

THE USE OF LADINO CLOVER IN WILDLIFE MANAGEMENT

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Wildlife managers and technicians are constantly searching for a panacea for their numerous game problems. We have all learned long ago that one of the basic steps that can be undertaken in wildlife management work is that of providing a food supply for the particular species that we are attempting to manage. In our efforts we have tried a variety of food and cover plants with varying degrees of success. We have planted serecia, bicolor lespedeza, Multiflora rose, annuals and many other plants. All of these have some advantages, as well as obvious limitations, but none answered all of the food and cover problems for all of the game species.

In Virginia we have recently been experimenting with the use of a pasture mixture combined of ladino clover and Kentucky fescue on some of our publically owned land. Plantings have been made in the hope of producing year-around food supplies for turkeys, deer and rabbits. We do not pose as experts on the subject and possibly some of the other Game Departments represented here are more advanced with their experiments on ladino than are we, but the subject is being advanced for discussion nonetheless. Perhaps with an interchange of ideas we can all learn more of the potentialities and possibilities of this excellent pasture mixture in the field of wildlife management.

We are in the midst of a land-use trend of ever-increasing cattle production here in Virginia, with the accompanying result that more and more crop land is being converted to extensive pasture and hay production. From what we can ascertain, the identical condition exists rather generally throughout the Southeastern States. It would thus appear that the Southland is verily becoming a land of green pastures in more ways than one.

In a group such as this it is needless to discuss what intensive hay production and pasturing does to food and cover for our game animals and birds. In the past, a wise hunter knew better than to take his dogs to pasture land in quest of quail and rabbits. Perhaps the day will soon come when sportsmen will recognize the value of improved pastureland as a likely area in which to find game.

For several years the soil conservationists, technicians and county agents have been recommending the use of permanent pastures along with beef and milk production as a means of conserving the soil and as a method of spreading the farmers income over the year. It may have been a blessing in disguise for wildlife administrators that the principal crop currently recommended by agricultural workers is ladino clover. It is difficult to drive many miles through rural areas in the South without seeing a good stand of this brilliantly green legume. It is being planted for hogs and poultry as well as for cattle: farmers are thus coming to realize it is the most versatile of all forage crops.

The potentialities of ladino clover for wildlife has come to the attention of game managers in Virginia only recently. The writer first came to suspect its value

during the summer and fall of 1949. The Virginia Forest Service and the Virginia Game Commission have been managing the Cumberland State Forest cooperatively for the last eight years in the production of timber and wildlife. The Cumberland Forest, comprising approximately 15,000 acres, is considered excellent wild turkey range and usually supports as many as twenty gangs of native wild turkeys in an average year. This area also supports an ever-increasing deer herd. For years our wildlife managers have been planting a variety of annuals primarily for the benefit of the wild turkeys. Unfortunately, the deer herd has reaped most of the benefits from these annual plantings. There is much evidence on the State Forests of competition for the available food supply in the available food patches. During the last two years, systematic surveys have shown that by the middle of December practically all of the planted food in the annual patches has already been consumed by deer and turkeys. Whenever mast crops fail, as they often do, the wild turkeys have little available food on which to survive and they usually drift from the managed areas.

The Cumberland Forest is not a complete block of land, but is cut up rather irregularly with privately owned farms. On some of these farms the land owners have followed the trend toward cattle production during recent years and quite a few of these same farmers have planted pastures consisting of ladino clover, Kentucky fescue or orchard grass. Almost immediately these farmers reported utilization of the ladino-fescue mixtures by turkeys, rabbits and deer. One of these pastures lies adjacent to the forest land and is located along the main road to the Cumberland Forest. Almost any day during the spring, summer and fall of 1949 a gang of turkeys could be seen feeding in the ladino clover pasture. On numerous occasions, deer were observed feeding on the same tract during the night and even in the daytime. After constant and widespread reports from landowners in the vicinity on deer and turkey utilization, it was decided that an experiment should be conducted by planting these mixtures on the publically owned land. Suitable areas were located and the land was prepared during August and September of 1949. Eventually eighteen plantings of approximately an acre in area were seeded. Plantings were established in both the Cumberland and the Buckingham-Appomattox Forests. The seed was planted at the rate of 10 pounds of Ky 31 fescue and 2 pounds of ladino clover per acre. Fertilizer was applied at the rate of 400 pounds per acre and absolutely no lime was applied at that time.

The winter of 1949 - 50 was unusually mild and the eighteen widely separated pasture mixtures grew well during the late fall and winter. Turkey and deer grazing was observed soon after the clover and fescue emerged from the ground. Fortunately the plantings were not killed out by the heavy grazing and with the advent of springtime the plantings flourished. During the latter part of April a survey was made of the ladino plantings. All eighteen of the patches revealed rather heavy utilization by turkeys; actual observations of their feeding were made in ten of the eighteen ladino establishments. In several of the plantings, the utilization by turkeys was almost unbelievable. There was hardly a square inch on these areas that did not contain turkey droppings. Several visiting out-of-state technicians accused us of collecting bushels of droppings at our game farm and broadcasting it on the plantings. With the emergence of other green vegetation, the deer more or less deserted the ladino clover and did not return until early in May, but generally, the deer have been utilizing all of the plantings ever since.

Throughout the period of observation, signs of utilization of the ladino clover by rabbits was rather widespread, especially along the edges of the plantings. During the past summer, numerous coveys of young quail were flushed from the ladino patches. To date it has not been determined whether the birds were feeding on the clover or on the insects which are quite plentiful in a planting of this nature. For those who are interested in groundhogs, it offers a preferred food supply, according to indications thus far. It thus appears that most of the favorite game species of the Southeast, deer, turkey, quail and rabbits, have been found utilizing ladino clover plantings.

Seventeen additional ladino-fescue plantings were established during March, 1950, but largely because of competing vegetation these pastures did not appear to be as successful as the fall plantings. However, agronomists tell us that these plantings will flourish in another year, but stress that fall seedings are decidedly preferable. The results from the ladino-fescue combination have been so gratifying that an additional 41 plantings, comprising a total of 25 acres, were seeded during August and September of this year on the two major State Forests.

It might be stated here that originally Kentucky fescue was believed to be the principal item that we hoped to establish with ladino clover added only to produce nitrates for the Ky 31. However, observations indicated that even though the fescue is grazed when it is tender and green in the spring, the ladino clover appears to be the preferred plant in the mixture where wildlife is concerned. To obtain more definite information, pure stands of ladino, Kentucky fescue and orchard grass have been seeded on adjacent plots so that observations can be made on the utilization of the three by turkeys, deer and rabbits.

During recent months, farm bulletins and magazines have been singing the praises of ladino clover, and it is from these sources that we must obtain some of the essential facts concerning this relatively new legume. Possibly the great secret in its widespread use by grazing animals and poultry is the fact that it contains more protein than any other known forage crop. It is said to contain 25 to 26 per cent protein as compared to approximately 21 per cent for alfalfa. Most other clovers contain less protein than alfalfa. Ladino clover also leads in the essential vitamin carotene: 465 parts per million as compared with 255 for alfalfa.

One cannot read a current farm magazine or talk with a county agent or soil conservationist without hearing of the remarkable qualities of ladino clover. A farmer in Pittsylvania County, Virginia, kept a cow and a mule on an acre of ladino clover and Kentucky fescue for an entire year without an ounce of supplementary feeding and each animal reportedly flourished on the diet. Howard Bloomfield in his article "Ladino Packs a Protein Punch" (Country Gentleman, August, 1950) tells of a farmer in Iowa on whose land the county agent had planted some experimental plots of various forage plants, including alfalfa, alfalfa brome, ladino clover and other legumes. The farmer had a blind horse which invariably could be found feeding on the ladino. One of Virginia's district game technicians received a call last winter from a landowner in Craig county. The farmer claimed that he had counted 58 deer feeding with his cattle on his 20 acres of ladino-fescue pasture. Incidentally, there were only 31 legal deer killed in this entire county during the open hunting season.

From our limited experiences and observations on ladino clover, let us now examine critically the obvious advantages, as well as the shortcomings of this legume from a practical game management viewpoint.

On the credit side of the ledger, ladino clover plantings have been found to be utilized freely by most of our favorite game species. In cases where deer and turkeys are competing for the available natural food, ladino should add materially to the quantity and quality of the food supply. The luxuriant perennial growth of this legume should serve to feed more animals and birds for a longer period of time than anything that could be planted. When ladino is compared with annual plantings, the advantages are quite obvious. On one hand, we have a crop that may be consumed in a relatively short time and necessitates waiting an entire year until another crop can be produced, as compared to food planting that will produce good grazing during the entire year and will keep coming back regardless of the degree of utilization.

If ladino is a preferred food, and it appears to be one at this time, it may serve to retain game populations on managed areas. In locations where extensive crop damage from deer occurs, ladino clover plantings could conceivably act as a buffer in keeping the deer from ravaging farmers orchards, corn, soya beans, peanuts or other cash crops.

With adequate fertilizer and lime, ladino clover plantings are relatively easy to establish and appear to be well adapted to most of our southeastern soils. Once a good sod is established, sprouting and clearing on this land is eliminated. These are normally expensive items on wildlife management projects on publically owned land. As conservationists, we should be interested in the fact that a ladino-fescue establishment will enrich the soil and retard erosion.

Since this is a supposedly practical dissertation, let us examine the cost of establishing an acre of ladino-clover-Kentucky fescue. Many administrators and technicians may feel that the cost is prohibitive. Cost figures will doubtless vary with the state and conditions existing there, but considering 1000 pounds of fertilizer, 1 ton of lime, 2 pounds of ladino clover seed, 10 pounds of Kentucky fescue seed, plus one man-day with mechanized equipment, the cost would probably run between \$30 and \$40 per acre at present day inflated prices. However, the cost of establishing an acre of annuals will probably cost as much. This perennial year-around plant with its excellent grazing features actually makes it a low cost feed for wildlife.

Some of the limitations or disadvantages of ladino clover should also be considered here. Ladino plantings will require some maintenance. Since it is impossible for us in wildlife management to control the amount of grazing on the plantings, it appears that it is essential that the patches be mowed once or twice during the summer in order to obtain maximum benefits and growth. We have found that farmers who live close to our publically-managed land will gladly mow and remove the hay merely for the asking. Agronomists recommend that ladino clover pastures should be top-dressed yearly with fertilizer (0-12-12) which would add to the cost of maintenance, but when all factors are considered, money spent for fertilizer is well spent.

There is much evidence that a pure stand of ladino clover will cause severe bloating among livestock; whether it will produce the same effect on deer populations is not definitely known by the writer at this time.

During the periods of deep, persistent snow, ladino clover food plantings would be valueless, since ladino seldom grows over 18 inches in height. Fortunately, snow in the southeastern states is not usually a problem.

In conclusion then, southern landowners and agricultural workers alike have

found that ladino colver is perhaps the most valuable forage crop ever introduced. It is causing a revolution in land use management and increasing farm income wherever used. From our experience with it on the State Forests of Virginia, ladino-fescue plantings are utilized throughout the year by turkeys, deer, rabbits and even quail. It may prove to be an answer to many of the wildlife manager's problems. Only time and experience will tell.