

Extension Programs Involving Growing Forages for Wildlife

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Beef cattle producers and wildlife managers, i.e. hunters share a common goal. Both are seeing the benefits of growing forages to meet the nutritional requirements of the animals they manage on their properties. Forages were once exclusively grown for the livestock industry, but in many areas of the Southeast planting and managing forages for wildlife have taken “center stage”.

In a recent issue of *Hay and Forage Grower Magazine*, Dr. Don Ball, Auburn forage specialist says, “In some Alabama counties, more forage seed is being sold for wildlife plantings than for livestock production”. Dr. Ann Blount, University of Florida forage specialist adds, “I think it’s pretty safe to say that a large portion of the forage seed being sold in many parts of the southeastern U.S. today is being used for wildlife purposes – everything from planting food plots for deer and turkeys to establishing cover for quail and other species”. Bryan Murphy states in the newly released Quality Deer Management Association publication *Quality Food Plots*, “Food plots are the hottest topic among whitetail hunters today”. In the late 1970’s interest in planting forages in food plots for deer increased, especially in the Southeast. In 1988 the Whitetail Institute introduced a new product, Imperial Whitetail clover, and as they say, “The rest is history”.

A Changing Environment

As an Extension educator, knowing and understanding the needs of your clientele is a key component in developing and delivering educational programs that meet the expectations of your audience. There is probably no other agency or industry that has experienced more change in the last 10 to 15 years than Extension and agriculture, at least in the southeastern U.S. As commodity prices declined, production cost increased and the farming sector was decimated by back-to-back droughts. Much open farmland was planted to pine trees or lay fallow. We went from producing row crops and forages to producing timber and wildlife in a very short period of time. The needs of our clientele changed.

Extension agents went from being asked, “Which clover should I introduce into my bermudagrass pastures to increase the rate of gain on my steers and heifers” to “What is the best clover variety to plant for my deer herd to increase antler size.” Only a few years ago forage species such as lablab, chicory, and aeschynomene were not in the vocabulary of most Extension agents, mine included!! Many university soil test labs have only recently developed specific crop codes and fertility recommendations for these “Johnny-come-lately forages” of the wildlife world. Alfalfa, the queen of forages, is making its

début with hunters and wildlife managers at present. I have received numerous calls from deer hunters wanting to know about Roundup Ready alfalfa, and I predict that in the not-too-distant future a sizeable portion of the RR alfalfa varieties planted in the southeastern Coastal Plains will be in wildlife food plots.

Big Bucks Bring Big Bucks

Hunting is big business in the US. According to the US Fish and Wildlife Service National Survey of Fishing, Hunting and Wildlife Associated Recreation nationwide, 13 million hunters spent \$20.6 billion on hunting in 2001. Hunters spent \$4 billion just on land leasing and ownership - 19 % of their total expenditures. Today numerous companies, especially seed companies are committing large amounts of revenue and resources to capture a share of this market. All one has to do is conduct an internet search for “wildlife food plots” to get some idea of the magnitude of the wildlife seed industry.

According to John Carpenter, national sales manager with Pennington Seed Company, there is growing interest in actively managing property for wildlife-related recreational activities like hunting, photography and wildlife viewing. “An upsurge in interest in hunting has a lot to do with it”. In many areas of the Coastal Plains of South Carolina, the expense to hunters for leasing land for hunting rivals what farmers are paying to farm the land. Hunting leases and fee hunting are an important source of income for many landowners. For years farmers have complained about crop damage by wildlife such as deer, but to some, deer can be a pest with a value. Quality food plots can increase not only the leasing value of hunting land, they can also increase the quantity and quality of the wildlife on these properties.

Meeting the Needs

Providing landowners, hunters and wildlife managers with the latest and most up-to-date information on growing forages for wildlife can be challenging and is requiring more of the time of many agricultural Extension agents. Many of the individuals requesting information and assistance on growing and managing forages for wildlife have little or no agricultural background and have limited knowledge of the practices it requires to become a successful “food plot farmer”. In order to successfully answer the questions that arise about wildlife food plots one must: a) have more knowledge or experience on the subject matter than those asking the question or b) know where to find that information.

To that end, a wildlife food plot demonstration and educational short course(Food Plots 101- A Wildlife Management Short Course) was developed as a means of educating hunters, landowners and wildlife managers as well as extension agents in the proper establishment and management of forage species for wildlife. This natural resources educational program consists of 6 hours of classroom instruction covering topics such as soils and soil fertility, site selection, forage species selection, establishment and management of forage species, weed and insect control, sprayer calibration, selecting wildlife food plot equipment, management of native and natural plant species for deer and turkey, and dove field management.

Warm season and cool season forage species were planted for wildlife at demonstration sites, and field tours were conducted to show wildlife food plot managers the results of the demonstrations. Forage species were evaluated for ease of establishment, persistence, nutritional quality, adaptability to local soil and climatic conditions, and wildlife preference or usage. Various pieces of wildlife food plot tillage and planting equipment, for ATV's and tractors were used to demonstrate the importance of seed bed preparation. Both conventional and no-till methods were used. Weed control demonstrations were conducted utilizing labeled herbicides.

Field tours were conducted in the late summer to view warm season plantings and in early spring to view cool season plantings. Forage analysis was utilized to determine nutritional quality (crude protein and digestibility). Exclusion cages were employed to gauge wildlife usage. Single forage species as well as commercial mixes were planted and evaluated at three sites including two farms in Colleton County and the Edisto Research and Education Center near Blackville in Barnwell, South Carolina. Demonstration areas totaled 40 acres. Plot sizes ranged from 0.20 acre to 2 acres in size, depending on the number of species planting and funding.

Objectives and Options

If your objectives are to only harvest wildlife (deer or turkey) most any forage species that will produce foliage during the hunting season will suffice. If your goal is to produce a year round source of palatable, nutritious food for wildlife you will need a more intensive approach to forage selection. Young quail chicks and turkey poults require protein, most often found in the form of insects they get while "bugging" in food plots. White-tail does also require a diet high in protein, especially in the last trimester of pregnancy and during lactation to ensure healthy fawns. Bucks require a diet of at least 17 % crude protein for antler development. So what choices does the food plot manager have when it comes to selecting forages for wildlife? Some good choices are listed in Table 1.

Results-What did we learn from wildlife food plot demonstrations?

When it comes to selecting a forage species for wildlife food plot planting soil type directly influences moisture and nutrient holding capacity and is one of the most important factors in a successful wildlife food plot program. Unfortunately, it is also one of the most overlooked components in many cases.

One of the most frequently asked questions by food plot managers is," what do you recommend for planting on sandy soils"? Avoid planting perennial clover on sandy soils.

Perennials are better suited for heavy soils with better moisture holding capacity. Chicory has a deep tap root and shows some drought tolerance.

If one must plant clovers on sandy soils try crimson clover or arrowleaf clover. However, there are some soils that just aren't suited for clovers, annuals or perennials! Plant these drought-prone sites to cool season grasses like small grains. Rye shows more drought tolerance than wheat or oats, and rainfall is usually higher in winter months than during the summer. Warm season options for sandy soils include alyceclover, cowpeas, and lablab, each of which exhibit more

TABLE 1. SELECTED SPECIES THAT ARE USEFUL IN WILDLIFE FOOD PLOTS IN THE COASTAL PLAINS

Warm Season Food Plot Species	Cool Season Food Plot Species
<p>Legumes Alyceclover Aeschynomene Cowpeas Soybeans Lablab Hairy vetch* Velvet beans Hairy Indigo*</p>	<p>Legumes Alfalfa Austrian winter pea Lupine</p>
<p>Other Buckwheat Sunflowers Chufa**</p>	<p>Clover Crimson Ladino Arrowleaf Durana white Red Subterranean Berseem</p>
	<p>Small Grains Rye, Wheat, Oats, Triticale</p>
	<p>Brassicac Kale, Rape, Turnips</p>
	<p>Others Chicory Small burnet*</p>

* These forages were not included in the forage demonstrations but show promise as wildlife food plot species.

** Chufa is not considered a forage crop but was included in the demonstration plots since it is highly preferred by turkeys.

drought tolerance than soybeans or aeschynomene. Keep aeschynomene on soils with more moisture holding capacity. Hairy indigo may also be an option for sandy drought prone soils.

Another frequently asked question is, “ What can I plant that deer won’t wipe out in two nights”? The answer is,” Plant something that deer like not love!” Although highly preferred by deer, aeschynomene shows good tolerance to heavy browsing as compared to young soybeans or cowpeas. Alyceclover is an example of a crop that deer consume but do not devour. Lablab will stand grazing pressure but should be protected for 4 to 5 weeks after emergence. Plant a large enough area to produce some tonnage. With deer you cannot control the amount of forage they consume without repellents or fencing.

If you are not going to properly lime and fertilize your forage crops you are setting yourself up for failure. Take a soil test and follow recommendations, especially when planting legumes.

One of the most important lessons learned from our demonstrations was the importance of seeding or planting depth. Small seed must be planted at the optimum planting depth to ensure good emergence. Table 2. Illustrates this point.

TABLE 2. INFLUENCES OF SEEDING DEPTH ON ALFALFA ESTABLISHMENT IN SANDY, LOAM AND CLAY SOILS.

SOIL	Seeding Depth Critical with Small Seed			
	Depth (in.)			
	0.5	1.0	1.5	2.0
	----- # of alfalfa plants per 100 seed -----			
Sandy	71	73	55	40
Loam	59	55	32	16
Clay	52	48	28	13

Source: Sund et al.1966

It seems that everyone in the wildlife food plot business has a “silver bullet” for sale. Many advertise their products as ways to make wildlife “run faster, jump higher, and leap tall buildings in a single bound”. Well not really, but you get the idea. Oats have always been a preferred forage of many wildlife species, especially deer. There are many varieties available to food plot managers that are advertised for their superior performance characteristics. But are they truly superior and how will they perform in your environment? Table 3. provides results of a one year oat variety demonstration in which crude protein and digestibility were evaluated.

Mixes of different forage species have several advantages over single species plantings. Mixes spread the risk of stand loss due to factors like drought and winterkill. Mixes also extend the availability of forage to wildlife. For example, crimson clover is an excellent clover for wildlife plantings, but it matures early, late April or May in South Carolina. By adding arrowleaf clover to the mix you can get at least 30 more days of forage production. Mixes also pose some challenges like seeding at the proper depth when planting different size seeds found in some mixtures. Most food plot managers have difficulty planting a seed mix that contains a small seeded legume like white clover (which has 800,000 seed per pound and should be planted at 1/8th to 1/4th inch deep) and a larger seeded variety such as Austrian winter peas that has 2400 seed per pound and can be planted at 1 to 1.5 inches deep.

TABLE 3. CRUDE PROTEIN (CP) AND TOTAL DIGESTIBLE NUTRIENTS (TDN) IN VARIOUS OAT VARIETIES

Variety	2004 Oat Variety Demonstration	
	CP @ 100% DM	%TDN
Naked Oats	28.4	74.5
Plot Spike	24.9	73.5
Magnum 2000	27.8	73.4
Buck Forage Oats	23.4	73.6
Coker 820	27.3	72.9

Planting date: 10-22-04

Sampling date: 12-13-04

Plots were replicated 3 times and P and K applied according to soil test results.

N supplied by 2 years of crimson clover.

The greatest difference in these oats varieties in this particular demonstration was the cost of the seed.

Components of mixes should have similar soil type requirements. For example, chicory and alfalfa prefer well drained soils and brassicas tend to prefer a soil with more moisture holding capacity. Aschyenomene grows best on wetter soils and alyceclover works on sandy soils. Mixes limit weed control options such as herbicides. For example, one of my favorite warm season mixes for deer food plots is soybeans, cowpeas, sunflowers, and buckwheat. There are several herbicides labeled for use on soybeans, cowpeas and sunflowers but none for buckwheat.

The Food Plots 101 Short Course has been an excellent means of educating landowners and wildlife managers. It covers all the bases of sound food plot management and is very popular with natural resources clientele. The first session covers Soils and Soil Fertility and Selecting and Managing Wildlife Food Plot Species. The second session covers Weed Control in Wildlife Food plots and Managing Native/ Natural Plant Species for Deer and Turkeys. The third session covers Doves and Dove Field Management. This 6 hour short course has been attended by first time food plot managers, experienced farmers, owners and managers of large plantations, professional foresters, commercial seed company representatives, small landowners, and hunters.

In 2006 a youth component was added. 4-H'ers attended a demonstration and presentation on establishing wildlife food plots at a week long wildlife 4-H camp at Webb Wildlife Center in Hampton County S.C. They acquire "hands-on experience with fertilizing and planting food plots as well forage species identification. The short course and field tours are excellent fund raisers for agents. Earlier this year 25 wildlife managers from 6 counties paid \$90.00 each to

attend Food Plots 101 in Orangeburg County, S.C. Sponsors contributed \$400.00 towards meal expenses.

Summary of Evaluations for Food Plots 101

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1. How useful to you was the information presented in this program?
82% very useful 15% somewhat 3% didn't know
2. Did the program meet your needs?
97% yes, 3% didn't know
3. Did you gain any new knowledge by participating in this program?
97% yes, 3% didn't know
4. Will the knowledge gained by attending this program help you save money?
61% yes, 8% no, 31% didn't know
5. If yes, how much? Responses were: \$500- \$600, lots, \$3, Don't know, Plan to spend more, Not sure, \$1000, \$200 plus, \$800-\$1000, \$1500/ yr. \$280. \$500-\$1000, \$200, \$1000's, No Clue!
6. How do you plan to use the information presented in this program? Responses were: Deer & dove plots, Improve food plot mixes, Begin a food plot program on my property, Better educate landowners of property I manage, Improve seed selection vs. soil characteristics, This program will be the basis of all my food plots, Improve native vegetation on my property, Enhance deer/turkey growth on my property, Utilize soil sampling, Improve family property for wildlife, Aid in my business decisions concerning food plots, Just starting in food plots- no experience, Manage CRP openings

Summary- Successful Wildlife Food Plots

Lime, fertilize and properly amend the soil prior to planting
Plant on time in a well prepared seed bed with adequate moisture
Match forage species to soil type and local climatic conditions
Control weeds and pest
Record wildlife usage and forage quality
Don't be afraid to try new forage species to find what works best for you
If you are an educator, meetings, field tours and demonstrations to educate your clientele.