2013 YWTG Root Diseases Controlling Rhizoctonia

Root Diseases

- Rhizoctonia
- Fusarium
- Aphanomyces
- Erwinia

2012 Fungicide Use

for Rhizoctonia Control

- In-furrow fungicide used on 17% of acres in RRV
  - Mainly Headline
- Post application of fungicide used on 64% of acres in RRV
  - High number of acres considering moisture levels

Post Applied Fungicide use by District	
Moorhead - 59%	Crookston - 69%
Hillsboro - 61%	EGF - 59%
Drayton - 70%	

Rotation and Disease Pressure

Crop Planted	Rhizoctonia solani strains AG 2-2 IV		AG 2-2 III-B
Sugarbeets	Moderate Aggressive		Severly Aggressive
Soybeans	Moderate Aggressive		Severly Aggressive
Edible Beans	Moderate Aggressive		Severly Aggressive
Corn	Non-Host		Slightly Aggressive
Wheat	Non-Host		Non-Host

79% of 2012 crop planted on old Wheat or Barley ground
10% of 2012 crop planted on old Bean ground

Rotations least likely to build Rhizoctonia disease pressure:

- Wheat – Beans **– Wheat** – Sugarbeets
- Corn – Beans – **Wheat** – Sugarbeets

Analysis by Preceding Crop

RRV 5 year Avg.

Preceding Crop	Acres	Yield	Sugar	RSA	Rev/Acre
Potatoes	14,607	26.5	17.81	8,865	$1,595
Edible Beans	21,971	25.2	17.98	8,500	$1,535
Fallow	11,574	24.4	18.31	8,348	$1,533
Wheat	336,824	24.8	17.94	8,356	$1,510
Barley	12,212	24.6	18.05	8,309	$1,510
Corn	6,518	23.5	17.65	7,782	$1,398
Soybeans	30,103	23.2	17.74	7,707	$1,383

Gross payment for 5 Yr Summary is calculated from 5 year average payment variables
Each individual year is based on its final payment (initial payment for 2012 crop)

Intangible Values of Wheat

- Non-host crop for Rhizoctonia
- Different herbicide mode of action
  - What will the cost of glyphosate resistance be on your farm
- Less water requirements than corn and beans
  - Less likely to see Root Aphid issues
- More time to ditch prior to Sugarbeets
  - More time for seed bed preparation
- Diversification of fall labor
- Value of Wheat currently about $8/bu

Variety Selection

- Select an approved Rhizoc specialty variety:

Roundup Ready		Conventional	
BTS 89RR10	Hilleshög 4022RR	Beta 1301R	Hilleshög 3035Rz
Crystal 658RR	Hilleshög 4094RR	Beta 1135R	Hilleshög 3052Rz
Crystal 875 RR	Hilleshög 4195RR	Beta 1833R	SES Vdh H46714
Maribo 104RR	Hilleshög 9302 RR		

2013 Rhizoctonia Fungicide Control Options

At Plant

- **Metlock** – Seed treatment
- **Quadris**[1]
  - 10 oz/Acre in a T- band
- **Headline**[1]
  - 9 oz/Acre in-furrow
  - EC formulation (Blue Box)

[1] Some university research suggests possible stand loss when used in contact with the seed.

Post Emergence[2]

- **Quadris**
  - 10 oz/Acre in a 7” band
  - 15 oz/Acre broadcast
- **Proline**
  - 5.7 oz/Acre in a 7” band

[2] Try target application just prior to 4” soil temp of 65 °F but on no smaller than 2 leaf beets.

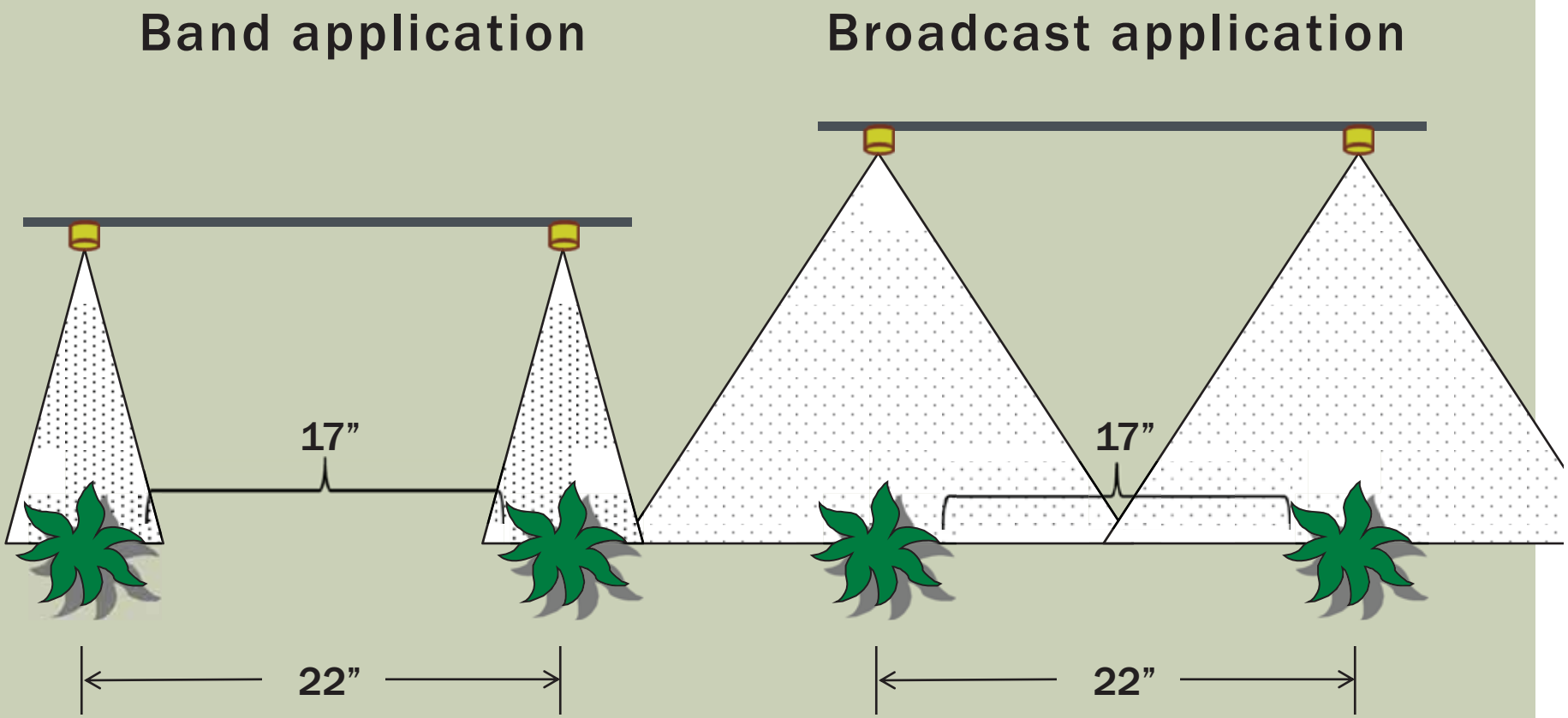
Quadris Rate Evaluation

Windels & Brantner, 2010, UM-NWROC

Quadris Rate (fl oz product/A)	Revenue ($/A)	Product Cost ($/A)	Benefit Over No Fungicide [z] ($/A)
Control (no fungicide)	1,401	-	-
5.0	1,368	12.50	-46
7.5	1,403	18.75	-17
10.0	1,496	25.00	70
14.5	1,520	36.25	83

[z] Product cost subtracted, but does not account for other costs associated with application.

WHAT'S HITTING THE PLANT?



Jason Brantner and Carol Windels, U of MN, NWROC

HOW MUCH PRODUCT IS HITTING THE PLANT?

Application method	Approximate amount of product hitting row*			
	Application rate (fl oz/A)			
	5	7.5	10	14.5
5-inch band	5	7.5	10	14.5
7-inch band				
Broadcast				

* Assumes 5-inch canopy for a 4-6 leaf sugarbeet

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HOW MUCH PRODUCT IS HITTING THE PLANT?

Application method	Approximate amount of product hitting row*			
	Application rate (fl oz/A)			
	5	7.5	10	14.5
5-inch band	5	7.5	10	14.5
7-inch band	3.6	5.4	7.1	10.4
Broadcast				

* Assumes 5-inch canopy for a 4-6 leaf sugarbeet

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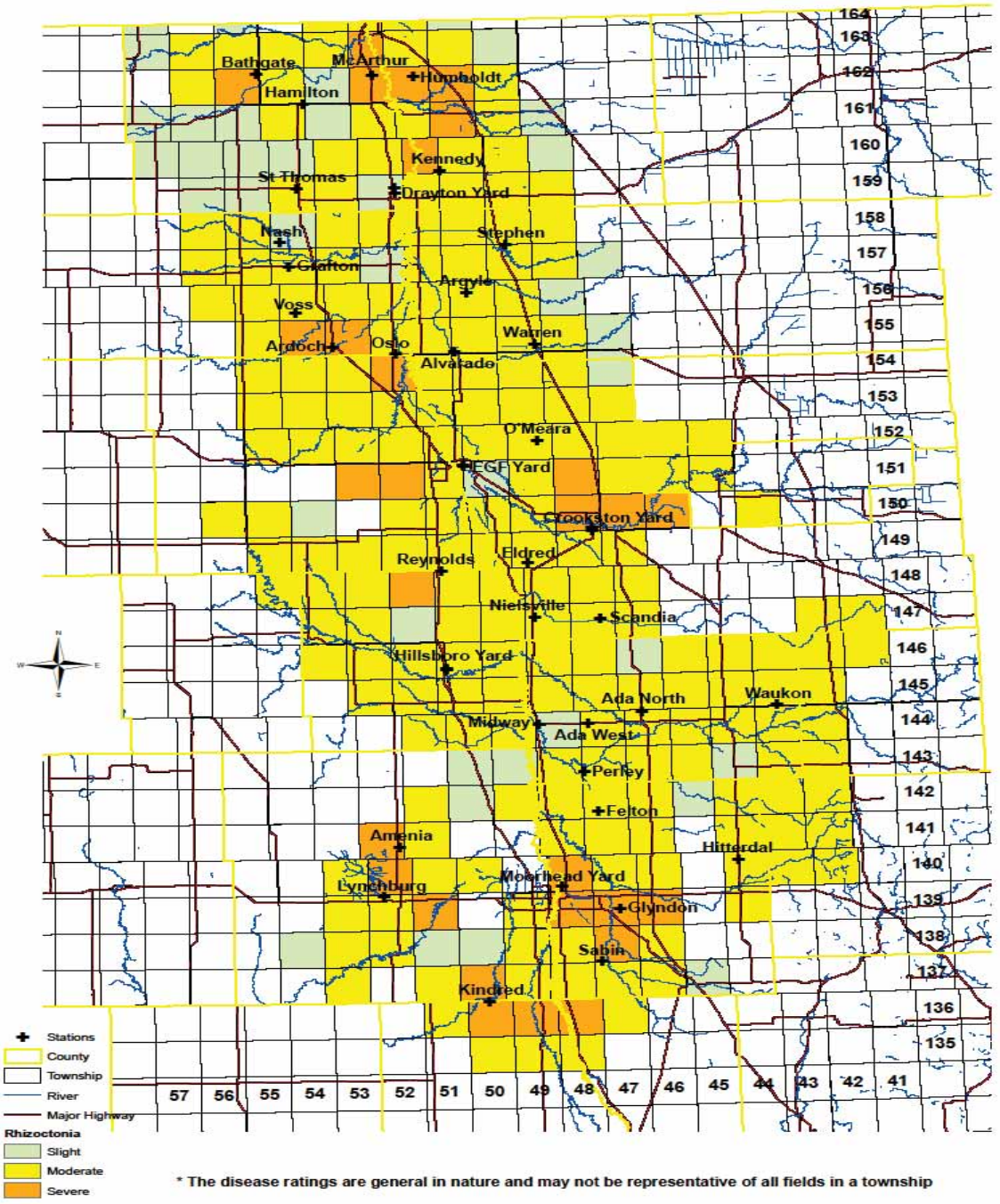
HOW MUCH PRODUCT IS HITTING THE PLANT?

Application method	Approximate amount of product hitting row* Application rate (fl oz/A)			
	5	7.5	10	14.5
5-inch band	5	7.5	10	14.5
7-inch band	3.6	5.4	7.1	10.4
Broadcast	1.1	1.7	2.3	3.3

* Assumes 5-inch canopy for a 4-6 leaf sugarbeet

Jason Brantner and Carol Windels, U of MN, NWROC

2012 Disease Rating*
Rhizoctonia



* The disease ratings are general in nature and may not be representative of all fields in a township

Fusarium

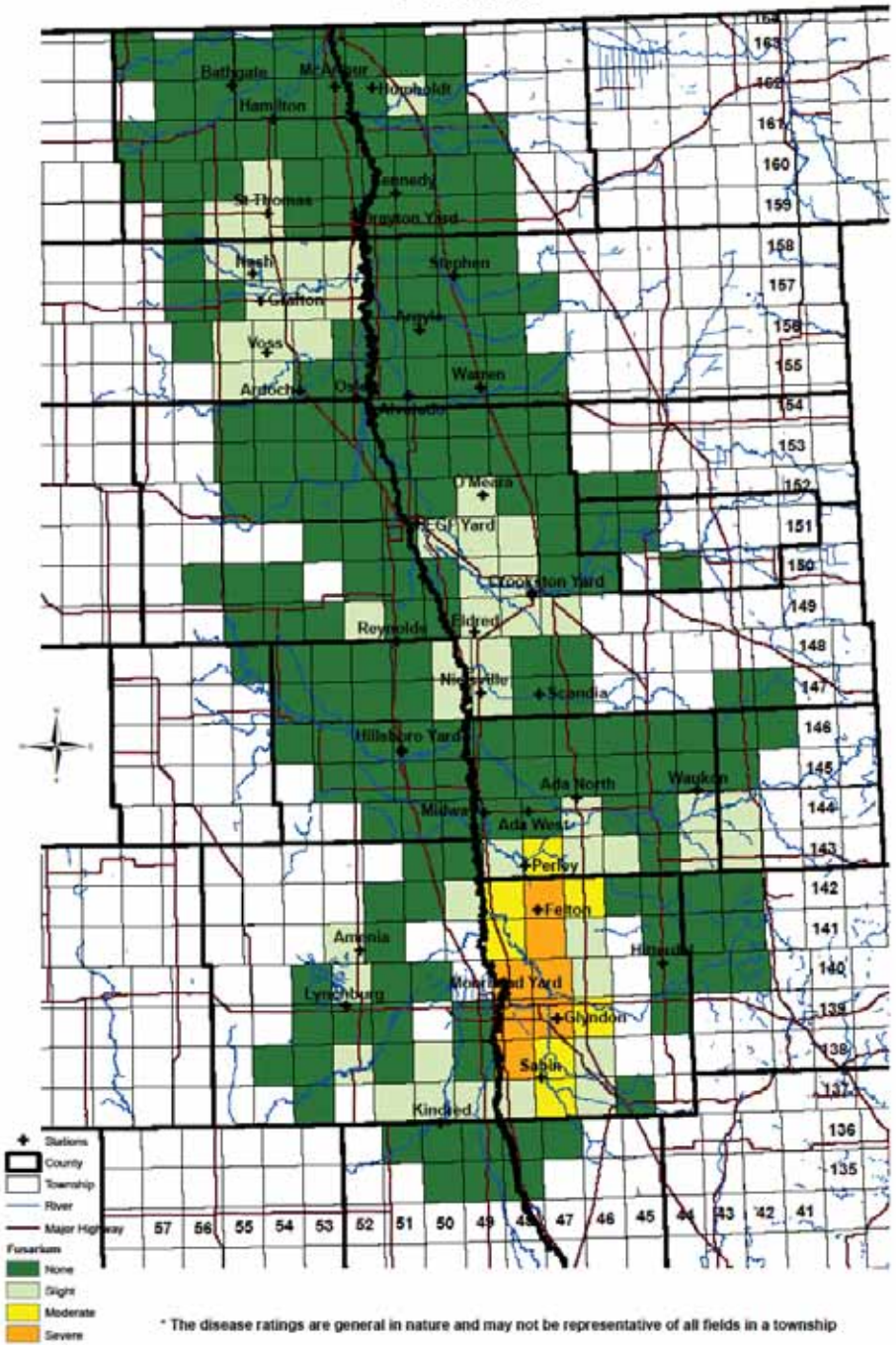
Fusarium

- Likes wet, poorly structured soils
- Long lived in the soil
- Optimum soil temp above 75 °F
- Can be confused with Verticillium Wilt

Fusarium Management With Disease Resistant Varieties

- **Disease root rating of 3.0 or less**
- **Crystal** - 658RR, 101RR, R761
- **Beta** - 89RR30, 81RR17
- **Disease root rating between 3.0 and 4.0**
- **Crystal** – 981RR, 985RR, 093RR
- **Beta** - 80RR32, 80RR52, 89RR50, 81RR78, 89RR83
- **SESVdh** - 36179NRR
- **Hilleshog** – 4300RR

2012 Disease Rating*
Fusarium



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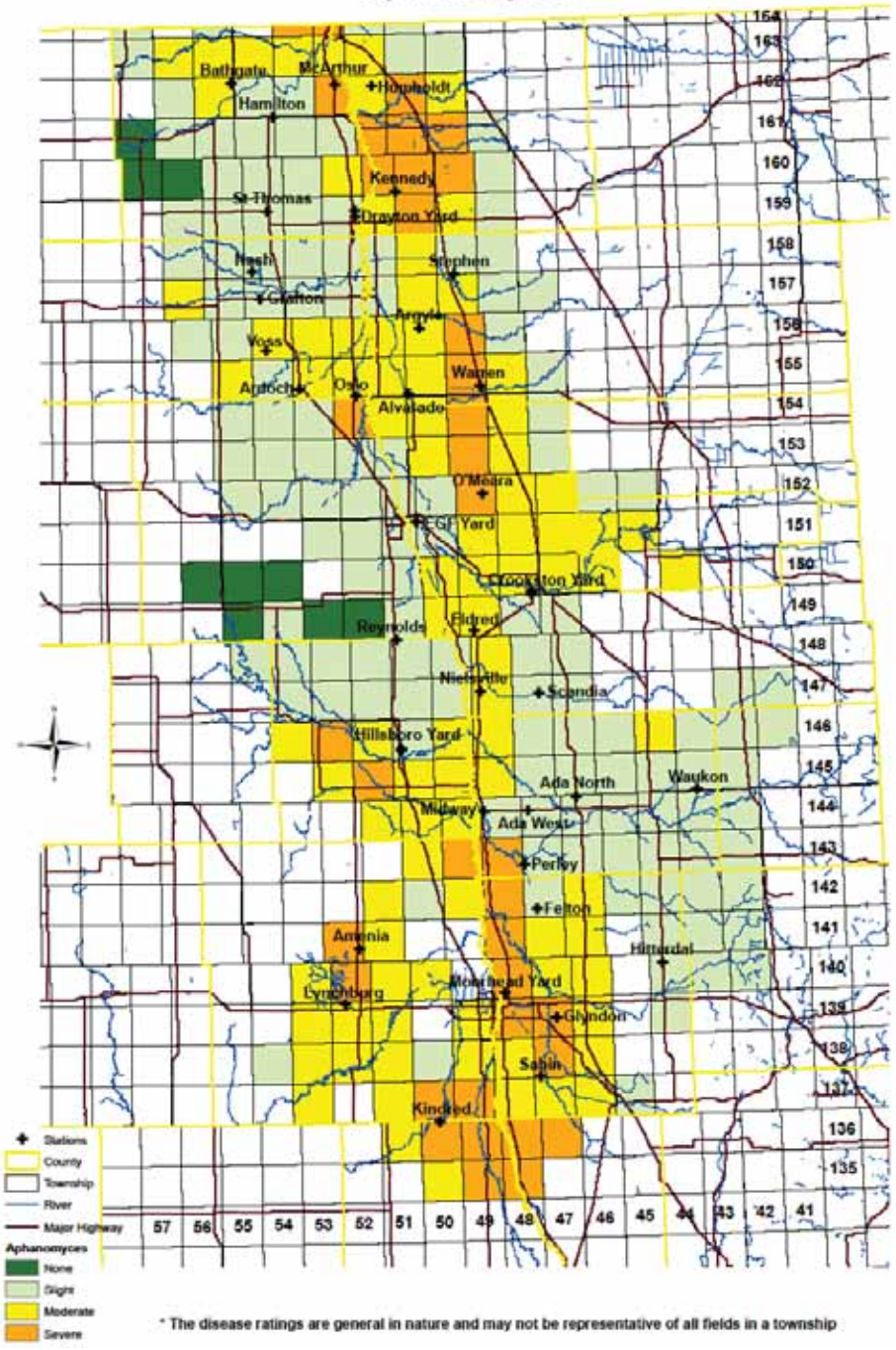
Aphanomyces Rating Change

- Current RR varieties with a 4.9 rating or lower is 41
  - Total number of RR varieties available is 48
  - Only 7 RR varieties currently not Aph specialty

- New Aphanomyces specialty approval rating, effective this fall, will be 4.4 or lower
  - With the new 4.4 criteria 20 varieties would then be considered Aph specialty for the ’12-’13 CVT

2012 Disease Rating*
Aphanomyces



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A New Disease Threat?
Erwinia Soft Rot

Erwinia Bacterial Disease

- Difficult to detect, starts internally
- Mainly been in Western USA
- Bacterial enter roots through wounds
- Invades vascular system of roots and petioles
- Froth type oozing from crown
- Sometimes brown petiole lesions or streaking
- Rot hollows out root interior

Favorable Environment

- Hot 75 °F or higher
- Survives 2 months after harvest
- Poor drainage – wet conditions
- Excess N favorable
- Low plant stands
- After hail damage

Extremely Serious Storage Problem

Take Home Messages

- Wheat prior to Sugarbeets is a good mgmt practice for Rhizoc control
- Spray 10 oz/A Quadris when 4” soil temp is 65° F but on no smaller than 2 leaf beets
- Band application of Quadris will likely perform better than Broadcast
- New Aph specialty variety rating will be 4.4
- Keep your eyes open for Erwinia soft rot

Questions