Crop residues offer food, cover for birds and small mammals

A literature search of the effects of cropland tillage on wildlife habitat found that conservation tillage systems—known for their ability to reduce soil erosion and energy consumption, and improve water quality—also offer food and cover for wildlife.

For instance, significantly more species of birds nest in no-till corn fields than in conventionally tilled fields because of food availability, amount and height of cover, and less disturbance.

The literature search by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Wildlife Habitat Management Institute—now the Agricultural Wildlife Conservation Center (AWCC)—led to development of two summaries: *Conservation Tillage Systems and Wildlife*, and *Conservation Tillage and Terrestrial Wildlife*.

The summaries are now available online from the AWCC at http://www.whmi.nrcs.usda.gov/technical/literature.html.

Research literature indicates four major factors of tillage systems affect wildlife habitat and populations in cropland settings:

- Amount and height of cover provided by crop residue
- Availability of wildlife food in crop residue
- Timing and frequency of disturbance (equipment passes)
- Toxicity of pesticides (direct and indirect effects)

Residue increases wildlife cover

The general rule is that the greater the amount of crop residue a tillage practice leaves on the surface, particularly standing residue, the better the practice is for birds and small mammals, according to Ed Hackett, a biologist with the NRCS, who facilitated the study for the AWCC.

Highlights of the literature search include the following:

- Diversity and density of nesting birds diminishes as amount and structure of soil surface residue decreases. No-till appears to be the only tillage system that reduces disturbance enough to have a positive influence on nesting birds, not because the nesting habitat quality is high, but because the low frequency of disturbance gives birds that attempt to nest in these fields an opportunity to do so successfully.
- Ring-necked pheasant, grasshopper sparrow, and meadowlark nest mostly in no-till when nesting in corn and soybean croplands.
- Increased residue amounts tend to increase diversity rather than density of small mammals.
- Increased residues seem to increase diversity of beneficial insects.
- In the northern prairies, waterfowl production was 3.8 times greater on no-till small grain farms than on conventional tillage farms.
- Attracting nesting birds to the residues left by conservation tillage may be an ecological trap, because of the timing and frequency of equipment passes

The literature search was undertaken by AWCC to assist NRCS field office personnel as they work with farmers and ranchers to conserve natural resources on agricultural lands.

The AWCC, located in Madison, Mississippi, is a fish and wildlife technology development center.

Photo by Roger Hill

Northern bobwhite

Summary of:

Agricultural Wildlife Conservation Center Project—unnumbered

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