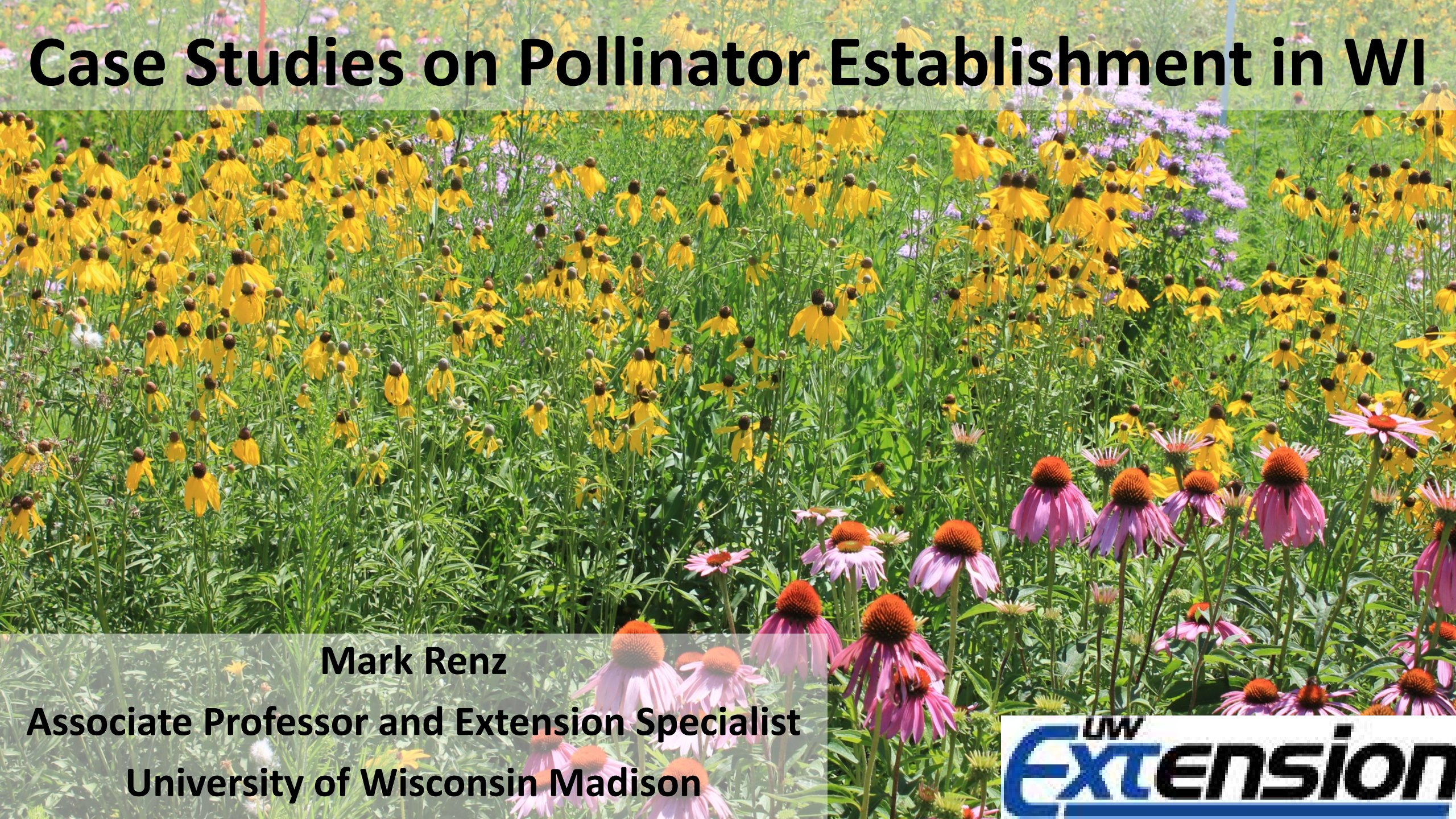
Case Studies on Pollinator Establishment in WI



Mark Renz

Associate Professor and Extension Specialist

University of Wisconsin Madison

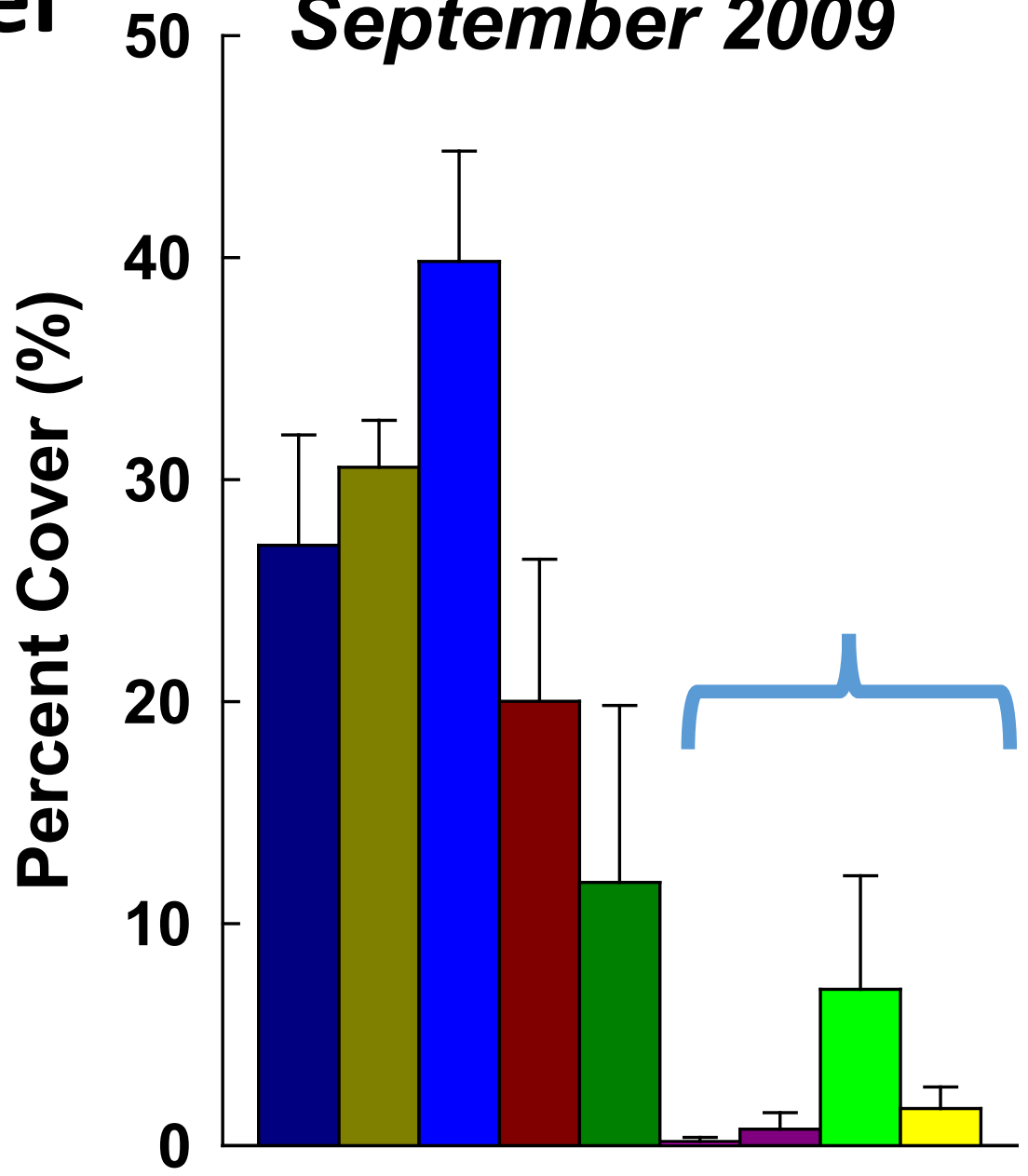
Background

- Conservation plantings have been historically popular in WI
  - Past: soil stabilization and wildlife habitat
  - Current/Future: pollinator habitat as pollinator health

- Best management practices (BMPs) exist, but
  - Land managers do not follow the BMPs for establishment
    - Proper planting timing
    - Proper weed management during establishment
  - Developed for prairies not pollinator dominated seed mixes
    - Reduced grass seed in the pollinator mixes

Plant cover 1.5 years after establishment

- Big Bluestem
- Indian Grass
- Little Bluestem
- Sideoats Grama
- Switchgrass
- Illinois Bundleflower
- Milk Vetch
- Partridge Pea
- Yellow Coneflower



Establishment is difficult and variable

- Results from a largescale prairie establishment across six sites in SW Wisconsin

How can we improve success?

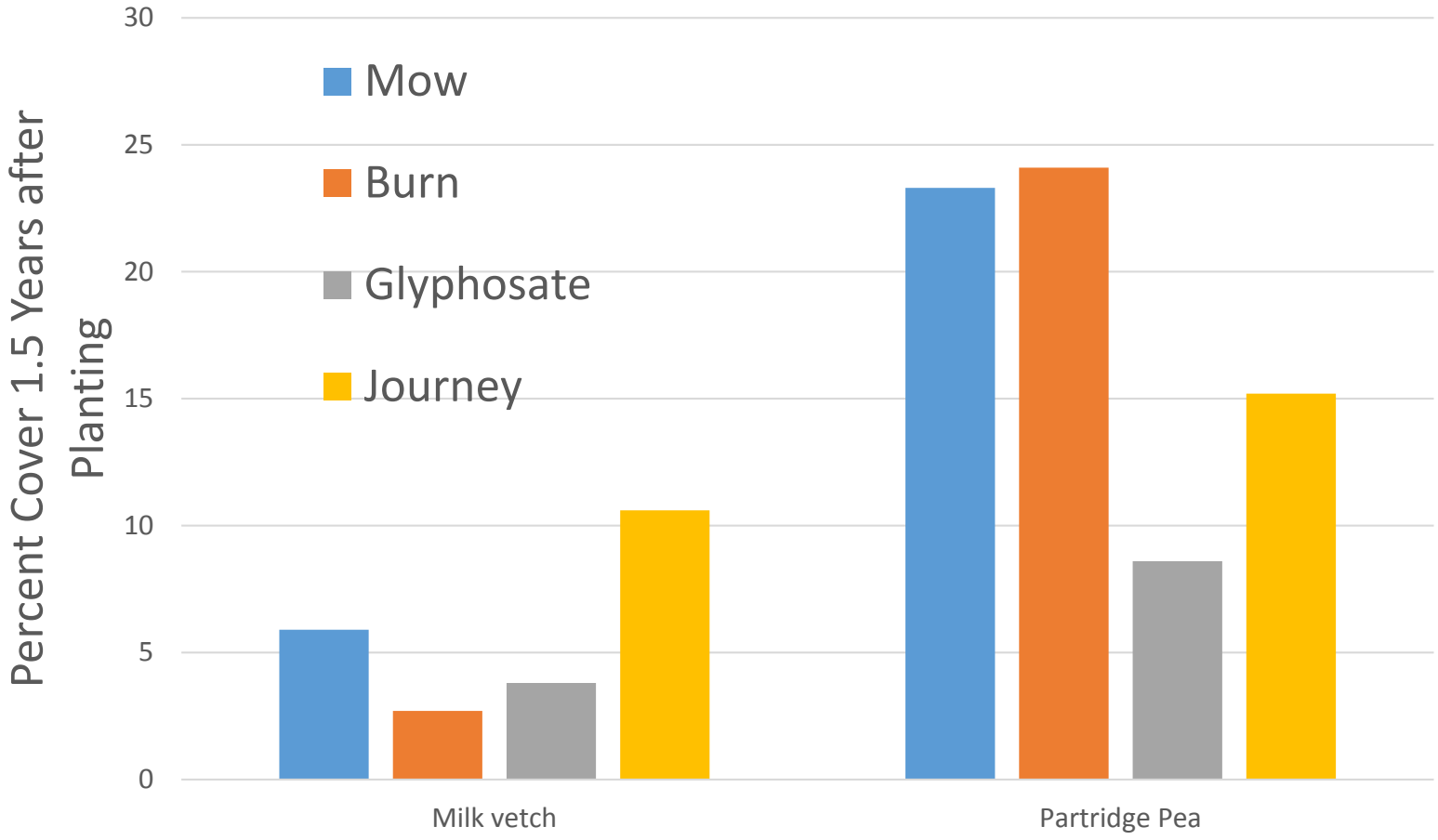
- **<u>Develop a plan</u>**
  - Take a multi-year approach
  - conduct weed management PRIOR to establishment
    - Eliminate difficult to control weeds (perennials)
    - Reduce weed seedbank by management for 1-2 years prior to seeding
  - Plan for TIMELY weed management during establishment (1-3 years)
  - Proactive scouting and removal of competitive plants

What tools are recommended during establishment?

- Mowing, Mowing, mowing, and more mowing……..

Why do we rely so much on mowing?

- Few techniques are safe to all pollinator species
- Most other techniques will cause damage to specific forbs while promoting others.



When to mow, how frequently and how the pollinator plants will respond?

- Lots of demonstrations, but few detailed recommendations
- **I believe timing is based on weed species and light penetration**…..

- Experience suggests
  - Annual/biennial broadleaf weeds and Non prostrate annual grasses: Mow when plants are just starting to flower (middle July – Early Aug)
  - Perennials weeds and prostrate annual grasses: mowing doesn't work/help…..
  - Mowing not needed if light is reaching the soil surface (weed density dependent)

- This improves response but it still takes 3-4 years for successful establishment
  - Can we reduce this timeframe?

We want to know how to optimize success of pollinator establishment in Wisconsin

- Received a small grant (NC SARE) to establish plots at 2 locations
  - Janesville, Lancaster

- Evaluating establishment success
  1. Planted at two timings (Late April 2018 vs Early June 2018)
  2. With and without companion crop (oats)
  3. When utilizing a range of weed control techniques during establishment
     - **Companion Crop**
     - **Mowing 1x early, Mowing 1x late**
     - **Mowing 2x**
     - **Herbicides during establishment**
     - Herbicides year after establishment

Details of sites and methods

Location	Early mow	Late mow	Common weed species
Lancaster early planting (4/25)	June 27-28th	July 16-17	Lambsquarter, crabgrass, foxtail, shepherd's purse
Lancaster late planting (6/4)	July 31 -Aug 1	August 16	
Janesville early planting (4/26)	June 29th	July 24th	Giant Ragweed, foxtail
Janesville late planting (6/1)	August 20th	Sept. 1st ?	

Lancaster

Janesville

Janesville+ oats

Results (PRELIMINARY)

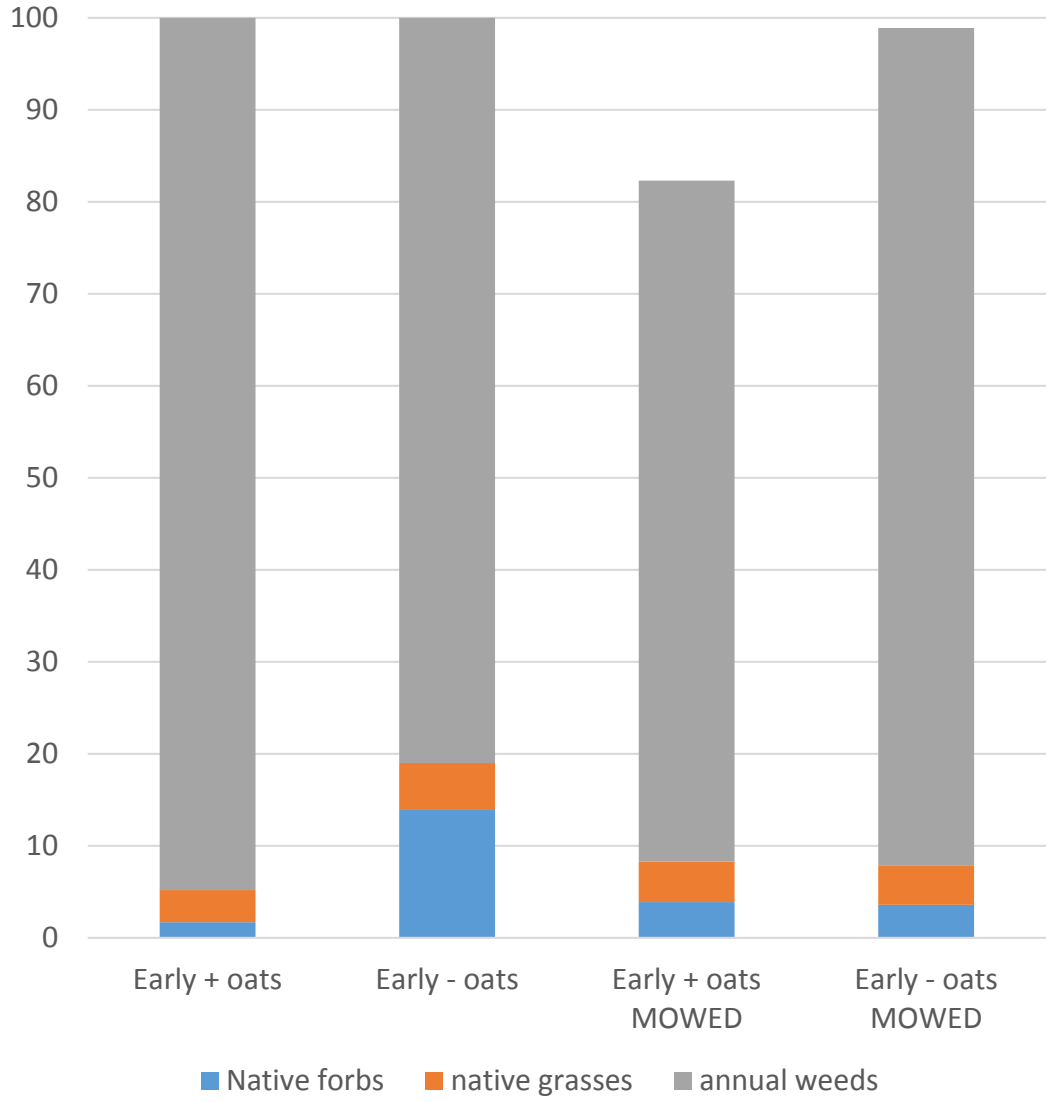
How long was bareground evident in plots (>10% cover)

- Early seeding
  - Lancaster: 60 days
  - Janesville: 75 days
- Late seeding
  - Lancaster: 60 days
  - Janesville: 60 days

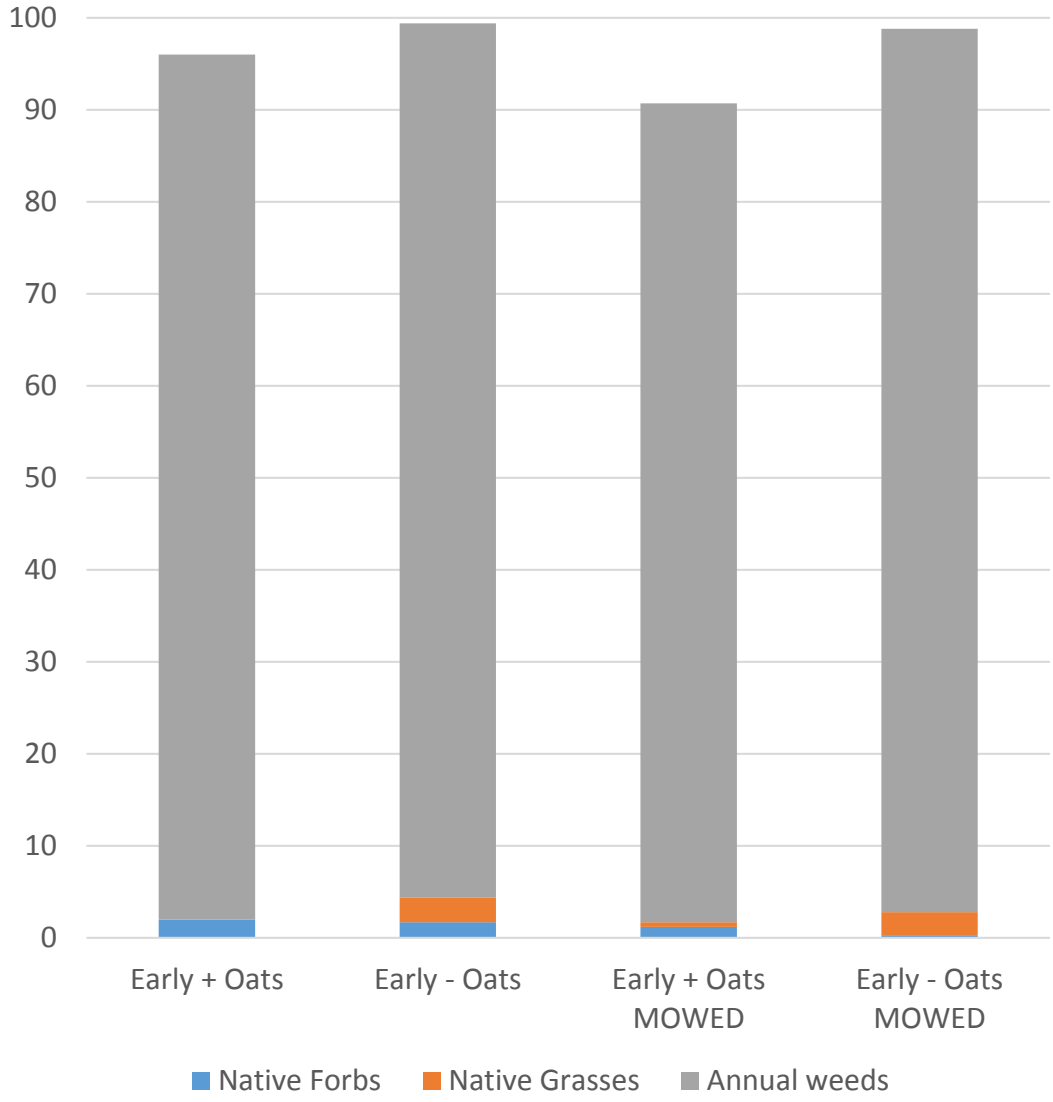
Results (PRELIMINARY)

Cover of native forbs and grasses (Mid August)

Lancaster



Janesville



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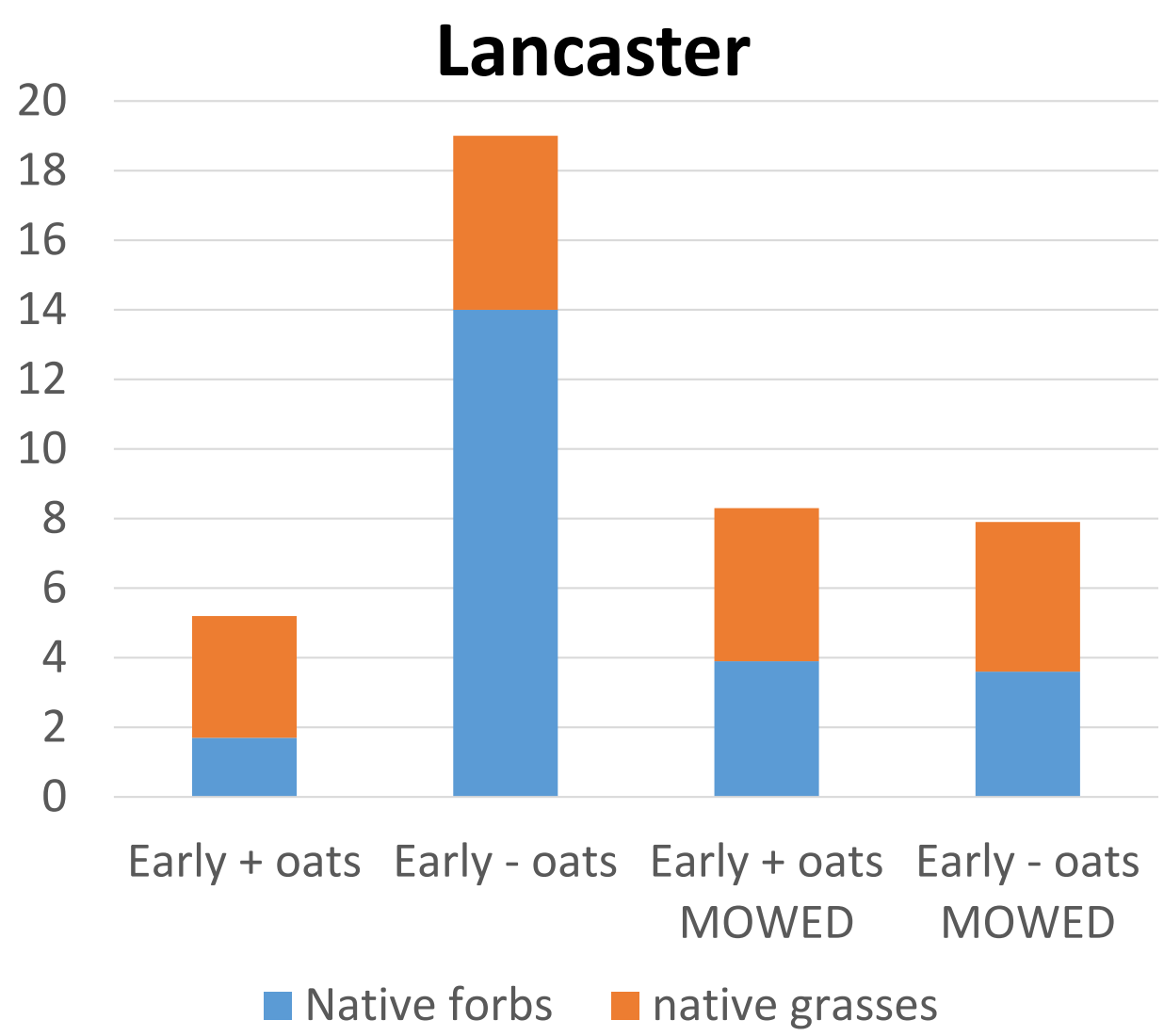

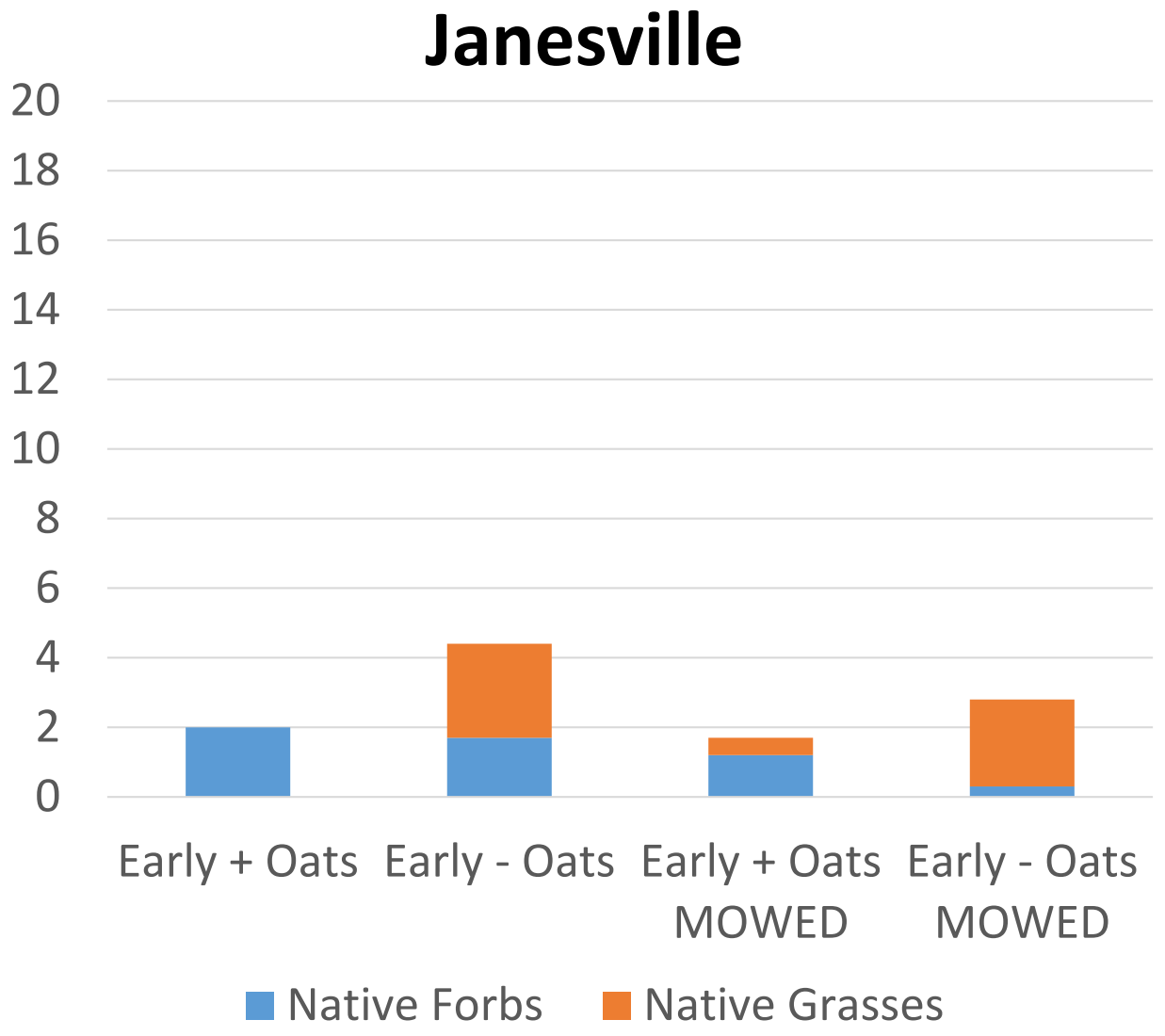

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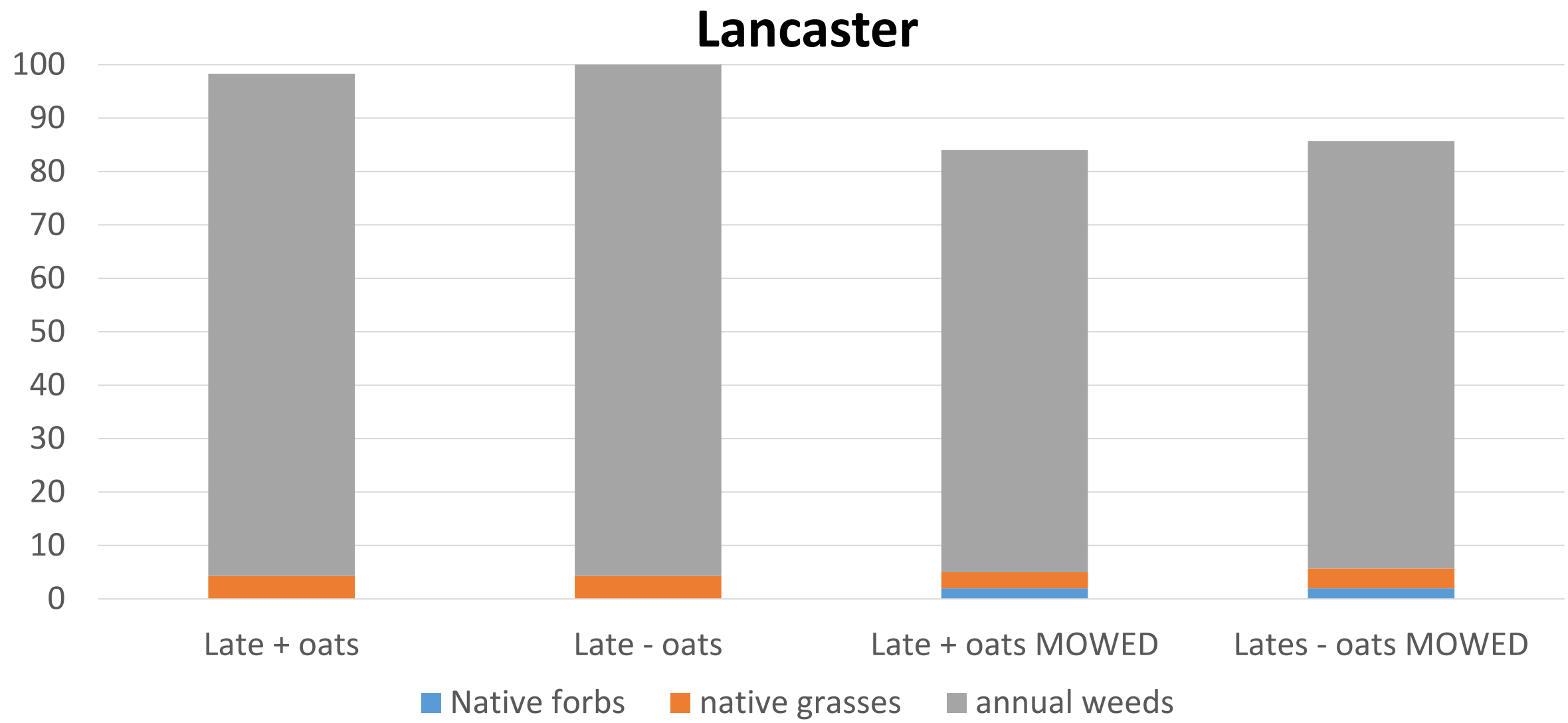

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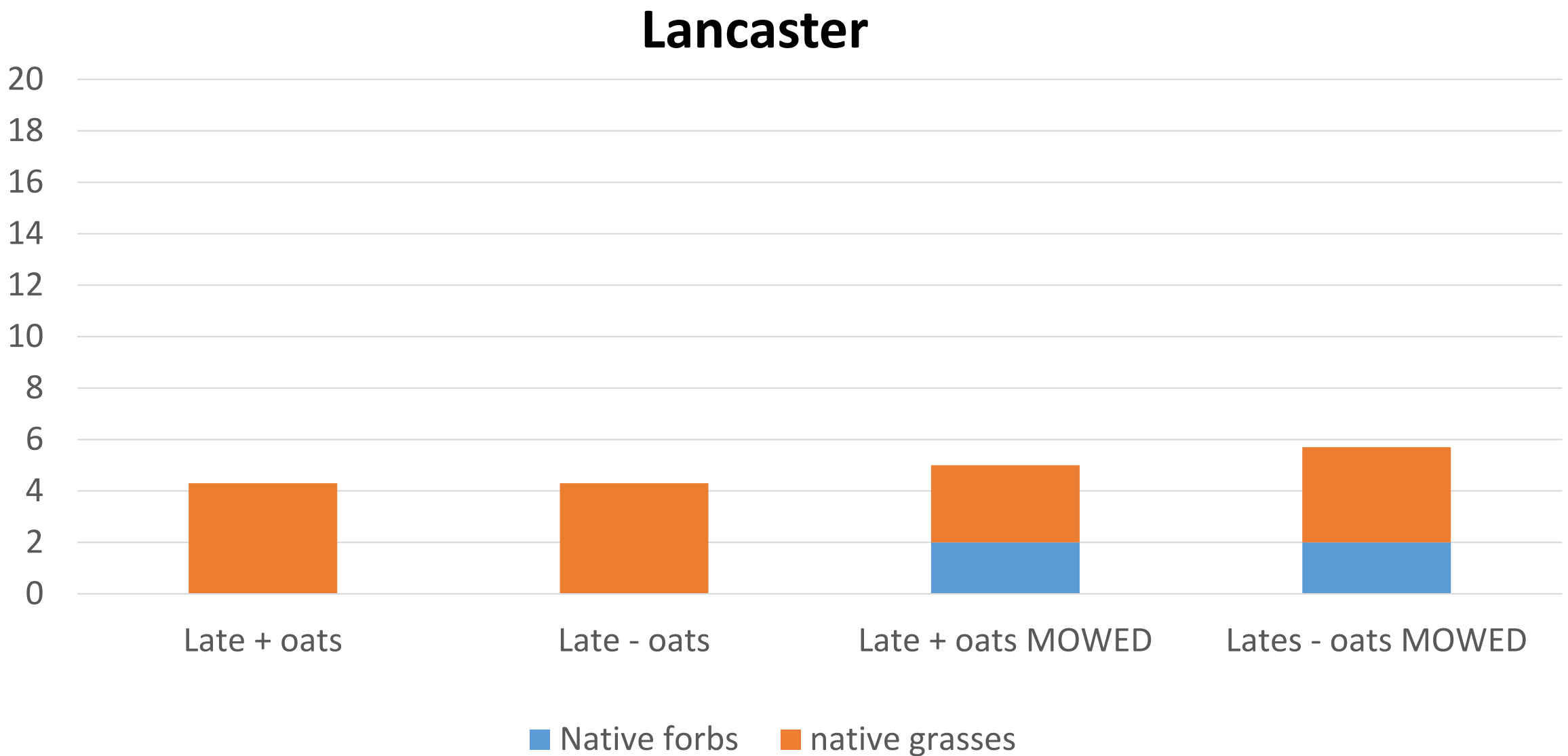

Results (PRELIMINARY)

Why are native Forbs/Grass cover so low?

- Typical of establishment year
- Difficult to find native forbs/grasses in sea of weeds/oats
- Measurements this fall/next spring are better estimate of success

Results (PRELIMINARY)

Did oats help with weed suppression?

YES BUT SPECIFIC TO PLANTING TIMING AND WEED SPECIES PRESENT

- Early seeding
  - Lancaster: Broadleaf YES, annual grasses YES
  - Janesville: Broadleaf NO, annual grass YES
- Late seeding
  - Lancaster: Broadleaf NO, annual grasses NO
  - Janesville: Broadleaf YES, annual grass NO

Results (PRELIMINARY)

What about mowing timing?

- Too early to tell, but initial data suggests timing is important with development of annuals…..

- At Janesville early timing had minimal effect on foxtail, but late timing reduced cover from 65 – 25%.....

Results (PRELIMINARY)

Herbicides treatments

- Look promising……..
  - Lots of bareground for 30-90 Days after planting
  - Native grasses look great (1-5%) **and growing**
  - Native forb cover is high (1-9%) but will all species survive?

Summary

- Results are encouraging, but are still preliminary
  - Weed management methods can reduce weed populations
  - results appear to be specific to
    - Weed species present
    - Timing implemented in relationship to weed development
- Be looking for additional events in 2019 to highlight results
  - Establishment success of pollinator species

Don’t expect it to be like growing crops

you will see weeds before pollinators