

# Targeted Applications of Triclopyr to Manage Woody Encroachment of *Fraxinus pennsylvanica*

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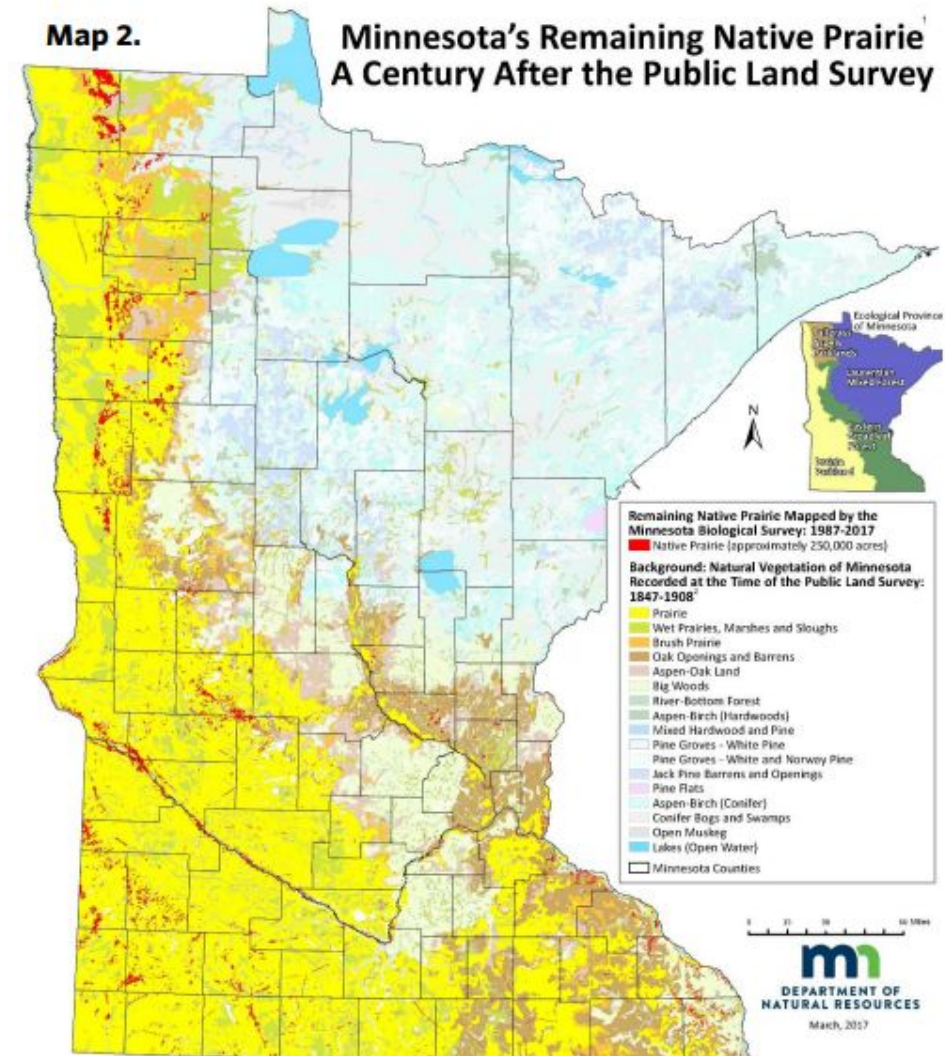
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# Tallgrass Prairie Remnants

- 2% of Minnesota's native tallgrass prairie remains
- Previously covered 1/3 of Minnesota
  - Most has been converted to agriculture



# Woody Encroachment

- Historically controlled by wildfires and grazers
- Big problem in Minnesota's tallgrass prairies
  - *Fraxinus pennsylvanica* (green ash)
  - *Rhus glabra* (smooth sumac)
  - *Rhamnus cathartica* (common buckthorn)



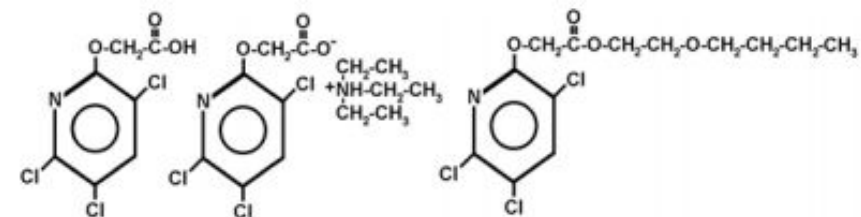
# Research Plot

- 100x58m
- Long term experiment on purple coneflower (*Echinacea angustifolia*) being conducted
- 3 of 4 sides are surrounded by adult *F. pennsylvanica*
  - Seeding within plot nearly constant
- Many trees within the plot are regrowth from multiple controlled burns and previous treatments

**Is there an effective way to manage adolescent trees without damaging the surrounding area?**

# How Does Triclopyr Work?

- Auxin (Andole acetic acid) mimic
- Interferes with cell growth and division
- The ester causes degradation in sunlight and binds excess runoff to the soil
  - Half-life in natural systems is about 7 days
- Has little impact on grasses
- A large amount must be applied to be effective



Triclopyr acid

Triethylamine salt

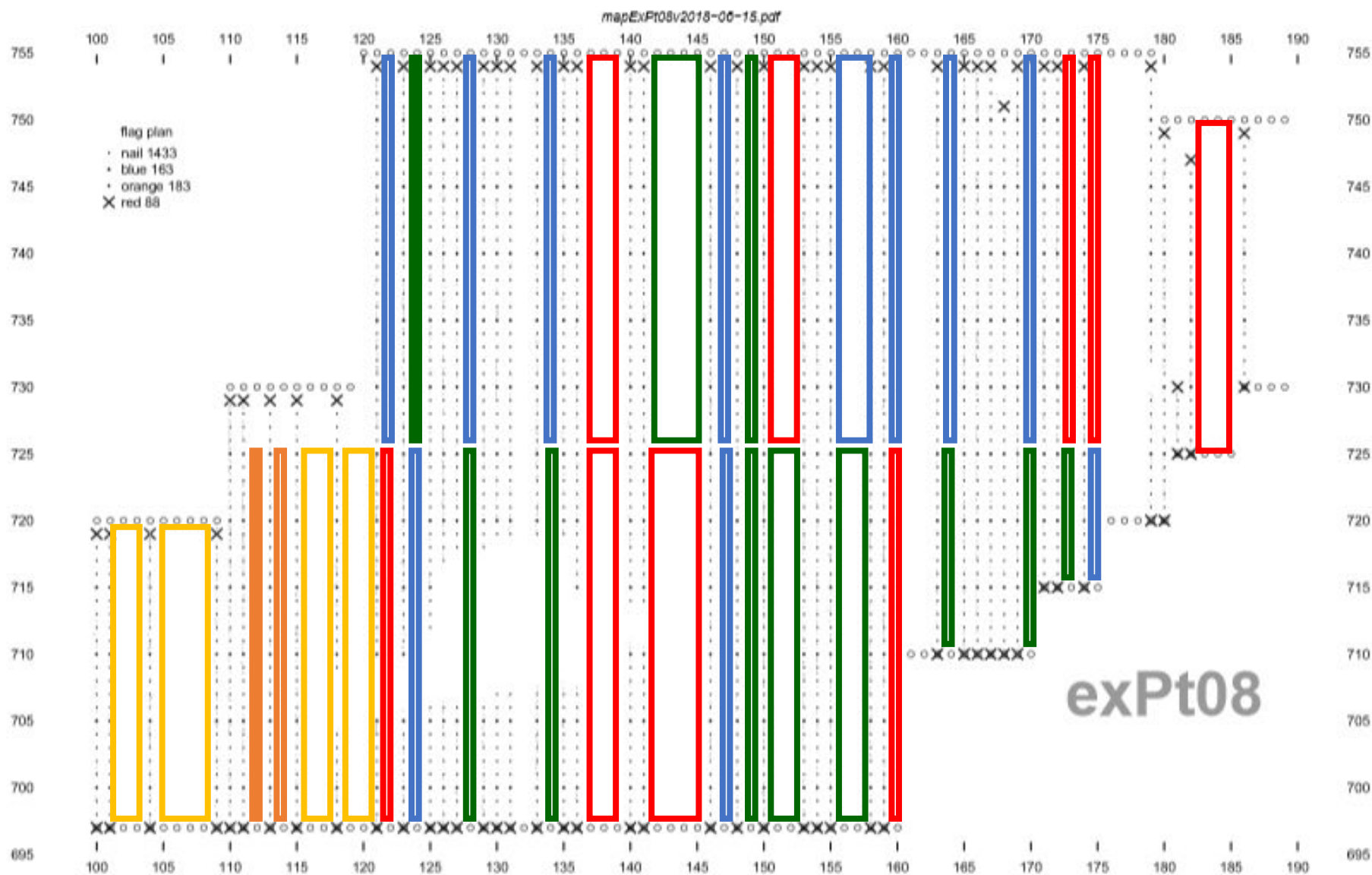
Butoxyethyl ester

# Application Types

- Treatment 1: Foliar application
  - Back faces of all leaves painted with a sponge brush
  - Intended to simulate spraying
- Treatment 2: Cut
  - Trees were cut down to 10 cm above groundline and herbicide applied to cut surface
- Treatment 3: Cut and Bark Peel
  - Trees were cut down to 10 cm above groundline and bark was peeled away with a knife
  - Intended to approximate wedge technique



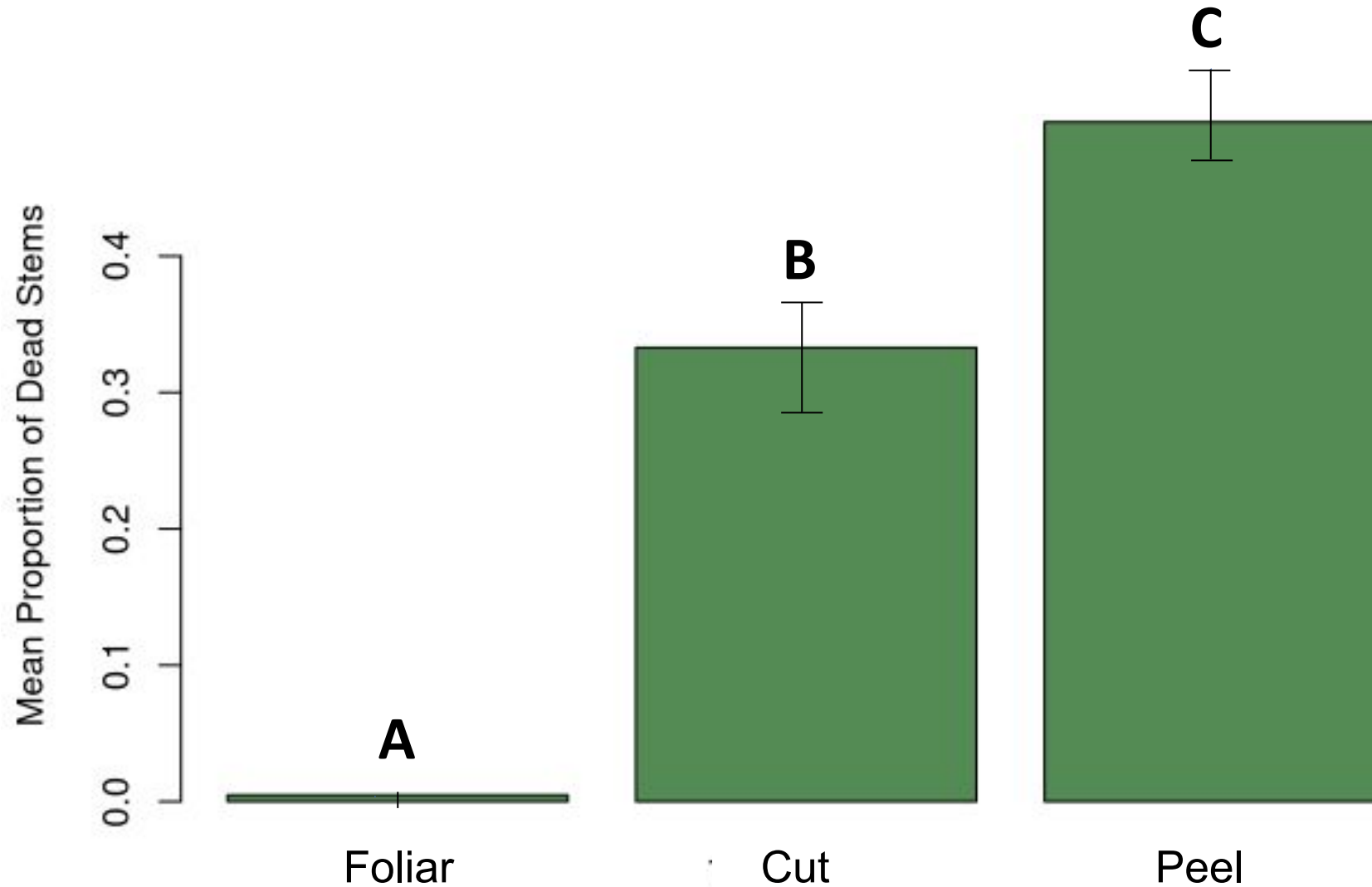
# Assigning Treatments



- Foliar-** 188 total individuals
- Cut-** 137 total individuals
- Peel-** 113 total individuals

438 individuals  
across 31 sections  
were treated over a  
12-day period in  
late July and early  
August

# Results



- ANOVA determined significant differences between all treatments
  - P-value  $\ll 0.01$



# Constraints

- Ideal application times: early spring or late fall
  - I applied in mid summer
- Can become volatile above 85°F
  - There were several days that I applied that were warmer
- Data collection occurred 3 weeks after treatments applied
  - Results that were more long term would be useful

# Future Research

- Follow up data collection
- Late fall and early spring applications
- Different herbicides

**Questions?**