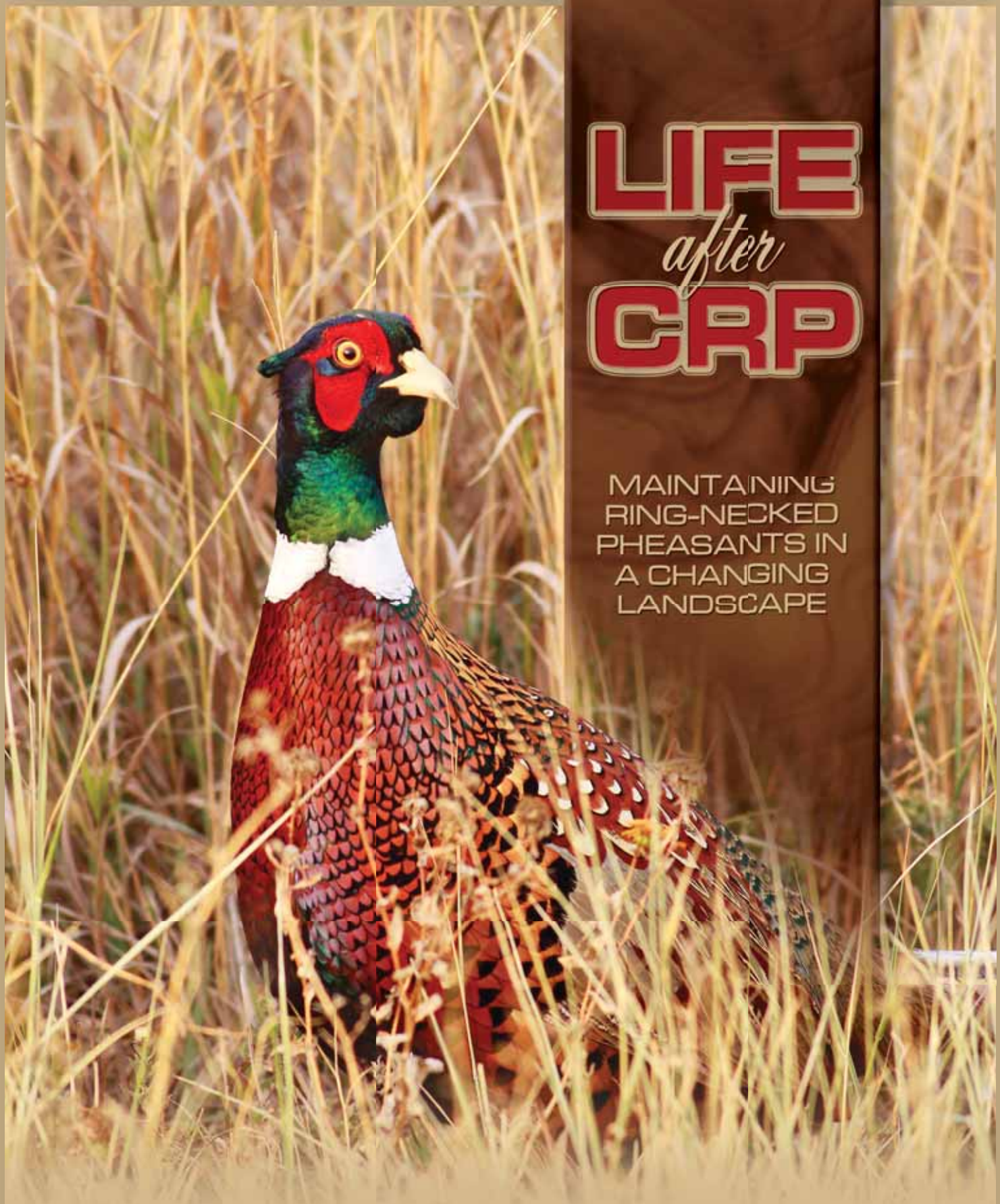

LIFE *after* CRP

MAINTAINING RING-NECKED PHEASANTS IN A CHANGING LANDSCAPE

A GUIDE FOR LANDOWNERS AND PHEASANT ENTHUSIASTS

NRCS Natural Resources Conservation Service

NDSU | HETTINGER RESEARCH EXTENSION CENTER

PHEASANTS forever

LAND AND WILDLIFE IN TRANSITION

Wildlife responds to habitat changes. As land enrolled in the Conservation Reserve Program expires and is converted to other uses, many wildlife species, especially those that rely on grassland for nesting, brooding and winter cover, will decline in numbers.

The ring-necked pheasant and other grassland nesting birds are a case in point. The CRP is recognized as a main reason for much improved pheasant populations in North Dakota and other Great Plains states in the last two decades. Loss of CRP acreage will mean declining pheasant numbers across their entire North Dakota range.

An expiring CRP contract, however, does not have to mean a void of pheasants on a piece of ground. This special publication is designed to provide private landowners/operators with guidance on ways to manage expired CRP acres for profitability, while maintaining at least some benefits for pheasants and other wildlife.

In addition, practices that preserve or create habitat on expiring CRP acres may also fit into management plans for landowners who don't have CRP acres. Many options come with attractive financial incentives from state and federal agencies or private organizations.

While North Dakota may not in the near future see an annual pheasant harvest approaching a million roosters as it did in 2006, there is still opportunity to provide habitat for these popular upland game birds.

This special publication is designed to provide private landowners/operators with guidance on ways to manage expired CRP acres for profitability, while maintaining at least some benefits for pheasants and other wildlife.

CRAIG BIHRLE

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With more than 800,000 acres scheduled to expire by the end of 2012, and varying amounts in the years to follow, North Dakota's CRP base will fall to around 1 million acres by 2015, down from more than 3 million acres in 2006.

Various management scenarios can provide pheasant habitat on land with an expiring CRP contract, ranging from maintenance of idle grassland, to retaining grass for livestock grazing or haying, or returning it to raising crops.

Managing for maximum habitat without the annual income from a CRP contract is not likely a practical alternative for many landowners, but retaining or creating at least some habitat is an option that many landowners would consider if it's cost effective and makes sense for an operation.

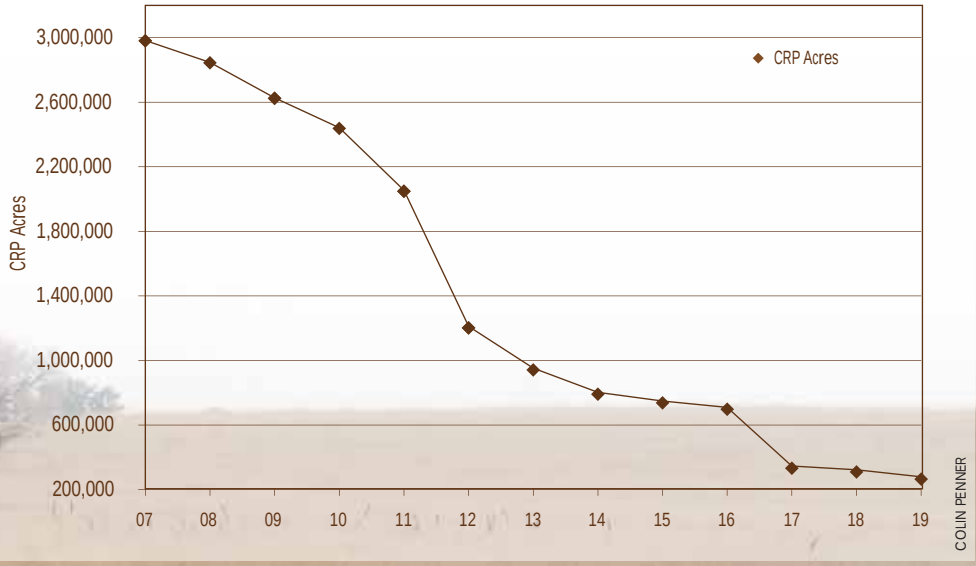
A good first step is an inventory of expired or expiring CRP acres to determine existing habitat quality and future land use goals. Pheasants and other wildlife will respond differently to varying management scenarios.

An ideal landscape for pheasants consists of about 70 percent cropland (approximately 30 percent row crop and 40 percent small grains) and 30 percent hayland or grassland, of which 10-15 percent is undisturbed nesting cover.

This combination of food and cover provides the needed pheasant life requisites. A drinking water source is not a life necessity for pheasants as they get sufficient water intake from dew, frost and food sources.

Greatest pheasant mortality occurs from winter exposure and predation, rather than hunter harvest or dry conditions.

NORTH DAKOTA CRP PROJECTED LOSSES



COLIN PENNER

CHRIS GRONDAHL

PHEASANT HABITAT FROM SEASON TO SEASON

Throughout the year pheasants use the following cover and food types:

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Nesting cover - Dense herbaceous cover with good overhead concealment from avian predators. Pheasants are six times more likely to nest in undisturbed grassland than in woody areas such as tree rows.

Brood-rearing cover - Consists of vegetation with forbs (food sources) that is relatively open near the ground, to allow easy travel by chicks while still providing overhead concealment from avian and other predators.

CHRIS GRONDAHL

CRAIG BIHRLE

Food - Waste grains, forbs and grass seeds, fruits and leaves. Adult pheasants also consume insects in spring and summer, and young birds survive almost entirely on bugs their first five weeks after hatching.

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Roosting/ escape cover - Dense tall shrubs and hedges or dense herbaceous cover, cattail wetlands, weed-grown fence lines and small farmland woodlots. These areas of dense vegetation located near foraging sites are also necessary as escape cover.

Thermal or winter cover - Dense herbaceous and woody vegetation provide thermal and protective cover during winter months.

Note that none of these cover types need to include trees. Pheasants will safely roost in shrubs. Trees provide habitat for avian predators that can destroy nests and kill adult pheasants.

Which of these cover types are close by? Pheasants do not typically travel great distances for their habitat needs, so if any required habitat element is not available within a quarter- to half-mile radius, that's an area for consideration.

Habitat inventories should include soil types. Soil surveys are available on the U.S. Department of Agriculture's Natural Resources Conservation Service website at http://websoilsurvey.nrcs.usda.gov/app/.

Knowing soils is an important step in the inventory process. For example, soil limitations could mean that woody habitat is not an option. Or, soil limitations could determine future crops and conservation practices necessary to control erosion and retain soil quality achieved while the land was idled in the CRP.

A decision on how to use expired CRP land depends on variables. Whether future use is for growing crops, livestock grazing, hay production or something else, it's possible to retain or create valuable pheasant habitat without sacrificing productivity.

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LAND USE AND PHEASANT

Unlike some grassland nesting birds, pheasants cannot rely solely on one cover type for their entire life requisites. They use edges and a variety of habitats in close proximity.

Pheasants need grasslands for nesting habitat. Undisturbed grass is preferable, but they will also use grazed or hayed areas. Grassland proximity to winter cover, such as shrubs and brush or cattails around wetlands and along waterways, is also important. Pheasants can also find food in cropland, particularly in fall and winter.

Undisturbed herbaceous habitat, such as CRP grass, can also provide early or mild winter cover, but often fills in with snow during typical winters.

Expired CRP grasslands can still provide pheasant cover even though they are grazed or hayed. Habitat quality for nesting and brooding cover is determined by grazing and haying management strategies.

While grazed or hayed grassland is more beneficial to pheasants than cropland, landowners with expiring CRP acres may not have use for those options. Well managed cropland can still benefit wildlife without affecting the producer's bottom line.

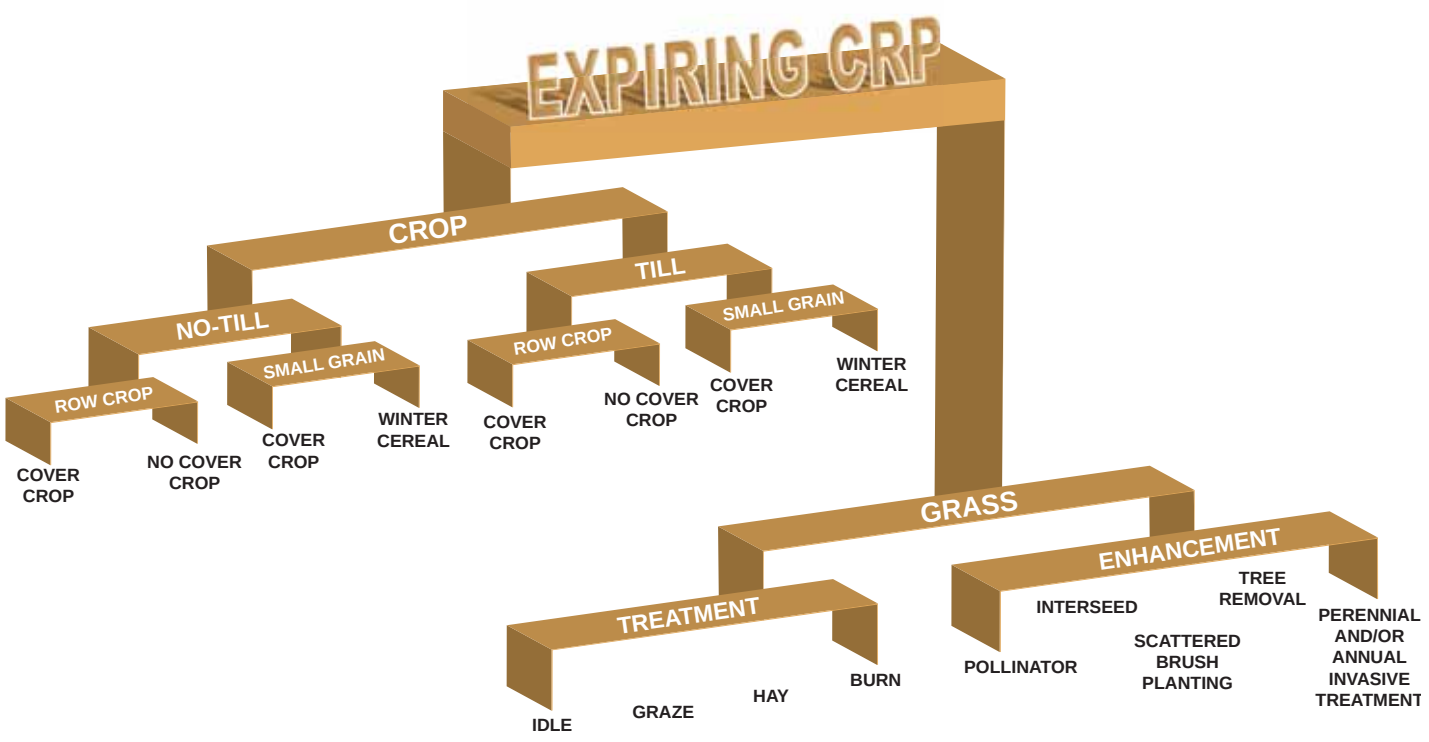
Grassland Ecology

Native or introduced grasslands require management to invigorate and maintain desirable species. Native grasslands evolved with disturbances such as grazing by native bison, pronghorn and elk, and periodic fire.

These frequent disturbances maintained the natural diversity of warm- and cool-season grasses and forbs. Elimination of fire and changes to grazing frequency following European settlement significantly altered the natural disturbance regime. This, coupled with introduction and invasion of nonnative species such as Kentucky bluegrass, smooth bromegrass, crested wheatgrass, sweet clover, annual bromes, Russian olive and the spread of some native woody species (i.e. Rocky Mountain juniper), has, in some cases, dramatically altered the composition and health of native grassland habitats.

Left idle, excessive plant litter accumulates on native and tame grassland. This alters some ecological processes including reducing the amount of sunlight reaching plant crowns near the soil surface. This shading shifts the competitive advantage from native species to shade-tolerant invasives such as Kentucky bluegrass and smooth bromegrass. Unchecked, the invaders take over more and more territory and reduce grass and forb diversity, meaning lower quality habitat for pheasants and ultimately, greatly reduced overall plant and wildlife species diversity.

The management practices described in the following pages can help maintain grass and forb diversity.



HABITAT QUALITY

Managing Hayland

Producers can hay one-third of a designated nesting area annually and still provide optimal wildlife nesting opportunity. No matter the amount, delaying haying until August 2 each year yields best results for limiting mortality of pheasant nests and broods, while July 15 is an alternative date if hay quality is a priority.

If better hay quality and quantity is the desired goal, and a producer would like to hay up to 50 percent of dedicated nesting acres annually, following a haying rotation (see accompanying illustration) is a beneficial compromise. In this scenario, 50 percent of the field is cut annually, with each area cut two years in a row, then switching to the other area for two years. This helps ensure good residual cover for nesting most years, while usually increasing hay quality.

Haying toward the idle acres allows pheasant broods and adults to escape to the unhayed area instead of getting trapped in a small strip in the middle of the field. Under this scenario, the producer hays the ends of the field first, then works back and forth toward the unhayed nesting cover.

If haying is used to manage and invigorate a grass stand, rake and remove dead grass (litter) from the soil surface. Using a heavy harrow or other light ground disturbance post-haying will allow more sunlight to reach the soil surface to encourage forb growth.

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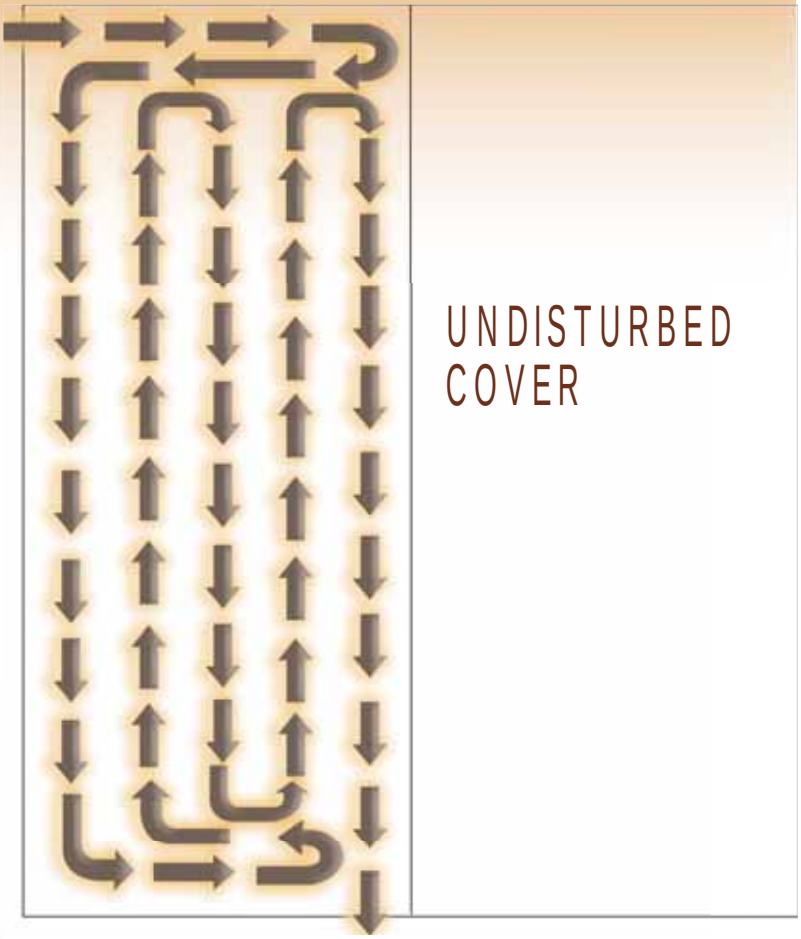

Haying Diagram

Hay west half on years
1/2, 5/6, 9/10

Hay east half on years
3/4, 7/8

Prescribed Grazing

Grazing systems should match stocking rates to annual growing conditions and control the frequency, intensity and timing of grazing within each pasture. Grazing systems should allow for adequate recovery between grazing events – 45 to 65 or more days for native grassland, 25 to 35 or more days for introduced grassland depending on growing conditions – to improve plant vigor and provide for residual cover for nesting and winter cover for resident wildlife.

Changing deferment periods for each pasture from year-to-year will improve plant vigor and provide undisturbed nesting cover in at least a portion of the grazing unit. Well-managed grazing systems can provide a diverse, vigorous grass and forb community rich in insect populations to provide a protein source for chicks and fledglings.

Multiple pastures within a grazing system allow the manager to control the amount of time any one pasture is grazed or rested. As the number of pastures within the rotation increases, managers have more options to better meet habitat objectives.

Prescribed Burning

Prescribed burning can help reduce unwanted woody vegetation and invasive plant species. This practice is most productive on native grasses, but also benefits forbs and legumes, such as wildflowers, alfalfa and clovers.

Prescribed burns reduce plant litter, stimulate new plant growth, and increase forage quality in haying/grazing operations. They must be properly planned and timed correctly, however, to effectively reduce target species.

Early season burns (late April and early May) are typically most effective for suppressing Kentucky bluegrass, while late spring burns (late May and early June) are preferable for suppressing smooth bromegrass. Effectiveness of summer and fall burns for suppressing these species is still unknown, though some anecdotal evidence appears to support fall burning for Kentucky bluegrass suppression.

Following a burn, monitoring for noxious weeds is necessary. Prescribed burns every 3-5 years is a typical rotation, though annual burning is sometimes necessary to manage native grassland heavily invaded by smooth bromegrass or Kentucky bluegrass.

Fencing

Properly constructed and maintained permanent and temporary electric fences are effective in controlling livestock within a well-managed prescribed grazing system. These types of fences are more cost effective, require less maintenance, provide more management flexibility and are less disruptive to wildlife movements than conventional three- or four-barbed wire and woven wire fences.

KEVIN KADING

CRAIG BIHRLE

Above and below: Prescribed fired can help improve forage quality in grazing systems, and it can also stimulate beneficial plant growth in undisturbed areas. While there is always a risk that prescribed fire in spring will destroy some nests, pheasants will typically renest and long-term benefits will outweigh short-term losses.

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Trees as Pheasant Habitat

Although pheasants benefit from edge habitat found in agricultural landscapes with grass, cropland, cattail-ringed wetlands, woody cover and weedy patches, they need relatively undisturbed herbaceous areas for nesting cover.

Trees, however, are sometimes detrimental if developed without a plan. Trees are often added to herbaceous cover with the goal of enhancing habitat, but studies in South Dakota and Colorado have found that pheasant nesting success was lower in and near shelterbelts.

In addition, location of some trees and shrubs could reduce food plot use. Studies in South Dakota indicate pheasants used tree cover only at the end of a severe winter, (a one- in 10- year event) though this use may have prevented total mortality.

In other winters, hen pheasants were much more likely to use cattails, tall grass and food plots for winter cover.

Studies indicate that woody habitat is important for escape cover and good winter cover during severe weather conditions. However, trees should be limited or not included at all in woody habitat plantings. In addition, narrow tree belts (1-4 rows) can become death traps as they collect snow and can bury and suffocate pheasants looking for thermal cover.

Linear tree plantings also provide travel lanes for mammalian predators and perches for avian predators such as crows, magpies and various birds of prey. These predators can reduce nesting success and increase hen mortality.

If woody habitat is planted, it is best to locate these plantings on the edge of nesting habitat, rather than in the middle, to reduce predator influence.

Woody habitat should consist of scattered shrubs around the perimeter of nesting habitat to provide escape cover, but not create travel lanes for ground predators or perch sites for birds.

If other winter cover is not available, wide blocks of woody habitat can be planted in compatible soil. These block plantings should be at least 15 rows wide, comprised of predominately suckering shrubs. Consider native suckering shrubs that bear fruit for late fall and early winter food sources. If trees are used, select evergreen species that provide thermal cover.

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Pheasants do roost and rest in trees (above), but elevated branches also provide favorable perches for birds of prey such as this red-tailed hawk (left). Todd Porter, Mandan (below) used silverberry in his planting to yield low woody cover without the potential for high perches for birds of prey.

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MANAGING CROPLAND WITH

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No-till cropland management can leave behind waste grain that pheasants and other wildlife can use as a food source in fall, winter and even the following spring. Tall stubble can also provide some cover until it fills with snow.

Pheasants and other wildlife species cannot survive solely in a cropland dominated landscape. Other vital habitat types must be available to meet certain demographic requirements. However, cropland can be important for wildlife and provide many benefits if managed properly. These benefits vary depending on the season, species, type of crop, mechanical disturbances, and availability of food, water and cover. The best management of cropland for wildlife incorporates no-till practices with high residue crops and diversified cropping rotations.

Pheasants use cropland as a winter food source, and they may find both food and cover during breeding season. Some birds nest in cropland after a crop is planted. When this occurs, exposure to predation and chemical applications is a concern.

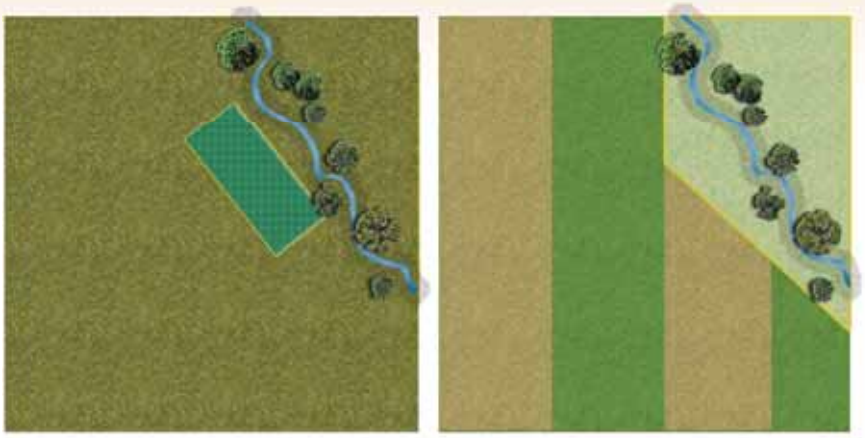
Nests and young are vulnerable to mechanical disturbances during nesting and brood-rearing seasons. Winter cereal crops (winter wheat, etc.) are attractive to some nesting birds because of early green-up and fewer disturbances in spring. Mature or taller crops like sunflowers, corn or wheat can provide cover in the summer/fall but do not provide nesting habitat. Planting spring crops in close proximity to nesting cover will maximize benefit to pheasants.

Cropland Management Strategies

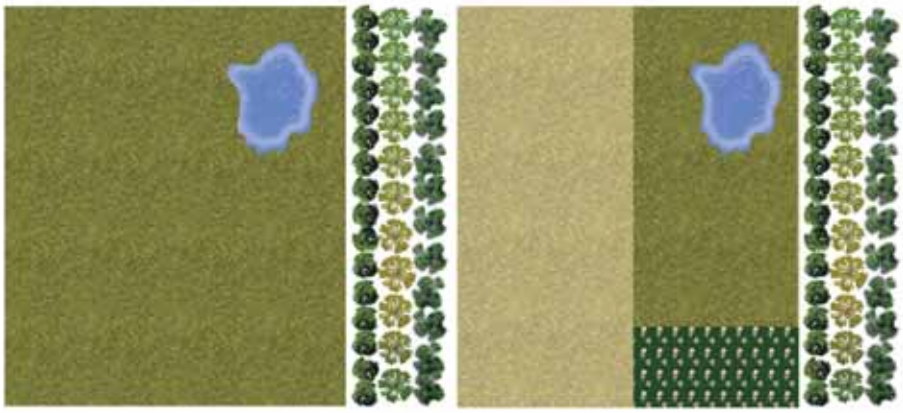
The following practices can improve potential wildlife habitat within cropland:

1. Avoid fall tillage. No-till or minimum tillage practices leave weed seeds and waste grain on or near the ground that can provide food for wildlife. Avoid mechanical activities and heavy pesticide use in spring. Inversion tillage destroys foods, cover and nests, destroys soil structure and opens fields to erosion.
2. Avoid cropping wetlands and areas directly adjacent to riparian corridors. A grass buffer around wetlands and adjacent to riparian areas provides much needed cover in intensively farmed areas. Cultivation near wetlands promotes surface evaporation, increasing salt concentrations at the surface. Over time, salinity may reduce productivity, eventually making the land unfit for crop production. Buffers can be planted, maintained or allowed to naturally regenerate.
3. Avoid burning cattails in and around wetlands. Cattails are preferred winter habitat for pheasants, providing thermal protection from bitter winds and heavy snow. Cattails within cropland provide ideal winter cover in close proximity to available food (waste grain).
4. Manage saline areas by planting deep-rooted perennial forage species on recharge areas of saline seeps to use excess water before it reaches discharge areas. This will also reduce evaporation and prevent salts from reaching the surface. Perennial vegetation manages salinity and provides nesting cover for pheasants.
5. Provide food on conventional crop fields by leaving several rows or strips of standing crops adjacent to permanent winter cover.

PHEASANT HABITAT IN MIND



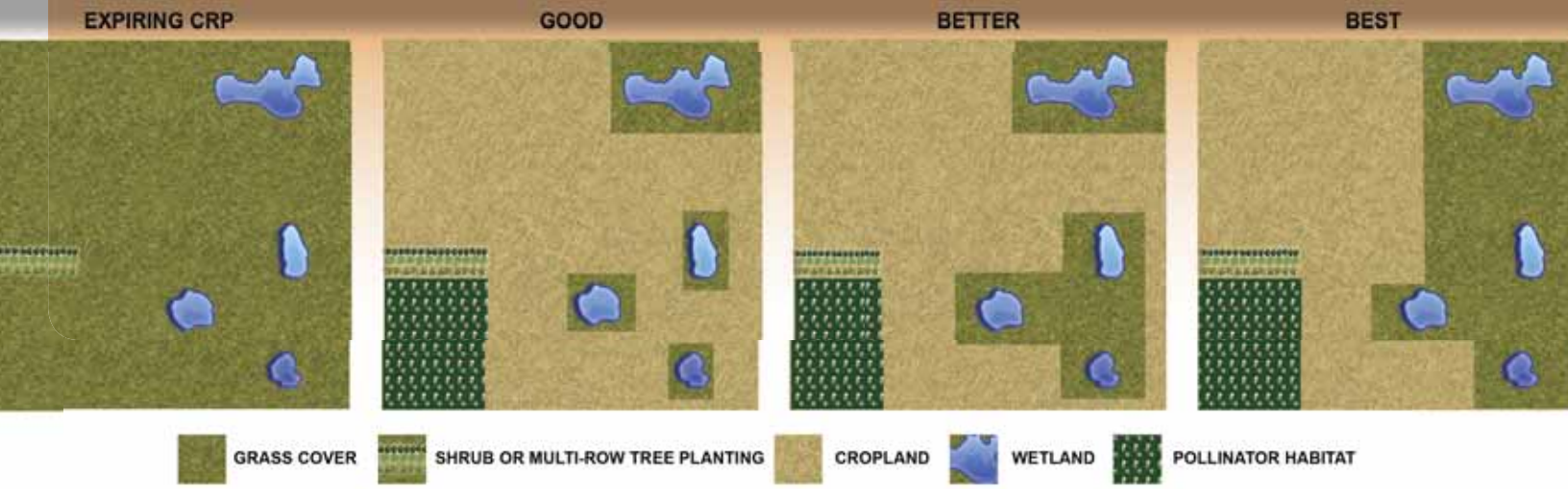
The diagram on the left depicts a parcel of CRP containing a perennial stream with natural woody cover and a food plot. After the CRP expired the landowner returned a portion of the CRP acres to crop production. In this scenario, grass cover was maintained around the riparian area. The food plot was removed because a portion of the area went into crop production. The green areas in the diagram at right were converted to alfalfa. The crop and alfalfa strips will be rotated every 4-5 years and cover crops are seeded on the cropland after harvest of winter cereals.



The diagram on the left shows a 160-acre parcel of expiring CRP that contains a wetland and is bordered by a multi-row shelterbelt. On the right is that same parcel after the CRP contract expired and the landowner returned a portion of the area to crop production. The landowner re-enrolled the right side of the parcel back into a general CRP contract, and converted an area to high diversity pollinator habitat as an enhancement. The cropland was returned to production using no-till. The area now provides all pheasant habitat requirements throughout the year.

6. In landscapes that are intensively farmed, provide nearby nesting and roosting habitat, such as planted cover (CRP and other set-aside grasslands) and wetlands. Include undisturbed or low-disturbance areas in the landscape to balance out more intensively managed areas.
7. Provide properly distributed food plots to prevent unnatural concentrations of wildlife, which may lead to starvation, disease outbreaks or competition with domestic livestock food supplies. Food plots in blocks minimize accumulation of drifting snow, and should be located within one-quarter mile of winter cover, to minimize pheasant exposure to the elements when traveling to and from feeding.
8. Heavy herbicide and insecticide use destroys many valuable wildlife food sources. Excessive or improper pesticide use in crop fields and adjoining areas will not only kill target weeds or insects, but also kill beneficial nontarget plants and insects.
9. Proper crop rotations can improve soil health and provide plant and insect diversity. Including winter cereals in a crop rotation system provides pheasants with green cover in which to nest in spring, and provides habitat through harvest. Fall-planted crops also break up field work throughout a farming operation because they mature earlier than spring-planted small grains.

   Other crops, such as flax, canola and sunflowers, attract insects and can serve as good brood-rearing habitat if insecticide use is limited. Corn and soybeans serve as escape cover during summer and provide a food source during late fall until snow gets too deep.
10. Consider incorporating alfalfa into a cropping system with small grains on a 4-5-year rotation. Delay haying until July 15, or leave an undisturbed block each year to allow for successful nesting. Wildlife-friendly haying operations reduce loss of nesting hens.
11. Recognize that genetically modified crops might reduce wildlife benefits due to fewer weed seeds and insects.
12. Managing crop residues can benefit resident wildlife. Tall stubble can provide food and thermal cover, and depending on snowfall, the benefits could last throughout winter. Combines equipped with stripper headers, which leave stubble height greater than 12-15 inches, provide the most benefit to pheasants while maximizing topsoil moisture retention.



The diagram on the left is an example of 160 acres of CRP prior to expiring. These CRP acres were dominated by smooth brome, providing nesting cover but not much other pheasant habitat. The area contains wetlands and a multi-row tree planting. After the CRP contract expired the landowner decided to return some of the 160 acres to crop production, but still wanted to maintain habitat for pheasants. The diagrams to the right are three examples of returning idled CRP acres to production while still maintaining some pheasant habitat. The wetlands and adjacent uplands were re-enrolled in a continuous CRP practice and brood-rearing (pollinator habitat) was added using a general CRP signup. The far right example provides optimum habitat retention while returning land to crop production. Nesting cover is maintained by retaining a large block of grass, brood cover is enhanced by pollinator habitat, and protected wetlands maintain winter cover.

COVER CROPS

Cover crops can provide wildlife food and cover. Taller crops provide obvious escape and thermal cover. Cover crop seed mixes used to improve soil health provide high protein forage for species such as deer and pronghorn. The diversity of plants used in mixes also adds to insect diversity for young birds. Cover crop mixes, which include species in the *Brassicaceae* family, such as turnip and radish, as well as soybeans, field pea, corn, sunflower, millet and sorghum, will provide quality seed for winter food if left standing to maturity.

Cover crops, although not a new concept, are gaining popularity throughout much of the Upper Great Plains. A true cover crop is planted for soil protection or enrichment between main crops. However, crops planted for a variety of purposes are sometimes called cover crops, regardless of when they were sown.

Known cover crop benefits include retention of soil moisture, building soil structure, preventing soil erosion, reducing chemical inputs, enhancing nutrient cycling, suppressing weeds, creating pollinator and beneficial insect habitat, and as forage for livestock.

As cover crops increase in popularity, the number of plant species incorporated into use has increased substantially. In general, four crop types are associated with cover crops.

These four cover-crop types include:

1. Cool-season grasses
   a. Annual
   b. Biennial/winter annual
2. Warm-season grasses
   a. Annual
3. Cool-season broadleaf
   a. Annual
   b. Biennial
   c. Leguminous
   d. Nonleguminous
4. Warm-season broadleaf
   a. Annual
   b. Leguminous
   c. Nonleguminous

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Cover crops can improve soil health and also provide winter food and cover.

Cropping systems can be tailored to enhance wildlife needs. A no-till cropping system, which includes high crop diversity from the four major crop types, provides a basic starting foundation. Cover crop combinations can address wildlife resource concerns; a partial list may include vertical structure, pollinators and food supplies.

Diverse cropping systems include opportunities or windows to seed cover crops. Specifically, after early harvested crops like pea, wheat, triticale and corn silage; or as season-long cover crops.

Cover crop seeding alternatives include:

1. Predominately cool-season annuals seeded in April and May – season long
2. Predominately warm-season annuals seeded in June and July – season long

3. Predominately cool-season annuals seeded after an early harvest
4. Predominately cool season biennials seeded after an early harvest.

Cover crops can provide suitable habitat for pheasants and other grassland nesting birds if they have adequate structure and are relatively undisturbed during nesting. Since pheasant nesting generally starts in late April, a biennial planting of cover crops may best meet hen requirements.

Species to consider include those that generally grow well in the fall and are likely to maintain rigidity and stature throughout a severe winter. Plants that are easily laid over by snow will not provide the needed structure the following spring.

A cool-season planting that is relatively undisturbed for an entire growing season may provide nesting cover for pheasants, provided it is seeded early enough. While a cool-season mix planted in late April would provide little nesting cover for first nest attempts, it might provide adequate nesting structure later on for hens that lose their first or second nest attempts to predation or abandonment.

Both biennial and season-long cover crops can also provide secure brood cover if proper species are used and they are managed to maintain structure and attract insects. The key is to include multiple species of flowering plants that differ in flower color and timing of flower production.

Again, insects are the primary diet of young chicks and insects are attracted to flowering plants. Insects also provide a valuable source of protein for adult pheasants any time they are available, particularly for hens during nesting.

If fall or early winter food for pheasants is a concern, incorporate small grains into cover crop mixtures regardless of when the crop is planted. Species that produce a lot of seed, and are of higher stature can provide valuable food well into winter, even in times of heavier snow.

While most cover crops do not provide secure winter cover, sorghum-sudan grass does have enough structure and vertical cover to protect wintering pheasants from heavy snow and prolonged cold.

INTERSEEDING

If expired CRP land is a monoculture with one type of plant such as smooth bromegrass or Kentucky bluegrass, or lacks legumes or forbs, consider interseeding adapted, native and/or introduced legumes into the field.

Benefits of establishing interseeded legumes or forbs can include improvements to soil health, increased forage production, enhanced diet quality for pheasant chicks, and better habitat for wildlife.

Interseeding the same or different grass species into existing grass stands has not proven successful. An onsite investigation to determine feasibility of interseeding is required. Timing of precipitation, soil structure, soil moisture at time of seeding, species selection, seedling vigor, seeding technique and competition from established species are all factors that determine the level of success.

Vigor and density of an existing stand will determine moisture available for new seedlings. Soil surface conditions, including amount of bare soil surface, litter amounts (thickness and extent), and presence of a root mat (most common with Kentucky bluegrass), directly affect the potential to obtain necessary seed/soil contact.

For existing native grass mixes, interseed native forbs. Species selection depends on soils. Most native forbs can be used for interseeding. Alfalfa and sweetclover are the most successful forbs to interseed into tame grass such as bromegrass. Seeding rates for adapted legume/forbs should be one-half the recommended full seeding rate for the species.

If multiple legume/forb species are interseeded, then the total seeding rate for all species should not exceed 50 percent.

Site preparation and seeding technique depend on the site. To reduce competition to seedlings, an application of Glyphosate could help suppress smooth bromegrass stands. Other techniques such as heavy harrowing when plant litter is dry (days with extremely low relative humidity) may reduce litter cover and help ensure seed to soil contact.

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Interseeding alfalfa (purple flowers in background) into tame grass can help improve pheasant nesting and brood-rearing potential.

Seeding equipment needs to penetrate the soil surface place the seed at the proper depth and ensure good seed to soil contact. Seeding should take place in early spring or late fall to provide seedlings the most favorable conditions. Late summer seeding is not recommended due to moisture limitations. If management includes grazing, defer for at least one growing season to allow for seedling establishment.

FOOD PLOTS

All pheasants need food.

Sometimes, particularly during difficult winters, humans feel the desire to help wildlife out, but this usually does more harm than good. Pheasants can become dependent on artificial food sources, and supplemental feeding congregates birds in a small area, often attracting predators and increasing predation risk. Supplemental feeding can also draw birds away from winter cover, exposing them to the elements and increasing mortality.

Alternatively, planted food plots provide a long-term food source and quality habitat with more natural feeding distribution to reduce the risk of disease transfer.

The most common food plots include annual crops such as sunflower and corn, though diverse annual crop mixtures are becoming more popular. These multi-species plantings not only provide a food source, but can provide brood rearing habitat and winter cover.

Food Plot Recommendations

Annual food plots can enhance pheasant survival by providing readily available food and improving the habitat complex. Food plots are especially important on land planned to provide a winter or early spring food source.

Many areas with quality winter habitat lack a nearby food source. Food plots can reduce mortality from weather and predators when placed in close proximity to winter protection. Food plots can also provide good nutrition for hens prior to egg laying.

The recommended food plot size is one-half acre to five acres. One pheasant needs approximately one bushel of corn over a five-month period. Food plot size should correspond to the estimated population of wintering wildlife.

Consider multiple food plots where adequate winter cover exists.

Locate food adjacent to or within one-quarter mile of winter cover, on the leeward side of protected areas. If that isn't practical, snow traps can reduce the amount of drifting into a food plot.

No-till planting is recommended to minimize erosion.

Planting should take place early enough to ensure plant maturity.

Adequately prepare the seedbed to ensure food plant establishment.

Food plots will be undisturbed until seedbed preparation the following spring, except for cultivating or spraying to control weeds.

Avoid planting food plots in a location that will increase wildlife activity near livestock feed supplies, newly planted trees or major roads and highways.

Food plots established away from winter cover will expose pheasants to weather elements and predators.

ANNUAL FOOD PLOTS

Crop	Rate	Date*
Corn	12,000 -18,000 plants/acre	May 20
Sunflower (oil type)	12,000 -18,000 plants/acre row crop 4-6 lbs./acre solid-seeded	June 5
Millet (Proso)	15-30 lbs. /acre	June 25
Sorghum (grain)	15-30 lbs./acre solid-seeded	May 25
Barley	60-90 lbs./acre	May 31
Buckwheat	50-60 lbs./acre	May 20
Flax	35 lbs./acre	June 10
Oats	50-80 lbs./acre	May 31
Rye	60-90 lbs./acre	Sept. 30
Wheat	60-90 lbs./acre	May 31
Sudangrass	15-30 lbs./acre solid-seeded	May 20
Lentil	40-70 lbs	May 20
Winter Peas	100-180 lbs./acre	May 20

**Planting dates will vary with location, the crop variety and weather conditions.*

Perennial Food Plots

Perennial food plots – those that do not require planting every year – provide added dividends for birds, especially those species whose chicks depend on insects for food, like pheasant and sharp-tailed grouse.

Perennial food plots comprised of flowering forbs attract insects and provide food for chicks. These forbs also attract pollinating insects such as bees, which benefit plant reproduction.

Perennial food plots can vary in size and location throughout nesting habitat to provide adequate feeding sites for chicks. Choose sites that are relatively free of noxious and invasive weeds and that have suitable soils.

Timely weed control prior to and during establishment is required. Maintain sites with weed problems weed-free for at least two years prior to planting.

A diverse mixture of native grasses and forbs is recommended, with no more than 25 percent grasses by seed count. A suggested perennial food plot seed mix is listed on this page.

PERENNIAL FOOD PLOT MIX			
Species	**Variety**	**%**	**Rate PLS LB/AC**
Sideoats grama	Pierre or Killdeer	5	0.375
Blue grama	Bad River	5	0.125
Switchgrass	Dacotah	5	0.225
Canada wildrye	Mandan	5	0.375
Green needlegrass	Lodorm	5	0.375
Subtotal		**25**	
FORBS *(lb./acre rate shown is doubled from percent seed count shown)*			
Blanketflower	Northern	5	0.7
Black-eyed susan	Northern	5	0.08
Blue flax	Appar	10	0.76
Yellow coneflower	Stillwater	5	0.15
Purple prairie clover	Bismarck or Northern	15	1.14
White prairie clover	Antelope or Northern	15	1.17
Canada milkvetch	Northern	10	0.8
Maximilian sunflower	Medicine Creek	5	0.1
Stiff sunflower	Bismarck	5	0.25
Subtotal		**75**	
Total		**100**	


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Corn next to a tree row is a typical annual food plot, but perennial plantings that include grasses such as switchgrass (left) and forbs like maximilian sunflowers (below left) are beneficial in summer because they attract insects that pheasant chicks need during their first few weeks of life.

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CRP has been on the landscape since 1986. Wildlife, including ring-neck pheasants, responded and achieved populations not seen since the Soil Bank days of the 1950s and 1960s.

North Dakota's populations of the 1990s and 2000s became new historic highs. Although the guidelines outlined in this document may not provide habitat equivalent to the CRP, they do provide options for landowners to enhance available habitat while maintaining income potential on lands where CRP contracts have expired.

Landowners concerned with pheasant and other wildlife populations should inventory their own and surrounding lands, and rely on a variety of tools to fulfill annual wildlife needs and maintain local pheasant populations.

Information on available resources is available by contacting a local NRCS office, Pheasant Forever biologist or North Dakota Game and Fish office.

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