Cheatgrass Control in Winter Wheat; What Works

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Welcome

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agriculture
Maverick applied to Group 2 SUSCEPTIBLE downy brome
Maverick applied to Group 2 RESISTANT downy brome
Trends

• Higher Wheat Prices
  – Higher input costs
    • Herbicides
  – Greater return to herbicide input
    • Weeds losses cost more
  – Crop injury greater cost
  – Herbicide persistence greater cost
  – Integrated management still provides best sustainable return

Yenish, et al.
Focus, “back to the basics”

- **Cheatgrass Ecology**
  - Root and plant development
  - Seed production
  - Yield reduction

- **Cultural control with the goal of improving herbicide efficacy**
  - A number game
  - Residue mgt
  - Herbicide efficacy, herbicide resistance mgt

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Life with Group 2 Herbicides [Acetolactate synthase (ALS) inhibitors]

- Diesel: $3.00/gal
- Glyphosate: $20.00/gal

Olympus Flex | Osprey | Olympus | Maverick | Beyond
Life BEFORE Group 2 Herbicides

- Diesel
  - $0.75/gal

- Glyphosate
  - $100.00/gal

- Fargo
- Sencor
- Lexone
Life BEFORE & WITH Group 2 Herbicides

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Cheatgrass Ecology

- Downy Brome (*Bromus tectorum* L.)
  - aka cheatgrass
  - Winter-annual grass
Cheatgrass Ecology

• Downy Brome (Bromus tectorum L.)
  – Germinates primarily in the fall
  – Root system grows throughout at soil temperatures just above freezing
• Downy Brome (*Bromus tectorum* L.)
  – *Seed* can be produced from spring germinating plants
  – *Seed* production is more prolific on fall germinating plants
  – Rapid development from heading to *seed* make it difficult to prevent *seed* production

[Link to website](http://lincoln-adams.wsu.edu/agriculture)
Cheatgrass Ecology

- Downey Brome Seed Production
  - Dense infestation = 500# Seed/ac (250,000 in 1 #)
  - 400 seeds per plant
  - Require short after-ripening period
    - Little dormancy remains
  - Seed germination often exceeds 95% for seed buried within 2 inches of the soil surface
  - Viable in soil for 2 to 3 years
• Losses due to downy brome infestations vary widely.
• Research in the PNW has shown moderate infestation emerging within 10 days of wheat emergence can reduce winter wheat yields by around 1/3

Cheatgrass Ecology: Wheat Yield Loss

Percentage winter wheat yield loss due to downy brome emerging 0 to 14 and 21 to 35 days after winter wheat. (P.W. Stahlman and S.D. Miller, 1990. *Weed Science* 38:224-228)

Cheatgrass Ecology: Wheat Value Loss

50 bu/acre wheat @ $8.00/bu

Value of Wheat Loss ($/ac) vs. Downy Brome Population (plants/sq. yd)
Cultural control with the goal of improving herbicide efficacy
A number’s game: Culture control to improve herbicide efficacy

- 100 plants/yd²
- 20 plants/yd²

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A number’s game: Culture control to improve herbicide efficacy

90% control with herbicide application

10 plants/yd²  4,000 seeds

2 plants/yd²  800 seeds

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