FENCE DESIGNS FOR DEER CONTROL: A REVIEW AND THE RESULTS OF RECENT RESEARCH IN SOUTHEASTERN NEW YORK

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Research on fences for deer control over the last 45 years has involved either the nonelectric or electric designs. The conventional nonelectric fence has been a vertical 8- to 10-foot woven-wire type which has proven effective in several states over the past 30 years. Some installations have included a 2- to 3-foot overhang of barbed or smooth wire at the top. All versions of this fence have been deemed excessively expensive by many consumers, although a recent New York study reported the 8-foot fence in new, high-density fruit orchards to be a very cost-effective control option.

Efforts to minimize the cost of 8-foot fencing by modifying the design have been reported. These designs generally involved the use of overhangs or slanted extensions that were meant to curtail deer jumping the fences. In the late fifties, slanted, non-electric fences were developed in California and South Dakota and involved designs that slanted up and away from the protected area to an outside height of 4 or 5 feet. In all of these modified designs, cost, snow-loading, loss of horizontal space, and high maintenance were cited as disadvantages, although the designs were effective.

Electric fences were first reported for deer control in 1939 in Michigan. Standard versions of vertical domestic animal electric fencing were felt to be ineffective for deer control by researchers in New York and California. Early workers in Vermont and New York devised several modified vertical designs that involved 3 to 5 charged wires from 2 to 7 feet above the ground with additional wires at various heights 2 to 3 feet outside the vertical fence. Earlier versions of these modified electric fences were effective but were unpopular due to the high maintenance required to prevent grounding and poor shocking power during dry seasons and in snow depths over 6 inches.

Recent technological developments have rekindled interest in electric fencing. The use of high-tensile wire has allowed single-stranded wire fences to be constructed with greater strength, lower maintenance requirements, and lower costs than fences constructed with conventional wire products. In addition, new, low-impedance, high voltage chargers have proven capable of charging long fence lines with reduced susceptibility to shorting out.

Research in this study has proven the modified versions of vertical electric fences (those using 2 wires erected 2 to 3 feet outside a vertical fence of 3 to 5 wires) to be effective in low to moderate deer pressure areas. In higher deer pressure areas these fences have been successful on small acreages and especially on summer crops.

On larger acreages with high deer pressure and under year-round conditions, research in this study has proven a slanted, 7-wire electric fence to be effective. This fence design requires more space and a wider vegetation control strip than vertical fences but has proven to significantly ($p < .01$) reduce deer contacts when compared to a modified vertical electric fence. Although the modified fence presents 3 dimensions, the vertical distance between wires contributed to increased contact by those deer that approached the fences ($p < .05$).

This review has suggested that several fence designs are available for deer control purposes. Recommendations should be conservative though, as variables such as changes in seasonal deer pressure, changes in yearly deer pressure, the size of the area to be protected and the economic value of the material to be protected have not been studied by many researchers and have proven difficult to quantify by others. The wide range in each of these variables and the various combinations of circumstances that do exist require that each fence design should be evaluated over extended periods to derive real construction and maintenance costs to compare against measured benefits.