



Mowing



Vegetation on any parcel of land will eventually change its composition through a natural process known as “succession”. For example, over a period of time an abandoned crop field will progress from bare soil, to grasses and forbs, to woody shrubs, and eventually to a climax community of vegetation best suited to that specific site or region. In most parts of Indiana that climax community will be some type of forest, such as Oak-Hickory or Beech-Maple forests.

Certain species of wildlife benefit from each stage of succession. As the abandoned crop field turns to a grassy, herbaceous condition, ground nesting birds and mammals find what they need to survive. These same species will not necessarily prosper if the entire area progresses to a forest climax, but forest-type wildlife will benefit.

Fortunately, succession is rarely a one way street. Tornadoes and high winds knock down trees, exposing bare soil and/or the area to direct sunlight. Floods, disease and insects can affect a plant community and reverse what succession has produced. Naturally occurring fires kill woody vegetation and set back the clock in favor of the sun loving grasses and forbs. The resulting patchwork of vegetative types is highly advantageous to the great number of wildlife species that require habitat variety to survive. Rabbits and quail certainly fit that category. Both will prosper where a combination of successional types, such as weedy fields, grasslands, and early stages of woody succession (brambles and brushy areas) are located adjacent to one another.

Succession can be stopped at a desired stage or even reversed to benefit certain species of wildlife, and to add to habitat diversity in the area. There are many ways to manipulate grassland succession, including **strip disking**, **strip spraying**, **prescribed burning**, and mowing (see the related Habitat Management Fact Sheet Sheets listed below).

General Mowing Recommendations

Mowing certainly has its place in managing wildlife habitat, but all too often it is used too frequently or incorrectly, creating unintended consequences. For example, mowing a grass field several times over the course of a growing season will ultimately thicken the grass component, eliminating the ability of forbs, wildflowers, and legumes to compete and remain within the stand. In essence, frequent mowing reduces the diversity of plant species within the grassland, which in turn reduces the diversity of wildlife foods, nesting sites, and structural diversity (protective cover) of the grassland. The resulting reduction in habitat diversity will reduce the diversity of wildlife and the quantity of wildlife the grassland can support. As the grass stand thickens it becomes increasingly impenetrable to many wildlife species and limits their ability to forage for food or to escape potential predators. Similarly, when the understory of a woodlot is frequently mown for aesthetic purposes, it too reduces the plant diversity, nesting cover, and structural diversity; which in turn reduces the wildlife diversity and the quantity of wildlife using the woodland.

When used judiciously, at the proper time of the year and in the proper manner; mowing can be a useful wildlife habitat management tool: It can be used to help control annual weed growth when establishing native warm season grasses; to stress native warm season grass stands that have become too thick; to control the invasion of woody stems in a grassland; to create a diversity in vegetation heights; to maintain firebreaks and trails; and to reduce the amount of standing vegetation prior to conducting a prescribed fire or herbicide treatment.

Since the repetitive use of mowing has the tendency to reduce plant and wildlife diversity, as well as the number of individual wildlife using the area, landowners should first determine what their management objective is for the area in question, and then select the most appropriate method(s) to achieve that objective. If the objective is to maintain a grassland condition that will maximize wildlife diversity, then strip disking, strip spraying or prescribed burning are probably better options. However, in some cases mowing may be the most appropriate management tool.

When determining the best course of action, the timing of vegetation management also needs to be considered. In general, Indiana's primary nesting and brood rearing season for grassland wildlife extends from April 1 through August 1. Landowners are strongly encouraged not to conduct grassland management activities during that time. Mowing immediately prior to the nesting season will reduce the height of potential nesting cover, which may prevent some species from nesting, delay nesting until sufficient re-growth has occurred, or reduce the number of times the species normally would have nested during the year. On the other hand, mowing in the fall of the year can reduce the height and availability of protective winter roosting cover, reduce availability of winter food resources (seeds and berries), and reduce the quantity and quality of escape cover. Mowing that has been delayed until after the nesting season, should be performed prior to October 1, to allow plants to reach sufficient height to provide some winter cover benefits. In general, any type of mowing, including the mowing of crop field borders, grassed waterways, and filter strips should be delayed until after August 1st.

Mowing for Hay

When mowing can't be delayed until after the nesting season, the following recommendations should be followed to minimize wildlife impacts during haying operations. Research has shown that many farmland related wildlife species, such as rabbits, quail and pheasants place most of their nests within 50 feet of some type of edge or protective cover. When cutting hay, refrain from cutting the first 50 to 60 feet of hay around the entire perimeter of the field or delay cutting the perimeter until

future cuttings are performed. Leaving just one or two mower widths along one or more edges of the hayfield, especially along woodland borders, can be extremely beneficial.

Most wildlife tend to avoid crossing large open expanses and will tend to stay hidden in whatever cover is available. Wildlife are more prone to being killed during haying operations if the cutting pattern results in concentrating wildlife in an ever shrinking patch of uncut hay in the middle of the field. Instead, initiate hay cutting operations from the center of the field and work outward. This will give wildlife the opportunity to escape into surrounding areas under the security and protection afforded by the existing tall, uncut grass.

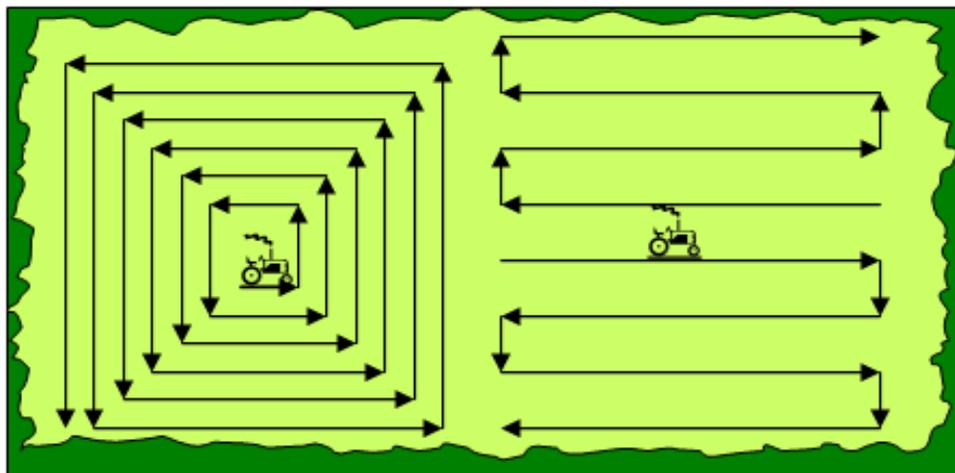


Figure 1. When mowing grasslands start cutting from the middle and work outward.

Noxious Weed Control

When mowing is used to assist in the control of noxious weeds, limit mowing to only those portions of the field that are affected (spot treat) and raise the height of the mower blades so that only the seed heads are removed. Mowing of noxious weeds should only be used as a temporary means of controlling noxious weeds until such time that appropriate methods for eradicating the noxious weed can be applied. Most noxious weeds, like Johnsongrass and Canada thistle, spread vegetatively by rapidly spreading root systems as well as by seed. Mowing only removes the potential of the plants to spread by seed dispersal and, therefore, does not eliminate the existing plants and their potential to laterally spread by root growth. To effectively eradicate noxious weeds, the judicious use of an appropriate herbicide, applied at the proper time(s), must be utilized.

Firebreaks and Critical Erosion Control

Although repetitively mowing grassy areas during the nesting season is strongly discouraged, there are a couple of exceptions. Firebreaks are one of those exceptions. Firebreaks that have been seeded to legumes or a mixture of grasses and legumes should be mown frequently. Frequent mowing keeps the vegetation short and lush, and reduces the build up of thatch that could potentially carry fire across the fire break. The other exception is where a thick grass sod needs to be maintained to prevent critical erosion problems. This would especially apply to earthen dams and levees.

Strip Mowing

Strip mowing is a useful technique for controlling the invasion of woody stems in grassland situations where the desired plant composition is currently present but the wildlife species being managed for have limited mobility or small home ranges. Managing a grassy field for eastern cottontail rabbits would be a good example, where the objective is to maximize the interspersed of tall erect vegetation for protective cover, with short succulent vegetation for foraging. By alternating mown and non-mown strips of vegetation across the entire field, the whole field can continue to

supply both habitat types and support a healthy rabbit population while keeping the invasion of woody stems in check.

Strip mowing is typically conducted over a two to four-year period where only one-half to one-fourth of the field is mown in any given year in linear strips across the entire width or length of the field. Mown and non-mown strips of vegetation are alternated with one another. Whether the entire field is ultimately mown over a two, three or four-year period depends on site conditions such as soil fertility, annual soil moisture, and the extent to which the site is prone to seed dispersal from mature trees near the area. Typically, a site with high soil fertility and moderate soil moisture is more apt to experience rapid woody growth once the seed source has become established. Therefore, a greater portion of the site will need to be treated with strip mowing in any given year to keep woody succession under control. On low fertility and droughty sites, strip mowing one-fourth to one-fifth of the field in strips each year may be all that is needed to keep woody invasion at bay.

Remember that the primary purpose of conducting strip mowing is to control woody invasion. Therefore, utilize strip mowing only to the degree that it is necessary to control woody plants and to maintain the proper habitat for the wildlife species being managed. If the area being managed has extensive woody invasion pressure, then alternative habitat maintenance practices, such as strip disking, strip spraying, or prescribed burning, might be better choices for maintaining the grassland.

When conducting strip mowing, the landowner should first determine the frequency (two to 5 years) at which each portion of the field should be mown. Based on the desired frequency, the landowner should then determine the width and number of both the mown and non-mown strips. Narrow strips of non-mown cover increase the ability of predators to more efficiently locate potential prey; therefore, non mown strips should be at least 30 feet wide - if not wider. To simplify the task, most landowners use the width of their mower as a guide. For example, let's suppose that the landowner's objective is to apply strip mowing to one-third of the field each year. The landowner might accomplish this by mowing a linear strip equal to twice the width of his mower. In other words, mow a strip and then turn around and mow another strip immediately next to the first one back to the beginning. The landowner would then skip an area equal to 4 times the width of his mower, before mowing another strip twice the width of his mower. The landowner would continue alternating the sequence (mow 2 widths, leave 4 widths) until the far end of the field is reached. The next year, the landowner would begin by mowing one-half (2 mower widths) of each of the strips that he did not mow the first year. The third year, the landowner would mow the remaining strips that were not mowed the first and second years.

Block Mowing

Block mowing is an alternative method for controlling woody invasion in grassland settings in which a field is divided into large blocks with each block mown in a different year. One might use block mowing, instead of strip mowing, when the objective is to manage the field for wildlife species requiring larger areas of structurally similar habitat (less interspersed). Block mowing would be a better alternative for managing species like grassland songbirds, pheasants, amphibians and reptiles.

Remember that the primary purpose of conducting block mowing is to control woody invasion. Therefore, utilize block mowing only to the degree that it is necessary to control woody plants and to maintain the proper habitat for the wildlife species being managed. If the area being managed has extensive woody invasion pressure, then alternative habitat maintenance practices, such as strip disking, strip spraying, or prescribed burning, might be better choices for maintaining the grassland.

Potential Negative Effects of Strip or Block Mowing

Mowing has other disadvantages beyond its negative effects on plant diversity and wildlife species diversity. Mowing also allows plant succession to advance from one plant community type to another. In particular, if the only vegetation management that occurs to a field is strip mowing or block mowing, then early successional plant communities, composed primarily of annual plants, will be replaced within a couple of years by plant communities composed primarily of perennial plants.

Annuals, such as a common ragweed, sunflowers, foxtails, smartweeds, and pigweeds; tend to produce copious quantities of large, high energy seeds which are important fall and winter foods for a wide variety of wintering birds and small mammals. Perennials on the other hand typically produce small quantities of very minute seeds, many the size of a grain of sand or smaller. Unless annual plant communities are maintained within the grassland to provide a variety of winter foods, the ability of the grassland to support year around wildlife populations is substantially diminished. In order to maximize the diversity and quantity of grassland wildlife, both annual and perennial plant communities must be maintained within the grassland. This can only be achieved by applying some type of management practice to a portion of the grassland that will expose the mineral soil, allowing annual plants to colonize the disturbed area. Once again, strip disking, strip spraying or prescribed burning may be better options for controlling woody invasion and providing the ground disturbance necessary for maintaining a combination of annuals and perennials within the grassland.

Strip mowing and block mowing also encourage the development of a thick litter layer at the soil surface through the constant accumulation of thatch. As plants die, their dried up remains accumulate on the soil surface as thatch. As the amount of thatch increases, the litter layer becomes thicker. Seeds, falling from above, either get lodged in the litter layer or buried beneath it, placing the seeds out of reach to many forms of wildlife. Mowing does not eliminate thatch. In fact, mowing adds additional thatch with each mowing. Some forms of wildlife, including voles, shrews and some grassland sparrows, prefer grassland habitats with a thick litter layer. Species such as quail, pheasants, and some of the other grassland song birds prefer a sparse litter layer or none at all. In this case, strip disking or prescribed burning can be used to provide a diversity of litter layer depths across the grassland that will allow a greater diversity of wildlife to utilize the grassland on a more permanent basis. One might also consider flash-grazing the site after the primary nesting season as another tool to control woody invasion and thatch build up.

Mowing to Stress Native Grasses

Although most native grasses are bunch grasses that tend to grow in clumps rather than form a sod, they can become too thick for optimum wildlife usage. The most effective methods for maintaining native grasses for optimum wildlife usage have already been mentioned and include prescribe fire, strip disking, strip spraying, and flash-grazing. These methods not only control woody invasion, but they also increase plant and structural diversity, important for supporting a diversity of wildlife. However, if these methods cannot be used, mowing can be employed to help increase plant diversity to some extent. By stressing native grasses at the proper time, mowing can be used to thin a native grass stand and allow other plant species to colonize the grassland, but it will also add to the thatch build up.

The best time to stress native grasses with mowing is when they are most actively growing, which typically occurs between mid-July and mid-August. This, of course, conflicts with Indiana's primary nesting season, which also makes this practice a less attractive option. To sufficiently stress native grasses at this time of the year, the site should be mown as close to the ground as possible using the block mowing or strip mowing technique.

Mowing in Preparation for Prescribed Burning

Mowing can also be used in preparation for a prescribed burn of tall warm season grass stands to help control the length of flames near the edges of the burn area. Depending on the height of the grasses to be burned and the width of the adjacent firebreak or control line, the first 10 – 20 feet of the warm season grasses can be mown to reduce the flame height and intensity of the fire at that location. This practice can reduce the likelihood of flames jumping across firebreaks or reduce the intensity of the fire in areas where a backing fire is going to be ignited. If mowing is conducted in this manner, caution should be taken to make sure any grass clippings created from the mowing activity do not remain in the firebreaks. This material can quickly dry out from the heat of the fire and carry the fire

across the firebreak. If prescribed burning is going to be used, make sure a comprehensive burn plan is developed, and if necessary, seek professional assistance in conducting the burn.

Mowing in Preparation for Herbicide Application

Another use of mowing is to prepare a thick, rank or tall stand of warm season or cool season grasses for herbicide application. Mowing can reduce the amount of non-target residue (dead, leafy material) and ensure the maximum exposure of new growth to herbicide contact. Prior to herbicide treatment, the vegetation should be mowed and allowed to re-grow to a height of 6-12 inches. Grazing or prescribed fire can be substituted for mowing. Herbicides should be applied when the grasses are actively growing. For further information on applying herbicides, see the *Fescue Eradication*, *Warm Season Grass Management*, or *Warm Season Grass Establishment* Habitat Management Fact Sheets.

Related *Habitat Management Fact Sheets*:

Prescribed Burning
Strip Disking
Strip Spraying

Fescue Eradication
Warm Season Grass Management
Warm Season Grass Establishment