

Chemical Weed Control During Fallow



Smika examines 14-month-old undisturbed wheat stubble.

USING herbicides to control weeds during fallow is one more management technique that farmers and ranchers on the Central Great Plains can use to increase the odds for a successful higher yielding wheat crop. Fallow is the period when fields are not planted to crops. This allows soil moisture to accumulate for the next crop's use if weeds are controlled.

Grain yields on lands where herbicides alone were used to control weeds during fallow averaged 44 bushels per acre. Conventional fallow, which uses sub-surface tillage to control weeds,

produced grain yields that averaged only 34 bushels per acre.

SEA research shows that when soil is not tilled, only the top 1 to 1½ inches of soil dries—no matter how long between rainfalls.

All too often, limited precipitation and uneconomical use of available moisture means crop failure for vast acreage of wheat lands from Canada to Texas. When farmers apply herbicides during fallow, weeds do not grow and the limited amount of moisture that is in the soil remains for the next crop.

When the best mechanical tillage methods available today are used, moisture storage during fallow rarely exceeds 35 percent. However, when contact and pre-emergence herbicides and no tillage are used, water storage has been as high as 60 percent and averages above 52 percent during fallow.

Why? Although tillage controls weeds, each pass of the tillage tool over the field results in soil drying amounting to as much as one-third inch loss in 24 hours. Herbicides kill weeds without disturbing the soil.

Tillage to control weeds is not usually performed until weeds are 2 to 3 inches high. By this time, weeds have removed

much valuable soil moisture. This moisture loss can make the difference between a crop and no crop. Pre-emergence herbicides kill weeds before they emerge and before they have used moisture.

"We learned that replacing tillage with chemicals during fallow results in more dependable crop production," says soil scientist Darryl E. Smika.

A major additional benefit of herbicide fallow will be cleaner air because leaving all crop residue on the soil surface will protect against wind erosion. These residues are often destroyed during tillage. Also, using conventional tillage increases soil susceptibility to wind erosion by 20 to 25 percent compared to virtually zero for chemical control during fallow.

Cost for chemical control is about \$18 to \$24 per acre compared to an estimated \$17 to \$23 for conventional tillage fallow. "Chemical weed control reduces fuel consumption by 50 to 70 percent and increases wheat yield by 10 bushels per acre," adds Smika.

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