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Ecofallow under Colorado conditions— selecting herbicides

COLORADO STATE UNIVERSITY EXTENSION SERVICE



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no. .105

Quick Facts

- Residual herbicides remain active in soil over a period of time and control many common weeds.
- Nonresidual herbicides are necessary for burn-down of growing weeds.
- Tank mixes of the two herbicide types can reduce the number of trips required for application.

Editor's Note: Reference to products and tradenames in this publication is not intended to be an endorsement to the exclusion of others that may be similar. Persons using such products assume responsibility for determining if they are safe and effective for the intended use in accordance with manufacturer's current label directions.

Objectives for selecting ecofallow system herbicides in a winter wheat-fallow rotation should be good weed control and no chemical carry-over. Good weed control is required to increase soil water storage, and chemical dissipation, prior to planting, is necessary to obtain a stand capable of utilizing additional soil water. To fulfill both objectives, both residual and nonresidual herbicides usually are required.

Residual Herbicides

Three residual herbicides presently are labeled for use in Colorado's winter wheat-fallow system. These herbicides generally are effective against many grassy and broadleaf weeds and remain active in the soil over varying time periods.

Atrazine (including *Atrazine* or *Aatrex*, trade names of Shell and CIBA-Geigy Chemical companies respectively) was the first residual herbicide labeled for use in a winter wheat-fallow rotation. It is a long-acting residual herbicide that can remain active 14 months or longer, depending on the soil, application rate and climatic conditions. Atrazine must be applied at least 12

months prior to planting winter wheat. Its relationship to soil properties is discussed in Service in Action sheet .104, *Ecofallow under Colorado conditions—selecting soils*.

Atrazine has some advantages over other residual chemicals, although its longer activity period can cause some crop damage. Presently, atrazine costs less than other residual herbicides and is used at a much lower rate. Atrazine keeps the cost of ecofallow competitive with other systems, but its use must be tempered with judgement.

Triazine herbicides (including *Igran* and *Bladex 80W*, trade names of the CIBA-Geigy and Shell Chemical companies respectively) can remain active in soil up to four months. Labeling these short residual chemicals for ecofallow has improved the probability of satisfactory results on many eastern Colorado soils. Both chemicals are labeled for tank mixes with atrazine. The mixtures strengthen weed control on soils requiring lower rates of atrazine.

These herbicides also are labeled for use in spring applications but must be applied at least 120 days prior to seeding. *Bladex 80W* and *Igran* have some burn-down effect on small weeds—less than 1½ inches (3.8 centimeters), tall—but they are most effective on germinating weeds. Spring application of *Bladex 80W* should be made in early March. *Igran's* performance may be improved with application about mid-April.

The rate of either chemical used should conform with the labeled rates for both mixtures and single chemical applications.

Nonresidual Herbicides

Nonresidual herbicides (including 2,4-D esters, and *Paraquat* and *Roundup*, trade names of *Chevron* and *Monsanto Chemical* companies

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respectively) are used for burn-down of growing weeds. The chemical 2,4-D ester is effective only on broadleaf weeds, but Paraquat and Roundup are capable of controlling most grasses and broadleaf weeds. Paraquat and 2,4-D ester are most effective when applied to small weeds—less than 5-6 inches (13-15 cm) tall. Roundup generally is more effective on volunteer wheat, but its effectiveness varies with the stage of growth for different weeds. Paraquat and/or 2,4-D ester can be tank-mixed with atrazine or atrazine-Bladex or Igran mixes. Roundup cannot be tank-mixed with the triazine herbicides, however, it is labeled for tank-mixing with Banvel (a trade name of the Velsicol Chemical Corporation).

Volunteer wheat, which can be a problem at times, is probably best controlled by Roundup. Bladex should be used with atrazine when conditions are favorable for volunteer growth.

A surfactant such as X-77 is required to facilitate spreading of Paraquat and Roundup for complete coverage of plant leaves.

Time of Application

Contact herbicides can be applied any time, but to be effective active weed growth or other favorable growth conditions should exist when sprayed. The herbicides selected and application rates should depend on the type and size of weeds, soil properties, climatic patterns and application timing. A very general guide for timing herbicide application with existing conditions is presented in Table 1.

Annual grasses must be controlled before setting seed. Ecofallow tends to reduce the total weed population over a period of years, but grassy weeds and hard-to-control broadleaves tend to increase.

Table 1: Application of chemicals for ecofallow.

| Time of application | Condition | | Herbicides | | |
|---|---------------|---------------------------|------------|-----------------|---------|
| | Growing weeds | Favorable for germination | Atrazine | Igran or Bladex | Contact |
| Within 10 days ¹ after wheat harvest | Yes | Yes | Yes | Possibly | Yes |
| | No | Yes | Yes | Possibly | No |
| | No | No | No | No | No |
| Late fall ² to mid- October | Yes | Yes | Possibly | Yes | Yes |
| | No | Yes | Possibly | Yes | No |
| | No | No | No | No | No |
| Spring ³ March to mid- April | Yes | Yes | No | Yes | Yes |
| | No | Yes | No | Yes | No |
| | Yes | No | No | Possibly | Yes |
| Late spring ⁴ May-June | Yes | Yes | No | No | Yes |

¹• Igran or Bladex used in tank mix with atrazine:

- when soil properties require lower rate of atrazine,
- for better burn-down of small growing weeds,
- when volunteer or weeds were not controlled by atrazine,

• Herbicides need not be applied if weeds are not growing and conditions are not favorable for germination.

²• Atrazine rate should be reduced.

• Short acting triazines (Bladex or Igran) can replace atrazine.

³• Bladex or Igran can be used if applied 120 days prior to planting.

• Contact sprays should be used only if weeds are growing.

• Bladex 80W cannot be used in the spring if it was applied in the fall.

⁴• Residual herbicides cannot be used if wheat is going to be planted at optimum time in fall.

• Contact sprays can be used on through summer until two weeks prior to planting.

• Subtillage can be used through summer in place of herbicides.