NEW METHOD OF ESTABLISHING BICOLOR PLANTINGS ON PRIVATE LANDS[1]

by

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ABSTRACT

This paper reports on a technique that appears successful for establishing bicolor or other perennial wildlife plots on private lands. During the winter of 1973-74, University of Tennessee personnel (with farmers' help) established a total of 127 perennial plots, 0.1 to 0.25 acres each with a tree planter on 19 private farms (average 6.7 plots per farm). A total of 35.2 man-days (excluding travel and farmers' time) was expended. This computes to be 0.28 man-day per plot or 1.85 man-days per farm. Plots were planted from November through April, and plant survival was satisfactory in practically all cases. A growth evaluation survey revealed that 65.1 percent of the plots rated fair or above. Grazing was responsible for poor growth in 24.6 percent of the plots, and 7.1 percent of the plots were plowed up when crops were planted—in most cases by laborers who didn't know the plots existed.

The most efficient team proved to be a crew of 2 people—one technician and one laborer. Typically the two individuals pulled a tree planter on a small utility trailer behind a pickup truck (with camper cover) loaded with bicolor seedlings. Upon arrival at the farm, the farmer drove his own tractor, and the two university personnel rode the tree planter, setting out seedlings. The technician, as well as planting, interpreted management plans and made decisions with farmer about exact plot locations.

Based upon these data, this technique may be feasible for state wildlife agencies to consider. The author suggests, however, that plots not be established in pasture unless areas for plots are fenced *beforehand*. It is also suggested that plots established at edges of cultivated fields be delineated by stakes with colored flagging until plots are well established. Advantages of the technique include:

1. Assurance that plantings on private lands are actually carried out—and correctly.
2. Farmer has input (tractor and personal time) and is likely to be more interested in plots.
3. Unless destroyed, plots established are *permanent* and will likely produce food and cover for many years.
4. Opportunity for technician to teach farmer certain wildlife management principles.
5. Projecting the above data, costs of such a program appear feasible. It is estimated that the cost to a wildlife agency (excluding plants and administrative costs) would be 11¢ per affected acre of habitat per year, based on an average expected planting life of 10 years.

INTRODUCTION

For years, wildlife agencies in the Southeast have faced the problem of providing enough hunting for farm game hunters, who buy most of the hunting licenses. The problem has always boiled down to one dilemma: most potential farm game habitat is privately owned and not under control of wildlife agencies. Any possible solution to this dilemma has to involve working with thousands of private landowners (mostly farmers)—and most with small holdings. Gaining confidence of and creating interest among these private landowners is difficult.

A great deal of money has been spent on programs to increase farm game on private holdings. Very few of these programs have met with success (Frye 1961; Hornsby, et. al. 1962; Sullivan, et. al. 1963; Marshall 1953). Some of these programs involved stocking pen-reared animals, a technique later shown to be ineffective.

Another reason many of the programs were unsuccessful is that most farmers lost their inspiration before receiving free planting materials and failed to use them properly—if at all (Marshall 1953; Sullivan et. al. 1963). So the problem has two parts:

1. How can we feasibly increase farm game numbers on private lands, causing little interference with modern agricultural practices?

2. How can we get the farmer to cooperate and carry out management recommendations properly?

Most managers now agree that habitat management is the key to increased numbers of farm game. In some areas burning is feasible as an excellent, inexpensive way to increase farm game members (Frye 1961; Ellis et. al. 1969; Speake 1966). In other areas, such as most of Tennessee (roughly the eastern 2/3), burning is not feasible. Extensive acreages of pasture and hardwoods cannot tolerate fire on a regular basis without severe economic loss.

In a cooperative effort between the University of Tennessee Institute of Agriculture and the Tennessee Wildlife Resources Agency, research is underway to determine answers to the above problems. One phase of ongoing research involves the es-

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tablishment of Wildlife Demonstration Farms on private holdings across the state. The main objective is to test and demonstrate practical methods of increasing farm game on private lands, at a nominal cost, and with little change in the farm plan.

Tennessee varies in topography and soil associations from Southern Mississippi Valley Alluvium in the west to Blue Ridge Mountainous in the east. Much of the area is intermediate (Highland Rim, Cumberland Plateau and Central Basin). As of 1970, 83% of the state was in private holdings (Tennessee Wildlife Resources Agency 1970a). Of all private holdings 52% (1971 estimate) was in woodland (Wells et. al. 1974), 31% was in cropland and 16% was in pasture (Tennessee Wildlife Resources Agency 1970b).

Because of modern agricultural practices and extensive acreages of pastureland, farm game habitat across most of the state is poor. It appears that the most serious ingredients missing are cover and late-winter food. Hoping to improve these conditions, particularly the latter, bicolor (*Lespedeza bicolor*) was established on 25 Wildlife Demonstration Farms (19 with seedlings and 6 with seed). There are conflicting reports in the literature on the value of bicolor for increasing farm game populations. Gehrken (1956), Rosene (1956) and Murray (1958) reported little significant benefit to quail in areas they investigated. The last two studies, however, were apparently conducted on areas where late winter food was not limiting. Gehrken (1956) did not indicate the quantity or quality of existing habitat where bicolor was tried.

Rosene (1956) and Wunz (1959) indicated that plantings such as bicolor and others may be helpful in situations where late winter food is critical. Pearson and Sturkie (1950), Davison (1945), Wunz (1959) and Rosene (1956) indicated that bicolor is a preferred food of quail. It seems apparent that on areas with a dearth of late-winter food, a late-winter food which is preferred under near-ideal conditions would be beneficial. Of course, other life requirements also have to be met.

The value of bicolor plots and other habitat development efforts toward increasing farm game numbers in Tennessee is being evaluated. This study reports on a technique found to be effective in *establishing* perennial wildlife plots properly on private lands at, what appears to be, a nominal cost. The useful life of these plots is also currently under investigation.

Appreciation is expressed to Billy Minser, cooperating landowners, and the numerous students who assisted in this project.

MATERIALS AND METHODS

Because of excessively wet weather during the spring of 1973, farmers were unable to seed most of the recommended perennial plots due to other farming responsibilities. In order to establish these plots on schedule, University of Tennessee personnel (with farmers' help) established bicolor lespedeza plots on 19 farms during the winter of 1973-74.

Two to four people visited the farms and, in most cases, enlisted the farmers help. The most efficient team proved to be a crew of 2 people—one technician and one laborer. Typically the two individuals pulled a tree planter (with a three point hitch) on a small utility trailer behind a pickup truck (with camper cover) loaded with bicolor seedlings. Upon arrival at the farm, the farmer drove his own tractor and the two university personnel rode the tree planter, setting out seedlings. The technician, as well as planting, interpreted management plans and made decisions with the farmer about exact plot locations. Also, there was opportunity for teaching the farmer ways he could influence farm game numbers during normal farming operations, such as mowing.

RESULTS AND DISCUSSION

A total of 127 bicolor lespedeza plots, 0.1 to 0.25 acres each, was planted with a tree planter on 19 farms (average 6.7 plots per farm). A total of 35.2 man-days (excluding travel and farmers' time) was expended. This computes to be 0.28 man-day per plot or

1.85 man-days per farm. Plots were planted from November through April, and plant survival was satisfactory in practically all cases.

During the summer and fall of 1974 plot growth was evaluated as follows: 0-very poor; 1-poor; 2-fair; 3-good; 4-very good. A total of 65.1 percent of the plots rated fair or better. The average rating of all plots was 2.0. It was assumed at the time of planting that farmers would later fence the plots exposed to cattle; very few did, however. Grazing was found to be responsible for poor growth in 24.6 percent of the plots. It should be noted that bicolor plants in grazed plots still had healthy root systems in most cases, and most were resprouting vigorously. Another problem was that 7.1% of the plots were plowed up when crops were planted—in most cases by laborers who didn't know the plots existed.

If grazing and plowing up were eliminated as problems, 96.8 percent of the plots would have rated fair or better. One way to alleviate the grazing problem is to establish plots only in areas not exposed to cattle. Plots established at edges of cultivated fields could be delineated by stakes with colored flagging until they are well established. This would signal unsuspecting laborers where plots are located.

All farmers contacted had already indicated an interest in farm game management on their land. It was observed that nearly all were genuinely interested in improving habitat. It appeared that the main drawback in establishing wildlife plots on these private lands was a lack of sufficient labor for planting and fencing. Since wildlife (in most cases) is not utilized as a cash crop, it is understandable that the farmer will devote his limited labor to income-generating crops.

This technique appeared successful mainly because a definite appointment was made with the landowner (through the county Extension agent). Once committed, the landowner followed through by providing 1/3 the labor and all tractor and fuel costs.

Based upon these data, this technique may be feasible for state wildlife agencies to consider. The author suggests, however, that plots not be established in pasture unless areas for plots are fenced *beforehand.* It is also suggested that plots established at edges of cultivated fields be delineated by stakes with colored flagging until plots are well established. Advantages of the technique include:

1. Assurance that plantings on private lands are actually carried out—and correctly.
2. Farmer has input (tractor and personal time) and is likely to be more interested in plots.
3. Unless destroyed, plots established are *permanent* and will likely produce food and cover for many years.
4. Opportunity for technician to teach farmer certain wildlife management principles.
5. Costs of such a program appear feasible based upon the above data. A sample initial budget (excluding plants which should be grown by agency and administrative costs):

   For 4 teams of 2 people (one technician and one laborer each) working from November through April (6 months).

   1. Salary
      a. 4 technicians (6 months—excluding ¼ time for rainy days) $12,000
      b. 4 laborers (6 months—excluding ¼ time for rainy days) 9,000
   2. Four tree planters and trailers (may be amortized over 20 years) 1,200
   3. Mileage 6,000

   $28,200

Assuming one-half of the teams' time is devoted to traveling and rainy days—it should be less than this if teams work in local regions—a total of 1714 plots could be planted on 256 farms each year affecting about 25,710 acres of small game habitat (1 plot per 15 acres) for a total cost of $28,200 (excluding plants and administrative expense) or $1.10 per acre. If we assume that these plots will produce food and cover for an average of 10 years, the cost to the wildlife agency would be 11¢ per acre of affected habitat per year.

Sullivan et. al. (1963) indicated that by 1960 six million dollars had been spent in the Southeast by state wildlife agencies on "give away" programs with few apparent results. Marshall (1953) and Hornsby, et. al. (1962) list shortcomings of "give away" programs:

1. materials not delivered
2. failure of landowner to plant materials
3. poor planting pattern
4. poor survival of plantings

The technique described herein eliminates problems 1, 2 and 3 and minimizes problem 4. In short, the technique appeared to work to effectively *establish* perennial plots on private lands. The useful life of the plots will determine long term cost, and this is currently under study. If we assume an average useful life of 10 years, the small per-unit cost of establishment appears justifiable.

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