

SUMMARY

A controlled study was designed to determine the effect of nutrition on eye lens weight. A significant difference occurred between the 18 per cent protein and yellow corn treatments; however, the difference in eye lens weights was really due to the relationship of eye lens weights to body weights and not due to the treatments except as treatments affect body weight and through this medium the eye lens weight.

Under controlled conditions dried eye lens weights can be used to age pen-raised European wild hogs.

For the European wild hogs, dried eye lens weight is not useful as an indicator of age.

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DEER AND WILD TURKEY AT A BARGAIN

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South Carolina Wildlife Resources Department is providing good hunting on Piedmont Management areas with a minimum expenditure of funds, about fifteen cents an acre per year.

This low cost is possible for the following reasons:

1. When the sites of the areas are selected, very careful attention is paid to the natural food already available on the proposed areas.
2. Excellent public cooperation is assured by creating a desire, if not already present, for the areas before they are established.

Management areas for public hunting in the Piedmont section of South Carolina were initiated by selecting parts of the Sumter National Forest that seemed most suited to deer and wild turkey from a natural habitat point of view. The Piedmont part of the Sumter National Forest is composed of three districts located in nine counties. Now areas made up entirely of private lands are being developed. Areas selected for management should contain a minimum of 12,000 acres in a common block with plenty of hardwoods, browse and water available. If the

proposed area meets these requirements, the biologist questions the local people, particularly the near-by landowners, as to what they think of establishing a game management area for public hunting in their vicinity. This first contact with people is necessary for the successful establishment and operation of a game management area. Without the help of the local people, illegal hunting and loose running dogs will doom an area before it is started.

If the local atmosphere is "go," approximate boundaries for the area are established on readily identifiable features, such as roads, rivers, etc., to facilitate posting and control of hunting. In the event that the area selected contains private holdings, standard lease forms are executed. Attempts are made to bring all included private holdings under this agreement. Originally these lands were signed up as a state sanctuary which precluded all hunting for a five-year period. Now a better game management program is made possible by using a ten-year renewable management agreement which permits public harvest of any game as soon as the specific populations permit. On National Forests and large holdings of commercial lands all wildlife are included in the agreement. Small private landowners may retain small game rights for their personal use if they wish.

When adequate control of the management area is insured, the boundaries are posted. Stocking with deer and wild turkey is planned for the next trapping season. Deer and wild turkey used in the stocking program are those trapped from overpopulated areas in South Carolina, or refuges established in older management areas for such purposes. No attempt is made to introduce additional small game to the area.

In the meantime, a complete game program is planned for the area, with special emphasis being placed on the habitat requirements for the new deer and wild turkey populations. Where feasible, management of small game is included in the plan.

Careful reconnaissance will reveal areas where the carrying capacity can be increased or made suitable for holding game in a particular area, by improving the habitat. This habitat improvement may be accomplished by planting food patches or by increasing the production and the utilization of the native plant material. In either case, the use of basic slag and a rotary mower are very important. Experiences have shown, very dramatically, that the use of basic slag greatly increases the use of most plant materials, particularly the native plants. In cases where basic slag was applied in a particular pattern to excellent plantings of Ladino clover, the deer almost destroyed the treated clover before using the rest of the fields. Basic slag also plays a very important part in the establishment of desirable native legumes in openings within woods. This is particularly true in Pine stands. A rotary mower is used to reduce roughage and stimulate young growth.

All natural openings and old house sites are maintained or improved. Most of the old house sites are extremely valuable in the food plan as they are generally more fertile and already support a luxuriant stand of plants that are acceptable to deer and wild turkey. Winter food available on these sites generally include fruits and nuts in addition to the browse material. Maintenance of the fertile house site is limited to mowing while the maintenance of other openings include mowing and the applying of basic slag.

These highly developed areas may limit, or at least delay the deer damage to crops on private land.

With the cooperation of the United States Forest Service, "die-back" spots in the pine stands are being converted to wildlife openings by "clear cutting sales" and the removing of the slash. At first all of these areas were worked up, fertilized and planted to an agricultural crop such as wheat or oats. Now we have found that in many of these areas, disking and fertilizing with basic slag will stimulate the native plant materials and give a much surer and cheaper stand of food. Where native legumes are not present, reseeding annuals or perennial plants are established. Maintenance of these converted "die-back" is the same as previously described for natural openings.

An excellent example of the value of basic slag on these "die-back" areas was noted in a series of openings, on the Enoree Area, that were planted in oats in November 1959. Three of five openings were fertilized

with 500 pounds of basic slag per acre. Adverse weather conditions and a shortage of personnel prevented maintenance on all five fields for three years. This year the fields that received the basic slag contained an excellent stand of native legumes, while those fields that did not receive the slag have grown up to broom grass. Other than the application of basic slag, there was no readily apparent difference between the sites.

We have also found that basic slag is a great help in limiting the conversion of such fields to undesirable hardwoods, as an application every 2-3 years has made the young sprouts acceptable as deer browse.

The use of basic slag has also proved valuable in the management of openings in pure hardwood stands. Hardwood clearings, treated with slag maintained with a rotary mower, produce an abundance of browse for deer and insects for wild turkey. These openings are particularly valuable during times when the growing seasons have limited the production of annual materials. During the winter they give enough weather protection to produce a better growth of clover and grass that is relished by all game.

The following are some of the more important plant materials included in our Piedmont Game Management program:

Lonicera japonica: Japanese honeysuckle probably supplies more deer browse than any other plant in the Piedmont areas of South Carolina. It is one of the principle indicator plants used when selecting an area for deer management. This is a native from Asia that was introduced into the Southeastern United States many years ago and is now found in many parts of the Southeast.

Honeysuckle produces an extremely luxuriant growth in moist conditions, and if disked and fertilized, will produce a tremendous supply of deer food. This is available during all seasons, even when growing under extremely dry conditions, and is the main staple during late winter.

A very heavy growth of honeysuckle generally follows the forestry operation of converting hardwood stands to Pine. This extra growth will help compensate, for a time, the loss of the hardwoods; that is, until the Foresters start using chemical control on the honeysuckle. If such materializes, plans should be made to leave patches of honeysuckle that we can fertilize.

The honeysuckle fruit are a source of food used by quail and on some occasions by wild turkeys. Of course, you often find rabbits in a honeysuckle thicket.

Lespedeza striata: Common lespedeza, sometimes called Japanese Clover, is probably the most important legume and one of the most important of all plants used in our game food program. This plant, another native of Asia, was introduced into the Southeastern United States prior to the Civil War and is now more widely spread than many of our native legumes.

We have found that in most openings, seed of this plant are available in sufficient quantity to give an excellent stand in about two years. Generally, clearing, disking and applying 500-800 pounds of basic slag will create a condition favorable for the establishment of the common lespedeza. In some areas, potash is needed. Maintenance is limited to annual spring cutting with a rotary mower and the applying of slag every second or third year. A light disking may be needed every three or four years. Wood fires have been known to regenerate and stimulate the growth of this plant.

Common lespedeza is difficult to combine and produces a low yield of hay because of its low spreading type of growth. Thus, it is not ordinarily available on the commercial market at a reasonable price. In areas where the seeds of common lespedeza are not present or available the more vigorous, commercial strains of Kobe or Tennessee 76 are substituted. However, if available, common lespedeza should be used as it is more drought resistant and is a more consistent reseeded.

Lespedeza striata is readily used by deer, both in the forage stage and as a dry winter food. Wild turkeys are often found in lespedeza patches, using both the plant material and the large number of insects which inhabit the plantings. We also use lespedeza striata in the development of selected areas for quail and rabbits.

Desmodium dillenii — Dillen Tickclover is a very persistent perennial

legume found throughout the Southeast. Fertilizing with basic slag and cutting with a rotary mower will generally build up an excellent stand of tickclover in a couple of years. Seeds of this plant are not usually available on the commercial market, but we have been able to harvest them from one of our management areas by using a combine or a Blue Grass stripper. The stripper is the easiest machine to use if available. However, after being stripped, the seed must be cleaned with a hammer mill and a seed cleaner.

Deer use Dillen tickclover during the spring and summer after applications of basic slag. The plant is an excellent source of food for quail, and wild turkeys are found frequently feeding on the seed and the grasshoppers which are attracted in quantities.

We made a planting of Dillen tickclover in York County in 1939. After three years as a food patch the area was farmed for ten years in small grains and row crops. Since 1952 the area has been in Bahia sod. The tickclover is still very much in evidence.

Desmodium spp.—Several different species of native beggar lice are found to be an important part of browse and seed volunteering in woods openings that are treated with basic slag and mowed annually. These are used readily by deer for browse and by wild turkeys and quail for forage, seeds, and insects.

Lespedeza virginica—Slender lespedeza is a perennial native legume growing about two feet tall. Even with its purple flowers, this plant is often mistaken for the introduced Asiatic, *Lespedeza sericea*.

Treated with basic slag, this plant is readily browsed, but is seldom used by deer under natural conditions. Both leaves and seed are important for wild turkey, and quail regularly use the seed.

When occurring in sufficient quantity, this species is very easily combined as a source of seed for establishing stands in other areas.

Lespedeza procumbens—Trailing lespedeza is a very important source of food in dry, hilly locations. This species is readily used by deer and wild turkey under natural conditions but mowing and fertilizing with slag will greatly increase the production of both plant material and seed. When fertilized, the plant material will be used almost entirely but its low, vine-like growth will permit the production of a good crop of seed even under these conditions. This plant matures seed early and is readily used by quail during late summer.

We have never been able to combine *Lespedeza procumbens*.

Lespedeza sericea—Sericea, an introduced Asiatic, is recognized as an excellent cover for wildlife but ordinarily it is not used by deer except in early spring. After being fertilized with basic slag, sericea patches have been known to be browsed all through the summer. The ability to establish sericea on very poor soil permits the production of a food on certain sites that were formerly waste areas. Sericea is browsed by wild turkeys and if mowed during the summer, supports a great many grasshoppers and thus becomes even a more favorite plant for the turkeys. Road side plantings of sericea usually support a very high population of rabbits.

Albizia julibrissin—Mimosa, a small tree introduced from Asia as an ornamental and found around many home sites, produces a heavy crop of seed every year that is greatly relished by deer. From the time of ripening until the seed are gone, deer feed regularly in the Mimosa patches, and are known to break down the trees to get to the beans.

This species grows readily from seeds in a nursery and is easily transplanted. However, it is subject to vascular wilt and will not be used for field plantings until a resistant strain is found.

Campsis radicans—Trumpet-Creeper is a thick growing vine that sometimes appears as a low growing shrub and makes a quick appearance when an area is cleared. This species will grow in rather poor sites and will be browsed by deer, but it is very heavily browsed when fertilized with basic slag. The plant is very resistant to drought and is an important source of browse during the hot, dry months. It will also grow and produce a fine source of browse on poor, eroded fields.

Smilax spp.—Greenbriars probably rank second to honeysuckle as deer browse in the Piedmont areas and are one of the indicator plants used to locate a management area. It is also an indicator used to estimate deer use in an area.

Very little work has been done in special management on these species as they are very seldom found in our mowed woods openings. Fertilizing experiments have been started but no conclusion can be drawn as to the practical results.

Other fruit trees and shrubs — In an effort to find plants that require a minimum of maintenance as a source of food for deer and wild turkey, trees and shrubs that produce a heavy mast are being used in trial plantings in several of the management areas. As yet, none of these plant materials are being used in quantity.

To date, our cheapest way of supplementing the natural supply of food is by improving the native plant material using basic slag and a rotary mower.

Under certain conditions it is still necessary to use the more expensive agricultural crops. If it is desirable to concentrate either deer or wild turkey for a short time for trapping operations, the use of such crops as chufa, small grains or peas will do a good job.

There are times when this type of planting may be necessary for public relations. A few good fields in easy access during hunting season will endear you to many hunters. These "agricultural patches" may also be used to help alleviate deer damage on valuable farm crops on adjoining lands.

Agricultural crops are also utilized in developing areas for public dove shooting. Suitable fields in the management areas are planted to Brown Top millet in the summer so the grain will mature in September. Fields with the heaviest stand are combined for a source of seed for future plantings.

When the food and clover are in good supply and we have a satisfactory stocking of game, there are still two important "troubles" that we must control before we have to start worrying about overpopulation.

With deer, loose-running dogs are probably more detrimental than everything else combined. Here again, your public relations in a community are very important. Before the time of game management areas, it was generally considered that all forest land, either national forest or private, was open to coon, fox, and rabbit hounds. Unless the majority of the natives are in favor of the areas, it is almost impossible to control the dog situation. However, interested persons can be a great help in convincing a few "diehards" that they can hunt or "train" their dogs just as well in other parts of the county. The question of stray dogs still has to be solved. Enthusiastic hunters are a great help along this line. But, actual control will vary with different situations. With sympathetic natives, I don't believe human predation will greatly endanger an established deer herd; but, just a few "turkey baiters" can rapidly destroy a turkey population.

We have found that the excellent cooperation of the law enforcement division of the South Carolina Wildlife Resources Department is not only desirable but absolutely necessary for the success of our game management program. Enforcement personnel are extremely helpful in maintenance operations and assisting in the control of harvest, in addition to their normal law enforcement duties.

The answer to game management at a bargain is complete cooperation of man and nature.

A COMPARISON OF SOME AGING TECHNIQUES FOR ALABAMA DEER

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Technicians of the Alabama Department of Conservation have used the jaw method for aging deer since 1952. A few deer were aged that year using the procedures described by C. W. Severinghaus (1949, Tooth