

Results from a Brassica Variety Trial in MN and MI

John Durling, USDA-NRCS Rose Lake PMC

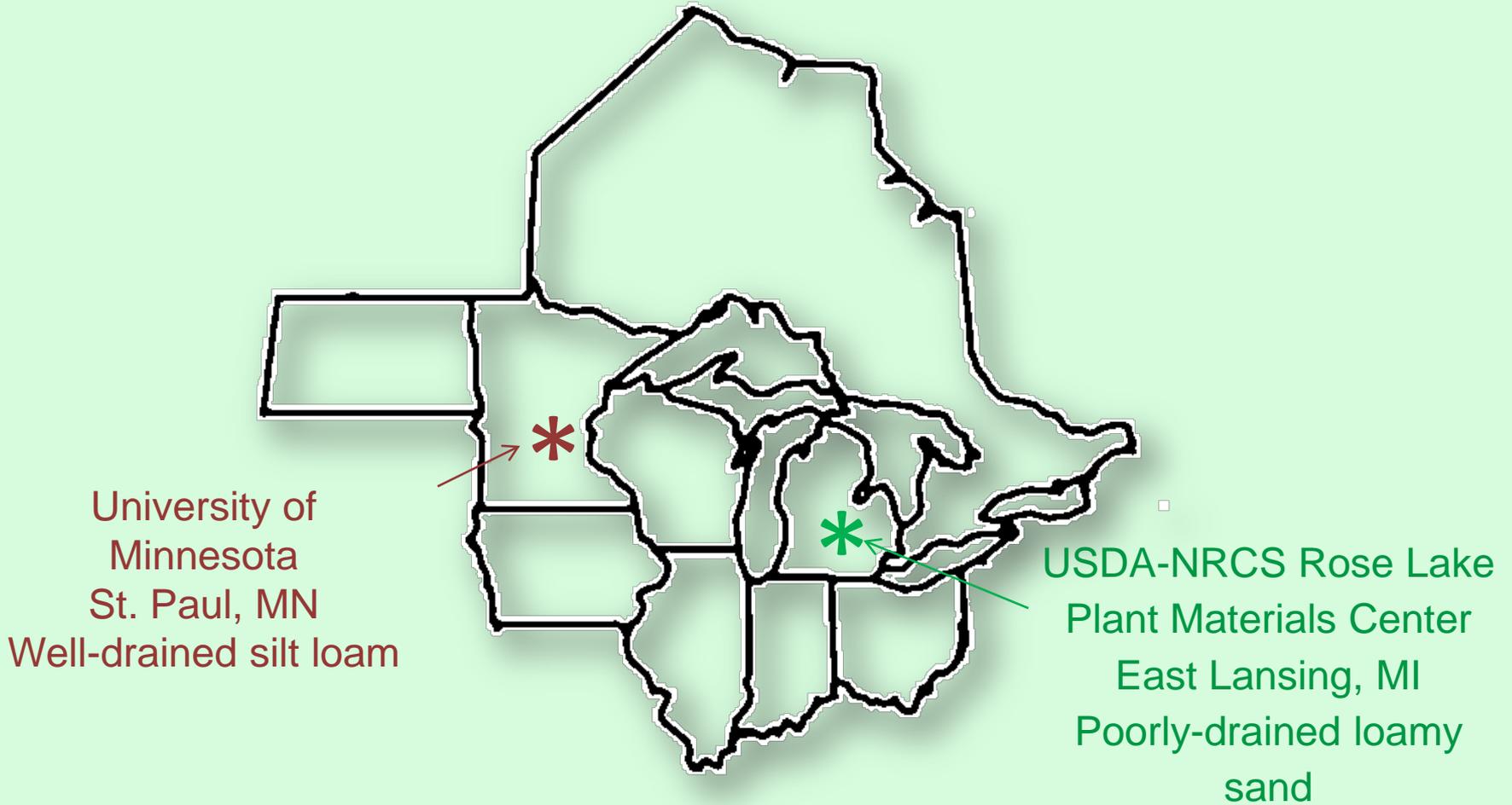
Miriam Gieske, Univ. of Minn.

Victoria Ackroyd, Michigan State Univ.
Extension



**John Durling, USDA-NRCS Rose
Lake PMC**

LOCATIONS



PREVIOUS CROP & CULTURAL PRACTICES

Soybean green manure	Oats
Soybeans mowed August 2010	Grain harvested August 2010
Soybeans (50-60 lbs/acre N) incorporated with tillage	Straw and 30 lbs/acre N incorporated with tillage

FIELD PLOT DESIGN & MANAGEMENT

Randomized complete block with 4 replicates

19 or 20 accessions of *Raphanus sativus* and
Brassica spp.

Planted 17 August 2010

Planted 13 August 2010

Oilseed and tillage radish @ 10 lbs/acre

Mustard @ 8 lbs/acre

Rapeseed @ 5 lbs/acre

Forage turnip @ 2 lbs/acre

Hand weeding
7 days after planting

Herbicide to manage
volunteer oats

No irrigation

Irrigation

University of Minnesota



Photo by Miriam
Gieske, Univ. of Minn.

Rose Lake (MI)



Photo by Sergio Perez,
Rose Lake PMC

DATA COLLECTION

Canopy cover and flowering at 1-2 week intervals
late August through mid-November

Two 0.25 m² subsamples

One 2 ft² subsample

Biomass and % nitrogen
mid-October
at 64 days after planting

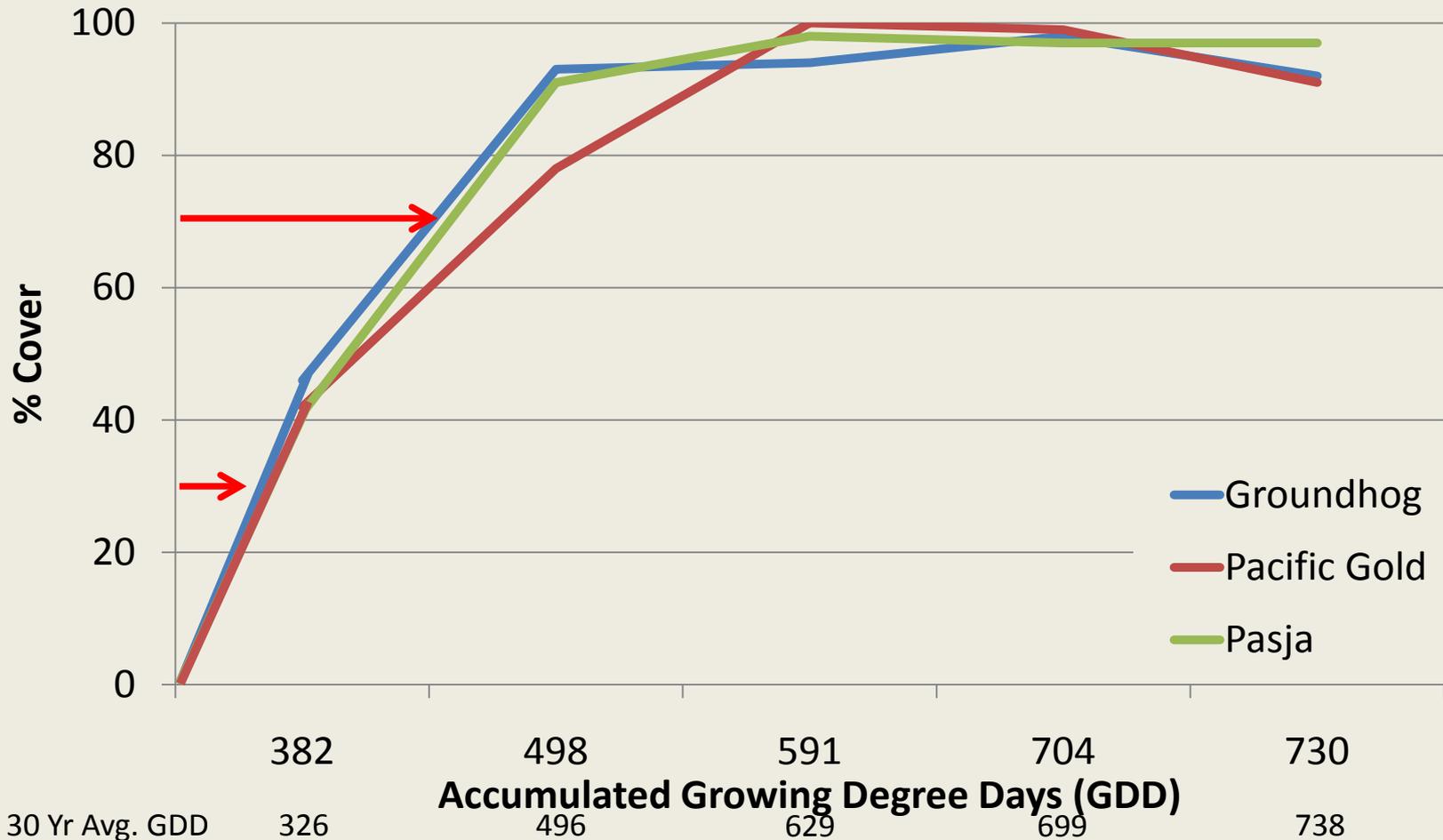
Biomass and % nitrogen
mid-October
at 60 days after planting

Other plant growth parameters for crop models



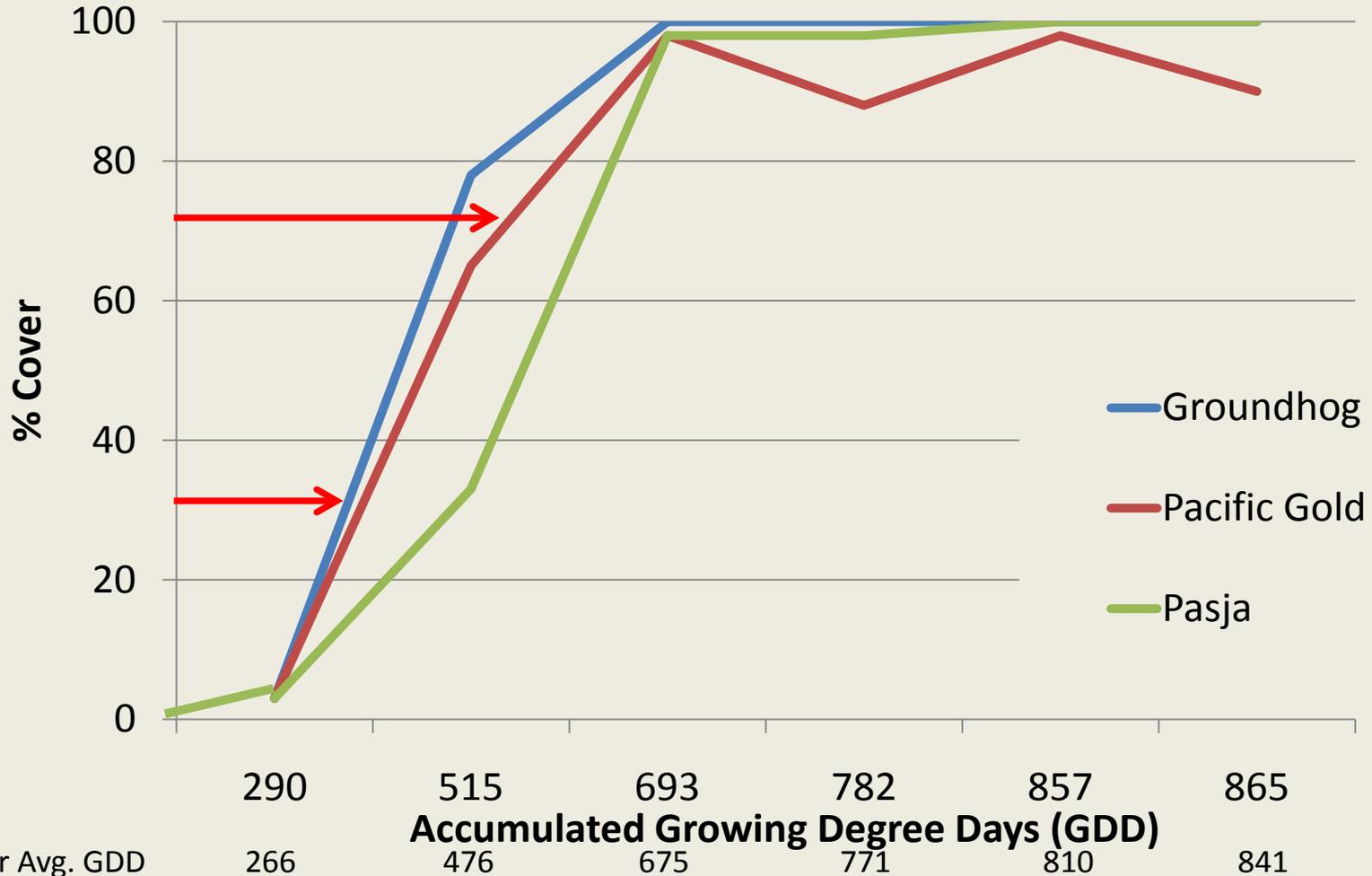
**Victoria Ackroyd, Michigan State
Univ. Extension**

% Cover (MN)



*GDD calculated using base 50°F, no cutoff. Data points correspond to 17, 30, 45, 59, and 76 days after planting.

% Cover (MI)



8 Yr Avg. GDD

266

476

675

771

810

841

*GDD calculated using base 50°F, no cutoff. Data points correspond to 14, 28, 45, 60, 75, and 89 days after planting.

% Cover October 25

Planted August 16

Planted August 30



Planted September 13

Planted September 29

Photos by Miriam
Gieske, Univ. of
Minn.

Roots, Roots, and More Roots:

Groundhog radish, MN, Oct. 30



Pasja turnip, MN, Oct. 16



Worm castings



Groundhog radish, MN, Oct. 16

Photos by Miriam Gieske, Univ. of Minn.

Radishes

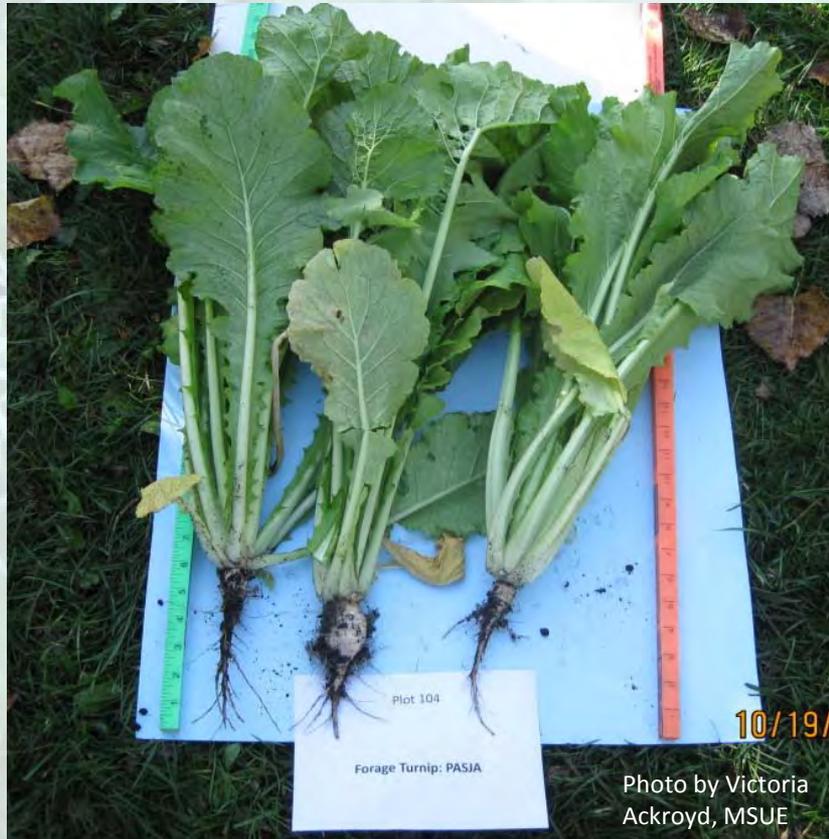


OSR Driller



OSR Daikon Nema Common

Forage Turnip and Rapeseed



Forage Turnip Pasja

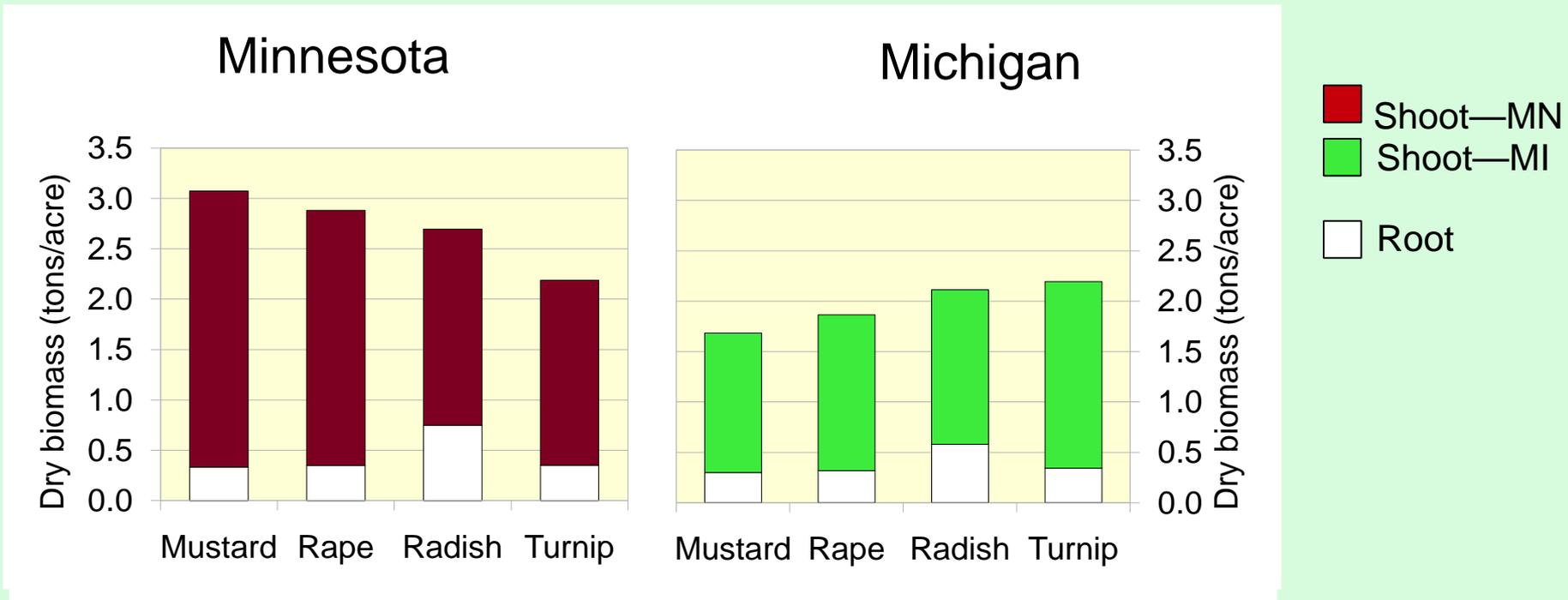


Rapeseed Dwarf Essex



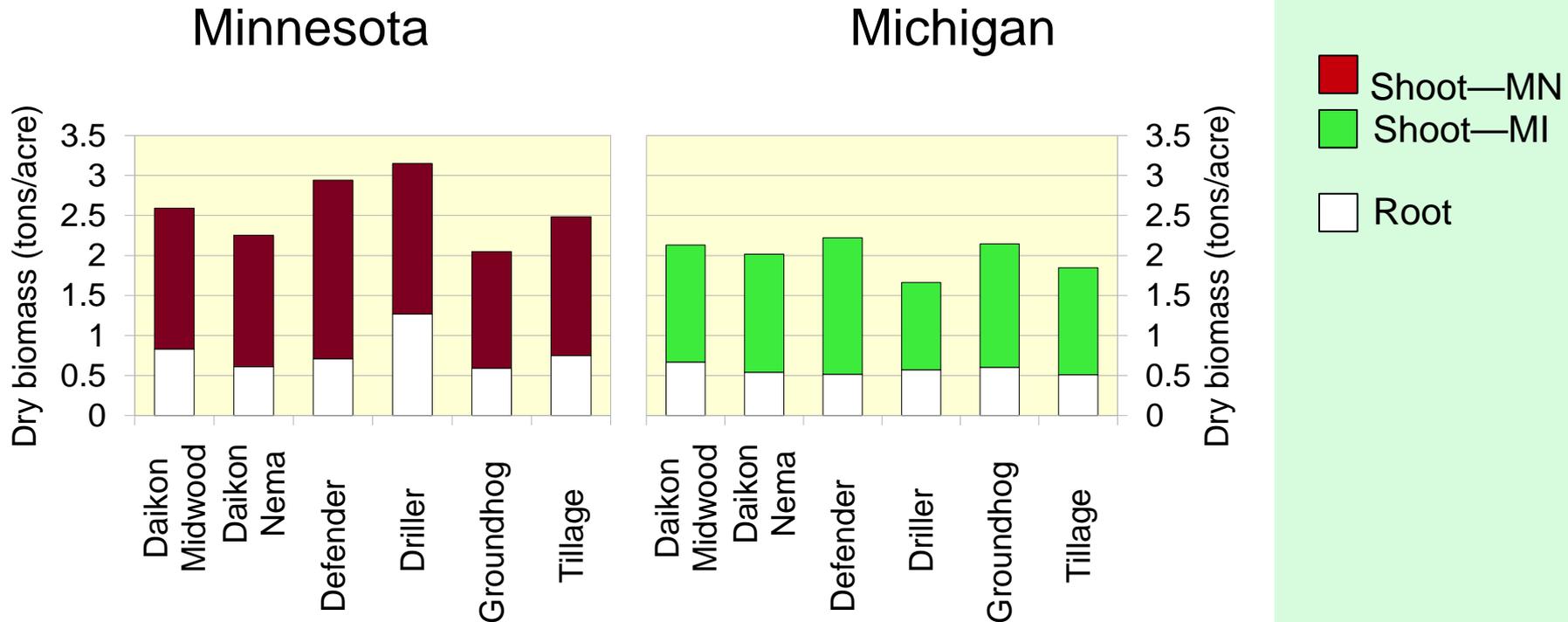
Miriam Gieske, Univ. of Minn.

Biomass by Species



- Shoot and total biomass were greater in MN than in MI.
- Radish had greater root biomass and root:shoot ratio than the other species.
- Average total biomass ranged from 1.7 to 3.1 tons per acre.

Biomass of Radish Varieties



- Radish varieties did not differ significantly in shoot or total biomass.
- Driller radish had a higher root biomass and root:shoot ratio than the other varieties in MN but not in MI.
- Total radish biomass ranged from 1.6 to 2.2 tons/acre in MI and 2 to 3.2 tons/acre in MN.

What You See, What You Get



OSR Defender



OSR Defender

Root:Shoot Ratios – No Surprise

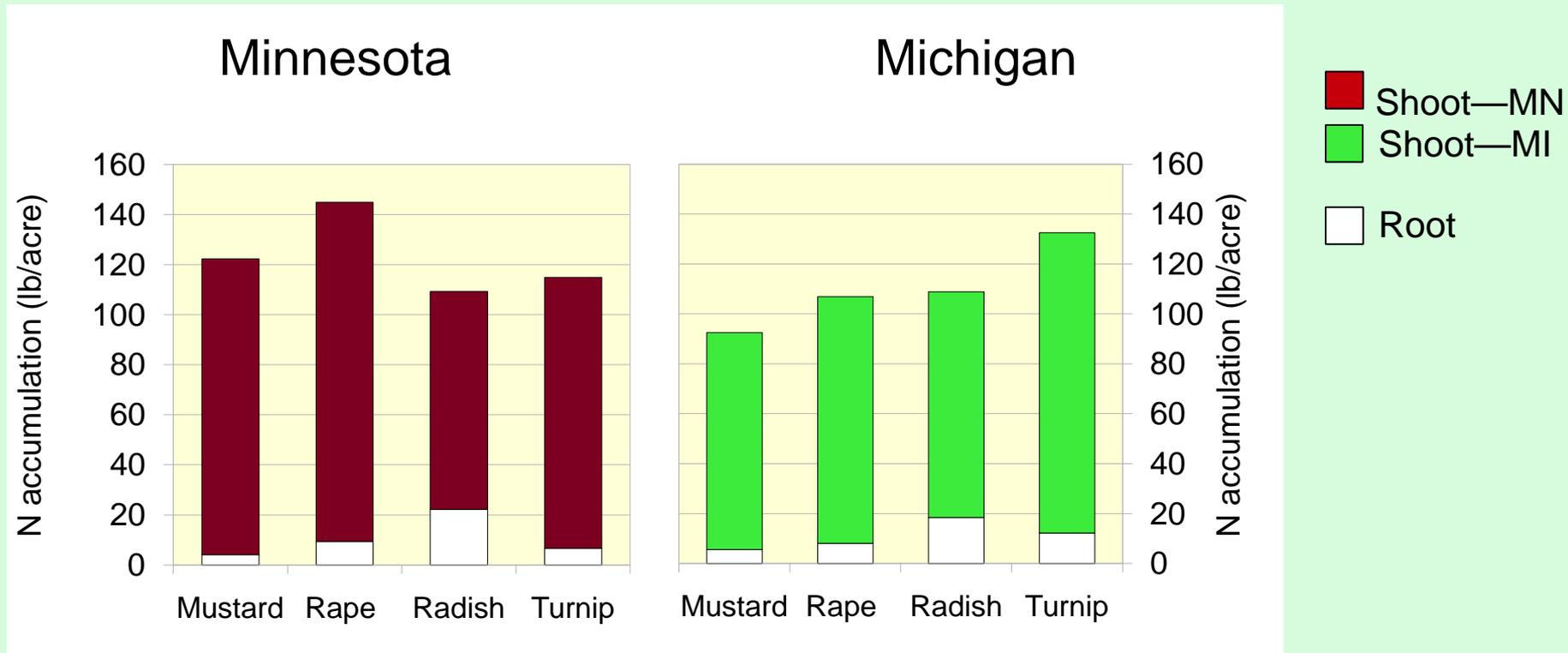


Mustard Pacific Gold



OSR Groundhog

Nitrogen Accumulation by Species



- Brassicas accumulated 95-145 lbs/acre N.
- Most of the N was in the shoots.
- In MI, turnips accumulated significantly more N than mustards.



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Univ. Extension**

Flowering and Pollinators (MI)

November 10, 2010



Photo by John Durling,
Rose Lake PMC

Flowering and Seed Set (MN)

- Brown mustard, Ida Gold and Pacific Gold had green seed pods Nov. 8.
- Nema Common Daikon and Midwood Daikon had a few plants with flowers or green seed pods.
- The rapeseed, turnips, and most of the “named” radishes (e.g. Driller, Groundhog) did not bloom.



Flowering and Seed Set (MI)

- Most of the named radishes did not flower; neither did the turnips and rapeseed.
- All of the mustards flowered, as did Daikon VNS, Daikon Nema Common, and Midwood Daikon.



Hardiness and Winter Kill

- Brassicas will generally tolerate light frosts, and are hardy to at least 28° F.
- There have been reports of oilseed radish overwintering under snow cover.
- Hardiness is another component of this study which we will continue investigating this spring.



OSR Daikon Nema Common



Whole Field View, Winter 2010-2011

Thanks to...

- Dave Burgdorf, John Durling, Elaine Gerona, Jerry Grigar, Bill Kuenstler, John Leif, and Sergio Pérez of USDA-NRCS
- Don Wyse, Bev Durgan, Doug Miller, Brad Kinkaid, Kevin Betts, Joshua Larson, Jackeline Verra, João Benevides, and Miriam Gieske of the Univ. of Minn
- Dale Mutch, Dean Baas, Todd Martin, Tim Dietz, Victoria Ackroyd, Paul Gross, and Christina Curell of Michigan State Univ. and MSU Extension
- Funding sources including Project GREEN and the Great Lakes Regional Water Program

Thank you. Questions?

Nov. 5, 2010



Photo by Victoria
Ackroyd, MSUE

Pacific Gold mustard (left) and Midwood Daikon.