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Ecofallow under Colorado conditions—planting equipment and methods

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Quick Facts

- Planting in heavy residue is a critical phase in an ecofallow system.
- Penetrating stubble to place seed at the proper depth requires a specific type of grain drill.
- Modification of commercial grain drills may be necessary at planting where very high stubble rates remain on the soil surface.

A principal advantage of an ecofallow system is maintaining a high level of wheat residue on the soil surface. These large amounts of straw retain snow, decrease runoff and evaporation and so are responsible for increased water storage in the soil. However, the residue cover also can present chemical application and planting problems.

Rainfall following residual herbicide application is the principal means of getting the material off the residue and into the soil. There it can act on germinating weed seeds. Nature does not help with planting. Placing seed at the proper soil depth depends solely on the farmer and the equipment used. To seed winter wheat with conventional shoe drills, stubble must be managed with one or two timely tillage operations.

Drill Modifications

Drills used in typical stubble mulch systems must have certain characteristics to penetrate stubble without clogging or dragging straw. However, these drills often need some modification to operate satisfactorily in the heavy stubble left with ecofallow. Wide row spacing—12 inches (30 centimeters) or more,—high clearance and staggered shanks are basic requirements. Generally, shoe- or hoe-type openers are more satisfactory than disks. Narrow openers (spear point) are more satisfactory than wide openers.

There have been two basic approaches used to reduce stubble dragging. Large coulters, usually about 18 inches (46 cm) in diameter, mounted in front of each opener must cut the straw cleanly, permitting the stubble to pass between shanks. All grain drill models do not have the clearance for coulters. Those that do must have the coulters in a fixed position. This means the drill must be removed from the ground for turning, or a very wide turn must be made. Due to the difficulty in turning, drilling back and forth across the field is probably better than the more common planting around the field. Disk assemblies for the old-style Noble drill are manufactured commercially.

The Nebraska Agricultural Experiment Station is working on experimental drills with coulters and drills with a "straw walker." A "straw walker" is a toothed wheel that runs between shanks and pulls the stubble through. The drill itself is a commercial model.

Without some special modification, the amount of stubble that a grain drill can pass through without dragging is largely a function of the row width. Twelve-inch (30-cm) row spacing has become a standard width for many drills manufactured for stubble mulch farming. Increasing the row width to 13.5 to 15 inches (34 to 38 cm) can reduce, but may not eliminate stubble clogging and dragging. Planting wheat successfully in wide rows with a no-till row crop planter has been reported, but the advantages and disadvantages need to be explored before recommending this planting practice.

The farmer contemplating ecofallow and especially no-till fallow should be fully aware of planting problems. Planning and modification of equipment, if needed, should be completed well in advance of planting time. Modified equipment should be field tested prior to actual planting.

Author's note:
Reference to products and tradenames such as the Noble drill or disk assembly in this publication is not intended to be an endorsement to the exclusion of others that may be similar.

[1/] *K. G. Brengle, CSU associate professor, agronomy; material for this summary was taken from the proceedings, Colorado Ecofallow Conferences, Feb. 1981, from papers presented by Darryl E. Smika, Gail A. Wicks, Robert H. Schieferstein, Greg J. Miley and John A. Knapp (12/1/81)*