

# TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE STATE OF COLORADO NATURAL RESOURCES CONSERVATION SERVICE

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## BIOLOGY TECHNICAL NOTE NO. 10

March 3, 2004

**To:** All Area Offices  
All Field Offices

**From:** Terri Skadeland  
State Biologist

**Re:** Retention of tall wheat stubble for pheasant habitat

This Technical Note contains information on how to manage wheat and small grain stubble for pheasant habitat. It was developed by NRCS and Colorado Division of Wildlife.

Cost-sharing may be available through several different programs. Check with program managers for details and specific program requirements.

## Harvesting Wheat to Retain Tall Wheat Stubble

Ring-necked pheasant populations within the Great Plains fluctuate with the quality of habitat and severity of winters. In Colorado, a long-term decline in pheasant populations may be related to changes in agricultural practices. While numerous farming practices can be detrimental to pheasants, none has had as devastating an impact as conversion to semi-dwarf varieties of wheat. Shorter wheat and the availability of modern combines to handle large quantities of straw have made it possible for farmers to cut wheat lower to the ground to harvest grain from all possible plants. The net effect is most wheat stubble now averages about 6-10 inches in height.

Wheat stubble is the predominant cover available to pheasants from autumn until green wheat approaches 12 inches in height in spring. Consequently, wheat stubble is used extensively by pheasants for feeding, escape, and day and night roosting from harvest until it is cultivated the following year. Research in Colorado has shown survival of pheasants is directly related to the concealment quality of wheat stubble, which is determined by the height of wheat stubble and the presence and composition of weeds. Wheat stubble is also extensively used by hen pheasants and other ground nesting birds for nesting. The poor cover value of short stubble is compounded by the increasing use of herbicides or other mechanical treatments to control weeds after wheat harvest. Additionally, many farmers have incorporated millet, sunflowers, or dryland corn into their traditional wheat-fallow rotation to produce two crops in three years. Because some of these other crops don't provide significant cover for wildlife, it is imperative that the wheat stubble that remains provides adequate cover. Thus, management of wheat stubble has more potential to impact pheasant populations, positively or negatively, than any other activity or habitat development.

Stubble height and quality can be improved by use of stripper headers or by raising the cutter bar on conventional headers. Stripped wheat stubble was over twice as tall and provided double the cover value of conventionally cut wheat in a study conducted in eastern Colorado in 1995. Increasing stubble height by either method will improve pheasant survival, maintain crop residues, trap more snow, improve soil moisture, and reduce wind and water erosion. Research in western Kansas has indicated that stubble height influences weed composition with shorter stubble dominated by annual grasses and tall stubble dominated by sunflowers and other broadleaf weeds. In this same study, herbicide treatments reduced pheasant use by 80%.

### Improving Wheat Stubble for Pheasant Habitat through Conservation Planning

Justification for planning conservation practices to improve pheasant habitat is based on the Pheasant Wildlife Species Model (WSM). The model is found on the eFOTG at: [http://efotg.nrcs.usda.gov/efotg\\_locator.aspx?map=CO](http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=CO) under Section 1, Technical Notes, Biology, Ring-necked Pheasant Technical Notes.

If the WSM shows stubble height is a limiting factor, the producer may be able to increase his/her WSM score to the required 0.5 or higher by managing wheat, barley, or oat fields in occupied pheasant range so that wheat or small grain stubble measures 15 inches or taller following grain harvest. See above for techniques.

Improving other limiting factors such as nesting cover and other winter covers and food may improve overall habitat quality for pheasants. For example, if the WSM shows winter cover,

other than wheat stubble, and/or food are problems, defer post-harvest herbicide use until April 30<sup>th</sup> or later. This will maintain broadleaf weeds and forbs as food and cover through the winter. Leaving weeds and forbs may help improve the overall habitat quality of tall wheat stubble by providing additional cover areas and food sources. Contact herbicides may be used where noxious weeds are a problem. Likewise, nesting cover, and overall pheasant habitat, may be improved by avoiding tillage, grazing, and mowing of grasses, green growing wheat, forbs, and legumes from April through July 1<sup>st</sup>.

Refer to the Pheasant WSM to determine if other limiting factors need to be addressed in order to bring to overall score up to 0.5 or higher.

#### References:

Rodgers, R. D. 2002. Effects of wheat-stubble height and weed control on winter pheasant abundance. *Wildlife Soc. Bull.* 30(4):1099-1112.