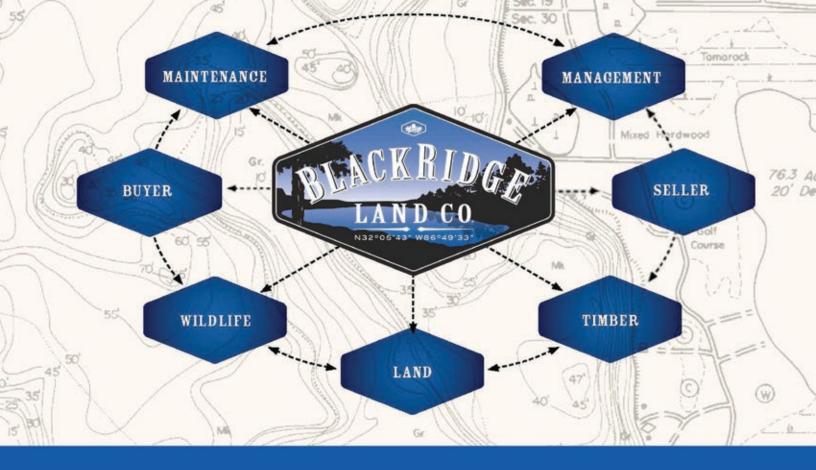


Wildlife Trends J O U R N A L

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Earl Says...

I can't tell you how much I enjoy having the opportunity to meet and talk to our subscribers whether it's to renew a subscription, sign up as a new subscriber, buying a gift subscription for a friend or just to answer a few questions. I always learn something new and enjoy hearing your ideas.

Last week a subscriber called in to renew his subscription and he had a great idea for new articles. What about a series of articles on how smaller landowners have used ideas from Wildlife Trends Journal to improve their property for wildlife? I thought that was a wonderful idea and so now I'm appealing to you, our subscribers, to write us and let us know how you've used information we've provided to better your food plots, entice more ducks to your property, grow larger fish, control predators or anything you've done to improve the habitat for wildlife on your property.

Several years ago a subscriber called in to renew and said, "Andy, I can take you to places on my property that didn't have a single turkey within a mile or two and now it's loaded with birds all because of the great articles I've read in your publication." As you can imagine I was extremely proud and humbled at that comment but that's exactly what we strive to do with each and every article from our expert list of authors.

So please contact me with your stories about how you've improved your property and the results you've seen during hunting season, fishing your pond or even just enjoying the fruits of your labor sipping a cup of coffee on the porch. Contact me at 800-441-6826 or info@wildlifetrends.com. Thank you all for subscribing with us and have a safe and successful hunting season.

Andy Whitaker Publisher Editor



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So What's the Big Deal about a Cultipacker?



By Tom James

Tom James attended Purdue University majoring in Landscape Architecture with a minor in Wildlife Management. He started and operated his own landscape contracting business for 23 years and developed and marketed "The Firminator" food plot implement in 2003. He was also a team member of "The Management Advantage" web based show series providing wildlife management content and video. Currently he is the head salesman for All Terrain Bridge Co.

remember it as vividly as if it were yesterday. As I walked across the soft, dark soil, the earthy aroma penetrating my nose, the sun just setting over the tree tops after a long, hard day of food plot work, I could just picture in my mind all the deer that would be sneaking into this remote food plot, completely surrounded by dense, rolling hardwood- hills to dine on the special clover mix I had just planted. It had been one of those days where I sweat so much I looked like I had been rolled in dark flour, and my jeans had gotten so heavy they hung low as I walked toward my buddy to talk about the job well done. We had purchased this property a year earlier and had cleared this old log deck area the hard way with chain saws, a bush hog, a scraper-type grader box and hand wielded axes, picks and shovels to scrub the thousands of roots that were showing. "The 58", as we call it, is nestled smackdab in the middle of a huge hardwood ridge area that consists of nearly 800 acres of

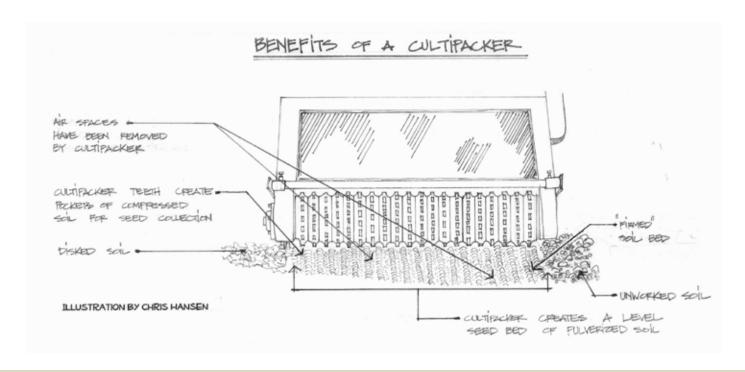
beautiful prime deer and turkey country in one of Indiana's top trophyproducing counties. We had hand limed and fertilized the soil based on ignorant guesswork and then roto-tilled the plot with a 3-point unit behind my tractor so thoroughly that the soil looked like a blanket of fluffy, dark-brown humus. As I walked back and forth across the plot broadcasting the expensive clover seed out of my over-the-shoulder handcrank spreader, my boot prints left telltale signs 4-6" deeper than the surrounding soil of exactly where my previous pass had been. After driving out to the truck and trailer in the dark, we loaded up and strapped down the tractor and various implements. We were dog-tired, yet felt satisfied and energized about what would surely result from all of our thoughtful planning and hard work. The hour and half drive home late that night was passed with only occasional words, as our minds were filled with the visions of the monster bucks we would certainly grow and see later that fall.

A few weeks later I returned to check on the progress of our remote plot. I walked back the long winding log road nearly giddy with anticipation to see the carpet of green that was about to greet

my eyes. As I rounded the last bend in the road my heart sank as I took in the scene before me. Not only was our labor of love not a lush green carpet, but I had to strain my eyes to see any green at all. As I walked into the opening, I could see just a few scattered long, gangly strands of clover, lying over on the ground. Their thin stalks not even strong enough to support the plant as it emerged from the soil. Deer tracks were evident everywhere, as they too appeared as holes punched into the top of a chocolate cake. As I squatted down in confusion and bewilderment, my mind raced for explanations. I had done exactly as the bag had instructed. I broadcast the seed on top of the ground as it recommended. I even timed the work day perfectly, having gotten a rain a day or two after we planted. The seed company stated that the rain would work the seed into the ground at the proper depth. This, according to them, would eliminate the need for something called a "cultipacker" since the rain would help cover the seed with soil to get it germinating. "Too much shade" I muttered to myself. "Maybe not enough lime." I was offering myself

failure as I walked through the property on my way back toward camp. Funny thing was, the explanation was right there before me, I was just too naïve and inexperienced to see what it was trying to show me.

That was nearly 18 years ago, and boy have I learned a lot since then. Most of it has been the hard way. My buddy and I still own that property, and that early food plot, along with two others on that piece have since been enlarged through timber harvests and more hard work to nearly 2 acres in size. What those gangly little clover plants were trying to say was that they exhausted every energy reserve that they had in the little seed trying to fight their way up through that loose, fluffy soil that had looked so good to me. The deep tracks that both I and the deer were leaving in that ground were another huge indicator that the soil needed work before I wasted that precious seed. Of the scattered few clover plants that I did see, thousands of others had died in the soil, fighting to get up and out of the ground, but never made it. What I read on that seed bag was that I needed to plant the seed on top of the ground, and that the rain would work it in. While this was true, what I didn't understand



plausible explanations for this apparent



Example of a firm, smooth seed bed produced by a cultipacker.

was that their recommendation of using a cultipacker was not to merely ensure that the seed was adequately "covered", but to guarantee that it didn't get planted TOO DEEPLY!

Through my experiences and engineering background I developed and brought to market the "Firminator"

food plot implement back in 2003. I felt that there was a definite need for a high quality, heavy-duty combination use implement that saved installation time by reducing the number of individual pieces of equipment a person needed to do top-notch installation jobs. Less pieces of equipment also saves

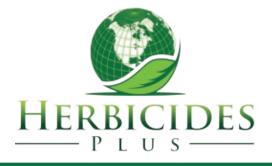
money along with trailer and storage space. Additionally, with the cost of quality seed, having a precise metering system to dispense the exact amount of seed pays big dividends over the years. Finally, and most importantly, producing a high quality food plot the first time will avoid the scenario described earlier which cost me a full season of lost forage. The idea of this implement was actually formed literally from the ground up starting with the all-so-important cultipacker. The Firminator's name itself was derived from the importance of a properly prepared seed bed. Having experienced the failures of improper preparation, I know that there are multitudes of guys out there working their tails off, not realizing the importance of this vital piece of equipment.

During the initial years of showing our products at sports shows across the Midwest I talked with literally thousands of guys about their food plot programs, both successes and failures. We also had been selling food plot specific commercial seed blends during that time as well. I immediately began



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A perfectly planted food plot.

to recognize a pattern developing in all of those "failure" stories and it was exactly the same scenario each and every time. It would usually start with a man approaching me and saying something like "Hey, I tried some of your seed last season, and it didn't come up at all." I would always ask first if they took the time to do soil testing and if they had followed the recommendations. Sometimes, that would reveal a problem, but often-times they would confirm that they had indeed done that. Next, I would ask them to describe in great detail step by step how they actually planted the seed. Without a miss, all of those failure stories involved guys spreading seed on loosely disked or roto-tilled soil and many times disking or dragging something around to "cover the seed". Another interesting link I noticed is that sometimes they would mention that only one type of plant would emerge from some of those plantings. After

confirming that the plant they were describing were plants in the Brassica family I was able to make my case. In my experiences, I have noticed that Brassica plants are more tolerant of excessive planting depths. I must note that what I am talking about here are clover and clover and chicory blended products that just do not tolerate depths of more than a quarter of an inch in the soil. Obviously, some cereal grains, corn, beans, peas, etc. actually require adequate planting depths to show their potential. More on that later. To a man, when it was described of the importance of firming down the seed bed PRIOR to planting, you could see the light bulb come on. With all of this being said, I thought it would be a good idea to cover some of the obvious reasons why a cultipacker is "such a big deal", and still a few other reasons that you might not have ever considered!

Firming of the Seed Bed

This by now will probably be the most obvious reason. A cultipacker consists of many individual cast-iron wheels which roll on an axle across the ground. They are very heavy! As the assembly rolls across a newly disked or roto-tilled soil, the heavy cultipacker compresses much of the air space from the soil to eliminate settling after rain begins to take its affect on the ground. The design and shape of the individual "wheels" on a cultipacker assembly facilitate the pressing both vertically and horizontally of the soil underneath. (See attached illustration) This is critical to ensure that the smaller seeds do not fall down into the pores and openings found in a newly-worked field. In the earlier story, if I had pulled a cultipacker across that rototilled food plot, the soil would have nicely firmed up which would have made the perfect seed bed for me to broadcast my new, costly seed.

Breaking-Down Clods, and Pulverizing

As you work a field with a disk, especially if there is a little too much moisture present; you will most likely end up with sizeable "clods" in the soil. Unless you make multiple passes with your disk harrow to continue to cut up these clods, the resulting seed bed will probably be less than desirable, once again a sure-fire way to allow seed to fall between these large clumps of ground that will eventually break down with rain, ultimately covering your seed too deeply. A cultipacker rolling over clumpy ground, especially if it is allowed to dry prior to working, breaks apart and pulverizes the soil nicely. The more passes made with a cultipacker at the right percentage of soil moisture, the finer the finished product. If choosing between more passes with a disk or more passes with a packer, it would be an easy pick for me. It requires less strain on your tractor and allows you to travel faster to roll your cultipacker across the plot an

extra time or two.

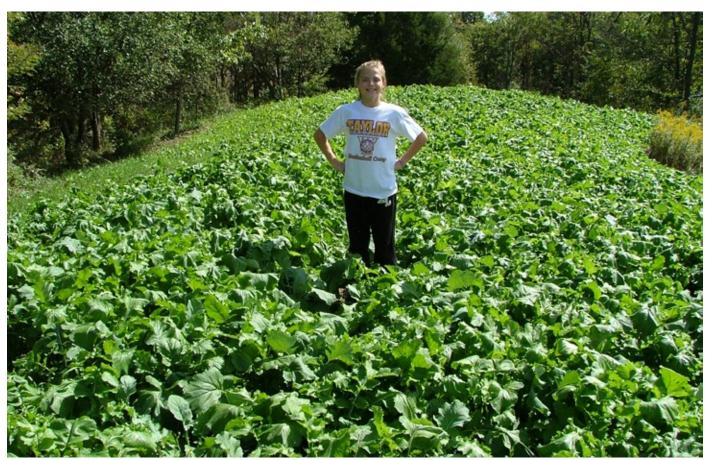
Covering the Seed, or Pressing it In

The method I recommend when using The Firminator to plant the smaller seeds is to thoroughly work up the soil with the disk first, then to lean the implement back, raising the disks up off the ground, and roll over the plot prior to planting with the cultipacker to nicely firm up the seed bed. A second pass is then made metering out the seed directly in front of the cultipacker assembly which "presses" the small seed into the recently firmed seed bed. A visual analogy I use is to imagine pressing a pool ball into the sand until just the top is exposed. This, in my opinion, is perfect seed-to-soil contact for many of the smaller seeds. The newly-emerging plants have no struggle to push out of the soil, yet the root system can immediately receive soil moisture and nutrients. This can be duplicated by broadcasting your seed onto a previously-cultipacked plot, and simply rolling over it again after the

seed is on the ground. For the larger seeds that must be planted deeper into the soil, the method of dropping seed onto the loose soil BEFORE cultipacking is the way to go. Once the seed is in place, a pass with the cultipacker covers the seed, presses the soil together and gives great seed-to-soil contact. You won't get consistent depths by using this method, but I and many others that use this method get fantastic results without the need for a grain drill or an expensive planter to do the job.

Creates "Gathering Notches"

If you notice on the outer perimeter of the cultipacker wheel there are protruding serrations or teeth. These teeth create notched indentions into the soil in the bottom center of each wheel print. The benefit of these notches or indentions is that in the event of a heavy rain, the seed will actually gather into those areas and ultimately be covered by sediment. This prevents the seed from being washed away, as would be the case on flat ground, and the



The results of a well planted food plot.





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resulting sediment-covered seed (not too-deeply covered) germinates nicely from these shallow protective "gathering indentions".

Sealing up of the Soil to Conserve Moisture

In areas of the country where soil moisture conservation is very critical, a cultipacker can also assist there as well. Once the soil has been thoroughly cultipacked, it tends to seal up quickly after the initial rainfall or condensation of dew dries up off the surface. This is not the case in loose, open and porous soil. The flattened, firmed surface actually creates a shallow sealed top layer that tends to prevent evaporation of soil moisture contained underneath. Turning over the top few inches of soil profile in a properly cultipacked field, which appears very dry on top, will reveal good moisture not far below. With regard to drier climates and soils that dry quickly, once the planting is properly packed and sealed up as

described above, if precipitation stops and the upper soil profile eventually begins to dry out, then another advantage takes effect. Since the soil has even particle contact throughout without open porous pockets, moisture can actually be pulled up from below as it wicks easily through the even contact without interruption of air pockets. This is a very overlooked yet fundamental benefit of properly firmed seed beds and lower profile. One thing is for sure, there are a number of you who have realized the benefits of the time proven trusty old cultipacker and the deserted ones that have been lying around in fence rows and old barn lots have been gobbled up. Older units that come up in farm auctions are quickly snatched up too. Many of these older units have been modified and cut down to a more practical size to be used by you food plot enthusiasts.

There are a few other ways to get close to the results obtained by a real

cultipacker. Lawn rollers filled with water, or the old concrete style rollers will do a good job of firming the seed bed down and breaking up clods. However there are disadvantages to these too. Water-filled rollers quickly cause condensation to form during hot weather. Eventually the dry soil begins sticking to the roller, which in turn will start to pick up seed. In slightly damp soil, regular rollers can be a nightmare to keep from picking up soil and seed. Beware of what some newer food plot implement manufacturers are calling cultipackers. Many of these items are not much more than rolling steel cylinders, or some sort of a dragging device. These pieces can't perform like the time-proven real deal that will accomplish all of the functions on our list. If you are not currently using a real cultipacker, try buying or borrowing one if possible and use it on your next venture of food plot planting and see if you don't agree that they are indeed a big...in fact a very big deal!

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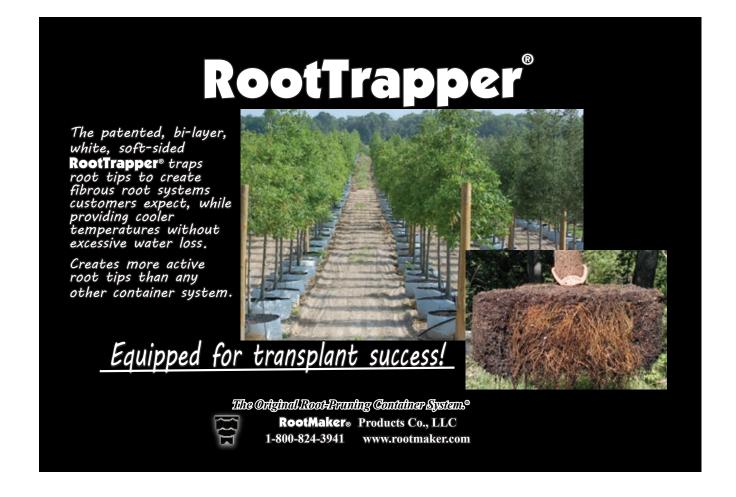
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Keys to a Successful Food Plot Program



Properly managed food plots can significantly benefit a deer herd and play a vital role in the success of your deer management program. However, maintaining a desirable deer density in balance with the existing habitat is the single most important management practice to promote a healthy, vigorous deer herd. Because deer tend to concentrate their activity near food plots, these areas not only provide excellent forage for the deer, but provide excellent places to observe or harvest deer. It is important to understand, however, that supplemental plantings (food plots) are not intended to replace native deer foods. As the name implies, they should supplement native foods. If managed properly, food plots can benefit your deer program by providing a high quality food source during periods of low native food production. These periods generally occur during late summer

By Dave Edwards

Dave Edwards is a certified wildlife biologist and regular contributor to Wildlife Trends Journal and other hunting/wildlife publications. Dave was honored as QDMA's 2007 Deer Manager of the Year and nominated in 2011 as Alabama Wildlife Federation's Wildlife Conservationist of the Year. Dave is General Manager for Cabin Bluff Lodge and President of Tall Tines Wildlife & Hunting Consultants, Inc. Contact him at Dave.Edwards@ CabinBluff.com or 912-464-9328.

Good example of splitting a field to plant annuals (the disked up portion) and perrennials (the green clover).

and late winter in the Southeast. Food plots can also be extremely important to deer during poor growing seasons which result in poor native browse and reduced mast production. To be most effective, at least 4-5% of your property should be planted in food plots. However, planting as little as 1% can make a difference. The most successful food plot programs often include a combination of annual (warm season or cool season) and perennial (year-round) food plantings. These combinations ensure that deer have access to a quality food source throughout the year. There are several factors that influence the success of a food plot program. Among the most important are establishing a well thought out food plot plan, ensuring proper soil fertility and pH, preparing a good seed bed, only planting under favorable conditions, and controlling weeds. Each of these activities plays an important role in the success of your food plots.

Planning

A successful food plot program is well thought out and planned ahead of time. It is difficult, if not impossible, to establish successful food plots without preparation. Planting food plots is a process that may span over several months, not a weekend. Determining what to plant, taking soil samples to determine soil conditions in each plot, applying required amounts of lime and fertilizer, and preparing the seed bed well ahead of planting dates takes time. These are all vital steps for success. Poor preparation not only results in wasted time and money, but results in poor food plots that do little in the way of providing benefit to your wildlife.



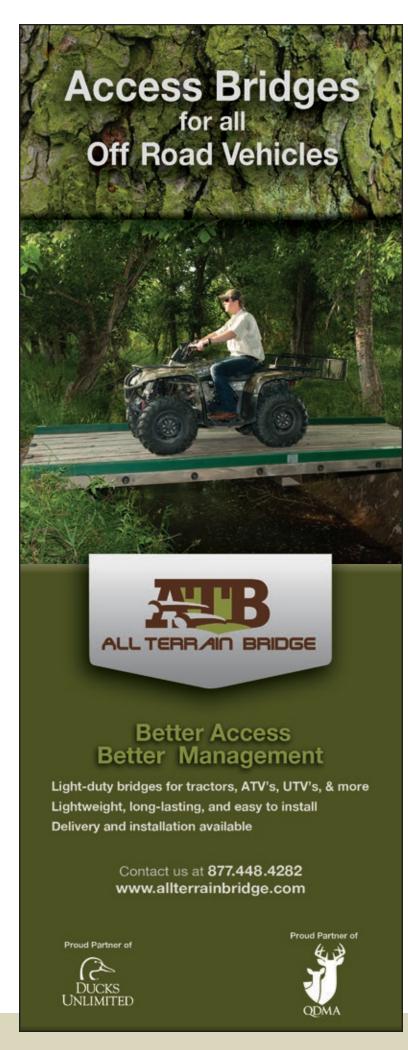
Fertilizer & Lime

Without proper soil pH and fertility, food plot failure is inevitable. Without question, ensuring proper soil pH and fertility is more important than what you plant. Of these, soil pH is more important than fertilizer. Proper soil pH is required to transfer nutrients (fertilizer) to food plot plants. You can spread 50 tons of fertilizer per acre on a plot, but without proper soil pH, it will be of little use to the plants and is going to remain in the soil, or be leached out by rain. To effectively change soil pH, granular lime must be applied at least one month, preferably several months, before the planting date. The lime must have time to complete the chemical process of changing the soil pH. In some cases, the full benefits of applying lime may not be realized for up to 12 months. Lime can be applied anytime of the year, especially under dry spreading conditions and on unbroken land. Because lime does not move quickly downward in the soil profile, it is important to incorporate it into the top 4-6 inches of the soil where it is available to the plant root systems. Besides supplying calcium and magnesium which neutralizes soil acidity (increases soil pH), lime also promotes desirable

bacterial activity in the soil, improves organic matter decomposition and increases plant's ability to efficiently use fertilizer elements. Fertilizer without lime is about as effective as a deer rifle without bullets. In summary, to get the most out of your expensive seed and fertilizer, or even to get it to grow at all in some cases, apply lime according to soil test or even higher than recommended. It will contribute to higher protein, higher production, better digestibility and directly to better antlers. Lime is calcium, a major component of deer antlers.

Soil preparation

Proper soil preparation is essential for successful food plots. Seed bed preparation is more than simply breaking ground. Soil preparation is a process. The basic steps in seed bed preparation include breaking the ground, harrowing the field to eliminate grasses and weeds (herbicide is often used), incorporating lime and fertilizer into the "growing zone" (top 4-6" of soil), and cultivating the field (leveling). A cultipacker is an excellent tool to use for final smoothing and packing in seed. The end result should be a smooth, firm seed bed ready to plant.



A smooth planting surface ensures that seed planting depth is consistent on the plot which promotes optimal germination and growth. Without a smooth surface, many seeds are covered too deep and will not germinate. Ideally, planting should be done with a seed drill or by the broadcast -cultipack method. Planting with a seed drill allows for more precise seed depth control when planting and requires less seed because germination rate is much higher than with the broadcasting method. The process of preparing the seed bed should start well in advance of the planting date.

What to plant

Food plots will be of little benefit to deer if your plantings do not provide what the deer need or are not available when they need them. Unfortunately, there is no single food plot species that can provide a completely balanced nutritional diet for deer. Determining what to plant depends on soil types, climate conditions, and your goals. Different plants do better on some sites than on others – even on the same property. Whether you are planting during the summer or fall, planting a combination or mixture of different species can be the difference in failure or a successful food plot. Combination plantings increase the probability that some of the plant species will do well in each plot you plant and reduce the risk of losing a crop to insects, disease or adverse weather. In addition, different plant species grow and mature at different rates. As a species matures, another is available to emerge as the primary producer. One of the best ways to ensure year-round quality food plots is to design your plots to accommodate both annual and perennial species. If you only plant a food plot in annuals such as winter wheat, the plot will be of no use to your deer/ turkeys during the summer or early fall. Additionally, if you plow fall annual plots to plant summer annual plots, you are "cleaning your deer's plate" until the summer annuals begin to grow. Ultimately, your goal is to provide a continuous supply of diverse, highly nutritious and digestible food. My recommendation is to devote 60% of your food plots to perennial crops such as clover or chicory and 40% to fall and summer annual food plots such as small grains, peas, and annual clovers.



Food plot diversity-several strips of different plantings.



Weed Control

Weed control is a complex subject which varies from one piece of ground to another, depending upon the seed banks or root systems already in the soil. There are hundreds of species of weeds, both annual and perennial, waiting to jump on your planting and take advantage of all that money you spent on lime and fertilizer. Of all the options for weed control -mowing, shading, or herbicides- chemical herbicides are often the most effective choice. They are safe, effective, relatively inexpensive, and cut plowing time tremendously. With so many herbicides on the market today, it can be difficult to determine which one you need to obtain desired results. The best approach is to identify the invading weeds then match the appropriate herbicide treatment that will kill the weeds but not the food plot species. Herbicides are designed to kill specific plant types. For example, there are grass selective herbicides that only kill grasses but not broadleaf species such as ragweed or coffeeweed. On the other hand, some herbicides target broadleaf species but not grass. With good planning, if you have had past weed problems from the grass family, you should plant a broadleaf such as clover, joint vetch or peas. Plant a grass such as grain sorghum if you have a broadleaf weed problem. This system allows for specific selective weed control using herbicides that will not harm your food plot plantings. It is often necessary to "tank mix" a combination of herbicides to effectively control grasses and weeds in food plots. Weeds are most vulnerable to herbicides when they are vigorously growing or young tender seedlings. If weeds are taller than 6-10", mow the

plot first and herbicide once the weeds start to grow again. To be most effective, do not spray weeds during a drought, when the plants are wet, or on windy days. The best planting and herbicide combination would be a treatment of herbicides followed by no-till drilling. Fewer weeds are germinated, soil erosion is greatly reduced, and seed placement is precise resulting in fewer seeds needed to establish a good plot. Drilled plots can even be treated selectively with herbicides later as needed for final control.

Size and shape

Food plots come in many shapes and sizes. The local habitat features and topography often dictate the shape and size of a food plot. However, to be most effective in providing a quality food source, and for hunting, food plots should be irregularly shaped and range in size from 1 to 10 acres. Ideally, a food plot program should have at least one if not a couple of food plots in the 5-10 acre range. Plots of this size are often considered "feeding plots" because they are able to provide an abundance of quality food for wildlife. As a result, plots often serve as the "hub" or "core" of home ranges for deer using them. Although bucks frequently use plots of this size, hunting pressure can curtail daylight use. Smaller food plots that range in size from 1-5 acres also provide quality food sources but are generally better for hunting due to their seclusion. These food plots often present the best buck hunting opportunities because deer feel more comfortable and secure entering these smaller fields due to their close proximity to escape cover. Regardless of size, food plots should be irregularly shaped to increase the

amount of "edge". Edge is the area where the food plot meets the woods. The idea is to create as much "surface area" or edge as possible. Increased edge equals increased quality native browse and cover around the plot. Most game species thrive on edge habitat because it provides increased food and cover. Also, deer feel more comfortable entering a food plot that has irregularly shaped edges because they can only see from one point of the plot's edge to another and do not feel that they are entering such a wide open area. Besides being irregularly shaped, leaving or planting a few islands of trees in the food plot will help conserve soil moisture during drier months by providing shade. This often enhances the aesthetics of a food plot as well.

Additional Tips on Planting Food Plots

Don't fall into the trap of planting too early. September is often a very dry month. Mid-October is ideal in most areas of the Southeast. This is when we start getting regular cold fronts that bring rain.

If broadcast planting both small (clover) and large seeded plants (wheat, peas) in combination, do not combine clover and the larger seeds. In fact, do not combine fertilizer and seed in the same hopper or spreader. Seeds and fertilizer will "sort" as you drive across bumpy fields which will result in inconsistent plantings. Fertilize then plant. Plant the large seeds first then lightly drag in. Then broadcast the small seeds and use a roller cultipacker to press seeds into soil. It is very important to NOT cover small seeds, such as clover, with more than 1/4" of soil. Some grain drills have separate seed boxes and separate drills allowing you to plant large seeds and small seeds

in one pass.

Proper inoculation is crucial for successful germination of many legumes such as clover or peas. Some seed comes pre-inoculated. Read the label on the seed bag. However, if inoculation is required, place seeds in a large container and coat them with "sticker" and a water solution. Mix in the proper inoculates. Make sure all seeds are coated evenly. Spread seeds out on plywood or other suitable surface and place in the shade to dry (may take a day). You may need to stir the seed from time to time. Once dry, seeds are ready to plant. During storage, protect the inoculate bags from direct sun or high heat areas. The inoculates have live bacteria in them that is vital to the process.

To maintain perennial fields you will need to mow and apply herbicides as needed to control competing weeds. Perennial plots are normally sprayed once in early spring when grasses and weeds start growing and later in the summer as needed. Closely monitor fields and mow when needed to reduce weed competition. Fields need to be mowed (if allowed to reach 8-10 inches tall) and fertilized in September as well as the following spring. Be patient during the first year after planting a perennial species. These types of plants are generally slow growers during the first fall. They spend much of their energy developing an expansive root system the first year. Most perennials take off in the first spring. I often include other annual crops such as wheat, oats, or crimson clover in the initial planting of a perennial clover to ensure the plot is productive during the first fall.

Conclusion

Quality food plots can certainly benefit wildlife on your property and assist in meeting your long term deer management goals. However, creating and maintaining quality food plots takes time and effort. It is important to understand that improving food plots should not take the place of native habitat management or population control. It is the combination of all of these activities that creates a "wildlife haven". I hope the information provided will be useful in helping to manage quality food plots on your property.



Perennial Clovers.

What Uses Your Lake Other Than Fish?



You have done everything your lake manger has told you to get your new pond/ lake up and running or an older lake back into shape, and now you are starting to notice signs that other animals are using your waterbody. Some signs are obvious like actually seeing the animals, while others are more subtle like scat, leftover food or trails leading in and out of the pond. Some animals are just drinking, some raising young, but many are feeding and you're wondering which are detrimental and which have little or no effect on the lakes physical parameters or the fish population directly. As a lake owner, at some point in time you may see turtles, frogs, snakes, alligator, waterfowl, birds of prey, cormorants, wading birds, raccoon, nutria, otter, beaver and other various animals. We routinely receive inquiries from lake owners asking about various animals around their lake and what effects they have on their waterbody.

By Scott Brown

Scott Brown is a biologist and regular contributor to Wildlife Trends Journal with over 30 years experience in research and managing natural resources throughout the southeast. Scott founded Southern Sportsman Aquatics & Land Management in 2007 and now has clients from Texas to Florida, and into the Carolinas. Scott can be reached at scott@southernsport smanaquaticsandland.com or (336) 941-9056.

Bald Eagles rarely fish in small waterbodies. The larger your lake, the more possibility they may occasionally grab a fish.

Turtles

Turtles always appear in a pond, and sometimes seem to be overrunning some lakes. Some turtles are acceptable, but too many or certain species present can be detrimental to fish populations. Most green turtles (most common observed) you see up on logs eat mostly vegetation, aquatic insects, worms and occasionally dead animal matter. These species are not hurting the fish population, but on rare occasions they can contribute to muddy water in shallow lakes or can add excessive nutrients through waste causing algae blooms. These turtles will consume fish feed disbursed by hand or automatic feeder. The soft shell and snapping turtles, which are rarely seen at the surface, eat fish and other animals. Both the snapping turtle

(Common and Alligator) and the several species of soft shell can hold their breath for long periods of time. The snappers are rarely seen at the surface, while both stay completely below the water surface and only stick their snout out to intake air. The soft shell turtle does like to climb out to sun as some other turtles do. It can also be observed in spring on shore laying eggs with other turtle species. The snapper catches larger fish including bass and bream as well as feeding on ducklings and dead animals while the soft shell preys mostly on smaller fish and minnows. The larger the waterbody, the larger the snapping and soft shell turtles can be and the more you can have, but this is not always true. I once saw an alligator snapping turtle in a creek that was mostly 12 inches deep and averaged about 25 feet wide, but had a deep bend almost four feet deep house a snapper weighing close to 100 lbs, with a head as big as a child's. It was there living off dumped animal parts from processed farm animals, deer carcasses and household food waste thrown into the water off a nearby bridge by local residents. He was large enough to actually cause harm to humans. Unfortunately we had no camera and it was before cell phones the day we encountered him while backpack electrofishing with waders in a small tributary off the Santa Fe River, in North Florida. Both the snapper and soft shell are used to make turtle soup, while the soft shell can be battered and fried. Both have the ability to extend their heads way out and around their body to bite, including humans holding



Turtles show up in most ponds. Most turtle species have little or no effect on the fish population.

them on each side. If you handle a live snapper or soft shell, grab at them more than half way back on each side of the shell to insure you are not bitten, because they can reach around and bite much farther back than you think. Each state and each turtle species has its own regulations regarding nuisance turtles, harvest and take methods.

Birds

Several different types of birds will frequent your lake/pond including herons, waterfowl, cormorants, anhinga, wood stork, pelican, osprey and possibly a bald eagle. Herons do eat fish, but the fish are usually small and the number per day is minimal compared to the number of fish present and how few herons will share your lake. Herons also consume snails, snakes, frogs and baby turtles, including snappers. Some waterfowl species eat small fish (generally diving ducks) and others (puddlers) do not. Generally, diving ducks consume fish, but require large waterbodies to feed. However, diving ducks will use smaller waterbodies to

loaf. Occasionally gulls, pelicans and wood storks will stop at a small waterbody. If a rookery is on your property, the number of birds generally is dictated by the size of lake and they feed in marshes. Only on large lakes will large nesting areas form by herons, storks and anhingas. But again, these birds generally only nest and stay long periods of time on large waterbodies with large marshes and target smaller fish or other organisms. The anhinga (looks similar to a cormorant but with a straight bill), does not consume an amount of fish to be concerned about since they are usually never in groups like cormorants. Osprey are usually found around the coasts and will rarely feed in small waterbodies, but have been documented doing so. They eat very little, feed on fish species at the surface and hunt many different areas, so their effect on your lake's fish population is probably undetectable, and the same with the bald eagle. Only the cormorant in the bird group (and one of the most detrimental animals to a fish population) can be an issue and can be

extremely detrimental to fish populations if there are too many of them feeding from your lake on a daily basis. Cormorants have a hooked bill and dive below the surface swimming and grabbing fish, both small and large. I have witnessed them "herding" black crappie, threadfin shad, silversides (glass minnows), and newly stocked eight inch channel catfish still in schools prior to breaking up. Depending on the time of year you may see a couple or as many as several dozen cormorants working your lake. They are a federally protected species and cannot be harmed. However, deterring them with noise or chase dogs from can be done to protect your investment. This can be a big problem for fish hatcheries trying to raise fish in ponds prior to stocking. Each bird can consume more than a pound of fish per day, or approximately 30 pounds per month per bird should they stay. I have seen 25 acre lakes along the coast, in winter, housing over 50 cormorants that migrated down and decimate an exceptionally good fish population in a

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One cormorant occasionally visiting your lake has little effect on fish numbers. But should a large flock start hunting your waterbody every day, they become a nuisance and can decimate a fish population.

short period of time.

Frogs

Frogs, even the large and always hungry bull frogs have little or no negative effect on your fish population. In fact, frogs are a food consumed by fish, including largemouth bass when they are present. The healthier your bass population is, the fewer frogs, including bull frogs you will have in your aquatic ecosystem. Frogs consume mostly insects, but will occasionally eat small snakes, worms, lizards and other frogs or toads.

Snakes

Most ponds will eventually have a snake or two take up residence in it. If you have quality habitat along the shore and in the lake, you will definitely have snakes. The most common poisonous water snake is the cotton mouth (known as the moccasin), but I have seen a few rattlesnake near a lake shore. Water snakes (poisonous and non-poisonous) will occasionally catch a small fish, but usually feed on small rodents, frogs, other snakes, small birds and large insects. Snakes do become a food for largemouth bass and occasionally frogs and turtles. We don't recommend removing all shoreline habitat to try to prevent snakes from taking up residence. Designate some areas for shoreline fishing by clearing vegetation and some areas where access is blocked by quality habitat.

Alligators

Lakes in the Deep South, no matter how big or small, eventually get an

alligator in it, usually for a short period of time. Alligators do eat fish, and are fairly good at catching them if a feeder has gone off and fish are congregated, but they eat a lot of other animals. Alligators generally stay in areas to fit their size. Big gators usually require big water to live, but may pass through during a drought situation or during the summer breeding season when males are searching for females or smaller males got run off by larger males where they used to reside. Should one stay for more than a month and you don't want it there, check with your state's regulations on options to remove it. Sometimes simply turning off the fish feeder for a few days sends it on its way. In most alligator/lake situations we have encountered, the gator left due to lack of food or companionship. I was aware of



This gator was lucky and got him a catfish dinner by hunting a fish feeder. His effect on the fish population is minimal since the waterbody is almost 2,000 acres.

one in Georgia that showed up every year at the same time for a few weeks and then left again, not to return until the next year. We never did figure out why this pilgrimage took place because it occurred during both high and low water years, but it did occur in June. Due to the time of its appearance we think he may have been searching for a mate, but since he was the only one in the lake, his success wasn't good. Whatever you do, do not start feeding it, as it will stay as long as it's getting easy meals and they do become unafraid of humans and are dangerous to humans and small dogs.

Raccoons

When walking around your pond, if you find freshwater muscles opened up on the edge, you probably have raccoons eating along your pond's edge at night. Raccoons will eat dead fish, but rarely catch a live healthy fish. If you have a lot of redear sunfish (shell crackers), they also feed on small snails

and muscles. If all the large muscles disappear, the smaller ones will also and possibly cause a food shortage for redear. I have never heard of this happening, but if the amount of muscle consumption exceeded the production requirement for fish forage it could have a negative impact in the future.

Nutria

Some areas of the country have nutria. Nutria are a large exotic rodent that lives in and near water, consuming aquatic vegetation. They are a large rat looking animal very common in Mississippi and Louisiana, but also in the other southeastern states. They have been documented to be extremely detrimental to native aquatic vegetation in and around waterbodies where they reside. Should one or more take up residence in your lake, they can cause significant damage to the habitat and shoreline by creating a series of burrows and dens that can compromise a dam or cause erosion. Signs of their presence

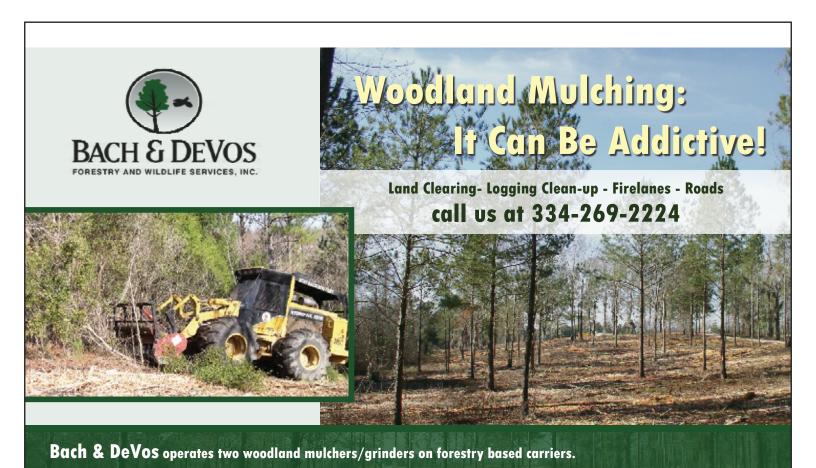
are seeing them near dark or at night, or by excessive amounts of vegetation floating in the lake that appears to be cut off at the water line. These are an exotic destructive species and can be removed by gun or trapping at any time.

Beavers

Another destructive rodent is the beaver, and it is common in many waterbodies, especially if they can swim upstream from a nearby larger creek or river. Beavers can be detrimental to a pond in several different ways, including the killing of trees, consuming vegetation, clogging the outflow and burrowing into the dam, compromising its integrity. Signs of the presence of beavers include trails entering and exiting the lake, trees being girdled, trees cut down (cut looks like a jagged sharpened pencil), and small sticks floating in the lake. Beavers are usually spotted just after or prior to dark and during the night hours. Like the nutria, they do not consume meat, but



This is a poor example of trying to keep beavers from clogging a drain.



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mapping, land sales.



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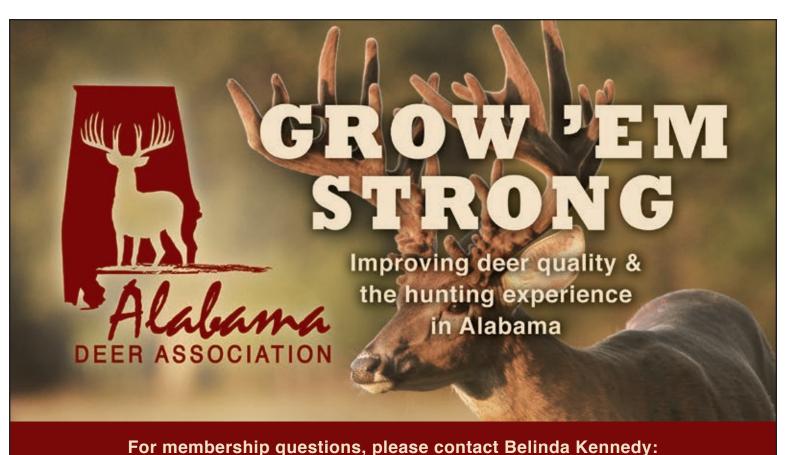
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can kill several trees a night if conditions are right. If you plant trees in or around your lake, we recommend tree guards from the start, even upland trees within 100 yards from water. We have observed beavers pulling turnip bulbs from a food plot, carrying them back to the water, taking a few bites then leaving them floating in the water and heading back to grab another. Even if beaver are not present at the time of planting, tree guards are cheaper than buying and replanting new trees. Beavers will chew down trees around a lake, along the shore, and in four feet deep water, chewing while floating. We have seen several dozen newly planted and a few year old cypress trees cut down in a few weeks by beaver that recently moved in with a landowner who refused to install tree guards. Besides cypress and pines at the lake, they headed up the hill and cut down a few fruit trees before the damage was stopped. They can also clog outflows and drain pipes. On lake outflows, a Beaver Baffler can be installed to help prevent them from accomplishing this. I only recommend installing one if this is a regular occurrence. Another destructive trait of beavers is digging dens and tunnels just below the water's edge into the steep bank. Sometimes this can occur on the dam, weakening it. A good document to reference for anything beaver related is: Missouri's Beaver - A Guide to Management, Nuisance Prevention and Damage Control. Some states



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They appear cute, but beaver can be very destructive to a small lake should one take up residence.

have seasons when these animals can be trapped (snare, leghold or conibear) or shot, and some states have no regulations. Again, check with your specific state regulations if action is required.

Otters

A group of otters can have the most direct and quickest effect on a fish population in a small waterbody. The otter is a very good fisherman and a big otter will consume fish of any size, including big largemouth bass. They are a better swimmer than a big gator. Some signs otters are present in your waterbody include runs or slides entering and leaving the lake, areas where fish remains are along the shore, areas where something has defecated repeatedly in the same area with fish

bones and scales in the scat, or piles of crushed freshwater muscles. The otter's favorite food is crayfish and they can consume several a day, especially if you stock them annually as bass forage. Like other animals mentioned, each state has different regulations on how you can remove otters via leghold or conibear traps, snare or gun. On large waterbodies they will have a minimal impact. However, on smaller ponds they can be devastating to fish numbers if they choose to take up residence. In a small pond situation with a quality fishery, a group of otters can cause significant harm to the fish population in a short period of time. A good document to reference for anything river otter related is: Missouri's Otter - A Guide to Management and Damage Control.

Summary

We have experienced some or all of these animals at some point on lakes. Rarely have we seen a need to do something about any of these animals. Our philosophy is they are all part of the aquatic ecosystem, and unless they become a nuisance to the fish, habitat or outflow/dam we leave them alone. Obviously each situation is unique and must be addressed and solved in the best interest of achieving the management goals set by your professional lake manager and the landowner. A good lake management strategy will be able to overcome most of these situations with little or no action required.

INTEGRATING WILDLIFE CONSIDERATIONS INTO FORESTRY OPERATIONS

Part 4 of a 4 part series: Regenerating Timber **Stands**

In the previous issues of this series, we discussed the role of pine and hardwood stands and techniques to integrate timber and wildlife habitat management. The regeneration of these stands, whether you are starting with a clearcut or you have a timber stand that needs regeneration, offers a fine place to start integrating your wildlife plan into the forest management scheme. A clearcut (or an open field system) offers a "clean slate" on which you can design and lay out your plantings of various timber species at a desired wildlife-friendly density, with fields, foodplots, patch shrub or perennial plantings, etc. You have the opportunity to pick the best greenfield locations for optimal deer harvest, where a quail walk-hunting course will best lay out for huntability, where turkeys will most easily fly off the roost into a bahaia field, where to place loblolly thickets for deer bedding and where to plant longleaf hillsides for quail hunting. The list is endless! Various species selections

By Ted DeVos and Rod Bach

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Open fields and pastures in addition to spraying herbicides, can be subsoiled, scalped and machine planted to make very clean, straight rows.

for hardwoods are included in the hardwood section, and the choices for pine are basically longleaf within the longleaf zone as the most favored wildlife/timber pine and loblolly and slash on other areas. The reasons for longleaf have been noted in earlier sections, but basically it is easier to maintain a wildlife-friendly understory and a regular burning regime (especially early in the life of the stand) in longleaf stands than with other pine types. Other pine species are planted in minimal amounts in the deep southeast. We'll start with discussing the various methods of regeneration for the two groups.

Pine

Natural regeneration

Pine stands offer a wide variety of regeneration opportunities. Each type of regeneration has both advantages and disadvantages. Natural regeneration methods include Shelterwood and Seedtree cuts, strip and patch clearcutting and variations of each. Fundamentally, natural regeneration counts on the existing, mature pines to seed in a new stand either into the existing woodland or into an adjoining clearcut area. Natural regeneration in pine stands involves less out of pocket cost in establishment, however there is no control over the density of seedlings growing on the site and there are some hidden costs as well. These include the potential loss of valuable seed trees, reduced stumpage values for harvesting seed trees and the fact that you would be planting genetically superior stock at a desired density. A density measured in the thousands of seedlings per acre is not uncommon using natural regeneration and leads to overcrowded and stressed seedlings growing at less than an optimal rate. The opposite result might also occur with very few pines regenerating and low quality hardwoods taking over the site. The only advantage (besides low out-of-pocket cost) of high density natural stands is that the dominant trees tend to grow tall with less limbs and produce high grade lumber and pole products. The drawback is that they may

grow slower than improved planting stock and they are highly susceptible to insects and disease. In cases where there are too many seedlings it may be necessary to perform a pre-commercial thinning by hand labor or other mechanical method. When there are too few seedlings it may be necessary to prune the saplings. Fire can also be used to thin these dense young stands and to help prune the low density stands but the results are often as variable as the establishment results. Fire might leave a nice stand of 400-700 well-spaced trees, but it may also be ineffective or kill more than you were planning!

A Shelterwood cut usually involves thinning a mature stand one to two times in an effort to promote an even-aged stand by natural regeneration. This is accomplished by initially cutting the stand back to 30-50 trees per acre (@12" and larger diameter) as a preparatory cut. The goal of this initial cut is to remove the undesirable species and poor quality trees and allow the crop trees to begin seeding in under the canopy. It is important to follow this cut with a controlled burn that will reduce the logging slash and help with hardwood control.

Once the stand is in good shape and the understory is under control, the actual shelterwood cut should be administered by thinning to 15-35 trees per acre. When an adequate number of seedlings are established in the understory a final harvest is conducted. This method is particularly suited for longleaf pine due to the large seeds on longleaf which do not fall far from the parent trees and the fact that longleaf are sporadic cone producers. A burning regime can be maintained in longleaf shelterwoods as long as a burn is not conducted in the year after successful seeding. The residual density of crop trees in a shelterwood while the regeneration is taking place is excellent habitat for bobwhite quail and other wildlife and resembles "quail plantation" piney woods.

Seedtree harvests are a shortened version of shelterwood cuts and involve cutting a pine stand back to 8-15 crop trees per acre. This method is well suited to loblolly, shortleaf and slash pines which have lighter seeds that travel far from the parent trees. Once seedlings are verified at adequate density, the crop trees should be removed. With both of these methods, hardwood



Site prepping clearcuts often utilizes aerial herbicide application to ensure good coverage. Site prep herbicides and application make a HUGE difference in the quality of the planting job.

competition can be controlled with herbicides which will allow the seedlings to grow without woody competition and promote native wildlife friendly plants in the understory.

Strip or patch clearcutting through a stand is another method to establish pine seedlings by natural seeding. Strips or patches should be less than 100 yards wide so that the seeds of light seeded species can travel to all parts of the clearcut. Again, herbicides and/or fire can be used to reduce competition and ensure successful seedling establishment. When using this method with longleaf, a variation called "group selection" is best utilized due to the nature of longleaf to seed close to the parent trees. This method entails clearcutting regeneration patches (groups of trees) measuring less than about 2 acres.

Uneven aged stand management can also result in maintenance of perpetual natural regeneration. This method of regeneration involves group and "single tree" selection over the life of the stand and yields a multiaged stand with a large variety of heights,

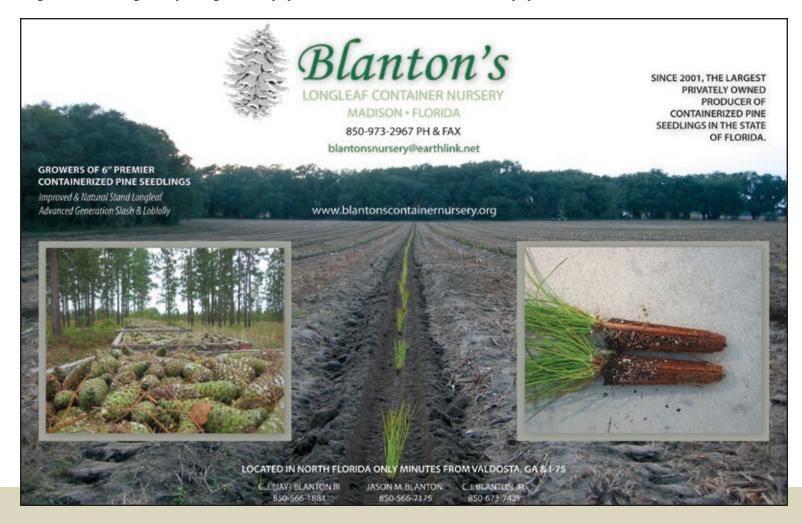
species, midstory, ages and diameter of trees. Maintaining the structure is complex and keeping the stand profitable can be a challenge. It can, however, provide excellent wildlife habitat, especially if a burning program is maintained. A wide variety of songbirds rely on midstories composed of shrubs, bushes and small trees (dogwoods, blueberries, and beautyberry for example) growing from 6-20 feet high and an uneven aged stand often provides this structure in abundance.

Artificial regeneration

While there is an upfront cost associated with planting pine trees, this is the most common method to establish a stand (either in a clearcut or field system) and usually yields good results. Aside from initial planting mortality or seeding from surrounding stands, spacing and stocking levels are more consistent than with natural regeneration methods. Problems with certain insects (pales weevil, tip moths, etc) can happen without proper planning. Planting the correct species to the correct soil type and terrain is important, as is site preparation. The most common causes of

high mortality in plantings (besides poor planting and care of seedlings) are drought or excessive rainfall (something we cannot control). Excessively wet or dry soils (choosing the correct species to plant), excessive competition from weeds, grass or woody shrubs (problems with proper preplant site preparation), and mortality due to drowning or silting (due to improper scalping or planting) are other causes of planting failures. Occasionally, certain post-plant herbicides can kill seedlings (especially longleaf) if prescribed on soils with an unacceptable pH (improper chemical prescriptions or application rates).

Herbicide applications to both pastures and cropland as well as clearcuts are the most common site preparation treatment. A variety of herbicides are available to choose from and the selection of which type of chemical and rates depends on the type and species of competition that is to be controlled. Early and proper competition control is necessary to ensure good seedling survival and is imperative for longleaf plantings. Mechanical site preparation and combinations of both



chemical and mechanical site preparation are also necessary at times. If possible use selective chemicals such as Arsenal and Chopper as these will not harm native desirable wildlife plants.

Seedling spacing is another consideration for plantings. Wider spacings are often recommended for increasing wildlife value of a timber stand. Wide spacings (12' x 12' or greater) lengthen the time it takes for the stand to close canopy and shade out the ground. This allows for a longer period of wildlife use early in the life of the stand. The drawback, however, is that these "open-grown" trees tend to grow substantial limbs on the bole of the tree and take much longer to shed these limbs. This increases knots in the main stem and slows height growth. Even wide spaced plantations close out canopy and shade the ground eventually and must be thinned to maintain wildlife use. Spacings in the 350 tree per acre (tpa) and above range are common and 550 - 750 tpa is the norm. While the stands with >500 seedlings per acre do shade out earlier in their life, the quality of the tree left after the first thinning is usually better than lower density plantings. These stands can also be heavily thinned early to create excellent wildlife habitat.

One other method of establishing a pine stand we are experimenting with holds promise for species conversion to longleaf without losing aesthetic quality. In pine stands that owners wish to convert from a loblolly or shortleaf stand to longleaf, the mature stand can be thinned essentially to a seed tree density and/or create patch clearcuts. Longleaf can then be interplanted (300 – 500 tpa) in small clearcuts or planted at a low density in these thin stands. Not only are these areas excellent wildlife habitat, but they also do not look like a clearcut and retain a "wooded" nature. By maintaining a burning program, the site is kept clean and the loblolly or shortleaf regeneration from the overstory is kept to a minimum. Burning should be excluded from the stand for one year after the longleaf has been planted but should be started back in the



Fields and clearcuts offer a "clean slate" to apply any planting pattern you would like from wildlife to timber focus. These strip plantings were oriented towards quail management in an old pasture.

second year after planting. Once the longleaf are well established, the mature trees can be removed if desired.

Hardwood

Natural regeneration

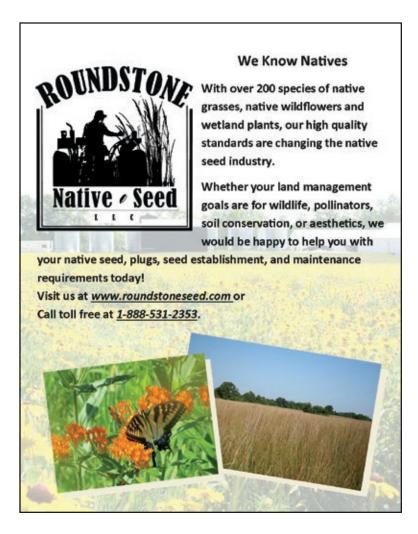
As opposed to pines, most hardwood stands are naturally regenerated. Unfortunately, they are commonly regenerated over a long period of years from a high quality species mix to a low quality, low value stand of lesser species because of poor management methods and an unwillingness to cut mature Oaks. This is often called high-grading and results from poor selection of harvested trees, not ensuring that regeneration is present in the understory and/or utilizing "diameter-limit" harvests where all trees greater than a specified diameter are cut. Over time these stands become dominated by a few poorly formed oaks and many gum, elm, hackberry, maple, hickory, etc.

The best method to ensure adequate oak regeneration is by clearcutting an oak stand. These stands usually stump sprout well and, if seedlings are present in the understory, they can begin height growth. Herbicides can be used to kill unwanted and undesirable sprouts on the site. On upland sites, fire is often used to ensure a stand dominated by oaks by allowing a clearcut

to resprout for a few years, then burning the site off to kill the maple, ash, etc. (which have smaller and weaker root systems) and allowing the oaks (which have heavier and stronger root systems) to resprout and dominate the site.

Shelterwood harvests are used in hardwood stands similar to pine. Stands which have adequate seedling and sapling oak species growing in the understory and midstory can be thinned to a 40-60 basal area stand which will allow the mature overstory trees to seed in additional regeneration. This allows the seedlings and saplings already existing on site to begin height growth and still keep enough shade on the boles of the mature trees to inhibit epicormic branching. When thinning the stand to a low density, trees to be removed should be the low quality species and care should be taken to leave the best formed trees well spaced in the stand to reseed. Herbicides might also be considered to kill unwanted hardwood stems in the harvest area and allow the quality trees to grow with reduced competition. Once an adequate amount of regeneration is ensured, the overstory trees can be harvested.

Often, woodlands have plenty of mature oaks but little oak regeneration. This is



often due to either too much shade in the understory suppressing the oak sprouts or a heavy deer population selectively eating all young oaks which sprout. To naturally regenerate stands such as this, they need to be thinned heavily, removing all non-crop trees and hope that the remaining oaks are able to reseed. If no oak regeneration is noted after a few years, the stand can be clearcut, the cut oaks allowed to stump sprout and the site can be supplemental planted to a low density of quality hardwoods.

Artificial regeneration

While not as common as pine plantations, hardwoods can be successfully established with artificial plantings. The good thing about establishing hardwoods with plantings is that you can choose the species mix and density you want. Both clearcuts and field systems are good candidates for hardwood plantings. Obviously, lower elevation slopes and drains are the best hardwood sites.

Clearcuts which have either no or little oak or other quality species prior to harvest need to be supplemented with quality species. Clearcuts which already have plenty of oak stumps will probably not need supplementation. If few oaks were present prior to harvest, 100-300 seedlings per acre might be necessary. If no oak was present prior to harvest, 200-400 seedlings might be warranted. Again, a selective application of herbicides can be used to kill



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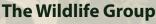
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undesirable species from the site.

Field systems can also be planted to hardwoods and as long as grassy, weedy, and woody competition is killed from the site, a good stand can be established. Preplant herbicides are most commonly used to control competition and breaking up subsurface hardpans with a single shank subsoiler is often necessary. Scalping on grassy sites is often helpful as well. Direct seeding is another method which has been used with some success for reestablishing hardwoods in old agricultural fields. Acorns or other nuts can be directly planted with either a hand crew and dibble bars or machine planted. Target density is 300-500 tpa.

There are a variety of quality hardwood species to select from and a mix of species is often the best from a wildlife and timber standpoint. Our recommendation is to stick with natives and avoid planting exotic, imported varieties. Given similar cultural treatments, many of our natives will produce nuts in similar time frames and are much better timber producers than nonnative hardwoods. Some of the best choices from a wildlife/timber standpoint are Swamp Chestnut, White, Post, Nuttall, and Overcup oaks from the White oak group; Cherrybark, Scarlet, Northern and Southern Red, Water, Pin, Willow, Shumard, and Black oak from the Red oak group; Chestnut, Ash, Poplar, Black Walnut, and Black Cherry and all have good to excellent wildlife and timber value. Black gum and Cypress are good species for the wettest areas and Live oak, Beech, Dogwood, Magnolia, Sassafras, Redbud, Holly and Buckeye are "lesser" species which mix in well with the previous species and have good wildlife value even while they have little timber value. Even hardwood stands with a few pines mixed in or a pine stand with a few hardwoods mixed in makes an aesthetically pleasing and wildlife friendly timber stand. The key to increasing value in hardwood stands is variety of oak species so that acorns are produced in some species each year, and that various tree species are producing some kind of fruit through the year.

Hardwood stands are an integral part of

most people's wildlife program and can be highly productive for both timber and wildlife, but management in the right manner is the key. Making sure that a property has a mix of well managed pine and hardwood (if possible) throughout the tract will ensure that wildlife will have a variety of food sources available through the year. Hardwoods rarely are productive for timber or wildlife if left alone and certainly high-graded or degraded stands offer little for the landowner. Throughout this series, the common thread has been active management of your timber stands. There is a wide variety of complex activities that can be performed to enhance the productivity of your forestlands. Well managed timber stands produce well managed wildlife populations, not the other way around.

There is nothing more satisfying than owning and managing your own land and being satisfied with the quality of the timber and wildlife. Riding through an aesthetically pleasing woodland with a wide variety of stand types, ages, species, and burning regimes is both enjoyable and profitable. These diverse landscapes are much easier to sell to prospective buyers than rough timberland with unmanaged wildlife populations.

We would encourage any landowner who truly wishes to properly manage their woodland and wildlife to talk a professional forester and/or wildlife biologist. There are many good forestry and wildlife consultants available throughout the country, many of which write for this publication. Your State Conservation Department, Forestry Commission, Natural Resource Conservation Service, or Extension office will be able to assist you or provide information on consultants available in your area. Always remember that it is your objectives that need to be implemented on your property and this can only be accomplished by good communication of your wishes to your consultant. If you wish to do quail management and manage for an unevenaged stand of longleaf throughout your property this needs to be communicated strongly. It will be regressive if your forester is industrial timber management minded and large patches of upland habitat are clearcut and planted to loblolly plantations for production style agribusiness forestry. Conversely, if your main goal is short-rotation fiber production, you will not have much satisfaction working with a wildlife biologist who continuously recommends 60 year rotations of 40 basal area Longleaf! Good Luck!



Correct site preparation, species selection, planting, and management yields good results whether it is for timber or wildlife purposes.

Wildlife Trends Journal Management Calendar



Dove field preparation

The only thing that helps get me through August, my least favorite month, is knowing that dove and football season will be starting soon! While the topic of what it takes to have a successful football team is for a different day, the following may help you have more successful dove hunts this year. A wide variety of crops can be used as a dove field; however, most successful dove fields have a few things

in common. First, they have an abundance of food (seeds). Dove are primarily seed eaters and consume very little insect matter or green forage. Among the various seeds available to dove, grass seeds and grains comprise most of their diets. Secondly, the seeds must be readily available to the dove. Dove prefer to feed on the ground in open cover where they can watch for approaching predators. Dove have short legs and are not strong scratchers (like

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Burning sections of matured crops makes fields very attractive to dove as it removes thick vegetation and exposes seed.

turkeys) so they avoid areas with dense ground cover and rough vegetation. Finally, the field must be located in an area used by dove – similar to being in a flyway for waterfowl.

Although it can be done, August is a little late to begin thinking about planting a dove field unless you are preparing for the last phase of the season. However, the most commonly planted crops for attracting dove include

various millets, sunflowers, wheat, sorghums and other small grains. Assuming you have a good crop growing that will mature as the season approaches, let's discuss a few ways to ensure that the seed you worked so hard to produce is readily available and will attract the most dove possible. First, let me caution you to check local baiting laws. Most states allow manipulations of crops so that seeds that were grown on that particular field are available to dove. Here are a few strategies I use when possible. First, always keep disked strips of bare ground through the field. As mentioned, dove like clean/bare ground to land in and easily walk around. They also use these strips to pick up grit (small pebbles and sand) used in their digestive system. Freshen these strips up through the growing season as needed. A week or so before the season, I burn sections of the field to remove vegetative cover of the crop and expose the seed on bare ground. If crops are mature but still green, apply an application of glyphosate (Round Up) a week or so before burning to brown the crop ensuring it will burn cleanly. I often use the bare dirt disked

strips as firebreaks – so think these through before installing them earlier in the process. Plan how much of the field to burn according to your anticipated hunting schedule. For example, if you plan to have one "blow out" hunt when the season opens, prepare and burn the entire field (or whatever is needed). However, if you plan to hunt through the various phases of the season, save some of the field to burn later just before hunts are scheduled.

A few other tips:

- Top-sowing or broadcasting without covering the seed is not considered a normal agricultural practice and is illegal in most states.
- Dove prefer to land in clear areas. Maintaining disked bare ground strips will ensure easy access for dove.
- Plan dove fields with a variety of plantings that will have varying maturation dates (e.g. browntop millet, Japanese millet, and sunflowers). This will ensure continued attraction throughout the season.
- Too much shooting pressure will cause dove to move to other areas. Limit shooting to one or maybe two

shoots per week.

• Manipulating portions of the field by mowing, chopping, burning, or disking a week or so prior to hunting will help expose seeds to attract dove to the field.

Check food plots for hardpan and subsoil if needed

If your food plots seem to either dry up quickly or stay wet longer than expected under normal rain conditions, or if you've been planting the same food plot for many years, your food plots may have developed a hardpan. Soil compaction, also called hardpan, may limit or constrain forage production and plant survival in food plots. A hardpan is a densely compacted layer of soil that lies between the topsoil and the subsoil. Generally speaking, depth of hardpans vary but are often 4"-12" below the surface of the soil and are caused by the weight and pressure of tractors (and other equipment) on the soil and repeated disking/tillage over several years that loosen top soil allowing the finest particles of the soil (clay) to migrate downward, accumulate and



Similar to quail, dove like bare ground areas. Maintaining clean disked strips in a field provides dove easy access to seed and grit.

bind creating a very dense layer. Imagine it as a layer of concrete below the surface of the soil. As you would expect, water and oxygen do not travel well through hardpans, thus during periods of adequate rainfall, water may lie in puddles on the surface of the compacted soil and evaporate before it can seep down into the soil. Similarly, during periods of low rainfall, the topsoil of food plots that have a hardpan dries out quickly due to the shallow layer of topsoil and inability to draw moisture from subsoil resulting in stressed or dead food plot crops. Hardpans can be easily detected in food plots using a soil probe, which is a 2' to 4' metal rod - sharpened on one end to penetrate the soil, and a handle on the other end to assist in pushing the probe through the soil. As the probe is inserted, the force required to move it



Annual clovers produce an abundance of seed once it matures. If properly managed, stands of clover can be regenerated the following year.

through the soil should remain about the same until a hardpan is reached. Upon hitting a hardpan, it will take much more effort to push the probe. From my experience, hardpans in food plots are often 4"-6" below the surface, which is the depth at which most disks plow, and may be 2"-10" thick depending on soil type and age of the field. Breaking the hardpan is often referred to as "subsoiling" which breaks up the soil to depths of 6"-12" and fragments compacted soil allowing water and roots to penetrate into the subsoil. To subsoil, you will need to use a subsoiling chisel plow. Most chisel plows have 1-5 shanks that are set 9" to 12" apart. When pulled by a tractor the chisels dig deep into the soil and rip or break the hardpan below the surface. Generally speaking, subsoiling every 2-3 years will benefit soils, keep hardpans from developing, and enhance plant growth in food plots. If you do not own a subsoiler, many companies rent them. However, it is a valuable food plot implement I recommend owning if you manage many acres. Obviously, this is something you want to do before initiating fall disking for planting food plots.

Begin flooding duck ponds in early September.

Teal are usually the first ducks coming down the flyways as they migrate south for winter. Although it depends on where your property is located, you should expect to start seeing teal in late August through mid-September. To accommodate these waterfowl and/or to attract them for the early teal hunting season, flood at least 30% of your duck pond. To be most attractive, make sure there are some open water areas within the flooded area. The main reason for not flooding the entire duck pond is to delay seed deterioration caused by flooding. Seed deterioration rates, or the amount of time it takes for a seed to break down after being flooded, vary among

different plant species. Most native wetland plant seeds are well adapted to flooded conditions and will last up to 3 months under water. However, most agriculture crop seeds breakdown much quicker. Thus, you only want to flood enough of your pond to provide early arriving teal with a food resource. Begin flooding the remainder of the pond in late October for the main flight of ducks. This will ensure the seeds you've worked hard to produce will remain longer into the winter to provide food and attract ducks. If you have never shot early season teal, you're missing out. Teal respond to calling and work decoys well and they fly in fast, tight flocks which makes for some fast and furious shooting - notice I said shooting and not killing!! - They are tough to hit!

Prepare areas to plant wildflowers.

Those that have read many of my management calendars know that I like planting wildflowers. There are many reasons I am a fan of wildflowers. Establishing wildflower areas not only enhance the aesthetics of a property, but provide excellent foraging areas for turkeys and quail. The wildflowers attract a multitude of insects which are high in protein. Insects are the primary food source for turkey and quail chicks which require a high protein diet. Adults consume many insects as well. The best time to establish a wildflower area is in the fall. I recommend a mix that is suited for your area that includes annuals and perennials. If properly managed, wildflower areas are easily maintained for several years. If you are creating a new wildflower area, prepare the ground just as if you were planting a food plot. That is, create a smooth, firm, clean seedbed. Refer to the planting instructions for the mix you plan to use. Most blends recommend planting well into fall after temperatures have dropped some to prevent germination of the perennials until



Begin flooding a portion of waterfowl impoundments by mid to late August for early arriving teal.

spring. If you already have wildflower areas, you probably have a few flowers that will persist through late summer, but most have faded. Assess the wildflower areas. If bad weed problems exist (over 50% of the area is covered with weeds), mow the area then apply a broadleaf selective herbicide a couple weeks later once the weeds are actively growing again. However, if possible (if the weeds are not overwhelming), allow the area to sit until early to mid-September. Holding off and applying this management strategy in September will provide more protection for fall wildflowers that will be germinating soon. Mowing the area will scatter seed and stimulate germination.

If you added annual clovers to your food plots last fall, September is the time to apply management to regenerate the food plots.

Incorporating reseeding annual clovers into your fall plantings will allow you to extend the plot's wildlife value by providing quality food sources through early summer. Without them, fall plots of small grain such as winter wheat and oats generally become less productive and thus less valuable for wildlife by early spring. If you have

planted annual clovers such as crimson or arrowleaf clover, allow them to flower and seed out - which normally occurs in April – June depending on which growing zone you are in. The flowers are important for game birds, particularly quail and turkey poults. Flowers attract insects which are an important component in the diet (source of much needed protein) for very young turkeys that were hatched this spring. Although plots generally get weedy after the clover has seeded out (which isn't always a bad thing), leave these plots alone until early fall. About 3 weeks to a month prior to planting time, mow the plots as low as possible, allow a week or so for the weeds to start growing again, and apply glyphosate (RoundUp) to knock them out and prep the plot for re-planting. If weeds were thick, you may consider burning the thatch off to expose bare ground (burning also enhances clover seed germination). Once the weeds die (or have been burned off), spread fertilizer, lightly disk the plot to expose bare ground and "stir up" the residual clover seed from last year, then plant annual small grains (wheat and oats). The key to the whole process is to not disk the food plot too deeply. After the first planting, and if you've allowed last

year's clover to seed out, annual clovers will reseed and come back every year – which not only provides great nutrition and extends the life of your fall annual plots, but will save you money on seed.

Implement habitat enhancement plans.

Summer is a good time to implement habitat enhancement projects such as timber harvests, timber stand improvements via hack & squirt methods, Quality Vegetation Management (QVM) to stimulate desirable wildlife understory species via herbicide applications, roadside enhancement areas, and creating new food plots. All of these projects or activities will add wildlife value to your property. Although it has already gotten late in the growing season, I like to have these projects planned well ahead of time so that they can be implemented early in the growing season. This allows a longer time during the growing season for these areas to "recover". Timber harvests or dozer work that is done late in the growing season often results in poorer quality wildlife habitat during the first year because plants have not had time to re-colonize. Additionally, these areas are not as aesthetically pleasing during the

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following winter. However, if you are running behind, I recommend getting these improvements in when you can. I'd rather get the improvements implemented late than to not have them done at all. You can think of it this way – you will be early for next year!

Develop a pre-season deer harvest plan that will maintain or improve your deer management program.

Monitoring the status of your deer herd is the backbone to ensuring successful and exciting hunting. Hopefully you have been collecting harvest data (weights, measurements, ages, etc.), hunter observation data, as well as conducting camera surveys. Collectively, this information is used to make sound deer management decisions that will help you achieve the goals of your program. If you haven't already done so, ask a wildlife biologist to

review your data or information and provide harvest recommendations before hunting season starts. Using trail cameras is a great way to assess buck quality and make buck harvest decisions before you head to the woods. Pictures from trail cameras will help reduce "mistakes" when judging bucks in the woods while hunting (where judgments are often made in seconds while your heart is racing 200 beats per minute!) While trail cameras are useful, a true camera survey is the most accurate method available to assess the status of your deer herd. September and October are normally the best months to conduct a camera survey (after bucks shed velvet but before the majority of acorns start to drop). If you plan to conduct a survey this fall, be sure to plan ahead. If you are doing it yourself, begin gathering all the equipment and supplies needed

(cameras, batteries, digital cards, film, corn, etc.). If you plan to hire a professional, get on their schedule early. With the popularity of camera surveys, most wildlife consulting companies are booked well in advance of camera survey season (September – November).

Prepare skinning shed for deer data collection

Deer season is right around the corner. Collecting information from deer harvested on your property can provide valuable insight to the status of your herd, the progress of your management strategies, and assist in making harvest decisions that will improve the deer herd and ultimately the hunting. Making sure your skinning shed is fully stocked and ready should be an annual pre-season activity. At a minimum, you should be collecting age (jawbone), weight, antler measurements,

and reproductive data. Supplies needed include jawbone extraction tool, pruning loppers, wire basket to air-dry/ store jawbones, sharp knives, permanent markers, pencils, weight scale, gambrel/ rope for hanging deer, flexible measuring tape, instructions on how to collect and store harvest data (recommended if more than one person will be collecting the data), and harvest data sheets to record the information collected. General preparations may include sharpening and lubricating pruning loppers, calibrating weight scales, inspecting and/or replacing rope or cables used to hang deer, ensuring water source is working properly, and stocking/organizing the data collection area. The Quality Deer Management Association (QDMA) or Forestry Suppliers are great places to purchase supplies to collect harvest data including harvest data sheets. Collecting and analyzing harvest data is often the backbone to the success of a deer management program.

Start preparations for fall food plots. It is difficult, if not impossible, to establish successful food plots without planning and adequate soil preparation. Planting quality food plots is a process that may span over several months, not a weekend. There are several factors that influence the success of a food plot program. Among the most important are establishing a well thought out food plot plan, ensuring proper soil fertility and pH, preparing a firm, smooth seed bed, only planting under favorable conditions, and controlling weeds. Each of these activities plays an important role in the success of your food plots. Here are a few tips on planting this fall:

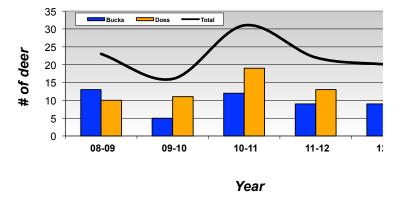
• Test soil early and apply required lime (preferably at least 6 months prior to planting). It takes time for the chemical process to take place and effectively change the soil pH. If you didn't lime in spring or early summer, go ahead and apply it now...better late than never.

- Use the results of the soil test to create the best fertilizer blend for your specific soil needs. Many people use balanced fertilizers such as 13-13-13 because they are easy. However, it is well worth your time to custom blend fertilizer to match your needs verses applying a balanced fertilizer that often requires applying extremely high amounts of some nutrients to compensate for the lack of others in the soil which results in wasted fertilizer/wasted money.
- Order seed and fertilizer as early as possible to ensure it is ready when you are.
- Ensure plots are relatively smooth and ready to plant before planting conditions are ideal. This takes time and should be done well ahead of planting dates. If you are broadcast planting, simply drag the field just

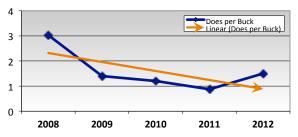
before planting to provide good seed-soil contact. Once broadcasted, cultipack the field to "mash" the seed into the soil (if you've never seen or used a cultipacker, check them out. In my opinion it is a "must have" implement that has many applications in food plot planting). Do NOT drag food plots once they are seeded if they are somewhat unsmooth or if you planted small seed such a clover. Dragging will result in burying seed too deeply.

• Have your seed beds ready, but don't fall into the trap of planting too early. September is often a very dry month. Mid-October is ideal in most areas of the Southeast. This is when we start getting regular cold fronts that bring rain. Planting too early normally results in disease (mostly army worms), poor planting success due to droughty conditions, or if you receive adequate rain the food plot is knee high and less

Historical Deer Harvest



Hunter Observed Sex Ratio



Hopefully you have been collected data harvest data. Now is the time to assess this information to make harvest decisions for the upcoming season. If you do not have this information you are simply guessing. No better time to start collecting data than this year.

attractive to deer by the time gun season arrives.

- Adding annual reseeding clovers such as crimson or arrowleaf into your fall plantings will increase the quality, nutritional value, and longevity of your food plots. With proper management, these clovers will regenerate again next fall which will save you money on seed costs.
- Use exclusion cages to monitor deer use and plot performance. An exclusion cage is a small "tube" of fence staked to the plot that prevents deer from eating the crop within the exclusion cage which allows you to assess plot growth and deer use of the plot. Cages are normally 2-3' foot in diameter and 3-4' tall. I've seen many food plots where the manager thought the crop did not do well, when in fact it did but deer simply mowed it down and never gave it a chance to grow.



Successfully planting quality food plots is a process rather than a single weekend project. Taking time to plan and prepare quality food plots adds both wildlife and hunting value to your property.

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