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EXTENSION

Cheatgrass Control in Winter Wheat; What Works

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Ritzville Chemical Grower Meeting
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Welcome

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

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**

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http://lincoln-adams.wsu.edu
agriculture

Life **BEFORE** & **WITH** Group 2 Herbicides

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

Cheatgrass Ecology

- 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

Cheatgrass Ecology

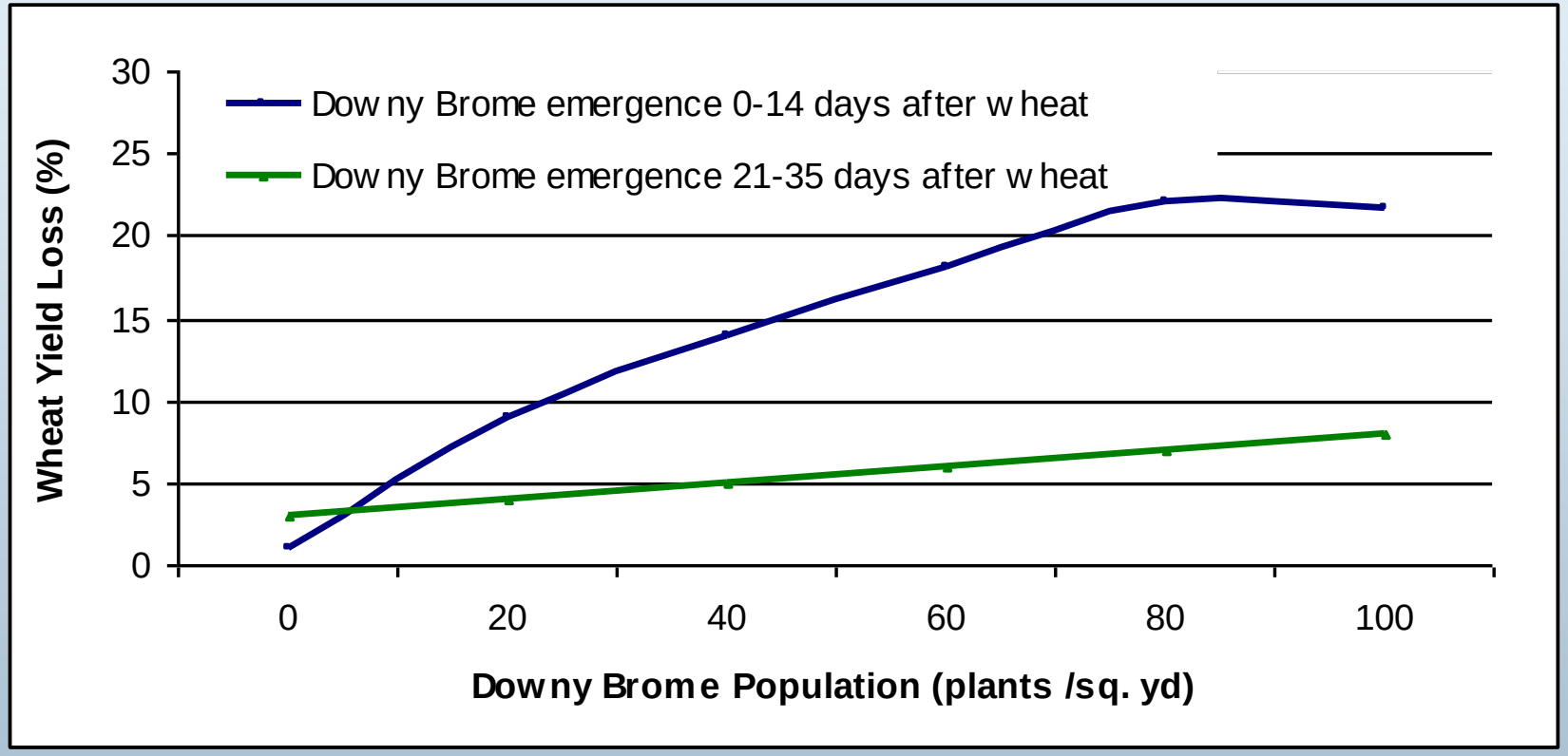
- Downey Brome Seed Production
  - Dense infestation = **500**# Seed/ac (**250,000** in 1 #)
  - **400** seeds per plant
  - Require short after-ripening period
    - Little dormancy remains
  - Seed germination often exceeds ***95%*** for seed buried within ***2*** inches of the soil surface
  - Viable in soil for ***2*** to ***3*** years

Cheatgrass Ecology: Wheat Yield Loss

- 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

Source: PNW 0509, Managing Downy Brome Under Conservation Tillage Systems in the Inland Northwest Cropping Region.

Cheatgrass Ecology: Wheat Yield Loss

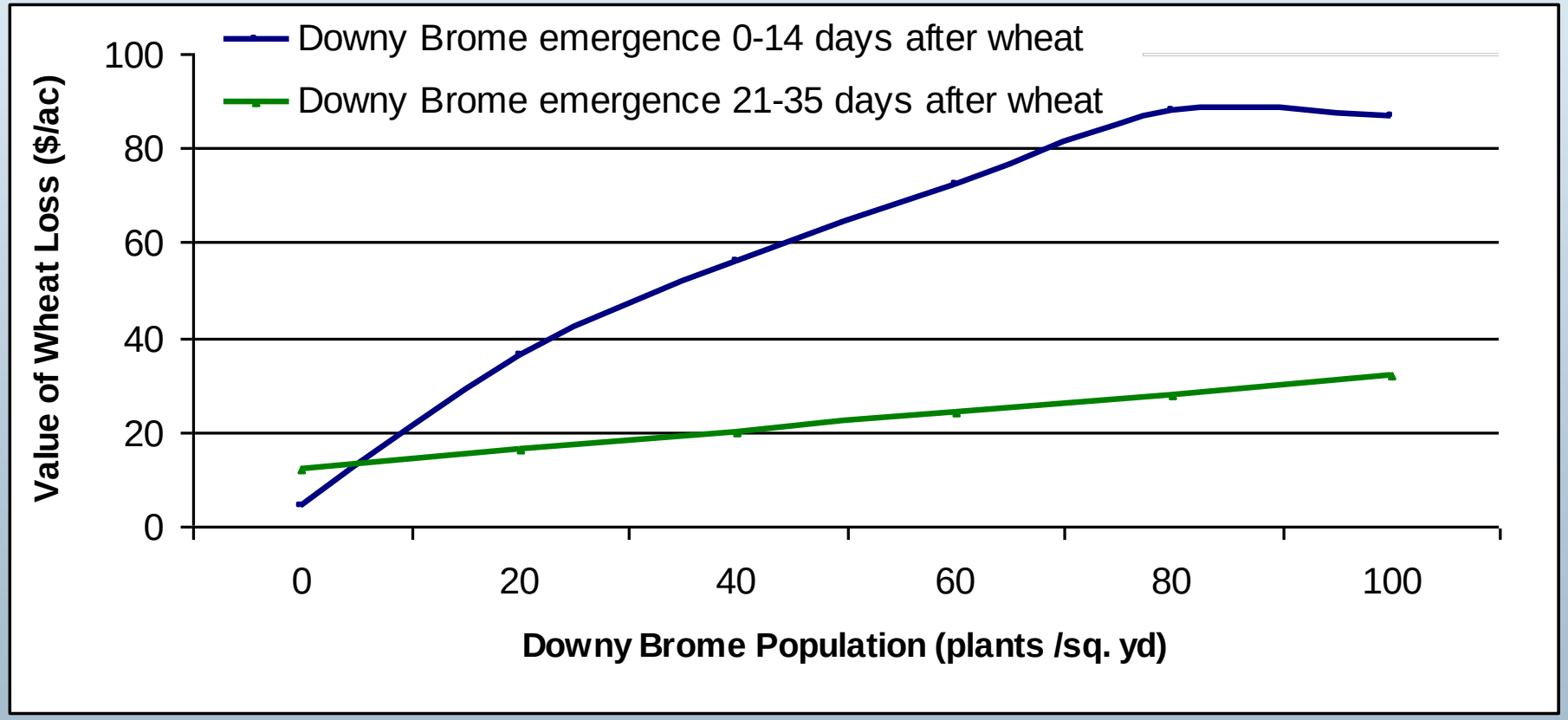


Percentage winter wheat yield loss due to downy brome emerging 0 to 14 and 21 to 35 days after winter wheat. (P.W. Stahlman and S.D. Miller, 1990. *Weed Science* 38:224-228)

Source: PNW 0509, Managing Downy Brome Under Conservation Tillage Systems in the Inland Northwest Cropping Region.

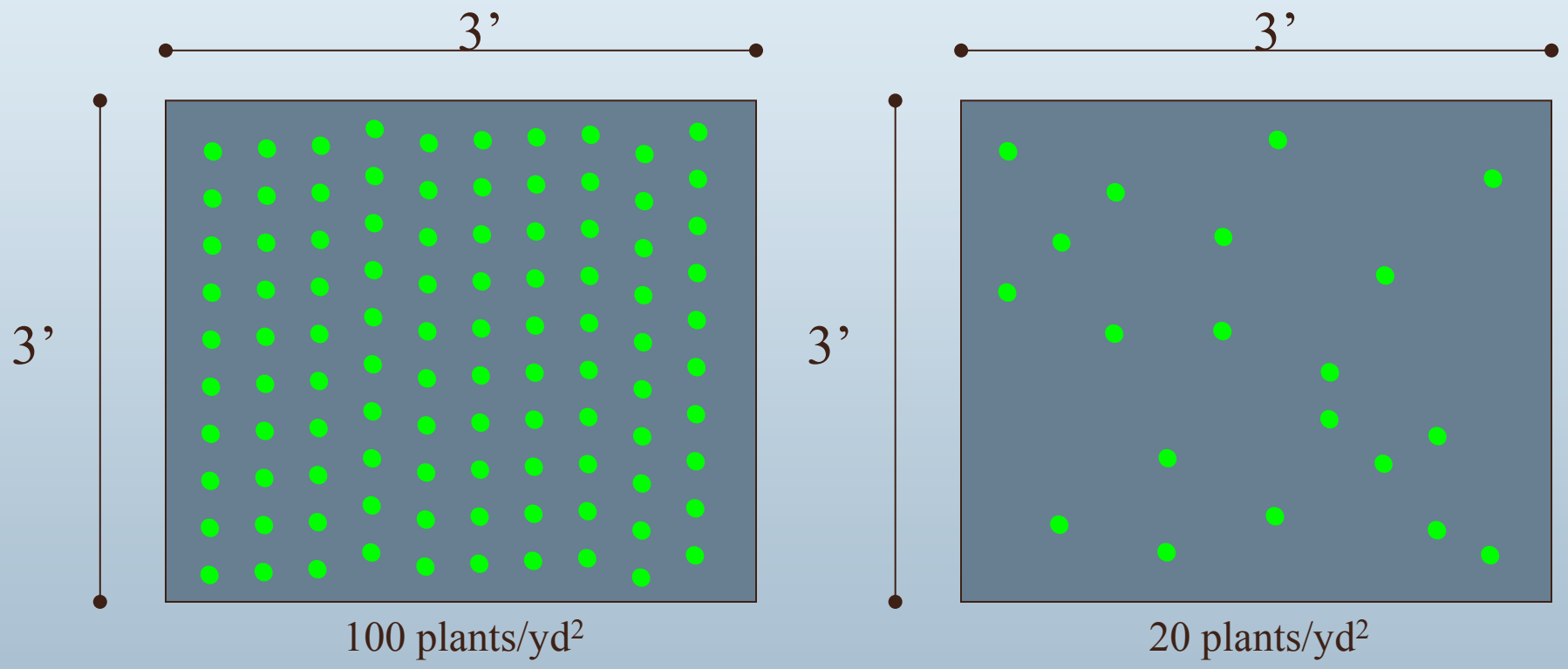
Cheatgrass Ecology: Wheat Value Loss

50 bu/acre wheat@ ***$8.00/bu***

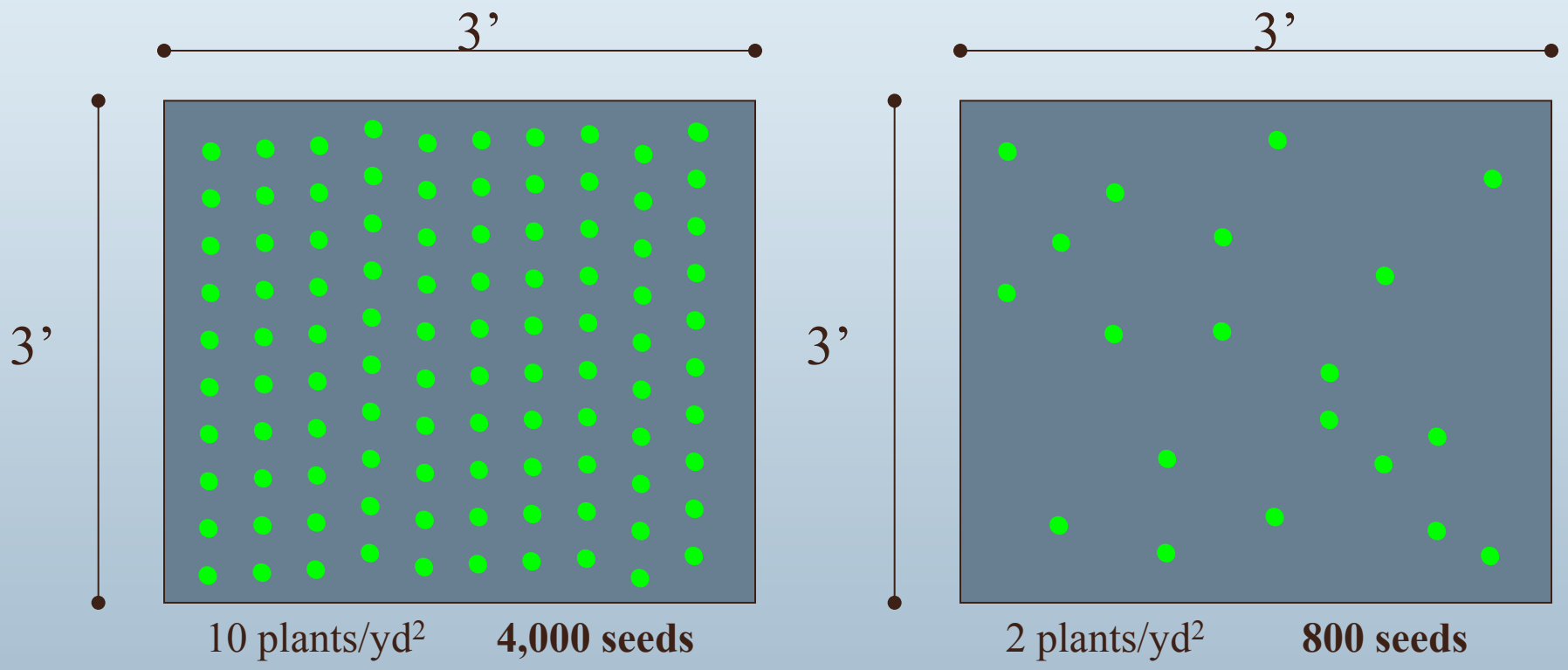


Cultural control with the goal of improving herbicide efficacy

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



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



90% control with herbicide application