

PUTTING IT ALL TOGETHER

Pheasants are LOCAL wildlife and spend most of their lives in a 9 mi² area. When planning habitat on your land look at all the land around yours and FIRST figure out what is missing, then add that component to the landscape. Many times you need only add a secure food source to existing winter cover or “beef up” existing winter cover to have a CWA in your local area. Nesting cover is most often the limiting habitat factor for pheasants. A CWA will not increase pheasants in your area without adequate nesting cover.

Pheasants thrive in a landscape that has 20-50% reproductive (grassland) habitat. Unfortunately, that landscape rarely occurs in Minnesota. In Minnesota, realistic reproductive habitat targets for a pheasant landscape (¼ township) should include between 10-



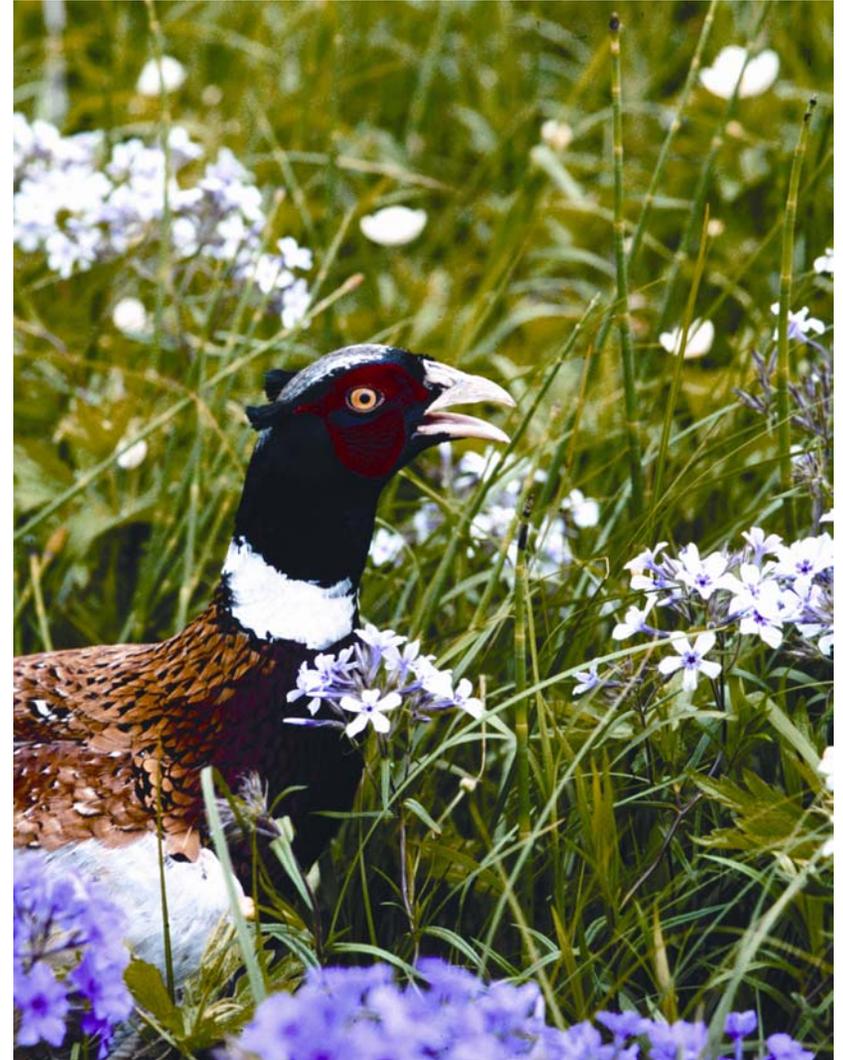
20% (60+ acres per section). In landscapes with less than 10% undisturbed grassland habitats, the primary objective should be on adding additional reproductive cover. In landscapes with less than 5% reproductive cover, pheasant populations are being supplemented from surrounding habitats in all but the best weather conditions.

Once you reach the target amount of reproductive area, you can consider adding core wintering areas in order to increase survival. Since 85% of pheasants move less than 1.5 miles between nesting habitat and winter cover, core wintering areas should be spaced approximately 3 miles apart to maximize their utilization. This equates to roughly 1 CWA per quarter township (see diagram).

Don't forget to contact your local Pheasants Forever Wildlife Biologist for help planning your pheasant habitat project, or a PF habitat specialist for assistance in creating and maintaining quality wildlife habitat.



MN'S COMPLETE GUIDE TO PHEASANT HABITAT





In the early 1980's concerned Minnesota sportsmen founded Pheasants Forever after estimated populations slipped from a high of 6 million in the late 1950s to only 500,000 in 1984. They recognized that the decline was a result of significant habitat declines in the state and established their habitat mission. In 2003, twenty years later, Pheasants Forever chapters in Minnesota have completed 21,914 projects affecting 242,316 acres and hunters harvested an estimated 511,000 roosters. The habitat mission of PF has earned us the title of the "Habitat Organization" and PF is widely known as the habitat authority for upland wildlife. This guide is meant to give conservation-minded hunters and landowners background knowledge of the important habitat types for pheasants and some basic background on how to improve habitat on their property.

There are 2 key habitat types critical to successful pheasant populations. The first is reproductive habitat, which is the most limiting throughout the pheasant range in Minnesota. Reproductive habitat consists of nesting and brood rearing cover. The second critical habitat type is winter habitat consisting of winter cover and a reliable food source and can be very important in order for pheasants to survive the harsh MN winter.

This guide will examine each of these habitat types individually and then discuss how they should be arranged to maximize local pheasant populations.

NESTING COVER BASICS

As snows melt and days get longer, roosters venture out from their winter stumping grounds and establish territories. Shortly after, hens leave the security of their winter cover to find a rooster and good place to nest. Nesting can begin as early as April and by the middle of May most hens have started to lay eggs.



In southern MN, the median date of incubation initiation is May 24 and successful nests will hatch 23 days later in mid June. In the northern MN pheasant range, median dates may lag a week or so behind. Some nests will be destroyed by predators, the weather and other disturbances, but pheasants are determinant nesters and will re-nest

CORE WINTERING AREAS

Landscapes that have **secure winter cover** AND a **reliable food source**, located in **close proximity** are called Core Wintering Areas (CWAs). A CWA is designed to provide protection during Minnesota's most severe winters, but may take years to reach its full potential. Core Wintering Areas should be at least 15 acres in size and at a minimum should include:

- 3 acres (200' x 600') of short woody cover (conifers and shrubs)
- 10 acres of heavy herbaceous cover, and
- a protected 2-acre food plot.

Most important, these elements should be located in close proximity and in areas with adequate nesting habitat. Even in Minnesota, pheasants rarely starve, but when food is not located near cover they are exposed to weather and predators. Most pheasants move less than ½ mile between food and winter cover, so it is essential that they be located in close proximity to one another. The primary purpose of a food plot in a Core Wintering Area, is to attract pheasants to high quality winter cover.



Where to locate a CWA?

In most of Minnesota, the limiting factor influencing pheasant populations is undisturbed nesting cover. Even with increased winter survival, populations will not increase without a sufficient base of undisturbed nesting habitat. Pheasant populations thrive in a landscape that includes 10-20% undisturbed grasslands.

In landscapes that have sufficient nesting cover, but experience severe winters, CWA's can have a dramatic effect on pheasant populations. Nearly 90% of pheasants will move less than 2 miles between nesting habitat and winter cover and more than 60% of those will move less than a mile; therefore, CWA's should be strategically spaced across the landscape.

Locate CWA's within 1 or 2 miles of secure nesting habitat and within 3 miles of each other to maximize their benefits to pheasants and other wildlife.

How do I plant this?

Whether by standard tractor and corn planter or grain drill, or via broadcast seeder mounted on ATV or pickup truck, there is a way to get a food plot in the ground where it will do the most good for wildlife (see Table below). If you are without planting equipment, it may be available to rent from local conservation offices. Some agencies and some PF chapters provide planting services at nominal rates, and there are often local custom operators willing to plant these areas.

Food Type	Planting Method	Advantages & Disadvantages	Other Considerations
Corn	Corn Planter, regular row spacings	Stands well throughout winter, provides excellent cover in large block plantings	High energy/protein food, deer & turkeys prefer and can clean out food plots quickly
Grain Sorghum	Corn planter with sorghum plates, grain drill, or broadcast harrow & cultipack,	Sized knee to chest high, excellent cover in large blocks. Plant with forage sorghum in alternating double rows.	May receive less attention from deer than corn, very high songbird use due to seed size.
Forage Sorghum	Corn planter with sorghum plates, grain drill, or broadcast harrow & cultipack,	Head high or taller, may snap off & lodge, plant with grain sorghum per specs above	Plant grain bearing varieties rather than Sudax/Sudan, if possible.
Sunflower	broadcast harrow & cultipack, grain drill	Excellent high energy food, but little cover.	Best with other crops, heavy songbird use.
Food Plot "Mixes"	Field prep, broadcast, harrow & cultipack using tractor, ATV or other vehicle	Wide food variety, good cover, tall plants curtail lodging of weaker plants, some food buried by deep snows.	Normally contains corn, grain & forage sorghum, sunflowers, millet, buckwheat, in various combinations

Check Local Sources for Help

It often works well to dovetail with farm programs like the Conservation Reserve and Wetland Reserve, which have acreage eligible for food plots. Food plots on these acres make valuable use of land that is already taken out of production. Many Pheasants Forever chapters offer landowners free food plot seed. The Minnesota Department of Natural Resources (DNR) may provide food plot assistance to landowners near state wildlife management areas (WMAs).

in order to raise a brood. Including re-nesting efforts, the nesting season ranges from early-April to mid-July. During this period pheasants need secure and undisturbed cover.

Ideal nesting cover is:

- Secure - cover providing overhead and horizontal concealment from predators.
- Undisturbed - cover free from both human (mowing, dog training) and weather related (flooding) disturbances.

Pheasants live out their lives within a home range of about one square mile, requiring all habitat components (nesting cover, brood habitat, winter cover and food) to be in close proximity. Ideally, 30-60 acres, or about 5-10 % of this range should be nesting cover. Larger blocks of cover are preferable to narrow linear strips. Linear cover, like waterways and field borders, are important to wildlife on a landscape level.



- Linear cover is easier for predators to search during nesting; however, it benefits pheasants significantly after nesting by providing travel links between fragmented agricultural habitats. *Hint:* Southern Minnesota studies have shown that for linear cover up to 60 feet wide, nesting success for pheasants goes up 1% for every 1-foot increase in strip width. Wider is better.
- Research tests have shown 20-acre blocks to be the target size for maximizing nest densities.
- Roadsides are mowed and burned far too frequently. Delayed mowing, and spot mowing or spraying accomplishes weed control in roadsides at less cost and does not disturb nesting hens.
- Roadsides provide important grassland habitat, with up to five acres of potential nesting cover along each mile of rural Midwest roads. In some areas, 40% of pheasants in the fall population are produced in roadsides.

ESTABLISHING NESTING COVER

Providing proper nest cover should be the cornerstone of all pheasant management plans. Establishing nesting cover is a combination of factors that include site, cost and management ability. Consult with a Pheasants Forever chapter if you have questions about grass seed mixes, or other nest cover concerns.

Cool or Warm Season Grass?



Cool-season (non-native) grasses like timothy, orchardgrass and brome (and some native grasses like Canada wildrye) begin growth in the cool, spring months. They reach maturity by early summer and then become dormant until cooler fall temperatures stimulate growth again. Cool-season grasses are generally easier

to establish, cost less, but require more intensive management to retain their productivity. Single species stands of cool-season grasses are of little or no value to nesting pheasants.

- Even with maintenance, most cool-season grass stands must eventually be replanted because the legumes are out-competed by the grass and eventually die.
- Cool-season mixes should be planted before mid-May, or in fall as a dormant seeding.

Warm-season (native) grasses such as indiangrass, switchgrass, big and little bluestem begin growth much later in the spring, reaching full maturity in late summer or early fall. Warm-season grasses produce high quality cover when cool-season grasses lie dormant. If left undisturbed, these grasses may provide good winter habitat and residual nesting cover for the following spring. Warm-season grasses are generally more difficult and costly to establish, but are easier to manage.



- Controlled burning on a 3-5 year rotation is the primary management tool for warm-season grasses.
- Warm-season grasses can be planted mid-May through June, as late fall dormant seeding, or as frost seedings in late winter.

on small food plots. Pheasants Forever produces a number of proven, high-quality mixes for pheasants and other resident wildlife. When choosing what to plant, be sure to select crops and maturities appropriate for your area, fertilize the plot, and control weeds to avoid excessive competition. Some weed cover benefits pheasants, but grain production will be reduced if weeds become a serious problem.

How much and where?

The two most critical design factors for food plots are location and size. Food plots can be established almost anywhere, such as on Conservation Reserve or Wetland Reserve Program land, or right next to your farm grove. The key to a successful food source is its location next to heavy winter cover that is frequented by pheasants and other upland wildlife.

Besides the weather, the size of your food plot depends on 2 critical factors: other wildlife populations and protection from blowing snow. Deer and turkey can consume a great deal of grain daily and can quickly exhaust food resources before winters end. Feeders can be used to supplement smaller food plots, or larger food plots (3-5 acres) can provide enough food for all resident wildlife in the area.

In open country, up to 50 rows of standing crop can be filled in by a single Minnesota blizzard. There, large (3-10 acre) square or block-type food plots are preferable to smaller, linear food plots. Food plot size can be significantly reduced (1-2 acres)



by protecting it from blowing snow. If plots will be small, minimize drifting by establishing snow traps (leave 4-6 rows windward, then harvest 12-20 adjacent rows as a snow catch) in open country. This same approach can be used to make wetlands, and small patches of woody cover more effective wintering areas—by placing food plots on their windward side to catch snow before it enters the winter roosting cover. Alternatively, woody cover located on the windward side (northwest) of a food plot can slow winds and deposit snows in an open catch area (50-100 ft) between the woody cover and the food source.

source, a feeder can be used to provide pheasants with a stable source during the cold winter months. They can be used effectively in emergency situations after blizzards where large groups of birds are concentrated while foraging. Feeders do not provide protection to pheasants from predators or the elements while feeding, and recent concern with Chronic Wasting Disease (CWD) has made their use even less desirable. In areas with high deer populations, feeders can be used with exclosures.



The greatest benefit of a food plot compared to a feeder is the shelter it provides. In addition to providing vertical and horizontal cover from avian and mammalian predators, food plots also provide shelter from winters blustering winds which reduces energy demands and results in less feeding exposure time. A 1-acre food plot provides approximately 8,100 lbs (150 bushels at 54 lbs each) of corn for pheasants and wildlife which can feed 400-600 pheasants depending on the severity of the winter.

What to Plant?

Plan your food plots carefully, keeping the previous discussion in mind, and taking the worst-case scenario into account. Don't bother to create a project that is going to be buried by the first winter blizzard. **Corn** and **grain sorghum** are among the most reliable food sources (see Table). Planted separately or in combinations, they retain grain on stalks, stand well in winter weather and provide very high-energy food. Large blocks of corn, and combinations of **forage sorghum** and grain sorghum can also provide excellent cover. Wheat, soybeans, millets, rye and buckwheat are good food sources, but are often buried by snow, forcing birds into the open to utilize them.

Food plot mixes combining many of the crops above are available commercially or from PF, and can be broadcast for easy establishment. In addition to providing a variety of food at different levels, mixes may reduce the impact deer and turkey can have



Diversify your plantings

Single grass stands may be easier to plant; however, mixed stands of cool or warm season grasses complemented with forbs will provide greater diversity and consequently be more attractive to wildlife. Interseeding legumes or planting separate plots of cool-season and warm-season grasses can also improve nesting and brood-rearing cover.

- Cool-season grass/legume mixes typically contain brome, orchardgrass, timothy, redtop and alfalfa or one of several clovers.
- Warm-season mixes usually contain switchgrass, indiangrass, big blue-stem, little blue-stem and 4-10 forbs such as butterfly milkweed, prairie asters or clovers, coneflowers, sunflowers, indigo, and stiff goldenrod.

BROOD REARING HABITAT

Recent analyses indicate that, in Minnesota, chick survival is the most sensitive parameter influencing proportional pheasant population increases. What this means is that improving brood habitat can have a very significant effect on pheasant populations. Largely to date, brood habitat has not been addressed specifically, although some diverse nesting habitats make fair brood habitat.



What is Brood Habitat?

Perspective is everything. Walk a mile in someone's shoes, and you gain an appreciation for their view. So for insight about brood habitat, exercise your noodle a little and imagine that you are a pheasant chick. No, big boy, not the good-looking one you buy raffle tickets from at the PF banquet. I am talking about 3 inches tall here—covered in soft, fluffy down and sporting short, stubby wings.



When that chick emerges from the egg, staring it in the face is an overwhelming demand for protein-rich food, and some serious trekking requirements given those stumpy little legs. Mostly, broods don't take great cross-country gallops in search of feeding areas; based on size

alone that's a tough proposition. Broods only move far enough to satisfy their needs--the shorter the distance, the better. And, home ranges can be pretty small if cover quality is high. Movements of just 1-4 acres per day in the first weeks of life characterize the limited travels of broods in good cover.

Bug Power

Bugs are the fuel these little bodies need to grow. Chicks chow down on bugs almost exclusively their first 4-6 weeks, feeding almost constantly throughout each day. Insects continue to be an important, but smaller, component of the diet through 14 weeks. What types of bugs are eaten? Soft bodied ones where possible.



Leafhoppers and larval stages of moths and grasshoppers make up a large part of the diet. Research has also shown that pheasant chicks think bigger is better, selecting the largest bugs first from a variety of sizes presented to them. The management challenge with brood habitat is to provide the very best cover possible for those insects, so that more of them are produced for brood food.

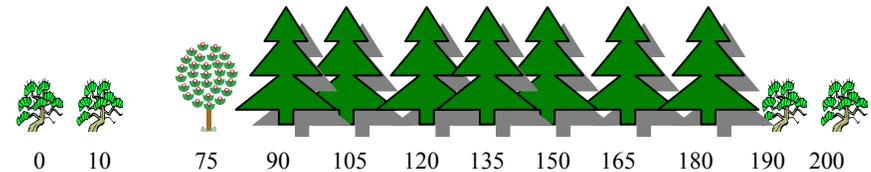
Chicks consume from 1,000 to 2,700 milligrams of bugs per day, so they need a cover that produces a high insect biomass (oats/sweet clover can produce 500 mg of insects per square meter). Pheasant broods forced to range over larger areas have reduced rates of survival (corn or beans are an example, where insect biomass is low, or about 40-50 mg/square meter). Single species stands of native (eg. switchgrass) or cool-season grasses (eg. brome grass) are also poor producers of insects. Adding forbs (broad leafed annuals or perennials) to these grasses increases diversity and insects.

Penetration

The composition of the habitat is also crucial to the ability of broods to penetrate and use the cover. A brood's needs and perspective are not unlike a grouse hunter's moving through forested habitat in pursuit of birds. The tree canopy towers above while around is secondary, lower growing vegetation that harbors grouse. A hunter would choose habitat that was both attractive to grouse and easy to shoot in (like open alder

Woody cover plantings

Woody cover plantings should provide secure shelter from harsh Minnesota weather and protection from predators. Avoid tall deciduous trees in your wildlife cover planting as they provide perch sites for avian predators such as hawks and owls and den sites and loafing habitat for raccoons. Winter wildlife plantings should include conifers and shrubs, but may also include short deciduous trees such as crab apples to attractive to other wildlife (deer). Plantings should include 2 rows of shrubs on the windward sides to catch drifting snow, an open snow catch area, 4 or more rows of closely spaced conifers (cedar, spruce, etc.) and 2 rows of shrubs on the leeward side (see diagram).



A woody cover planting must be at least 200 feet wide and 600 feet in length (about 3 acres) and be situated as to provide protection from prevailing NW winds. They may be L-shaped, arc-shaped or rectangular. If possible situate the planting to protect a food plot and robust nesting cover.

WINTER FOOD

The second element important to pheasants during Minnesota's winters is a secure source of high-energy food. Pheasants rarely if ever starve, so why then do pheasant biologists consider food to be important to pheasant management? First, food will attract pheasants to high quality winter cover. Second, by placing food near winter cover, pheasants spend less time exposed to predators and the weather.

Food Plots or Feeders?

There are two types of food sources commonly used in pheasant management: food plots and feeders. Feeders are highly mobile and can be placed in areas where food plots cannot. If there is an area with high quality winter cover lacking a food



WINTER COVER

As temperatures plummet and snows blanket grassland habitat, pheasants and other wildlife scramble to find cover from the bitter winds and blanketing snow. Winter survival can limit the number of hen pheasants that survive to the nesting season and weakens the condition of surviving hens leading to reduced reproduction in the following spring. Quality winter cover located near a high-energy food source can provide the elements needed by pheasants and other wildlife to survive harsh winter conditions and enter the nesting season in good health.



Depending on the severity of the winter, pheasants will use a variety of habitat types as winter cover. In mild winters with little snowfall, pheasants can find shelter in stands of native grass (i.e. switchgrass). As snows pile deeper, pheasants move to the more secure winter cover of willow thickets and cattail sloughs. Once every 10 years, Minnesota suffers a devastating winter when snows come early and stay late, covering all but the most robust habitats while temperatures drop to record lows. In those years, the only shelter that remains are carefully constructed woody cover plantings.

Robust herbaceous cover

Many efforts to create secure winter habitat have revolved around providing woody cover plantings. However, woody cover plantings take many years to reach their potential and in all but the worst Minnesota winters, large (at least 10 acres) stands of cattails or other robust herbaceous cover provide excellent winter cover and many already exist or can be enhanced / restored over a couple of years.

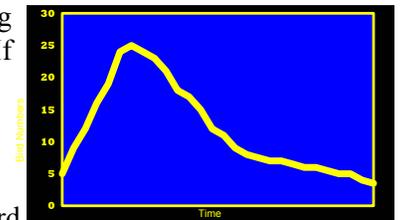
To provide winter shelter in most Minnesota winters, heavy herbaceous cover should consist of a 10 or more acre block (at least 600 feet wide) cattails, but Phragmites, sanbar willows and solid switch grass stand may also provide good winter shelter.

stands), yet with open access to work through the cover (prickly ash choked with deadfalls wouldn't be the choice of most grouse hunters). Pheasant broods on the hunt for food have the same considerations. Broods need good lateral and overhead concealment from predation, since they are being hunted themselves by most everything with teeth and talons (from a hatch of a dozen chicks, 6 will survive until the pheasant opener). Yet broods also require openness at ground level to feed freely throughout the stand (and to escape should trouble show up). Fields choked with the litter of dead vegetation from years of neglect will not see much use by broods. Obviously, brood cover must be comprised of vegetation attractive to their insect quarry—like the grouse example above. Meeting these twin needs through effective cover management translates to reduced brood movements. That means less exposure to predators/mortality, and more young roosters come fall.



Good nesting cover can be great brood habitat, as well, but generally not without some thought. Early-successional areas, characterized by open stands with a high diversity of grasses and succulent broadleaved plants (just the ticket for abundant insects), fit the requirements for both nesting and brood rearing—while straight grass plantings often do not. A brome/alfalfa mix is a classic pheasant nesting cover combination that provides excellent insect production, while switchgrass (an OK, but not fabulous nesting grass) is a poor brood cover choice. Well-designed habitat for both nesting and broods will pair diverse forbs (broadleaves) with several species of either warm or cool-season grasses (or a both) that will provide more cover variety.

The value of cover for broods and nesting declines significantly as the stand ages. If you have your own plantings to do, diversify them and create a plan for regular disturbance (disking, grazing, haying, burning, etc.) that rejuvenates the cover. Rotationally managing a third of the field annually provides much better wildlife habitat overall. On



older stands (like unmanaged CRP), renovate by light mechanical disking or burning, then reseed the area with legumes or native grasses and forbs. Chemical burn-downs of stunted grasses can also have short-term benefits. The annual weeds (i.e. forbs) released by burning, mechanical or chemical disturbance are a plus for pheasants—creating much better cover structure for nesting and more food for broods. Even weedy, second-year food plots provide good brood cover.

If your property can accommodate several discrete fields of tame grass/legume plantings and native grasses/forb mixes, nesting and brood cover will be enhanced. Mixes of cool-season tame grasses and forbs typically contain brome, orchardgrass, or timothy, and legumes like alfalfa or clovers. Vigorous for the first few years, these areas require periodic reseeding to stay attractive for insects and broods. Plantings of mixed prairie grasses and native forbs provide relative ease of movement for broods, form complex habitats for insects and offer excellent residual vegetation for nesting. The best native plantings normally contain mixes of 5-7 grasses suited to the site, with a complement of 7-15 forbs. Broods are often found at the junction of these native and cool season habitats. These complexes of plants also provide habitat for nesting, night roosting, daytime loafing and escape cover.

MANAGING NESTING / BROOD HABITATS

The wildlife value of grasses generally declines as vegetation ages and the vigor of the cover is diminished. It is for this reason that managing nesting cover is usually more important than what species you choose to plant.

Burning

Controlled burning (in early spring) is a critical tool in the management of grasses. Woody plants and other unwanted vegetation can be eliminated by proper use of fire. Burning also releases the nutrients bound in the plant litter, stimulating vigorous new growth following the burn. Burning can be very dangerous if not done properly as grasses produce extremely hot fires that spread rapidly.



- Before you burn, make sure to contact your local biologist, fire department and NRCS office to acquire the necessary burn plans and permits.
- Burning should be done every 3-5 years.

Mowing

Mowing of any type of cover (for haying, weed or brush control) should be delayed until after the nesting season has concluded (mid-July). In newly established areas, mowing the first year is a good idea if weed competition is severe. After cover is established, mowing segments of the field on a 3-4 year rotation will keep the vegetation rejuvenated. Leave 10-12 inches of cover after the last cutting, particularly with warm-season grasses. That's sufficient height to provide some roosting, residual cover for nesting and to protect plant vigor.

- Whenever possible, use spot mowing rather than blanket applications for weed control.
- Remember, there is absolutely no reason to mow (disturb) nest cover during the nesting season.

Discing

Light mechanical discing in the early spring can also restore plant vigor by opening up a stand of grass and reducing the effects of crowded root systems. This practice is more attractive for wildlife because it effectively increases diversity by creating a seed bed for annual herbaceous plants. However, Canada Thistle and other weed problems also may respond favorably to these conditions.

