



United States Department of Agriculture

CRP Management Activities

Natural Resources Conservation Service - Indiana – July 2020 (ver. 1.0)

Inter-seeding Job Sheet

Management Activities in the Conservation Reserve Program (CRP) ensure plant diversity and wildlife benefits are enhanced throughout the contract period, while maintaining soil and water resources. CRP participants are required to perform a Management Activity practice during the life of the contract. This job sheet describes the Inter-seeding management option.

Normally, Management Activities are conducted between the 4th and 6th year of the contract. However, on land with existing cover, disturbance activities can begin as soon as technically feasible. All required Management Activities must be completed by the end of year 6 of a 10-year contract and by the end of year 9 of a 15-year contract. No required Management Activity can occur during the last 3 years of a CRP contract, but there are options for additional voluntary management activities in this period.



INTER-SEEDING FORBS & LEGUMES & SMALL GRAINS

Once established, grasslands need management to prevent grasses from crowding out forbs and legumes over time. In the absence of disturbance, the composition of grassland communities will change over several years through normal plant succession. The vegetative structure changes as annual forbs and legumes are replaced by perennial forbs, grasses, and eventually, woody plants. Changes also occur structurally, as open ground networks decline, litter accumulates, and vegetation density increases. These changes lead to a decline in wildlife benefits.

The purpose of disturbance activities (disking, prescribed burning, prescribed spraying) is to enhance the wildlife value of the managed acres by reducing the grass top vegetation, leaving the root to maintain soil stability while allowing sun, exposed nutrients, and moisture to regenerate a diverse forb/legume community. Inter-seeding is one such management tool that can be used to augment this disturbance process. In addition to improving soil fertility through the ability to fix nitrogen, many legumes are also deep rooted and drought tolerant, which provide erosion control and soil health benefits. Forbs (any broadleaf plant) and legumes in grasslands are beneficial to birds, insects such as butterflies, and other wildlife. Annual small grains (sorghum, milo, millet, etc.) may be used in some circumstances, to create added competition for the perennial grasses, and allowing forb and legume growth. Wheat specifically has allelopathic properties that suppress grass growth, giving inter-seeded forbs a chance for establishment. Small grains can also provide additional food and habitat structure for wildlife.

This type of management is especially helpful for maintaining brood-rearing habitat for Northern bobwhite, Wild turkey, Ring-necked pheasant and pollinator habitat. The habitat quality is enhanced because this practice promotes favored seed producing plants and increases insect abundance. The insects associated with flowering plant communities provide critical nutrients, including protein and essential amino acids for growing nestlings and chicks. The structural diversity that results from inter-seeding forbs also improves habitat for a variety of grassland songbird species, including Dickcissels, Bobolinks and Savannah sparrows. Many of these species have experienced population declines over the last several decades.

Native legumes such as partridge pea, wild senna, round-headed and slender lespedeza, and leadplant are a rich and highly palatable source of protein and green browse. Legumes also tend to harbor a wide variety of insects that are an excellent source of protein for both game and non-game birds. The growth characteristics and structure also provide for a good interspersed of open ground beneath a shaded canopy. Small mammals and birds are able to move freely at ground level to search for seeds and insects. Loafing and roosting cover for wildlife is another benefit. Many legumes start growing in early spring when most grasses are still dormant and continue to grow well into the late fall, providing additional food resources.

Planting forbs and legumes can also provide habitat, or can enhance existing habitat, for pollinators, including Monarch butterflies. Season-long flowering plants provide both nectar and pollen as food for pollinators. Pollinator habitat also provides structure that other beneficial insects, such as predators and parasitoids need for cover, reproduction, and over-wintering. Monarchs face many risks that are resulting in declining populations across their North American range. Every monarch that successfully migrates to wintering sites in Mexico or along the California coast begins its life as an egg on a milkweed plant, and depends on nectar sources across miles of migratory flyway. Inter-seeding of native forbs and legumes can enhance areas for Monarch habitat if it includes an abundance and diversity of milkweed plants for breeding, and abundant nectar plants for fueling migration.

SPECIFICATIONS

The following are specifications for Inter-Seeding on CRP acreage:

- The Indiana (IN) NRCS Field Office Technical Guide (FOTG) Standard (647) *Early Successional Habitat Development/Management* will be used for this practice.
- Grassland fields must be established for a minimum of three (3) years before initiating inter-seeding.

SITE PREPARATION - NOTE: Except as indicated, all site preparation items below are required regardless of planting method used.

- Site preparation will result in a seedbed that consists of 40-70% exposed soil.
- Successful site preparation should begin the growing season before seeding. Methods for controlling existing vegetation include the use of herbicides, tillage, or prescribed burning.
- If spraying herbicide, work with a local consultant or Purdue Extension Specialist to determine the best herbicide combination and apply it at the appropriate time in the fall. Follow the manufacturer's label rates and guidelines when applying herbicides. Use herbicides rather than tillage on erosive sites.
- If burning is used for site preparation, see [IN NRCS FOTG Standard \(338\) Prescribed Burning](#) for additional guidance.
- The presence of annual weeds (such as foxtail, common ragweed, and perennial forbs) is not a concern, as these plants are important sources of food for wildlife, especially Northern bobwhite. The purpose of seedbed preparation is to control the density of these annuals during the establishment year, not to eliminate this group of plants.
- The following table shows the maximum amount of area that can be disturbed by Management Activities in a given number of years. However, to maximize wildlife benefits, participants may opt to perform MCM on one-third ($\frac{1}{3}$) of the area each of three (3) years if they so choose.

	MAXIMUM AREA TO BE DISTURBED	
	CP33	All other practices ¹
5 acres or more	$\frac{1}{2}$ of the area each of 2 years	$\frac{1}{2}$ of the area each of 2 years
Less than 5 acres		total area in 1 year

¹ CP Practices requiring management activities are identified by the State Technical Committee. See list for year of CRP enrollment, or CRP contract for information on those practices requiring management.

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- Strip spraying and disking will be avoided on environmentally sensitive areas including:
 1. Concentrated flow areas
 2. Critical areas
 3. Acreage within the first 20 feet of a practice that borders a water resource to avoid water quality resource concerns
 4. Other areas where gully erosion is likely
- Environmentally sensitive areas will be marked on the plan map to ensure Mid-Contract Management activities are avoided on these areas.
- Erosion from disked/sprayed strips will not exceed tolerable limits.
- Site preparation operations will not be performed from March 1 through July 15 for contracts prior to 2007, and from April 1 through August 1 for contracts starting in 2008, to protect the primary nesting period for grassland bird species. It is also recommended, but is not required, to delay site preparation until after August 15 to reduce the chance of harming fledgling birds and other young wildlife.
- Disking/spraying operations will be performed along field contours, or across the slope, when practical.
- Strips will parallel brushy or woody escape cover when feasible.
- All Federal, State and Local guidelines and Manufacturer's label rates will be followed when applying herbicides.

The following are specifications for inter-seeding forbs and legumes. Note that site preparation is critical and should be used in conjunction with the other disturbance techniques *Prescribed Burning*, *Strip Disking*, and *Strip Spraying*.

SEEDING DATES

Plant the selected species within the dates specified in Table 1 below.

Table 1 – Management Seeding Dates

Species/Mix	Growing Seeding Dates	Dormant Seeding Dates
Legumes	3/1-4/1 8/1-9/15	12/1-3/1*
Native Forbs	Not available	12/1-3/1
Small Grains except wheat	3/1-4/1	
Winter wheat	Not available	See Figure 3 for Hessian Fly-free dates

* Increase seeding rates by 25% dormant seeding.

Inoculate legume seed before seeding with the proper Rhizobia bacteria specific for the species. Re-inoculate seed if it was pre-inoculated more than 60 days prior to seeding.

SPECIES SELECTION

1. General wildlife

- In native plantings, forb and legume mixes will contain a minimum of five species and meet the specification in the Indiana NRCS Wildlife Seeding Tool.
- Only native forbs and legumes may be used in native grassland plantings.
- In introduced species plantings a minimum of ½-1 lb mix of two species of introduced legumes or forbs may be interseeded. See Table 2 for species.
- Small grains may be used in conjunction with forbs and legumes for added grass suppression. Seeding rates for small grains are listed in Table 2.

2. **Pollinators** (see Pollinator Habitat specific to Monarch Butterflies below, as applicable)

When pollinator habitat is the primary purpose, planting mixes will consist of:

- Forb and legume mixes meet the specifications in the Indiana Wildlife Seeding Tool for pollinator requirements.

3. **Pollinator Habitat specific to Monarch Butterflies**

- When Monarch habitat is the primary purpose, meet the Indiana Wildlife Seeding Tool for monarch habitat requirements.

PLANTING METHODS

Drill Seeding: Ensure the drill is designed to handle the seed being planted (especially important for native forbs and legumes). Many Quail Unlimited and Pheasants Forever chapters, as well as local Soil and Water Conservation Districts, have native grass drills available. Set the drill to provide an ideal planting depth of no more than one-fourth ($\frac{1}{4}$) inch unless otherwise directed. Seeding native forbs and legumes deeper than one-fourth ($\frac{1}{4}$) inch will lead to potential failure. Soils that are too wet or too dry can also cause improper seed placement.

Broadcast Seeding: Seed may be broadcast if completed in a uniform manner. Pre-mixing the seed with 200 lbs. per acre of pelletized lime and utilizing an airflow applicator is also effective. Seedbeds should be worked to a minimum depth of three (3) inches and firmed before seeding. The seedbed should be culti-packed before and after seeding. It is acceptable to see up to one-third ($\frac{1}{3}$) of the seed on the soil surface. Wind speed should be 10 M.P.H. or less when broadcasting.

The Indiana Department of Natural Resources, Division of Fish and Wildlife also has detailed information on seeding native forbs and legumes at <http://www.in.gov/dnr/fishwild/files/warmgrass.pdf>.

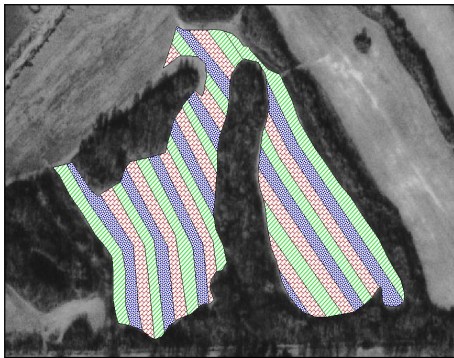
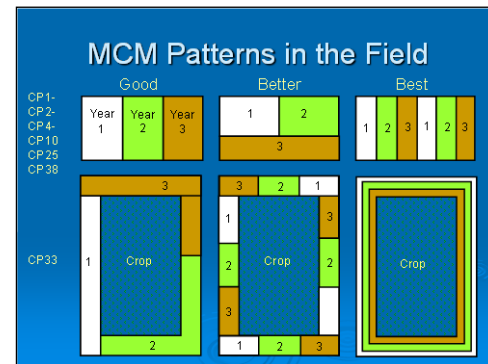
CONSIDERATIONS

- Inter-seeding low, wet areas should be avoided because these areas often develop sedge communities, adding additional plant diversity to the site.
- Inter-seeding should be planned for the least erosive parts of fields and not in places where gully formation is a problem. CAUTION: Disturbance activities in the late fall on highly erosive sites may cause erosion to occur over the winter months.
- Consider spot-spraying areas in advance of disturbance where noxious weeds, such as Canada thistle and Johnsongrass, or other invasive species, such as Reed Canarygrass, exist. Using no-till as a seeding method, rather than disking, will also reduce the potential for unintentional establishment of these species.
- Landowners should be wary of tile blowholes, groundhog holes, fallen tree limbs, and other hazards that may have developed since they were last in the field.
- Where the existing vegetation is extremely thick, tall, or rank, consider first using prescribed burns, herbicides, or mowing the season prior to seeding.
- Give the highest priority for treatment to areas that are dominated by a single plant species, especially a dense, monotypic stand of grasses such as fescue or smooth brome.
- Some seeding mixtures contain seed that is extremely small and thus have very low seeding rates. This may make it difficult to set seeding equipment to uniformly seed these low rates of very small seed. Under these circumstances, a carrier may be needed to add enough volume to the mix for proper metering. The carrier should be no larger than the largest seed species and have similar shape, density, and texture to the majority of the seeds in the mix. The carrier can be an inert material that does not have abrasive properties that may cause damage to the equipment or the seed.

EXAMPLE: 3-YEAR ROTATION

When disking entire fields, a maximum of 50-foot wide inter-seeded strips are recommended. Alternate an inter-seeded strip with two un-seeded strips to create a “plot”. Each of the two un-seeded strips should be the same width as the disked strip. Duplicate this pattern across the field. See **Figure 1** below. When fields are small (5 acres or less), or consist of linear practices such as CP33, see the example patterns in **Figure 2**.

1. In fall of the first year of disturbance, within each plot, inter-seed the first strip of land and leave the second and third strip un-seeded.
2. In fall of the second year, inter-seed the second strip, leaving the first (inter-seeded during previous year) and third strip un-seeded.
3. In fall of the third year, inter-seed the third strip leaving the first and second strips un-seeded.
4. In the fourth year, begin the rotation again, as indicated in the conservation plan.

Figure 1.**Figure 2.****Table 2.**

Species	Soil Moisture Tolerance	Pollinator-Friendly	Seeding Rates
<u>Introduced Legumes</u>			
Alfalfa (<i>Medicago sativa</i>)	MWD – ED	Yes	-
Clover, Alsike (<i>Trifolium hybridum</i>)	PD – WD	Yes	-
Clover, Ladino (<i>Trifolium repens</i>)	PD – WD	Yes	-
Clover, Red (<i>Trifolium pratense</i>)	MWD – ED	Yes	-
Clover, White (<i>Trifolium repens</i>)	PD – WD	Yes	-
Lespedeza, Common, Kobe, or Marion ⁴ (<i>Kummerowia striata</i>)	WD – ED	-	-
Trefoil, Birdsfoot (<i>Lotus corniculatus</i>)	MWD – WD	-	-
<u>Introduced Small Grains</u> ⁵			
Wheat ⁶	MWD – WD	-	35
Forage Sorghum	MWD – WD	-	6
Milo (grain sorghum)	MWD – WD	-	7-8
Millet (German/Pearl)	MWD – WD	-	8-10
Oats	MWD – WD	-	35

⁴ Substitutes for *Lespedeza* must be used on sites north of Interstate 70. Wheat may only be sown in the fall after the risk of Hessian fly is passed.

(-) = not rated

⁵ Small grains at shown rates must be interseeded in addition to forbs and legumes

⁶ Avoid wheat in situations where Canada thistle or other broad leaf noxious weeds are present.

Figure 3. Indiana Fly Free Seeding Dates for Winter Wheat

Soft red winter wheat should be planted within the two-week period following the Hessian fly-free date, which ranges from September 22 across the northern tier of counties in Indiana to October 9 in the extreme southern part of the state (Figure 1). There is no genetic resistance in currently available wheat varieties to the Biotype-L Hessian fly. Populations of this biotype have been steadily increasing over the past several years, and it is now a real threat to early-planted wheat. Early planting can also lead to excessive fall growth which could increase susceptibility to winter-kill as well as increased problems with several diseases. (Purdue-AY-244-W)

