

# Proceedings of the 3<sup>rd</sup> Annual Nitrogen: Minnesota's' Grand Challenge & Compelling Opportunity Conference



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Environment impacts on pests  
Environment impacts on crops  
Pest impacts on crops  
Environment, Crop and Pest impacts on  
*management decisions*

Bruce Potter

(507) 276-1184

[bpotter@umn.edu](mailto:bpotter@umn.edu)

<http://swroc.cfans.umn.edu>

# 2016 YEAR IN REVIEW (CROPS)

- Early corn planting, some soybeans
- Warm and wet growing season
- Yields mostly good—excellent but...

Rain delays on later SW/SC corn and soybeans

Frost on early corn (planting depth?)

Hail

Mid – late season rains

Some tremendous yields where early planted and moderate rainfall



# 2016 YEAR IN REVIEW (RAINFALL)

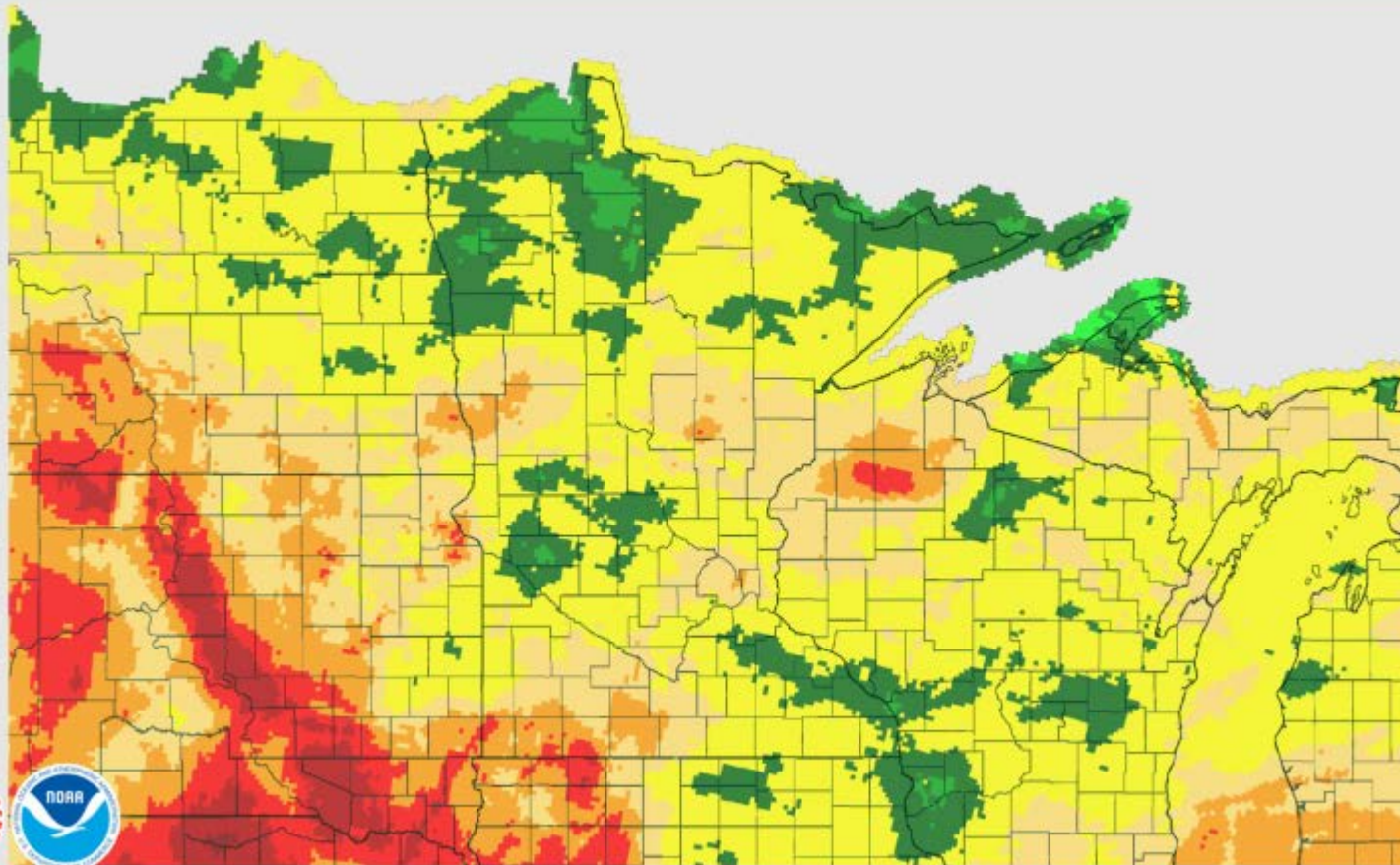
- The following NOAA monthly precipitation maps show variable 2016 rainfall patterns
- IN SW MN the western I-90 corridor wet early
- June hail IN SW MN and flooding in SW/C MN
- Later season intense rains in SC/SE MN
- Location and timing of rainfall and hail influenced crop and pests



## April 01, 2016 Monthly Observed Precipitation

Created on: November 27, 2016 - 17:45 UTC

Valid on: May 01, 2016 12:00 UTC

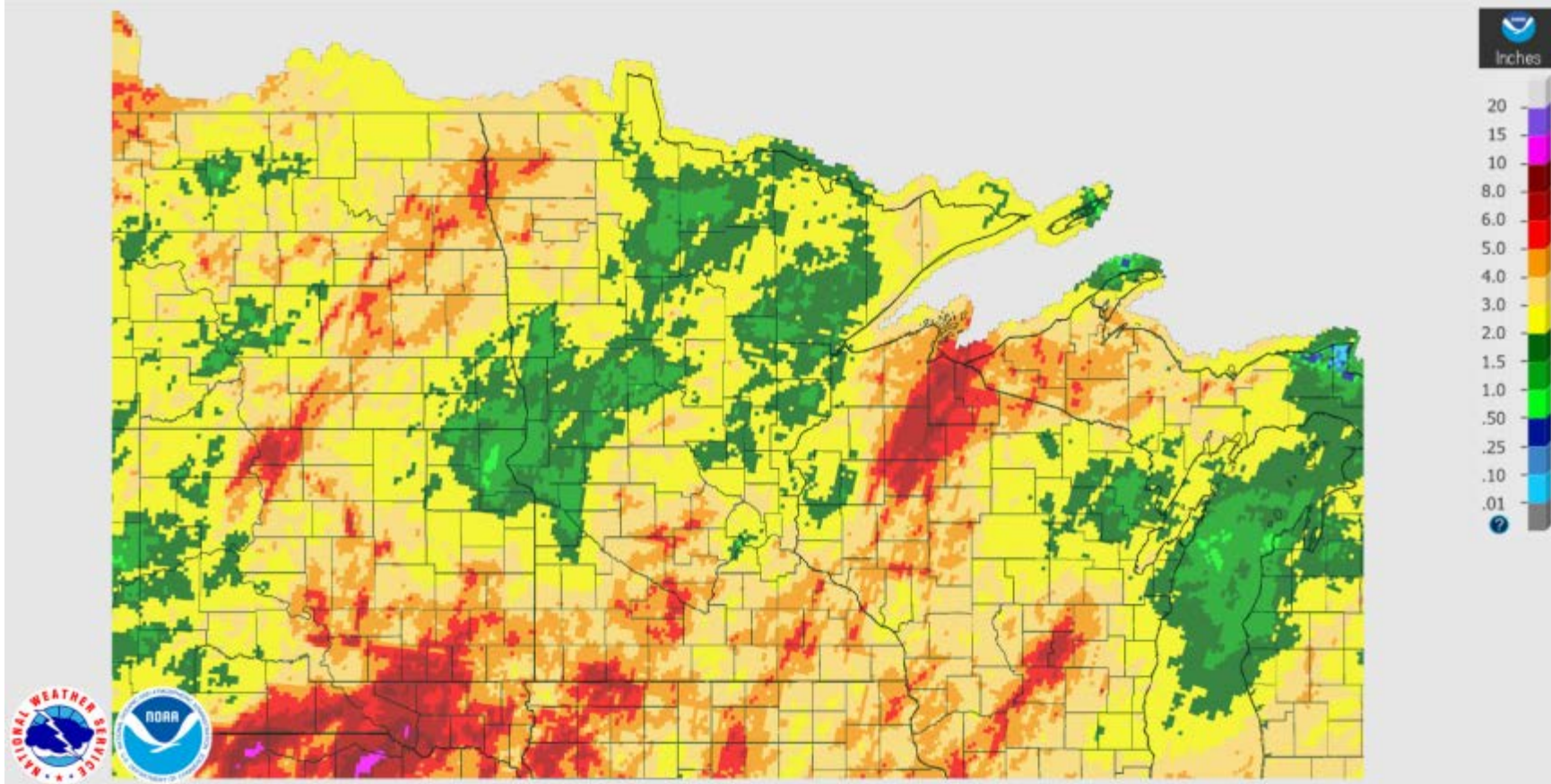


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## May 01, 2016 Monthly Observed Precipitation

Created on: November 27, 2016 - 17:48 UTC

Valid on: June 01, 2016 12:00 UTC

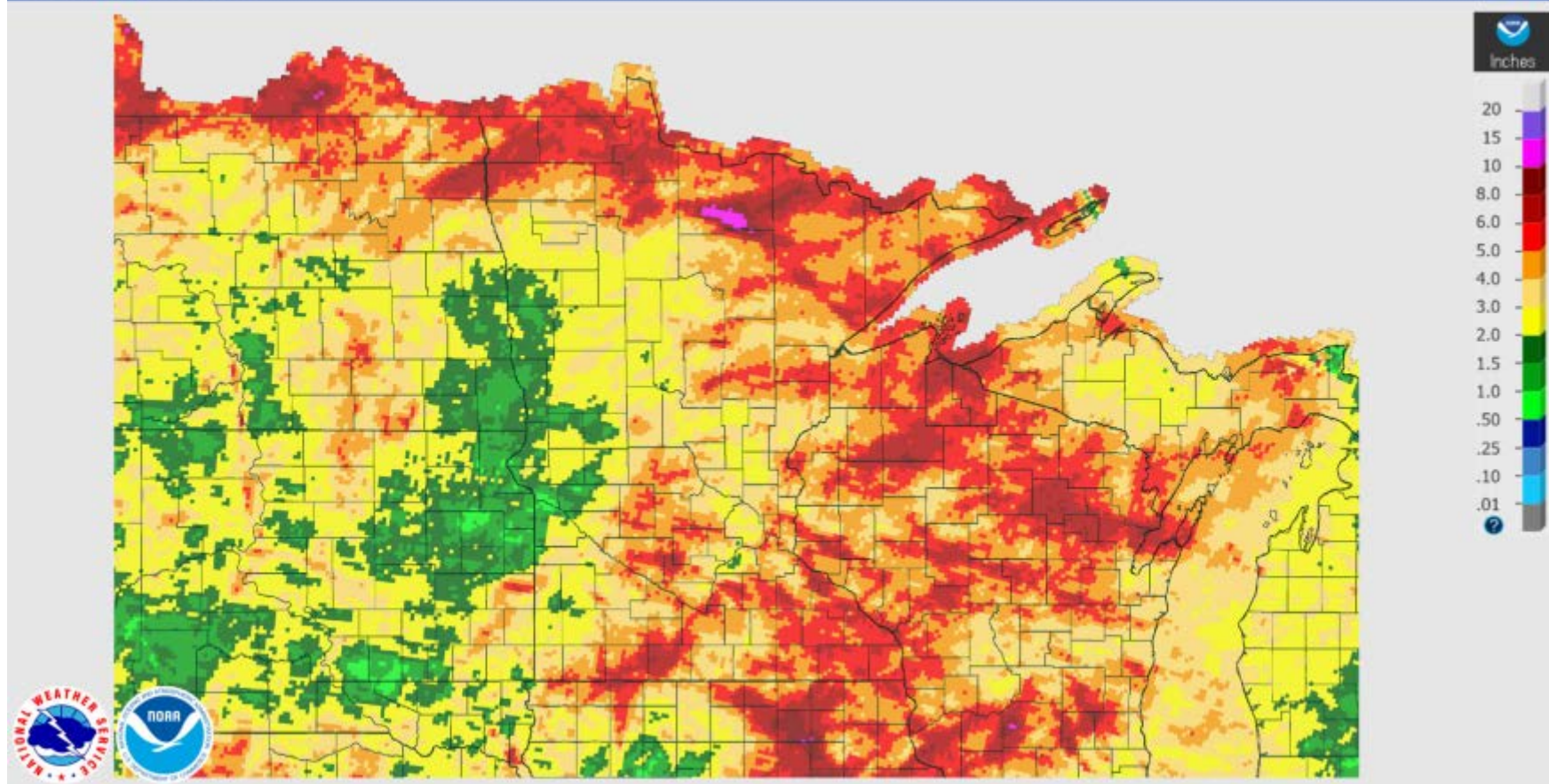




## June 01, 2016 Monthly Observed Precipitation

Created on: November 27, 2016 - 17:42 UTC

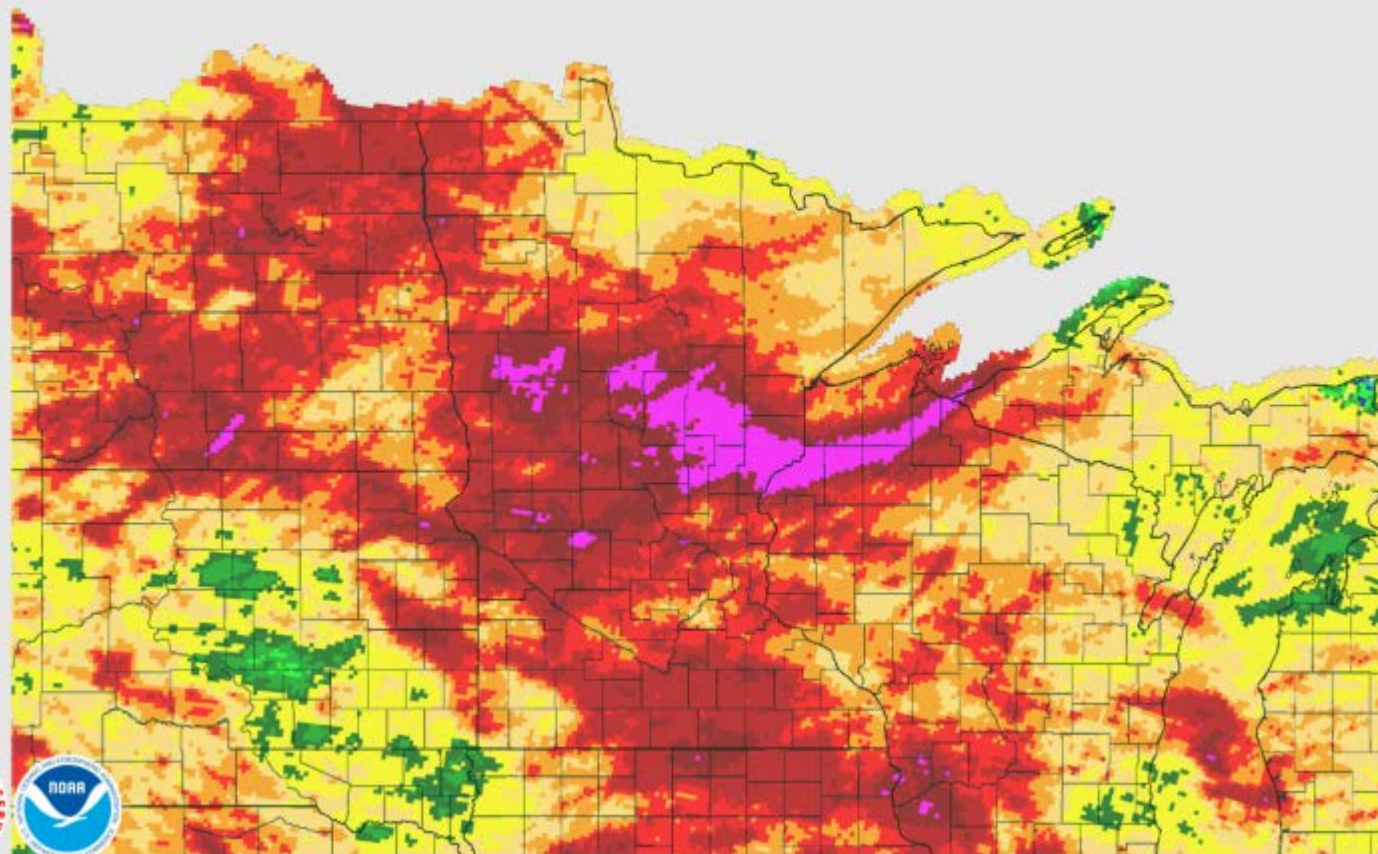
Valid on: July 01, 2016 12:00 UTC



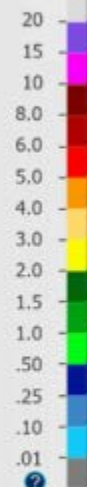
## July 01, 2016 Monthly Observed Precipitation

Created on: November 27, 2016 - 17:41 UTC

Valid on: August 01, 2016 12:00 UTC



Inches



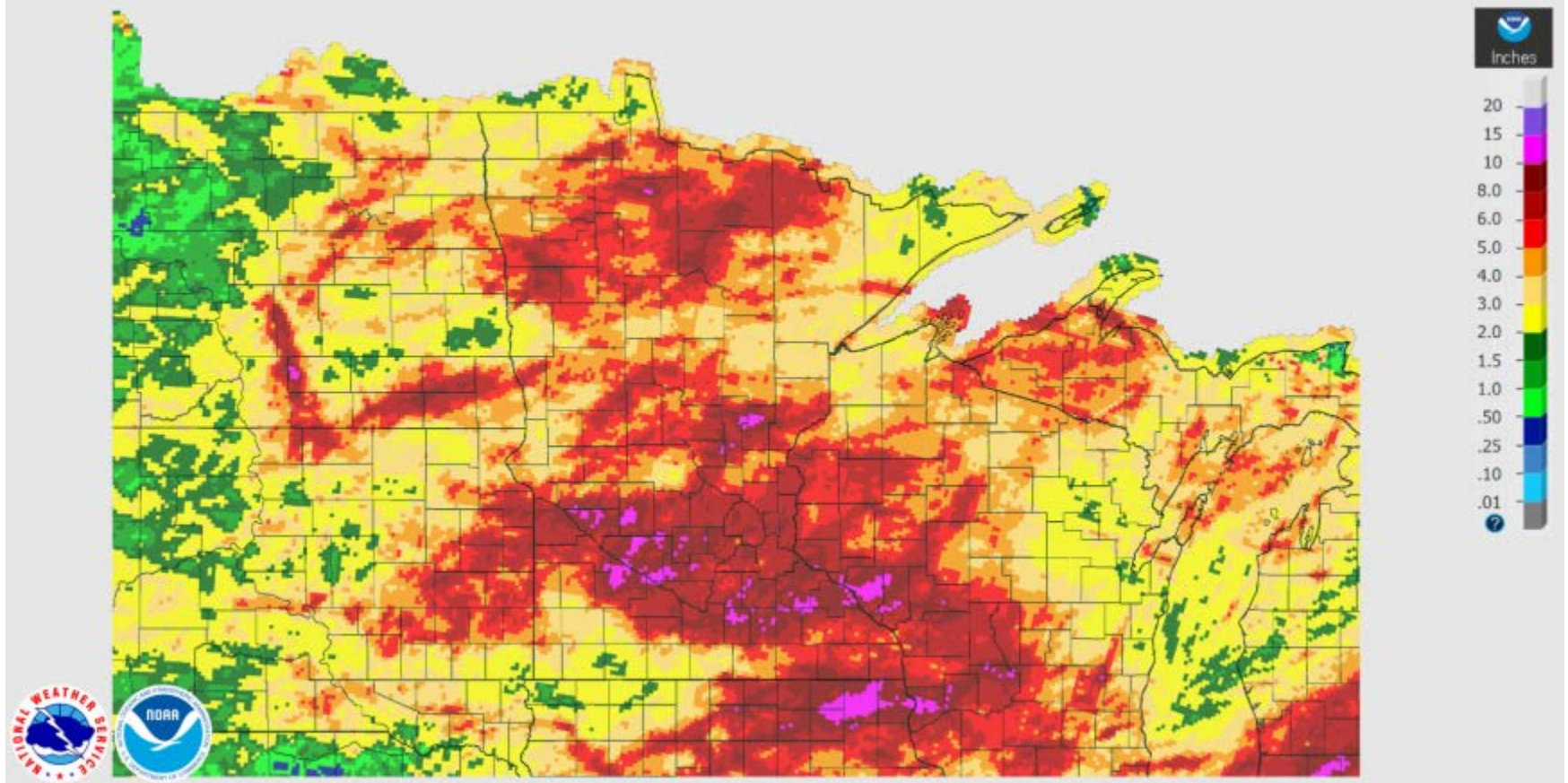
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## August 01, 2016 Monthly Observed Precipitation

Created on: November 27, 2016 - 17:39 UTC

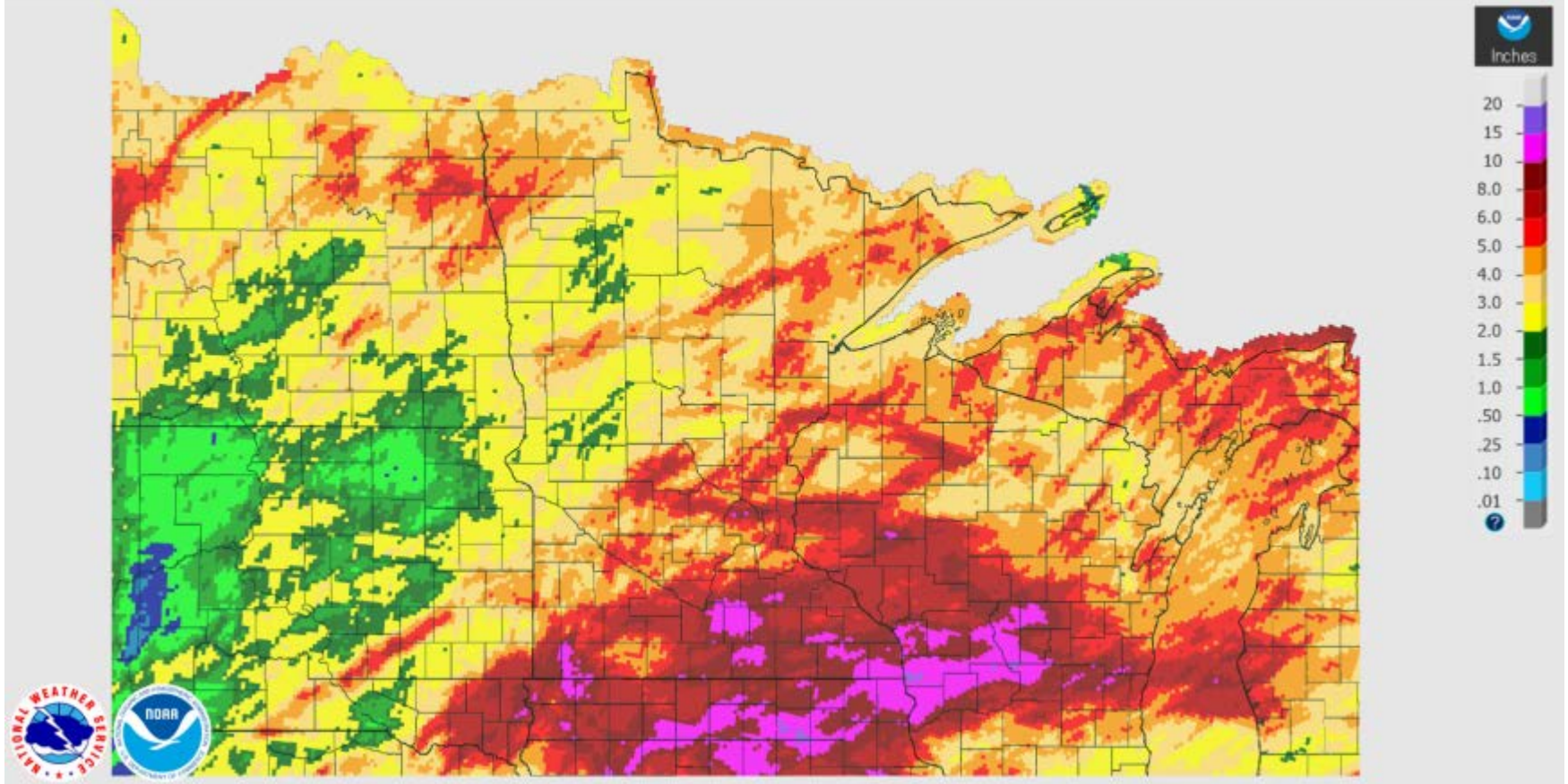
Valid on: September 01, 2016 12:00 UTC



## September 01, 2016 Monthly Observed Precipitation

Created on: November 27, 2016 - 17:32 UTC

Valid on: October 01, 2016 12:00 UTC



# 2016 REVIEW (WEATHER AND PESTS)

- Disease
  - Cercospora on sugar beets in S MN
    - Stobilurin resistance
  - SDS in soybean
  - White mold in some areas but less than expected
  - Northern corn leaf blight minimized by warm temps
  - Goss's in hail areas
- PRE herbicide and CRW insecticide
  - Adequate soil moisture = excellent performance
  - Some PRE herbicide issues in dry WC MN



# NORTHERN CORN LEAF BLIGHT



# GOSS'S LEAF BLIGHT AND WILT





# GOSS'S BLIGHT



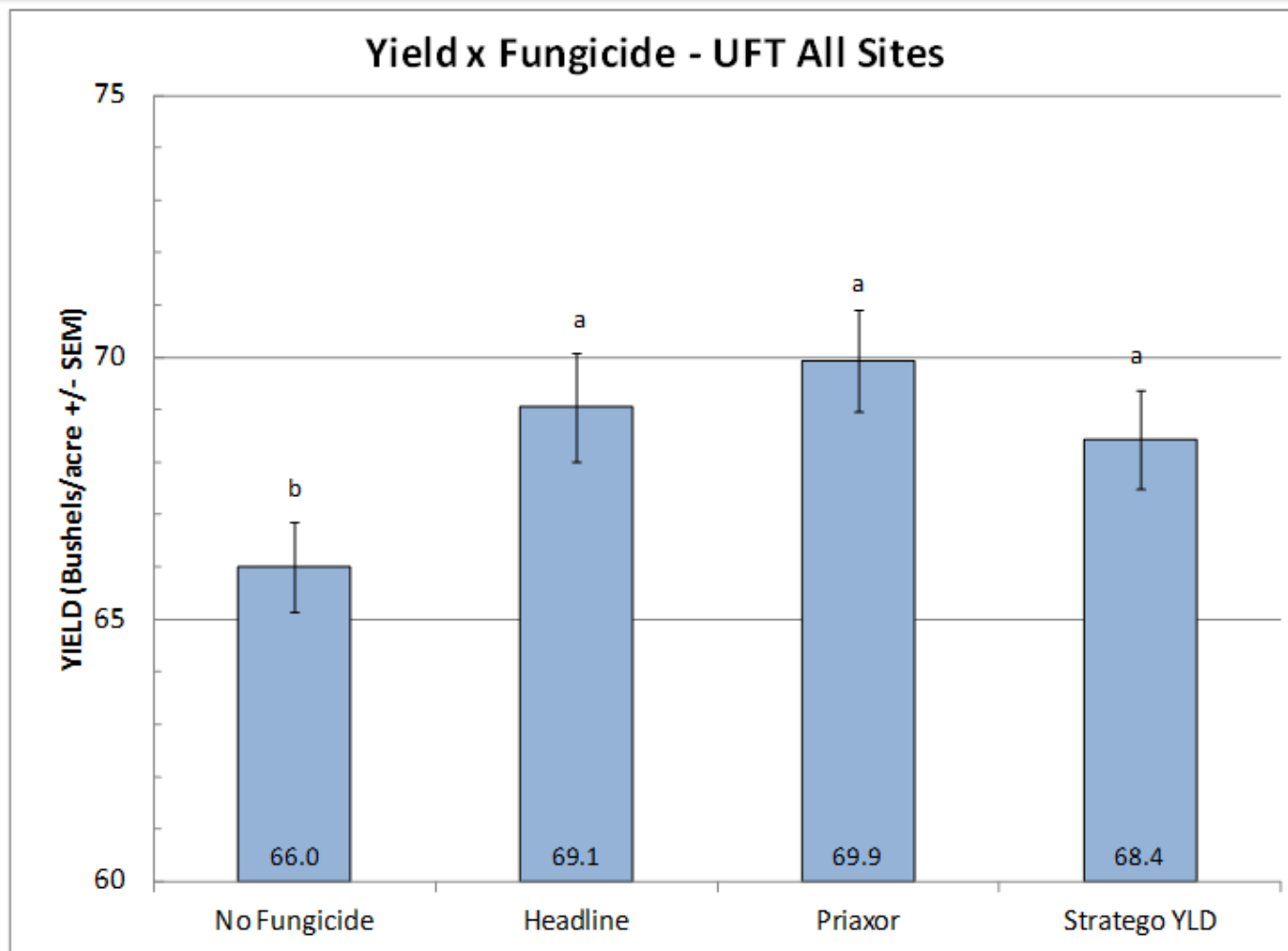


# 2016 REVIEW-(WEATHER AND PESTS)

## ■ Disease

- Significant response to fungicide application to soybean with and across three sites (Lamberton, Waseca, Rosemount)
- Foliar disease pressure was low
- May have had to do with changes in nitrogen or water within plant
- Will be expanded to 4 sites and corn in 2017
- Funded by MN Soybean Research and Promotion Council and MN Corn Research and Promotion Council

# 2016 MULTI-SITE SOYBEAN UNIFORM FUNGICIDE TRIALS (LAMBERTON, WASECA & ROSEMOUNT)



# 2016 - WEATHER AND PESTS

## ■ Insects

### – Soybean aphid

- Poor spring establishment on soybean
- Surplus soil moisture likely helped minimize reduced aphid populations due to poorer sap quality. N and K levels also influence
- Areas in SC and SW MN with some economic threshold levels, rare elsewhere
- Pyrethroid performance issues continue but low aphid populations limited our ability to determine how widespread

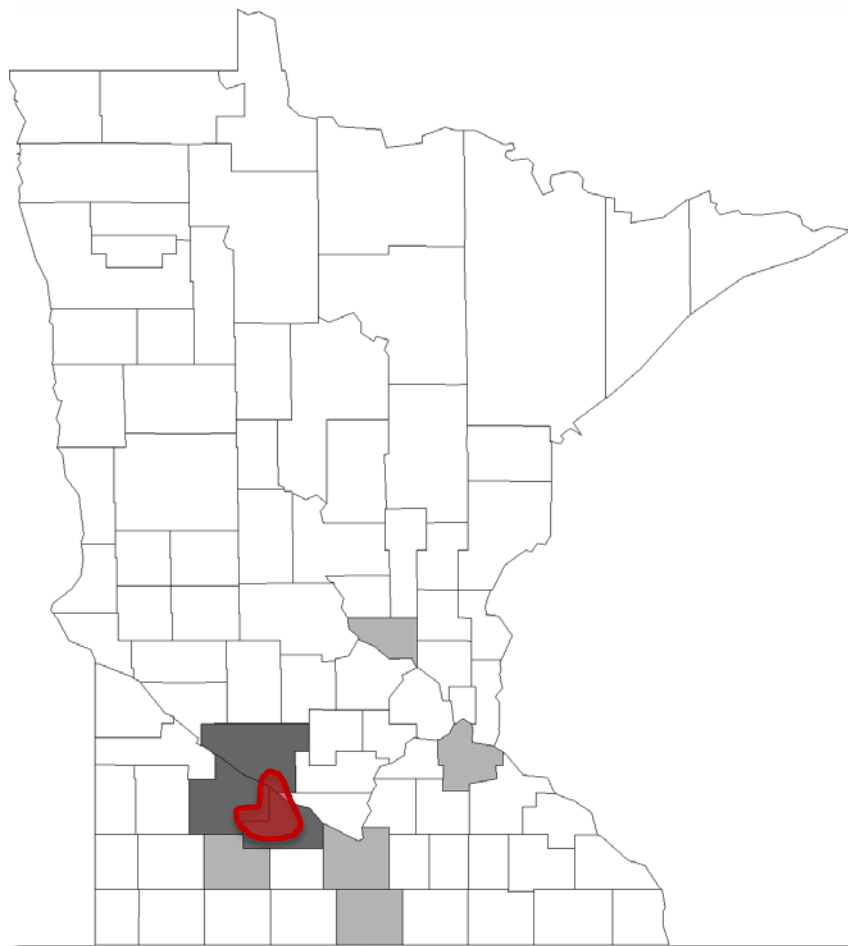




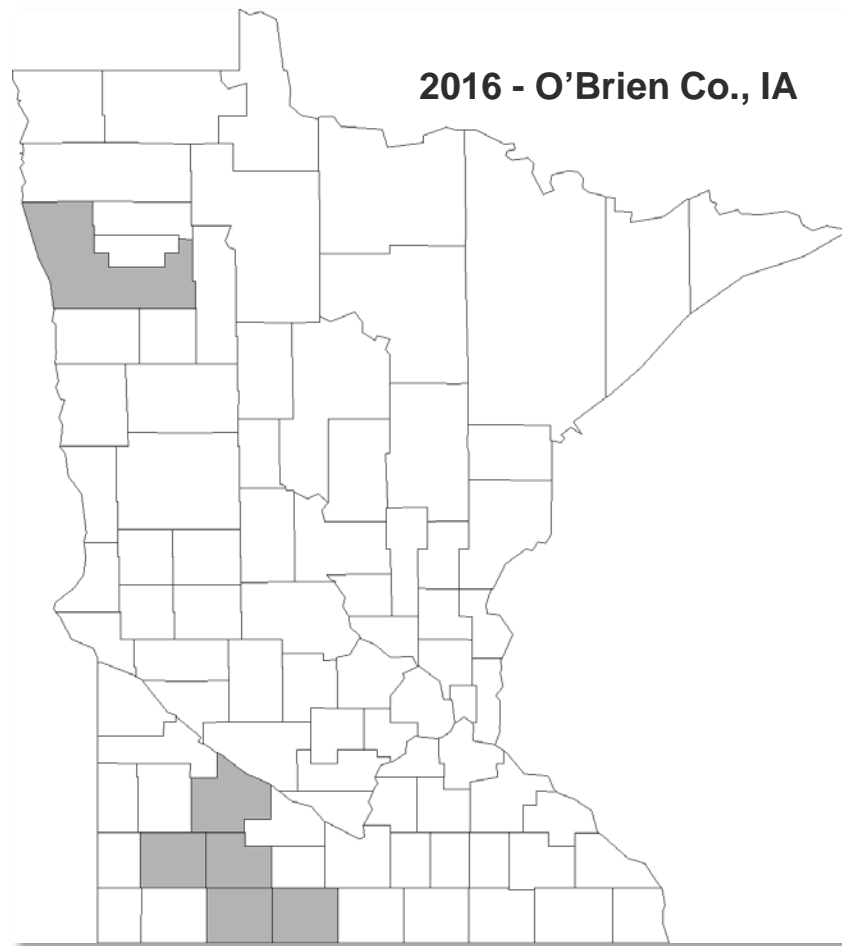


# MN COUNTIES WITH PYRETHROID PERFORMANCE ISSUES

2015



2016



# BT – RESISTANT CORN ROOTWORM



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# 2016 REVIEW (WEATHER AND PESTS)

## ■ Insects

### – Corn earworm

- Large migration
- Some infestations on Bt pyramid field corn

### – Corn rootworm

- Populations low but increasing
- Western CRW resistance to Bt trait(s) still present
  - May be masked by low populations
- Extended diapause Northern CRW still present
  - No field populations with resistance to Bt known
- Track adult populations for better mgmnt. decisions



# EUROPEAN CORN BORER



# SHOTHOLING AND EARLY INSTAR CORN BORER LARVAE





# 2016 REVIEW (WEATHER AND PESTS)

- Insects
  - European corn borer
    - Some populations in non -Bt in SE and C MN
    - Areas with history of less Bt most affected
    - Heavy rain can drown 1<sup>st</sup> generation larvae in whorl