrin is withdrawn, I see a reaction from the growers that will be unfortunate. The agricultural extension agent in Henderson County took a recent phone survey of suppliers of Endrin and found that 75% of the 10,000 acres in that county are treated with Endrin. These growers are not spending money just for exercise; they must be convinced that the chemical works and nothing better or cheaper is available.