

# Developing a Jointed Goatgrass Management Program for the Intermountain West

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## Jointed Goatgrass

Jointed goatgrass (*Aegilops cylindrica*) is an annual invasive grass weed that infests winter wheat fields in the western United States, resulting in reduced wheat yield and quality. Jointed goatgrass infestations can reduce wheat yields up to 30%. In 2003, yield losses due to jointed goatgrass infestations for the Intermountain region, including Utah, southern Idaho, and parts of Nevada, were approximately 139,000 bushels of winter wheat.

**“Jointed goatgrass has become one of the most devastating weeds to infest winter wheat and other cereal grains in Utah and other winter wheat-producing areas.”**  
Troy Price 1996, USU MS Thesis

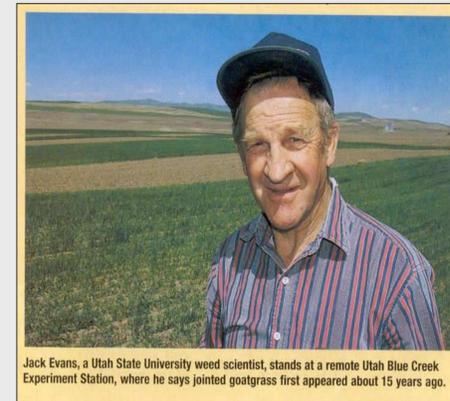
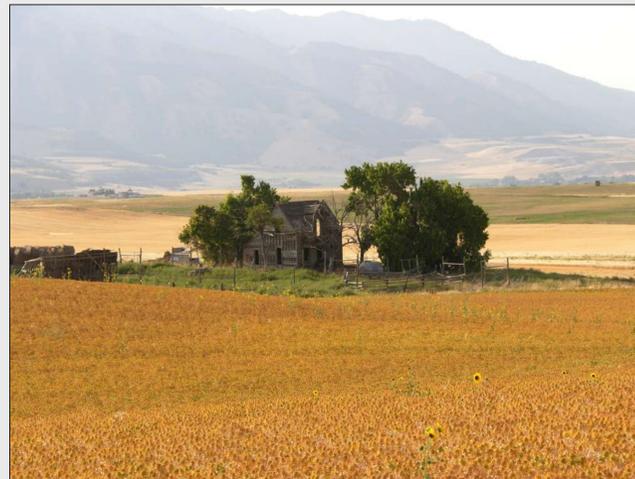
## The Intermountain Region

In the Intermountain Region; including Utah, southern Idaho, and eastern Nevada growers are mostly obligated to include fallow seasons every two to three years to accumulate and ensure sufficient moisture to produce winter wheat. Approximately three decades ago some management options became available or mandated to wheat producers that conserved moisture and reduced soil erosion which probably exacerbated the invasion of annual weedy grasses in this crop. Agronomic field conditions favoring winter wheat are also ideal for jointed goatgrass. Consequently it became crucial that alternative crop rotations, amended tillage regimes, or other cultural adjustments be identified.

## What did Intermountain West weed scientists consider while developing Best Management Practices for Jointed Goatgrass?

### Management Practices

- Prevention
- Cultural Control
- Physical Control
- Chemical Control
- Biological Control – None
- Integration of Practices



Jack Evans, a Utah State University weed scientist, stands at a remote Utah Blue Creek Experiment Station, where he says jointed goatgrass first appeared about 15 years ago.

Jack Evans and Don Morishita conducted much of the work on integrated jointed goatgrass management in the intermountain region. (photo from Western Farmer 2004)

**“...study showed the use of safflower to be a useful tool for reducing jointed goatgrass populations.”**  
Caleb Dalley 1999, USU MS Thesis

**In addition to reducing jointed goatgrass populations, a unique market for safflower as high quality birdseed provides an economic incentive to include it in the rotation (illustrated in Figures 1 and 2 below)**

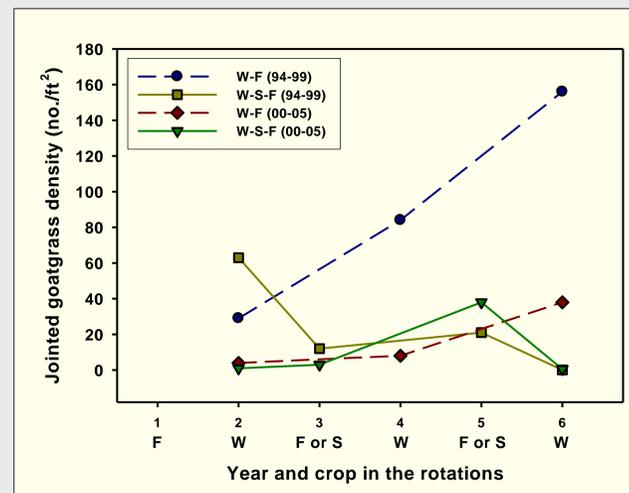


Figure 1. Jointed goatgrass densities over time in different crop rotations studied over two 6-year periods in northern Utah and southern Idaho. Rotations were wheat-fallow (W-F) and wheat safflower-fallow (W-S-F).

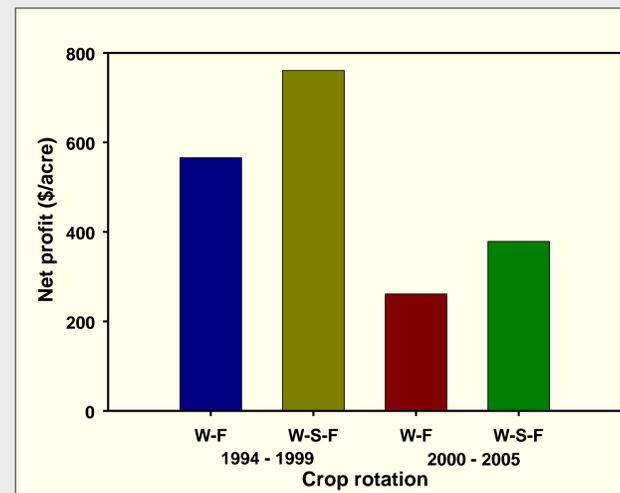


Figure 2. Net profit for 6-year crop rotations in northern Utah and Southern Idaho. Rotations were wheat-fallow (W-F) and wheat safflower-fallow (W-S-F).

## BMP OUTCOMES

### Prevention

- Education
- Certified seed – genetic purity
- Clean equipment – tillage, planting, harvest
- Tarp trucks – roadside spread
- Treatment of feed - grinding
- Hybridization – between species, among varieties

### Cultural Controls

- Crop rotation – alternative, spring crops
- Fertilizer placement – broadcast vs. banding
- Fertilizer application timing – spring vs. fall
- Seeding factors – seed size, seeding rate, seeding date

### Physical Control

- Tillage – effective, balance with conservation
- Mowing – seed head suppression
- Burning – controversial, smoke issues, surface only, compliance issues

### Chemical Control

- Summer Fallow or non-crop – non-selective
- Herbicide tolerant varieties – IMI wheat
- Herbicides in alternative crops

### Integration of Practices

- No single component effective
- BMP's – multiple strategies
- Integration of tactics over multiple years

## Conclusions

- Extensive efforts within the Jointed Goatgrass program provided management options
- Jointed Goatgrass Best Management Practices were developed and published for the Intermountain Region
- Inquiries into jointed goatgrass management have declined significantly
- Authors of the bulletin were: Michael Quinn, Don Morishita, Jack Evans, Ralph Whitesides, and Tony White