

# 2014 YWTG

## Disease and Insects



# Sugarbeet Root Aphid

## What we learned in 2013

- Symptoms include:
  - plant wilting and leaf chlorosis, flaccid and rubbery roots, severely injured plants collapse and die
  - yield loss both within field (in RRV mid-90's, decrease in sucrose =30%, loss recoverable sugar =55%) and losses in storage
  - whitish-gray, waxy substance or “frass” excreted by wingless aphid in the soil immediately adjacent to the roots
  - variably sized circles or elliptical patches appear in fields showing these symptoms.





# Life Cycle

- Overwinter as eggs under bud scales on poplar/cottonwood trees
- Hatches to wingless 'stem mother'
  - produces gall on the petiole of leaf and reproduces asexually, daughters continue feeding in gall and producing more daughters
  - After a few generations, a winged generation is created, which flies to beets
  - Lay live nymphs directly on exposed roots
    - Worse in dry years because of access to roots via cracks in soil - also other mortality factors (e.g predators, parasitoids, disease) which are not as effective in dry conditions

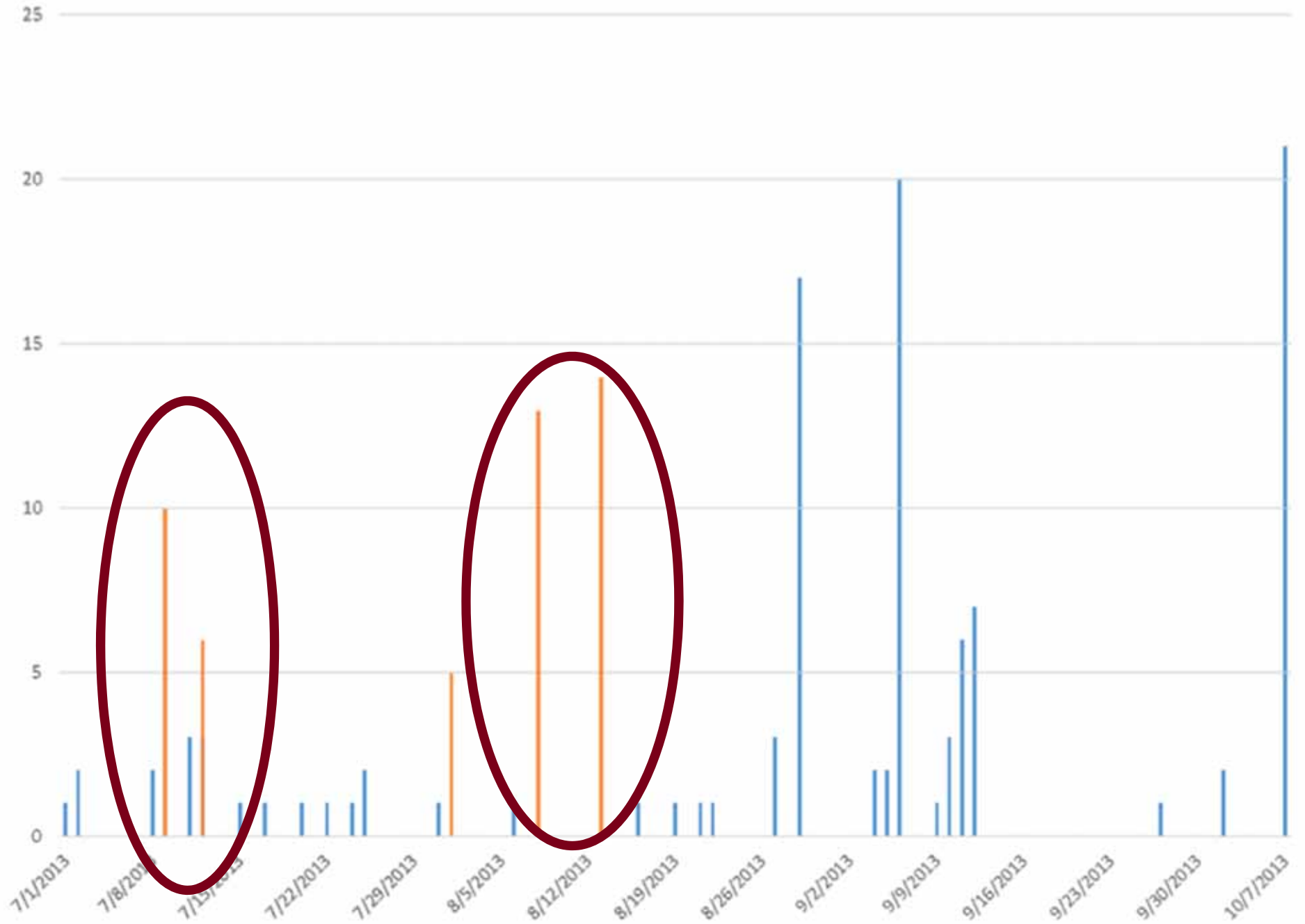




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2013





# Life Cycle Continued...

- Feed on root hairs
- Reproduce Asexually all summer (daughter clones)
- Return to poplar/cottonwood trees in the fall
- Some become males and mate and the wingless offspring lay overwintering eggs back onto the bud scales of these trees



















# 2013 Oddities

- Aphids on petioles!
- Different color
  - Brown, grey or even black



# Recommendations

- **Resistant varieties definitely the best bet for now.**
- We may be able to predict flights of adults to fields (July) in the future by using suction traps (potato industry) whereby we could spray insecticides in a timely manner.





# Root Aphid Tolerant Varieties

## HIGHLY TOLERANT

Beta 89RR83	Cry 093RR
Beta 89RR10	Cry 101RR
Beta 80RR32	Cry 765RR
Beta 81RR78	Cry 768RR
Beta 82RR22	Cry 981RR
Beta 82RR33	Cry 246RR
Beta 82RR80	Cry 247RR
Beta 82RR28	

## MODERATELY TOLERANT

Beta 80RR52  
Beta 81RR17  
Beta 89RR50  
Cry 095RR  
Cry 986RR

- Highly Tolerant varieties all performed over 110% of the mean in Rev/A in the Hendrum Coded trial (Root Aphid and Drought conditions)



# Impact on Storage



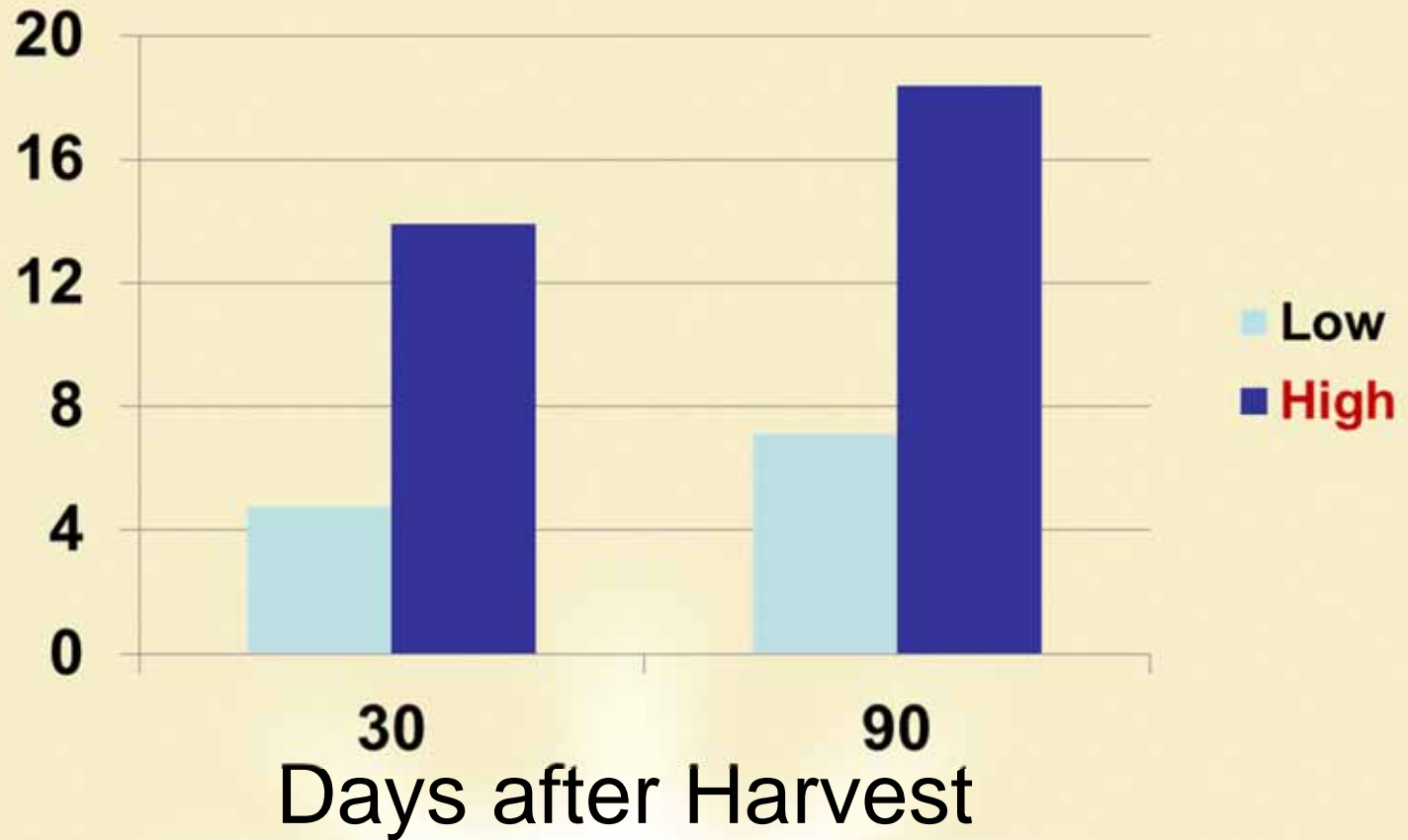
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# 2012 Nielsville, MN

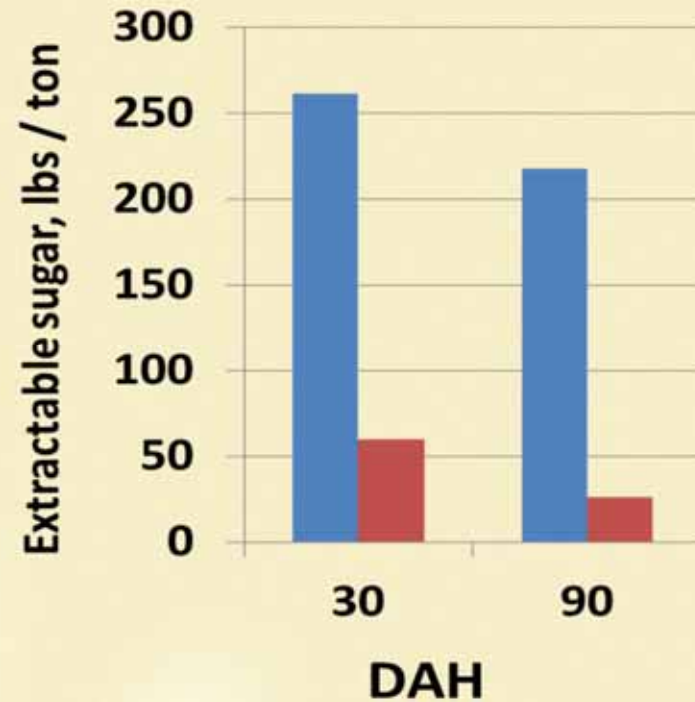
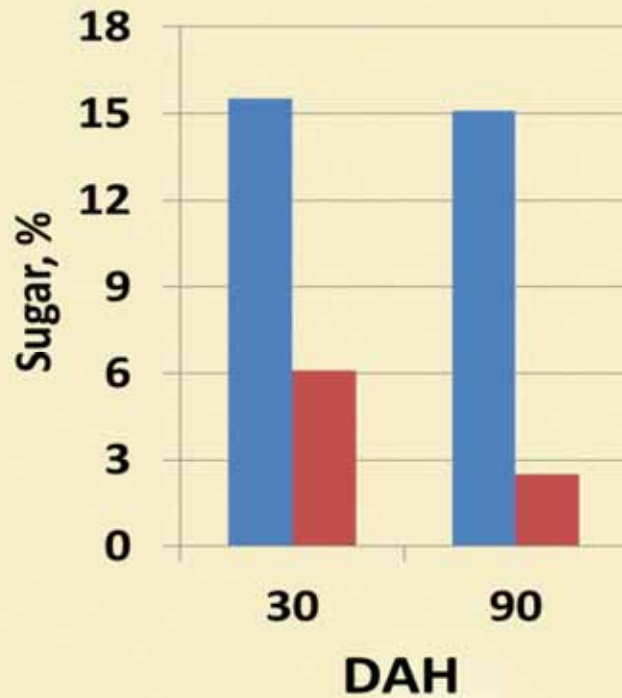
## Postharvest Respiration Rate



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# 2012 Nielsville, MN Sugar & Extractable Sugar

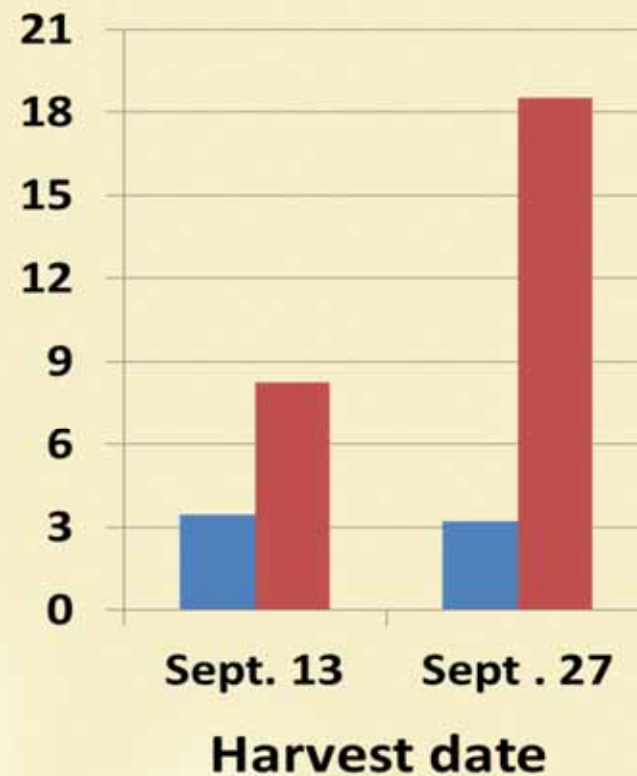
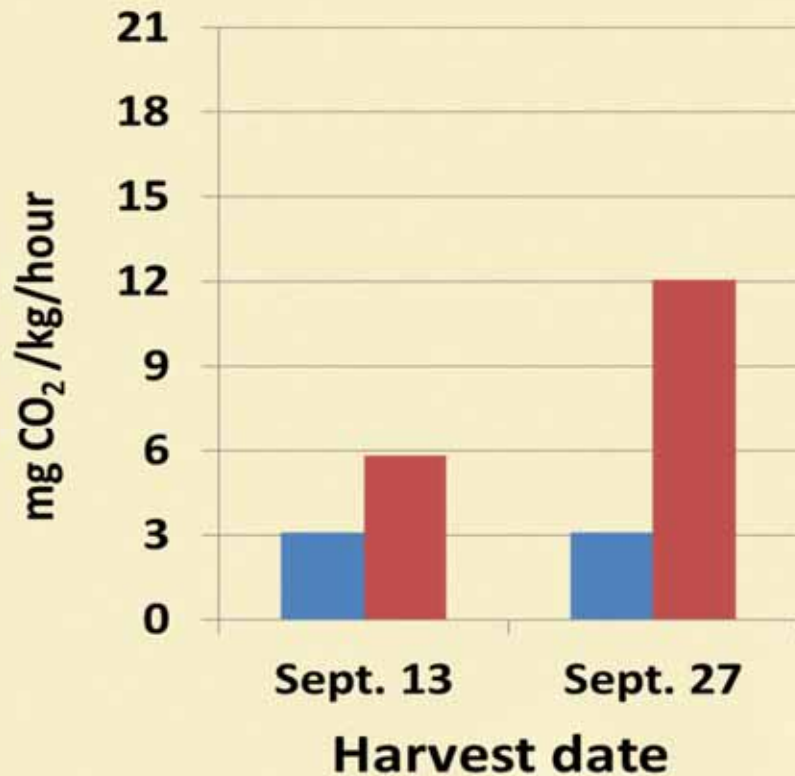


Aphid damage : **Low** **High**





# 2013 Ada, MN Postharvest Respiration Rate

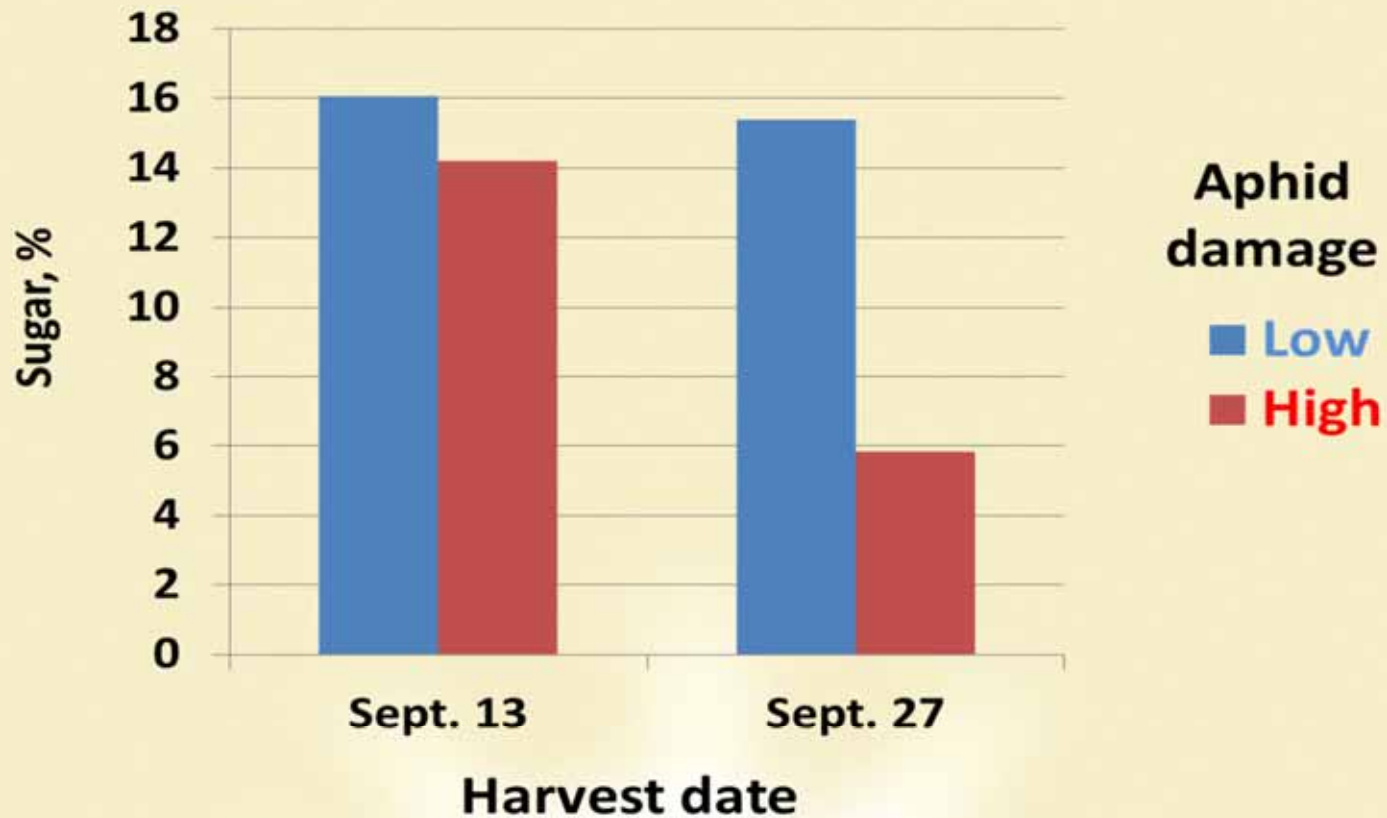


Aphid damage : **Low** **High**



# 2013 Ada, MN

## Sugar, 30 Days after Harvest



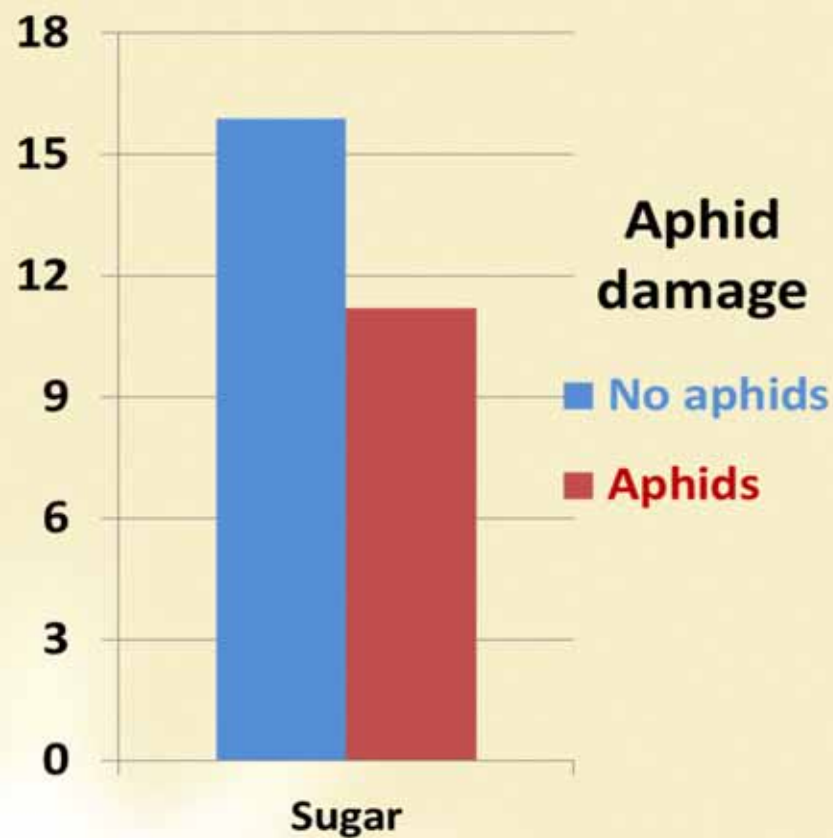
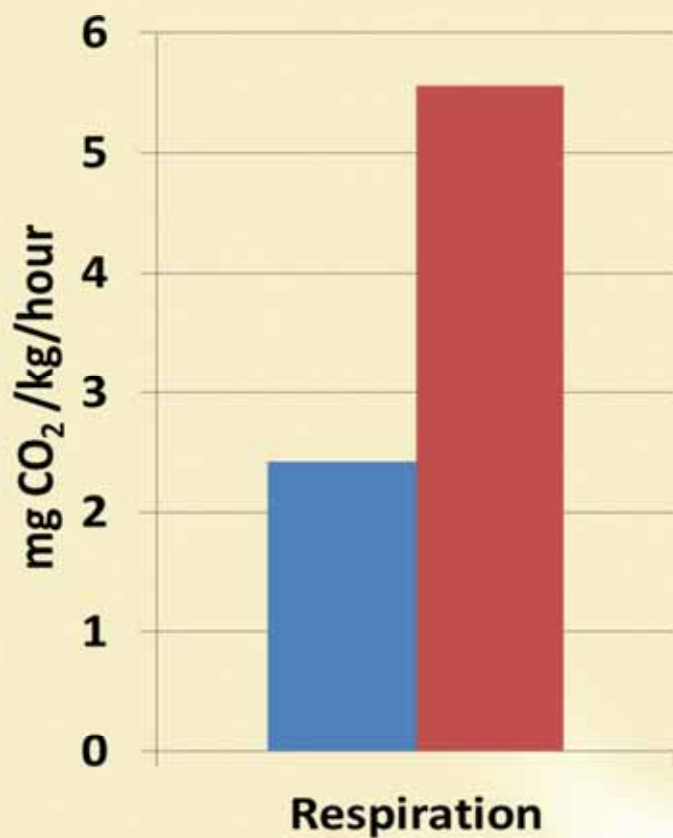
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# 2013 Scottsbluff, NE -- 30 DAH

## Single sample observation!



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# Fusarium



  
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# Fusarium



- Usually found in wet, poorly structured soils
- First appears as interveinal yellowing on older leaves.
- Optimum soil temp above 75 degrees F
- Can be confused with Verticillium Wilt

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# Fusarium Management With Disease Resistant Varieties



- 2 yr. Disease root rating of 3.0 or less.
- Crystal - 658RR
- Beta- 82RR28, 82RR33, 82RR17

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QUESTIONS?



# 2014 Rhizoctonia Management

- Kabina seed treatment is not meant to be a stand alone fungicide. A second post application may be needed in moderate to severe pressure disease.





# 2014 ACSC RHIZOCTONIA MANAGEMENT

 American Crystal Sugar Company	 <b>Quadris®</b>	 <b>Headline</b> fungicide	 <b>Quadris®</b>	 <b>Quadris®</b>
	AT-PLANT	AT-PLANT	POST	POST
METHOD	T-BAND (4")	IN-FURROW	BAND (7-11")	BROADCAST
TIMING	At-plant	At-plant	Just prior to 65° F 4" soil temp/≥ 2 leaf	Just prior to 65° F 4" soil temp/≥ 2 leaf
RATE	10 oz/Acre	9 oz/Acre	10 oz/Acre	15 oz/Acre
TANK-MIXES	None Recommended	Starter Fertilizer	Glyphosate w/ min. surfactant	Glyphosate w/ min. surfactant
WATER VOLUME	8 gal/acre	>1 gal/acre	10-20 gal/acre	10-20 gal/acre
NOTES  <b>(see reverse side)</b>	<ul style="list-style-type: none"> <li>• T-banding is the safest option for at-plant applications, Do not reduce rate</li> <li>• Applying in-furrow is risky</li> <li>• Less risk with in-furrow if planting late in warm soils</li> <li>• More phytotoxic in cool soils</li> </ul>	<ul style="list-style-type: none"> <li>• Some stand loss may occur, adjust seeding rate accordingly</li> <li>• Mix with water prior to adding to starter fertilizer</li> <li>• Need good agitation</li> <li>• May separate if left more than 4 hours without agitation</li> <li>• Apply with minimum of 2.5gal/A of carrier</li> </ul>	<ul style="list-style-type: none"> <li>• Do not mix with conventional herbicides/insecticides</li> <li>• Apply Quadris at midpoint between micro-rates</li> <li>• Do not add deposition aids when mixing with glyphosate</li> <li>• Narrower bands are most effective, do not reduce rate</li> </ul>	<ul style="list-style-type: none"> <li>• Do not mix with conventional herbicides/insecticides</li> <li>• Apply Quadris at midpoint between micro-rates</li> <li>• Do not add deposition aids when mixing with glyphosate</li> <li>• This is our least preferred method, but still beneficial</li> </ul>

# RHIZOCTONIA MANAGEMENT OPTIONS



DISEASE SEVERITY	RECOMMENDATIONS
Slight	Post Quadris or other fungicide only
Moderate	Increase Crop Rotation Length, Tolerant Variety, Kabina seed treatment/T-band/ In-furrow, Post Quadris or other fungicide 1x
Severe	Increase Crop Rotation Length, Tolerant Variety, Kabina seed treatment/T-band/ In-furrow , Post Quadris or other fungicide 1x or 2x

## ADDITIONAL NOTES:

- Tank-mixing Headline or Quadris with starter fertilizer can cause compatibility issues, use good agitation and apply the mixture promptly
- Headline is generally more compatible with other products compared to Quadris
- Stand losses may occur with in-furrow applications, adjust seeding rates accordingly (be sure equipment is calibrated correctly)
- At-plant applications or seed treatments may be a better option with a late May planting or if soil temperatures are close to 60°F at the 4" depth
- Tank-mixing Mustang Max with either product, for in-furrow treatments, is not recommended (consider using injection system)
- Consider using Kabina or other seed treatment in place of an in-furrow fungicide to prevent stand losses
- Kabina or other seed treatments do not provide season long control and should be coupled with post Quadris
- Seed treatments are generally less costly per acre than In-furrow or T-band fungicide applications



**QUESTIONS?**

