

4 Cropland Management



Value of crop fields to wildlife fluctuates throughout the year depending on the cover or food resources in the field and the needs of wildlife. Developing crops and waste grains provide a significant resource to wildlife ranging from songbirds to black bears. Conservation tillage or no-till makes a positive impact on wildlife habitat. Benefits include improved water quality, availability of waste grain, retention of cover in fields, and increased populations of invertebrates that are important food for young turkey, quail, and many songbirds.

Research on quail under field conditions found that, unlike some pesticides used in the past, those insecticides legally used on North Carolina farms today have little direct effect on the health of quail chicks. Today's pesticides (insecticides and herbicides) are more likely to impact wildlife indirectly by altering suitable cover and the available food supply of insects in croplands.

Opportunities can come in unexpected places. Farmers in both the southern Piedmont and northern Coastal Plain have recently recognized wildlife benefits from innovations in cotton stubble management. By leaving harvested cotton stalks standing and either top-sowing small grain or no-till planting spring crops into standing stalks, farmers have cut fuel costs and added structure and cover provided by the harvested stalks to the landscape. By reviewing your cropping system with cultural, economic and wildlife goals in mind, you may find adjustments that will better accommodate your wildlife goals while meeting cultural and economic goals.

Crop Rotation

Crop rotation consists of planting different crops in a field from one year to the next. Long-term crop rotation means planting three or even four different crops before returning to the original crop. These practices increase the health of individual crops and add plant diversity to the land. Continuous cropping means that the crops in a field do not change each year. Crop disease experts report that the highest risk for crop diseases results from continuous cropping. Insect problems also are more prevalent under this system, so more pesticides are needed. Many corn and soybean diseases and associated pests can be controlled by a simple crop rotation.

Legumes always are a good choice for rotation because they add nitrogen to the soil and reduce fertilizer requirements for next season's crop. Legumes can also make ideal wildlife nesting cover and food if mowing is delayed until late summer. Clovers can be seeded into row crops after the last cultivation to reduce erosion, add nitrogen, and provide wildlife cover during the winter.

Small-grain crops such as wheat, rye, and oats provide nesting cover throughout the spring and summer. The stubble of these crops, cut high and left undisturbed or planted to no-till soybeans, makes excellent brood-rearing habitat for quail.

Drainage Ditches

Drainage ditches perform the critical function of removing water from cropped lands and are a prominent feature on North Carolina farmland, particularly in flat eastern North Carolina landscapes. Ditches also function as narrow wetlands, provide nest sites and cover for wildlife, serve as corridors allowing species needing cover to access cropland, and provide staging areas for wildlife to occupy when crop fields are deficient in cover. Often the value of ditches to wildlife can be enhanced with minor variations in maintenance and management.

Ditch banks provide the foundation that supports many early-successional birds in agricultural landscapes. Ditches support a vibrant wildlife community, including birds, rodents, rabbits, furbearers, reptiles, amphibians, fish, and aquatic organisms that would otherwise be absent from crop fields. Research conducted by North Carolina State University and the North Carolina Wildlife Resources Commission confirmed that fields with bands of natural cover along ditch banks have more quail and wintering songbirds than nearby fields with closely mowed ditch banks.

Approach ditch-bank vegetation management with an integrated pest management (IPM) philosophy. An increasing variety of herbicides is labeled for aquatic use and provides the opportunity to control a broad spectrum of tree species on ditch banks. Examples of herbicides with aquatic labels are Rodeo (glyphosate), Habitat (imazapyr), and Garlon 3A (Triclopyr).

Consider controlled drainage on level land. This practice uses drop boards to manage water levels. Drop boards allow the farmer to hold water in field ditches, which provides more water for crops, reduces nutrient discharge, and increases the value of ditch habitats to aquatic species. Boards are removed to dry fields during wet periods and to allow equipment access for planting and harvest.

The preferred alternative for managing vegetation on ditch banks is to selectively remove trees with herbicides while leaving low-growing plant communities to filter runoff, provide habitat for wildlife, and to hold ditch bank soils in place.

If you must mow, time ditch-bank mowing to avoid nesting season (April 15-Sept. 15). Save time and fuel by mowing in alternate years, leaving cover on some ditches each winter, or by targeting problem trees with spot-mowing while leaving low-growing grasses, shrubs, and forbs. Mow high and leave 10 to 12 inches of stubble. This provides some cover for wildlife and prevents scalping, which can lead to sloughing ditch banks and more frequent maintenance.

Water quality researchers have found that a 20-foot buffer of volunteer vegetation along ditches will remove the majority of nutrients from most North Carolina crop fields. Backing crops off ditches even a few feet helps to filter nutrients and can reduce ditch maintenance by preventing sediment from entering the ditch. However, sheet flow of water across buffers must be maintained to effectively remove nutrients and sediments. It is critical to have fields properly sloped and buffers well maintained. Hoe drains, or areas of concentrated flow from the field into the ditch, defeat the water quality benefits of ditch-bank buffers.



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The value of drainage ditches to wildlife can be enhanced by buffers of planted or volunteer vegetation.

Field Border Systems

Wildlife benefits aside, a good case can be made to implement field border systems based on profitability on many farms. Researchers have studied many aspects of field border economics. They learned that field edges are often the least productive areas in the field. In some cases, the cost of soil preparation, seed, fertilizer, chemicals, and harvest exceeded the value of the crop produced. Field borders did not appear to contribute to major pest problems from weeds or insects and may enhance beneficial insect populations. Crops adjacent to field borders managed for wildlife did not experience reduced yields. These considerations, along with the fact that border establishment can produce annual rental payments through USDA conservation programs, suggest that landowners can turn unproductive field edges into income-producing areas. Finally, quail populations were found to double on Coastal Plain farms with field borders when compared to similar farms nearby without borders. Field borders also were found to provide important habitat benefits to several species of declining songbirds.

Quail, and a host of songbirds, can benefit from field borders of volunteer vegetation. Borders typically volunteer in ragweed, goldenrod, asters, and other forbs and quickly develop into nesting and brood habitat. Borders can be created by simply allowing a strip of cropland adjacent to the field edge to go fallow or by planting a mixture of native grasses and forbs. If initially bare, borders can be planted in an annual grain crop such as sorghum or wheat and then allowed to develop into volunteer vegetation. Borders that run parallel to the row direction are easier to maintain and are less likely to be damaged by farming activities. Borders are beneficial in any cropping system but are most productive when integrated with no-till grain farming and forest-management practices that encourage groundcover.



Yields are often lower where crop fields border mature woodlands.

Narrow borders can be ecological traps since they attract nesting birds, but are easy for predators to hunt efficiently. Research in southeastern North Carolina found that field border systems were more beneficial to nesting birds in agriculture landscapes than in forested landscapes. Fallow habitats arranged in blocks were more effective than narrow linear field borders. The benefit of arranging habitat in blocks was especially important in forest-dominated landscapes.

Borders require maintenance. A combination of spot-spraying invading trees and disking on a two- to three-year rotation will keep borders in productive plant communities. Disking in fall or winter usually results in plant communities that provide more foods and better structure than disking in spring or summer.

Field borders between 30 to 120 feet in width may be eligible for enrollment in USDA conservation programs. Qualifying borders are eligible for cost-share for establishment and annual rental payments. Check with your local USDA Service Center for more information.

Contour Strip Cropping

The practice in which row crops are planted in strips along the natural contour of the slope and next to a grass or fallow strip is referred to as contour strip cropping. It provides erosion control and plant diversity.

The strips of grass, legumes, or small grains act as a filter that traps sediment and slows water runoff. The strip width is dictated by the severity of the erosion problem and the slope of the field. Where erosion is severe, permanent grass strips should be maintained between strips of crops. These strips should be seeded to a mixture that is beneficial to wildlife. Seeded strips serve as travel lanes and cover for wildlife. These strips also provide nesting and roosting cover and ideally should be maintained by burning in early spring on a two- to three-year rotation.

Cropland Wildlife Management Tips

- Field borders can be used to straighten field edges and eliminate short rows.
- Field borders have less impact on farming practices when placed parallel to row direction.
- Field borders of diverse perennial forbs and native grasses support higher insect populations than borders of volunteer vegetation.
- Spot-spraying encroaching woody plants with appropriate herbicides and disking on a two- to three-year rotation will maintain borders for early-successional birds.
- Control fescue, Bermuda, and Bahia grass prior to establishing borders for wildlife.
- Integrate field borders with woodland edge practices like *edge feathering*, *fell and leave*, and heavy thinnings.