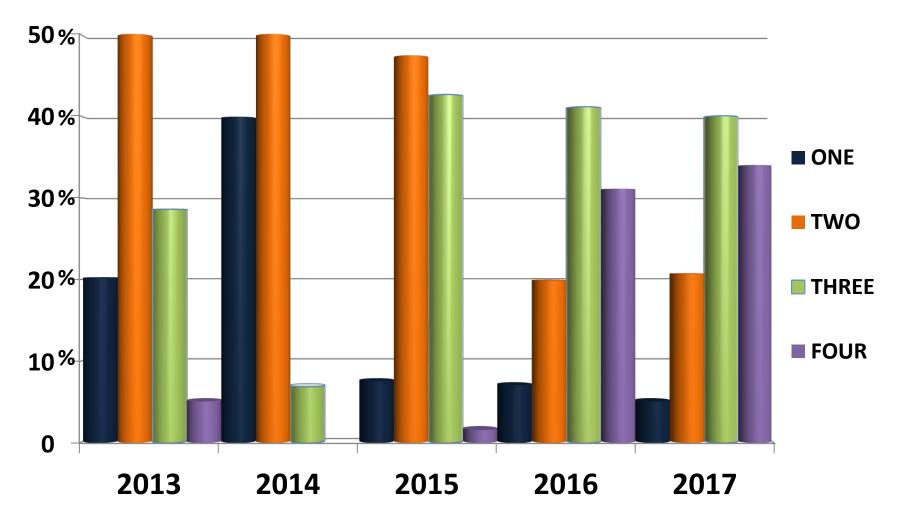
# Disease and Insect Management

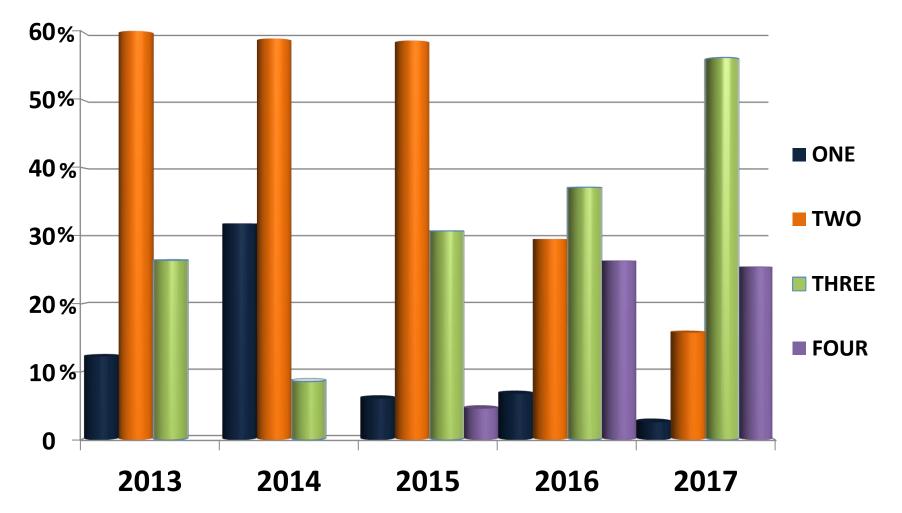
#### **CERCOSPORA LEAFSPOT (CLS)** Strategies to Manage Fungicide Resistance



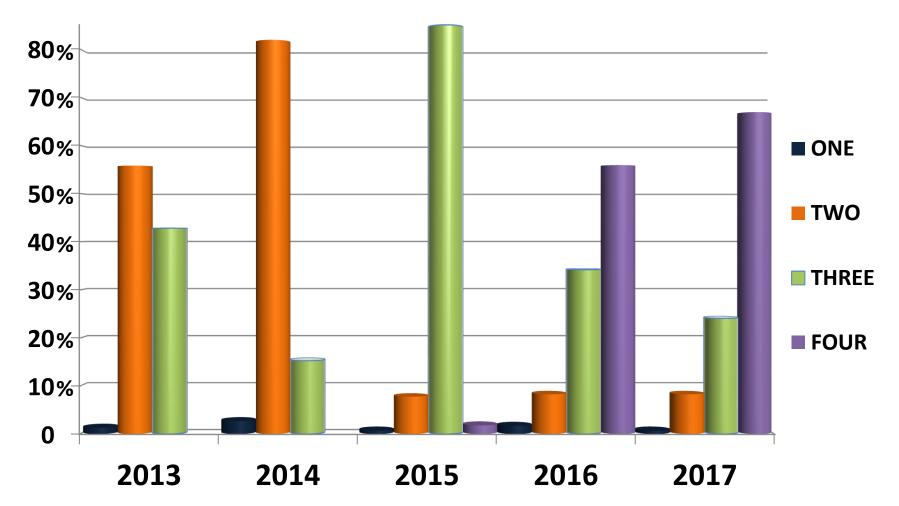
#### ACSC RED RIVER VALLEY NUMBER OF SPRAYS PER FIELD



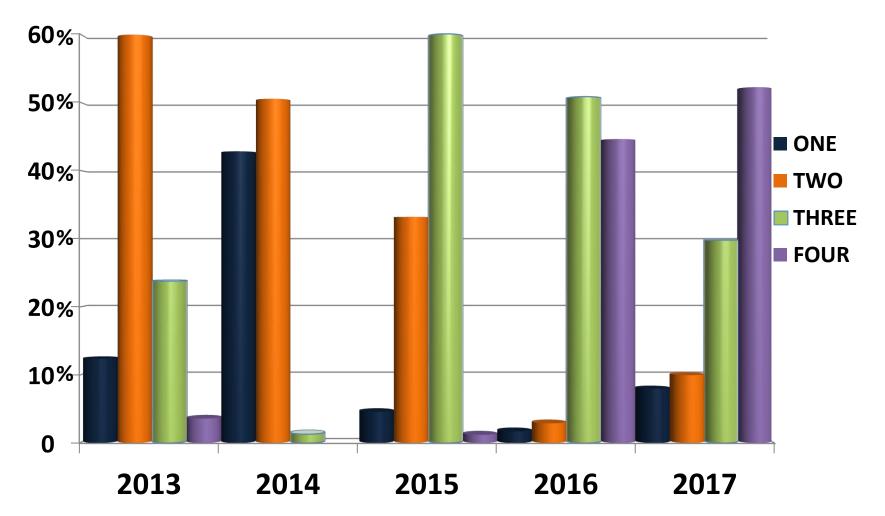
#### EAST GRAND FORKS DISTRICT NUMBER OF SPRAYS PER FIELD



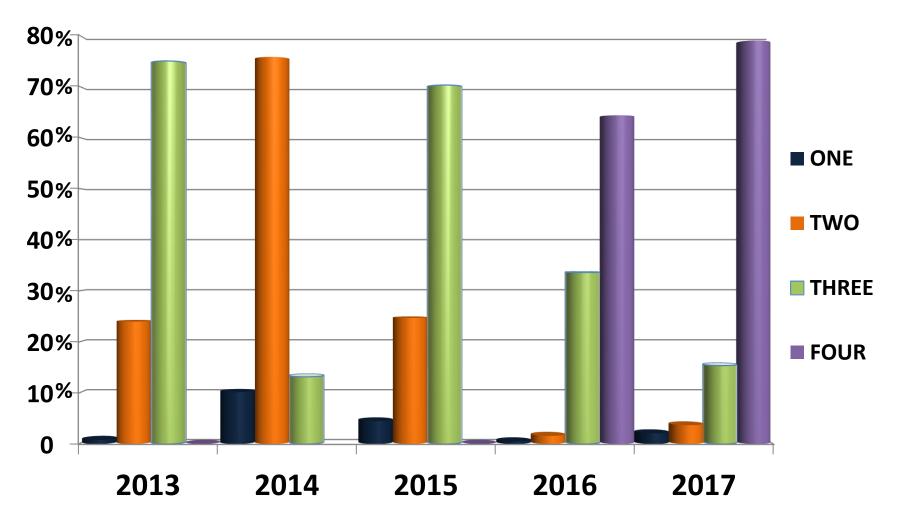
#### HILLSBORO DISTRICT NUMBER OF SPRAYS PER FIELD



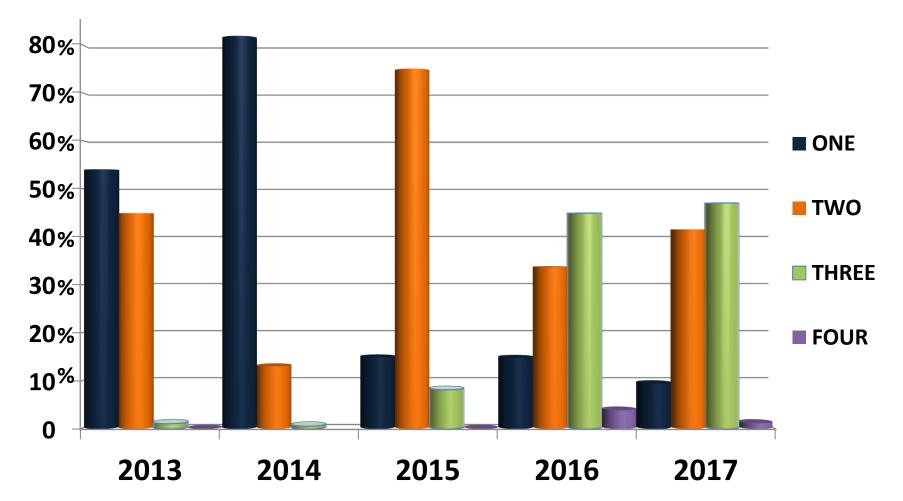
#### MOORHEAD DISTRICT NUMBER OF SPRAYS PER FIELD



#### CROOKSTON DISTRICT NUMBER OF SPRAYS PER FIELD



#### DRAYTON DISTRICT NUMBER OF SPRAYS PER FIELD



#### **Future of CLS Management**

- No new chemistry in pipeline None
- Background work on possible additive for improved CLS control, fast-track, yet a few years away
- <u>Critical</u> Timing, coverage, PSI and Tank-mixes



## **CLS Conditions**

- Warm, humid, rainy weather conducive for development of Cercospora Leafspot
- Leaf spots develop 5 to 21 days after infection, depending on: amount of inoculum, temp, & duration of wet period.
- Leaf spots typically occur first on lower, older leaves & progresses to younger leaves



NDSU - U of M bulletin March 2013

#### Cercospora Daily Infection Values (DIV)

#### Found on:

- Crystal Agronomy App
- NDAWN
- Crystalsugar.com



	Grand Forks													
Date	Daily Infection Value	Two-Day Total Infection Value	Daily Infection Risk	14-Day Accum Infection Values	21-Day Accum Infection Values	Season Total Infection Values								
2017-08-29	4	4	Moderate	4	4	4								
2017-08-30	0	4	Moderate	4	4	4								
2017-07-01	0	0	Slight	4	4	4								
2017-07-02	0	0	Slight	4	4	4								
2017-07-03	0	0	Slight	4	4	4								
2017-07-04	0	0	Slight	4	4	4								
2017-07-05	1	1	Slight	5	5	5								
2017-07-08	2	3	Slight	7	7	7								
2017-07-07	0	2	Slight	7	7	7								
2017-07-08	0	0	Slight	7	7	7								
2017-07-09	2	2	Slight	9	9	9								
2017-07-10	0	2	Slight	9	9	9								
2017-07-11	1	1	Slight	10	10	10								
2017-07-12	4	5	Moderate	14	14	14								
	Grand Forks													
	Value	Value	Daily Infection Risk	Values	Values	Values								
Date	~	~		~	~	~								
2017-07-13	2	6	Moderate	12	16	16								
2017-07-14	0	2	Slight	12	16	16								
2017-07-15	1	1	Slight	13	17	17								
2017-07-16	0	1	Slight	13	17	17								
2017-07-17	2	2	Slight	15	19	19								
2017-07-18	2	4	Moderate	17	21	21								
2017-07-19	0	2	Slight	16	21	21								
2017-07-20	1	1	Slight	15	18	22								
2017-07-21	3	4	Moderate	18	21	25								
2017-07-22	3	6	Moderate	21	24	28								
2017-07-23	2	5	Moderate	21	26	30								
2017-07-24	2	4	Moderate	23	28	32								
2017-07-25	4	6	Moderate	26	32	36								
2017-07-28	2	6	Moderate	24	33	38								

## Variety Cercospora Ratings



- CLS Rating < 4.40 Best resistance; monitor for disease development
- CLS Rating 4.41 4.80 Moderate resistance; monitor for disease development
  - CLS Rating > 4.80 Low disease
     resistance, Cercospora likely to
     show up in these varieties. Monitor
     closely

#### 2018 Official Variety Trials Sort on CLS Ratings

	Yrs		Rev/Ton	++	R	ev/Acre	++	Red	Ton	Rec//	Acre	Su	ar	Yie	ld	Mola	sses	Emer	a Be	olter / A	c .	CR	A	ph Root	Rhi	zoc.	Fusa	rium	Rzn
Variety	Com	17	2 Yr	2Y%	17	2 Yr	2Y%	17	2 Yr	17	2 Yr	17	2 Yr	17	2 Yr	17	2 Yr		Yr 17			17 2 Yr	17		17	2 Yr		2 Yr	1121
# locations		10	19	21.70	10	19	2.1.2	10	19	10	19	10	19	10	19	10	19		9 10			3 6	N 1	3	1	5	2	4	Τ
																							$\mathbf{N}$						
BTS 8512	1	54.51	52.80	102	1749	1833	103	340	328	10921	11380	18.08	17.48	32.2	34.8	1.08	1.08		77 14			3.69 3.86	14	8 4.0	4.3	4.4		2.8	Hi
SX Winchester RR	3	51.84	52.22	100	1580	1706	96	331	326	10087	10615	17.59	17.29	30.5	32.6	1.04	1.01		87 5			4.07 4.02	14	4 4.1	4.5	4.6	4.6	4.4	Rzn
Hilleshög 4302RR	4	52.73	52.18	100	1597	1699	95	334	326	10093	10582	17.75	17.33	30.1	32.5	1.05	1.04		85 0	_	<u> </u>	3.93 4.03	6	7 5.6	3.6	3.6	5.1	5.1	Rzn
Maribo 109	2	56.86		109	1569	1729	97	348	340	9579	10365	18.43	18.03	27.5	30.5	1.06	1.04		68 0			4.14 4.14	5.	4.7	3.6	3.7	4.2	4.4	Hi
SX RR1863	NC	55.21	54.29	104	1773	1889	106	342	333	11008	11565	18.13	17.65	32.2	34.8	1.01	1.00		71 0			4.08 4.21	4.	4.2	4.2	4.4	6.0	5.9	Hi
BTS 8363	3	51.14		97	1770	1854	104	329	319	11391	11777	17.53	17.03	34.7	37.0	1.09	1.06		76 0		_	4.10 4.21	4.	4.8	4.9	4.6	3.5	3.3	Hi
Crystal 573RR	NC	55.66		104	1785	1877	105	344	333	11039	11512	18.28	17.71	32.1	34.7	1.08	1.07		74 0			4.15 4.25	3.	4.0	4.6	4.6	3.1	3.3	Hi
BTS 8572	1	56.57	54.96		1817	1865	104	347	335	11147	11365	18.41	17.81	32.2	34.0	1.07	1.05		77 0			4.14 4.27	3.	4.1	4.3	4.4	2.5	2.4	Hi
BTS 80RR52	6	52.79	52.12	100	1699	1830	102	334	326	10789	11432	17.94	17.45	32.4	35.3	1.22	1.17		75 5		2 4	4.37 4.33	4.	4.2	4.1	4.3	2.7	2.7	Hi
BTS 8500	1	53.24		98	1862	1914	107	336	322	11741	12068	17.90	17.22	35.0	37.6	1.11	1.10		76 0			4.29 4.41	4.	4.4	4.6	4.5	2.1	2.0	Hi
Crystal 572RR	1	58.99	56.37		1891	1937	108	355	340	11379	11673	18.74	18.01	32.1	34.5	1.01	1.02		79 0			4.27 4.42	4	4.7	4.5	4.3	2.6	2.2	Hi
Crystal 574RR	1	52.84	50.76	98	1875	1973	110	334	321	11851	12453	17.79	17.14	35.4	38.8	1.08	1.09		79 0			4.35 4.43	4	7 4.2	4.2	4.3	2.2	2.0	Hi
BTS 8629	NC	52.38	50.48	97	1884	1920	108	333	320	11986	12153	17.72	17.08	36.1	38.0	1.08	1.07		80 0			4.29 4.44	1	7 4.4	4.2	4.0	4.2	4.1	Hi
Crystal 684RR	NC	52.65		98	1899	2005	112	334	321	12057	12684	17.81	17.18	36.2	39.7	1.12	1.13		79 0			4.34 4.45		3 4.0	4.6	4.5	2.0	1.9	Hi
SV RR351	1	53.73	52.02	100	1783	1877	105	337	325	11196	11723	17.91	17.30	33.2	36.1	1.05	1.04		73 0			4.41 4.48	14.	2 4.3	4.2	4.2	5.0	4.9	Hi
Crystal 355RR	2	54.56	53.87	104	1711	1829	102	340	331	10689	11243	18.16	17.70	31.5	34.0	1.15	1.14		76 0			4.36 4.48	4.1		4.1	4.0	2.8	2.7	Hi
BTS 8337	3	57.43	55.76		1842	1860	104	350	337	11209	11247	18.55	17.96	32.1	33.4	1.08	1.10		72 5		2	1.36 4.49	3.1		4.3	4.2	3.8	3.9	Hi
SX Marathon RR(856)	1	54.66	52.81	102	1812	1925	108	340	328	11296	11948	18.04	17.43	33.2	36.6	1.02	1.04		72 5	_	_	4.54 4.49	4.	-	4.4	4.4	4.8	4.9	Hi
BTS 8524	1	51.51	49.79	96	1796	1875	105	330	318	11506	11961	17.64	17.03	34.9	37.7	1.14	1.14		79 5		- 1	4.38 4.56	4.		4.4	4.3	3.2	3.3	Hi
Crystal 467RR	1	51.56	49.09	94	1804	1825	102	330	316	11588	11754	17.63	16.91	35.2	37.4	1.12	1.14		75 0			4.46 4.57	4.0		4.5	4.4	2.0	1.9	Hi
Crystal 101RR	6	51.29	49.71	96	1718	1784	100	329	318	11040	11400	17.66	17.10	33.6	36.0	1.20	1.22		73 0	_	_	4.57 4.58	3.	_	4.8	4.8	2.7	2.6	Hi
Crystal 247RR	4	53.09		100	1832	1923	108	335	325	11575	12031	17.79	17.28	34.6	37.1	1.03	1.04		72 18		_	4.55 4.60	5.4		4.5	4.4	3.0	2.9	Hi
SX RR1861	NC	53.14		100	1748	1857	104	335	326	11055	11594	17.81	17.34	33.0	35.7	1.03	1.03		74 0			4.74 4.63	5.1		4.5	4.5	5.0	4.9	Hi
SV RR244TT	2	52.93	52.31	101	1796	1837	103	335	326	11339	11427	17.79	17.36	33.8	35.0	1.05	1.05		89 5	_	_	4.85 4.65	4.	-	4.5	4.5	3.7	3.9	Hi
Hilleshög HIL9895	NC	50.46	50.46	97	1547	1710	96	326	320	10024	10827	17.48	17.18	30.8	33.9	1.17	1.18		72 41	2		4.84 4.67	4.4		4.3	4.4	4.1	3.3	Hi
SV RR266	NC	53.86	52.70	101	1814	1893	106	338	328	11405	11760	17.94	17.41	33.9	36.0	1.03	1.01		71 0			4.61 4.67	5.0		4.4	4.3	5.6	5.4	Hi
Hilleshög HIL9708	NC	54.11	52.09	100	1640	1749	98	339	326	10290	10933	18.02	17.34	30.4	33.7	1.07	1.06		76 9		-	4.61 4.68	5.0	-	4.2	4.2	4.6	4.4	Hi
SX Avalanche RR(858)	1	55.22		104	1690	1803	101	342	331	10472	11077	18.13	17.58	30.6	33.5	1.02	1.00		72 9		_	4.64 4.69	4.0		4.3	4.4	5.8	5.6	Hi
Crystal 093RR	6	57.65	54.91	106	1866	1904	107	350	335	11339	11603	18.60	17.84	32.4	34.8	1.08	1.10		74 0			4.49 4.72	4.4		4.5	4.4	3.5	3.4	Hi
Crystal 246RR	4	52.05	49.94	96	1775	1810	101	332	319	11322	11534	17.67	17.01	34.2	36.3	1.09	1.09		75 0	_	_	4.63 4.72	5.		4.2	4.3	3.2	3.2	Hi
Hilleshög HIL9707	1 NC	49.79 50.37	48.85 50.32	94	1692 1542	1716 1654	96 93	324 326	315	11020 10000	11042 10495	17.35 17.45	16.86	34.0 30.8	35.1 32.9	1.14	1.13		66 5 76 9			4.96 4.74 5.03 4.75	4.1		4.4	4.4	4.1 3.8	4.5 2.9	Hi Hi
Maribo MA611	6			97					319				17.14	30.8			1.16		-						4.4		3.8 4.7	4.8	
Crystal 986RR	-	54.89	53.48	103	1776	1836	103	341	330	11008	11298	18.09	17.51		34.2	1.03	1.01		77 0		_	4.77 4.76	4.		4.4	4.4			Rzn
SX Canyon RR SV RR333	2	55.26	53.44 53.06	103	1829 1823	1878 1887	105 106	342 339	330 329	11330 11399	11574	18.15	17.51	33.1 33.7	35.1	1.03	1.02		71 0 71 0			4.92 4.84	4.3		4.5	4.5	5.1 5.3	5.2 5.1	Hi Hi
	2	54.21		102							11670	17.98	17.46		35.6		1.03					4.84 4.84	5.0		4.4	4.4			
Maribo 305	-	52.03	50.29	97	1731	1752	98	332	320	11018	11121	17.60	17.00	33.2	34.8	1.02	1.02		85 0		_	4.98 4.85	5.	_	4.6		5.9	5.9	Rzn
Hilleshög 9528RR Crystal 578RR	3	54.35 54.05	53.26 52.68	102	1785 1899	1884 1958	106 110	339 338	329 328	11154 11908	11637	18.02 18.00	17.51	32.9 35.3	35.4	1.05	1.05		71 5 78 0		_	4.99 4.86	5.0		4.2	4.2	4.2 2.4	4.4 2.2	Hi
	NC 1		52.08 49.31	101	1899	1958	97		328	10539	12160		17.43	30.3	37.2		1.05		72 68		-	4.91 4.89 5.01 4.90	4.0		4.4 4.8	4.4		2.2	Hi
Maribo MA502		51.46		95				330			11124	17.66	17.00		35.4	1.17					_		-	-			3.0	2.5	Hi
BTS 8606	NC	54.65	53.10	102	1882	1941	109	340	329	11739	12018	18.13	17.54	34.6	36.6	1.09	1.08		75 0			4.73 4.92	4.9		5.0	4.7	2.8		Hi
SX Cruze RR	2	48.01	47.03	90	1696	1704	95	318	309	11272	11197	17.05	16.56	35.5	36.3	1.13	1.11		74 5		_	5.37 5.01	4.		4.4	4.5	4.0	3.4	Rzn
SV RR265 SV RR268	NC NC	53.56 54.83	52.21	100	1836	1908	107	337	326 330	11584 11245	11915	17.89	17.35	34.5 33.1	36.7 35.2	1.04	1.04		73 0 74 0			5.19 5.09 5.06 5.10	5.4		4.4	4.4	5.3 5.0	0.3	Hi Hi
	4		53.43		1802	1878	105	341	330			18.08	17.53	33.1			1.01				- 1 -		1		4.6			5.1	
Hilleshög 4448RR		53.93		99	1829	1851		338		11456	11617	17.97	17.24		35.9	1.06	1.06				_	5.28 5.24	6.3	-	4.6	4.6 4.5	5.3	5.3	Rzr
Maribo MA504	NC	52.70	50.34	97	1830	1879	105	334	320	11632	11946	17.77	17.07	34.9	37.5	1.07	1.08	77	75 0		0 8	5.50 5.27	6.3	2 5.4	4.4	4.0	4.5	4.6	Hi
Benchmark var. mean		52.84	51.97		1681	1785		334	325	10653	11164	17.88	17.39	31.9	34.4	1.16	1.14	74	72				1				1		1

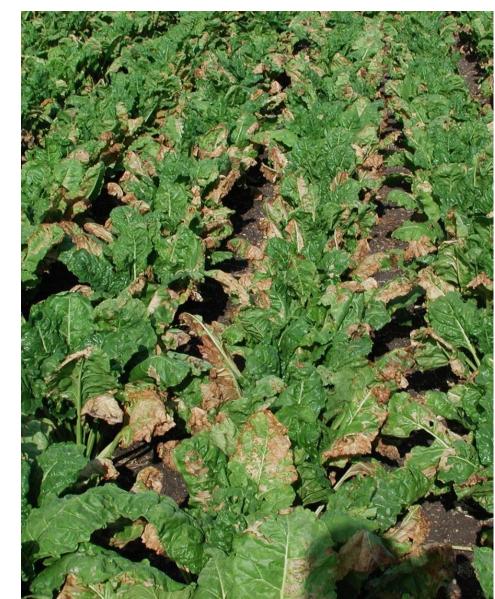
2 Yr is mean of 2 years data, 2 Y% is 2-Yr mean as % of benchmark varieties.

Emergence is % of planted seeds producing a 4 leaf beet.

++2017 Revenue estimate based on a \$48.49 beet payment (5-yr ave) at 17.5% crop with a 1.5% loss to molasses. 2016 Revenue estimate based on a \$52.44 beet payment. Revenue does not consider hauling or production costs. Bolters /Ac are based upon a plant stand of 45,000.

#### Factors That Can't be Ignored

- Use right products
- Apply proper rate
- Application timing <u>critical</u>
- Monitor weather
- Use right nozzle with the right pressure and volume



#### Products

- Best resistance management is necessary to maintain our limited arsenal of fungicides
- Know the level of resistance in your area review 2017 tolerance maps
- Be aware when using fungicides where tolerant strains of Cercospora are high or resistance is known in your area
- Know the PHI of the fungicides you use

#### Rates

- Use only the recommended full rate of the fungicides
- Tank Mixes: Always use full rates of all tank mix partners
- Watch the number of applications for each product

## Timing

- Planting date effect
- Spend time in your fields
- Monitor Daily Infection Values (internet & App)
- Know your farm history
- Begin fungicide applications when disease is first identified in your area
- Do not stretch application intervals Stay on recommended spray schedule

### Weather

- DIVs
- Local events
- Dew on canopy
- Fog
- "Air conditioner nights"

## **Application Method**

- Use correct spray volume: 15 20 gpa for max coverage
- Use correct pressure: utilize upper level of manufacturers recommended pressure for nozzle
- Use correct nozzles (fungicide specific), boom height & speed for best uniform coverage
- Ground applications of fungicides have been observed to give better control across entire fields
- Aerial applications can be made when a spray is necessary and ground rigs can't get in a field

#### **Rotate Modes of Action**

STROBILURIN	TRIAZOLE	TINS (TPTH)	BENZIMIDAZOLE	EBDC	COPPER
Headline	Minerva	Supertin	Topsin M	Several	Several
Priaxor	Proline	Agritin	Thiophanate Methyl 85		
Gem	Inspire XT				

- Good resistance management starts with rotating different modes of action
- Never use fungicides from same mode of action backto-back
- Use multiple modes of action in each spray
- Use full rates of all tank mix partners, all the time

## **Tank Mixing Fungicides**

- Always start with a tank that is ½ full of water
- Good, aggressive agitation is critical to maintain a good spray solution
- Know your products and add accordingly
- Always empty and clean your tank, lines, and strainers at the end of the day use

## **Tank Mixing Fungicides**

- Do Not tank mix fungicides with Glyphosate or other herbicides
- Fungicide and weed control are to be separate applications and each uses different nozzles, water volume and spray pressure

#### Mixing Order A.P.P.L.E.S.

**NDSU Weed Science recommendation** 

- 1. <u>Agitate</u>
- 2. <u>Powders Soluble (SG, SP)</u>
- 3. <u>Powders Dry (DF, WDG, WP)</u>
- 4. Liquid flowables and Suspensions (ASC, FME, SC, SE)
- 5. <u>Emulsifiable Concenctrates (EC, EW, OD)</u>
- 6. <u>Solutions</u> (S, SL)

Make sure that each product is uniformly mixed in the tank before adding another product

## Summary

- Plant tolerant varieties
- Scout fields diligently
- Monitor the weather models are not perfect
- Start on time with the right product
- Use correct spray volume & pressure for the most uniform fungicide coverage

## Summary

- Full label rate of all products in a tank mix are best for resistance management
- Use correct nozzles, boom height & speed
- Ground versus aerial both can work well
- Remember: Conditions that favor excellent sugarbeet growth also favor extreme CLS development
- Contact your Agriculturist for further information

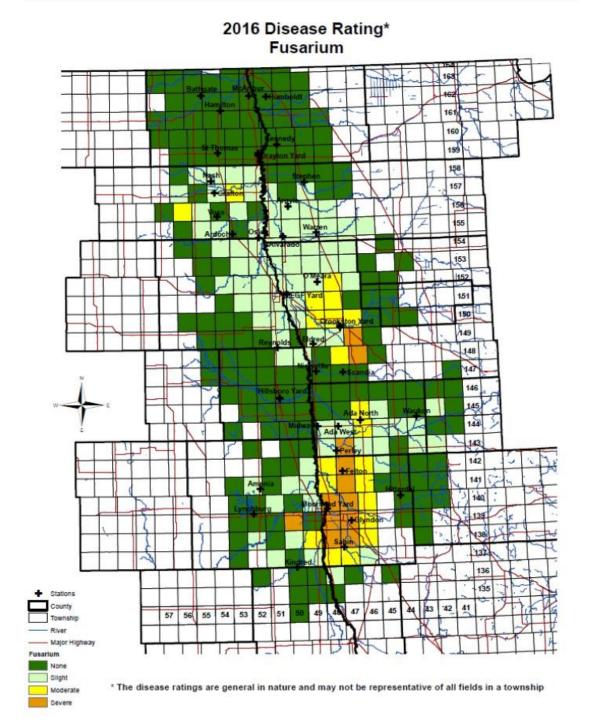
#### **Questions?**

#### Fusarium





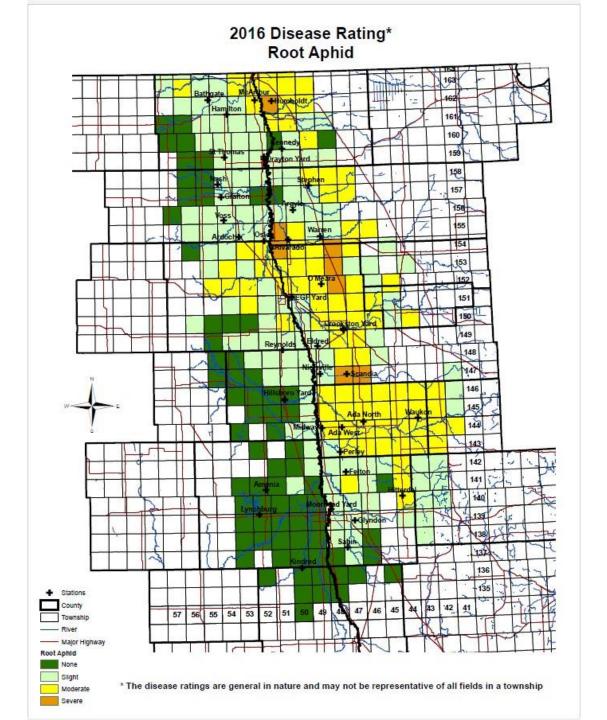
- Continues to be RRV Production Issue
- Managed best with Fusarium tolerant varieties
- Likes wet, poorly structured soils
- Persistent in soil



#### **Root Aphid**

- Field observations:
  - Low incidence in 2016 & 2017
  - Dry soil conditions usually higher presence
- U of Minnesota Root Aphid traps:
  - Very low Root Aphid counts in 2017
- Plant tolerant varieties
- Root aphid presence or Frass is indicator





#### ACSC Versalime

Made for all districts, Use all or just your district for presentation

## Moorhead Factory Versalime '17

- Nitrogen
  - 5 Lbs/ton Average
- Phosphorus
  - 12.2 Lbs/ton Average
- Potash
  - 1.8 Lbs/ton Average
- Sulfur
  - 5.4 Lbs/ton Average

- Applying Versalime at a 10 Ton/Acre Rate would provide 50#N, 122#P, 18#K, 54#S
- Benefits include decreased Aphanomyces and improved soil tilth
- Apply 1 year before beets for best results
- Contact Ag Staff for further assistance

## Hillsboro Factory Versalime '17

- Nitrogen
  - 5.2 Lbs/ton Average
- Phosphorus
  - 14 Lbs/ton Average
- Potassium
  - 1.3 Lbs/ton Average
- Sulfur
  - 7.6 Lbs/ton Average

- Applying Versalime at a 10 Ton/Acre Rate would provide 52#N, 140#P, 13#K, 76#S
- Benefits include decreased Aphanomyces and improves soil tilth
- Apply 1 year before beets for best results
- Contact Ag Staff for further Assistance

## Crookston Factory Versalime '17

- Nitrogen
  - 5.1 Lbs/ton Average
- Phosphorus
  - 11.6 Lbs/ton Average
- Potassium
  - 2.2 Lbs/ton Average
- Sulfur
  - 5.7 Lbs/ton Average

- Applying Versalime at a 10 Ton/Acre Rate would provide 51#N, 116#P, 22#K, 57#S
- Benefits include decreased Aphanomyces and improves soil tilth
- Apply 1 year before beets for best results
- Contact Ag Staff for further Assistance

#### East Grand Forks Factory Versalime '17

- Nitrogen
  - 4.3 Lbs/ton Average
- Phosphorus
  - 10.7 Lbs/ton Average
- Potassium
  - 2.0 Lbs/ton Average
- Sulfur
  - 6.4 Lbs/ton Average

- Applying Versalime at a 10 Ton/Acre Rate would provide 43#N, 107#P, 20#K, 64#S
- Benefits include decreased Aphanomyces and improves soil tilth
- Apply 1 year before beets for best results
- Contact Ag Staff for further Assistance

## Drayton Factory Versalime '17

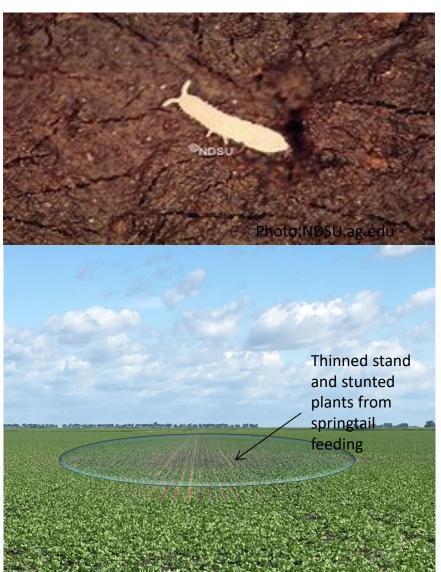
- Nitrogen
  - 5.8 Lbs/ton Average
- Phosphorus
  - 16.8 Lbs/ton Average
- Potassium
  - 2.3 Lbs/ton Average
- Sulfur
  - 6.7 Lbs/ton Average

- Applying Versalime at a 10 Ton/Acre Rate would provide 58#N, 168#P, 23#K, 67#S
- Benefits include decreased Aphanomyces and improves soil tilth
- Apply 1 year before beets for best results
- Contact Ag Staff for further Assistance

# Springtails

- Tiny wingless primitive animals. (very small, nearly microscopic)
- They are adapted to and reproduce more rapidly in soil moisture levels at or near saturation.
- Although feeding may occur on mature sugarbeet roots, injury is most apparent and harmful in seedlings.
- Above-ground symptoms of springtail injury to sugarbeet seedlings include wilting plants and reduced plant stand.

NDSU extension bulletin March 2001



# Springtails

## Management

- Not much is known about rotational crop management of springtails to help control in sugarbeet crop year.
- Hard to predict because pressure is variable from year to year and field to field. Fields with fine-textured soils (i.e., clay or silty clay) are more likely to have problems. (NDSU extension bulletin March 2001)
- Best line of defense usually a moderate rate of Counter but not always statistically better than the seed treatments.



## Wireworms

- Smooth somewhat hard bodied larvae varying in length from ½ to 1 ½ inches. They are most damaging when smaller.
- Color from yellowish-white to copper hues.
- Feed on a wide variety of crops and weeds and are difficult to detect and control.



## Wireworms

## Management

- They tend to be more prevalent in light textured soils and in fields that were previously a grassy crop, or have not been in crop production for several years, or had several grass weed escapes the previous year.
- There is no economic threshold for wireworms established in sugarbeets.
- A low to moderate rate of Counter 20G (5-6 lb) should do just fine.
- Seed treatments appear to do fine but not a lot of data.
- Insecticide seed treating rotational small grain crops help.

## Sugarbeet Root Maggot (SBRM)

Adult Fly



Maggot (larval stage)

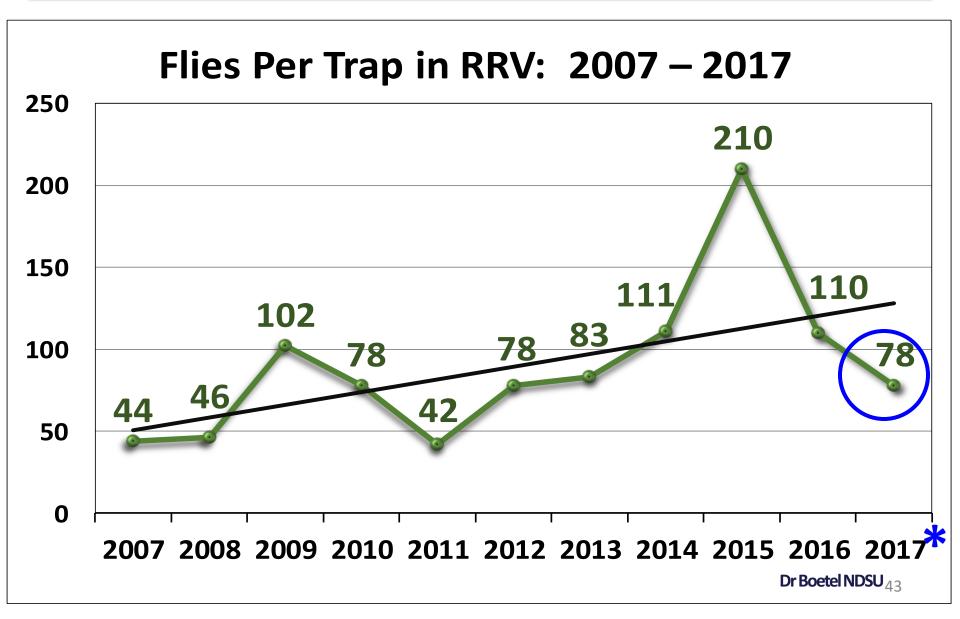


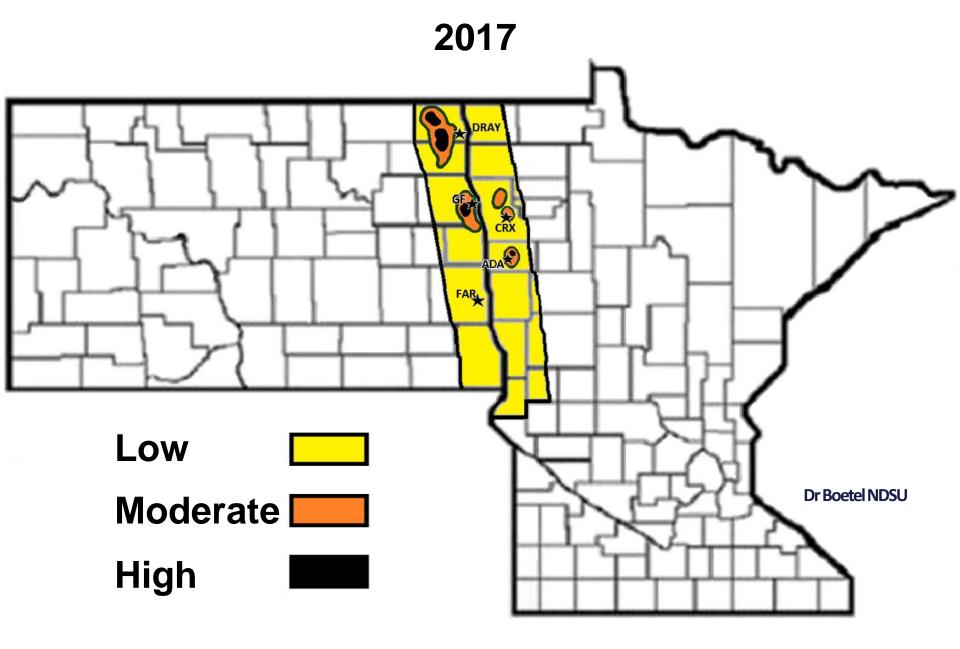
- Maggots overwinter as larvae, pupate and emerge in spring as flies in previous years beet fields
- Adult flies are monitored in current year beet fields with sticky stakes

# (SBRM)

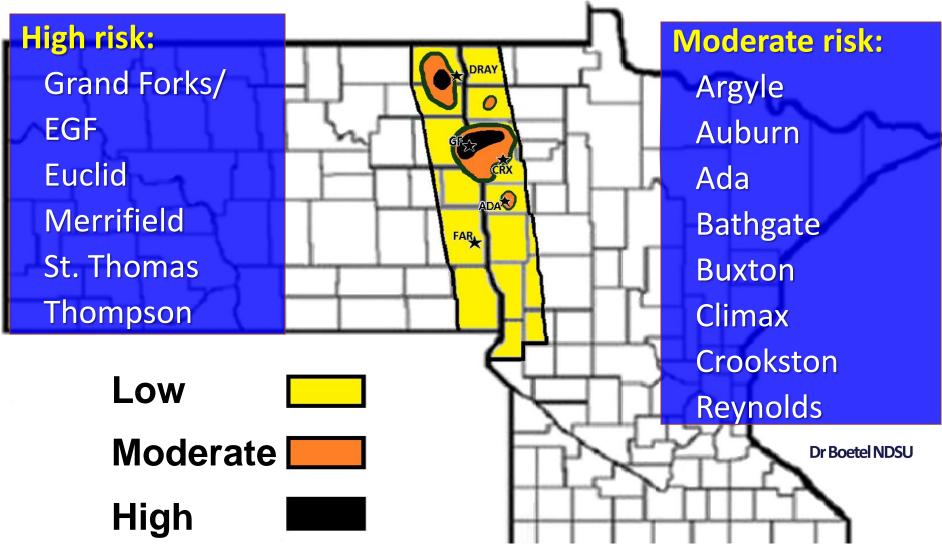
- Peak fly activity can occur anytime after 600 DD's are accumulated, on average, this occurs at 650 DD's
  - This is monitored at each NDAWN site in the RRV
  - NDSU monitors sticky stakes
- It is important to know that warm weather (around 80° F), and calm to low wind conditions are most conducive for fly activity
- Flies will remain fairly inactive in cool, rainy, or windy conditions

#### Root maggot control efforts are working





## 2018 Root Maggot Forecast\*



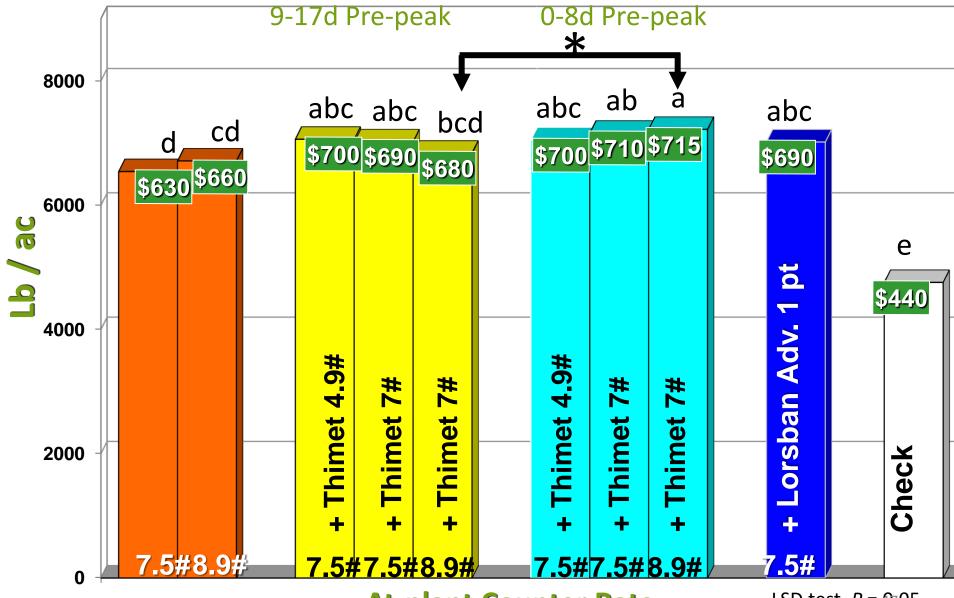
\*Based on fly counts & <u>root maggot feeding injury</u> ratings

#### Additive Granular Insecticides for SBRM Control: 2015 – 2017\*

Treatment	RSA	Tons/ac	\$\$/ac above check
Poncho Beta + Counter 8.9# At-plant Band	9269 a	32.3 a	\$359
Counter 8.9# Band + Thimet 7# Post Band	9242 a	31.8 ab	\$377
Poncho Beta + Counter 8.9# Post Band	8814 ab	30.6 a-d	\$310
Poncho Beta + Counter 5.25# At-plant Band	8745 ab	31.2 ab	\$259
Counter 7.5# Band + Thimet 7# Post Band	8719 ab	31.0 abc	\$263
Counter 8.9# Band	8405 bc	30.1 bcd	\$211
Poncho Beta + Thimet 7# Post Band	8397 bc	30.1 bcd	\$210
Counter 7.5# Band	8225 bcd	29.0 de	\$215
Poncho Beta	8058 cd	28.9 de	\$167
Poncho Beta + Counter 5.25# Post Band	7958 cd	29.2 cde	\$124
Counter 5.25# Band	7715 d	27.9 e	\$119
CHECK	6700 e	24.2 f	
LSD 0.05	619.2	1.97	Dr Boetei NDSU

#### Thimet 20G Timing & Rate Impacts on Root Maggot Control:

Recoverable Sucrose (11-year combined analysis)



**Dr Boetel NDSU** 

**At-plant Counter Rate** 

LSD test, *P* = **0**7.05

#### Impact of <u>Single</u> Post Sprays on SBRM Control St. Thomas, ND, <u>2015 – 2017\*</u>

Treatment	RSA (Ib/ac)	Tons/ac	Gross Rev. / ac
Counter 8.9# B + Lorsban Adv. 2 pts	8,707 a	29.9 a	\$955
Counter 8.9# B + Lorsban Adv. 1 pt	8,664 a	29.8 a	\$946
Counter 7.5# B + Lorsban Adv. 2 pts	8,211 ab	29.1 ab	\$855
Poncho Beta + Lorsban Adv. 2 pts	8,187 ab	28.8 abc	\$862
Poncho Beta + Lorsban Adv. 1 pt	8,011 ab	27.5 abc	\$880
Counter 7.5# B + Lorsban Adv. 1 pt	7,911 ab	26.9 bc	\$881
Counter 8.9# B	7,711 b	26.8 bc	\$829
Counter 7.5# B	7,628 b	26.6 bc	\$817
Poncho Beta	7,522 b	26.4 c	\$798
Check	5 <i>,</i> 780 c	21.0 d	\$578
LSD (0.05)	661	2.65	Dr Boeter NDSU

# **<u>Postemergence Spray Timing</u>** for SBRM Control St. Thomas, ND: Combined Analysis (2015-2017)

Treatment	Timing (from peak fly)	RSA (lb/ac)	\$\$ above Check
Ctr. 7.5 lb + Lors. Adv. 2 pts <b>2X</b>	7 d pre / 4 d post	9249 a	\$482
Ctr. 7.5 lb + Lors. Adv. 1 pt + Mustang 4 oz	2 d pre / 4 d post	8882 ab	\$357
Ctr. 7.5 lb + Lors. Adv. 1 pt <b>2X</b>	7 d pre / 4 d post	8735 ab	\$413
Ctr. 8.9 lb + Lors. Adv. 2 pts	2d pre	8724 ab	\$352
Ctr. 7.5 lb + Lors. Adv. 2 pts	2d pre	8405 bc	\$321
Ctr. 7.5 lb + Mustang Maxx 4 fl oz	2d pre	8367 bc	\$372
Ctr. 7.5 lb + Lorsban Advanced 1 pt	2d pre	8302 bc	\$337
Counter 20G 8.9 lb		7806 cd	\$246
Counter 20G 7.5 lb		7443 d	\$193
Check		5882 e	
LSD (0.05) Dr Boetel NDSU		822.0	49

#### Single, Dual & Triple Applications for SBRM Control St. Thomas, ND: <u>2016-2017</u>

Seed Trt.	At-plant	Post	RSA (lb/ac)	Rev./ ac
Poncho Beta	Counter 8.9#		10061 a	\$1295
Poncho Beta	Counter 8.9#	Lorsban Advanced 1 pt	9934 ab	\$1288
	Counter 8.9#	Thimet 7#	9667 abc	\$1250
Poncho Beta		Thimet 7# + Lors. Adv 1 pt	9554 abc	\$122 <i>1</i> ;
Poncho Beta		Counter 8.9#	9413 abc	\$1229
Poncho Beta	Counter 5.25#		9409 abc	\$1167
	Counter 7.5#	Thimet 7#	9122 bcd	\$1151
	Counter 8.9#		8940 cde	\$1100
Poncho Beta			8856 cde	\$1134
Poncho Beta		Thimet 7#	8833 cde	\$1059
Poncho Beta		Counter 5.25#	8266 ef	\$1002
Check			7713 f	\$965
	Dr Be	LSD (0.05)	855.5	50

### **Root Maggot Control Recommendations 2018**

- Lorsban 4E (Chlorpyrifos) Minimum of 10 days between application if used 2 times
- **Mustang Maxx or Asana XL** can be used as 2<sup>nd</sup> or 3<sup>rd</sup> applications if flies resurge before 10 day Minimum is met for Lorsban (Chlorpyrifos)
- Lorsban 4E (Chlorpyrifos) can be mixed with Glyphosate
- Do **NOT** mix *Lorsban Advanced* with Glyphosate

# Root Maggot- Summary

- Average population has declined since 2016, but there is an increase in number of areas affected
  - Proper management control measures are working!
- Aggressive control is a <u>must</u> in areas of high risk and rising populations
- POST: Seed treatments or low rates of at-plant granules are not sufficient w/out a post insecticide
- POST: control tools are the key to success



## **ROOT MAGGOT**

## **QUESTIONS?**

#### 2018 ACSC RHIZOCTONIA MANAGEMENT OPTIONS

American Crystal Sugar	AZteroid' FC	Priaxor <sup>®</sup> Xemium <sup>®</sup> Brand Fungicide	🚫 Quadris°	🚫 Quadris°
Company	AT-PLANT	POST	POST	POST
METHOD	IN-FURROW/BAND (3-7")	BAND/BROADCAST	BAND (7-11")	BROADCAST
TIMING	AT-PLANT	4 to 5 weeks after planting	4 to 5 weeks after planting	4 to 5 weeks after planting
RATE	12 oz/Acre (1.65 lbs Ai/Gal)	6.7oz/Acre	10 oz/Acre (2.08 lbs Ai/Gal)	15 oz/Acre (2.08 lbs Ai/Gal)
TANK-MIXES	w/starter fertilizer	Glyphosate w/ surfactant	Glyphosate w/ surfactant	Glyphosate w/ surfactant
WATER VOLUME	5-10 gal/acre	10-15 gal/acre	10-20 gal/acre	10-20 gal/acre
NOTES (see reverse side)	<ul> <li>Mixes with liquid fertilizers with no crystallization or clogging</li> <li>Do not apply in-furrow if cool weather follows planting</li> <li>Do not include COC or MSO in tank mix</li> <li>Applying w/starter in- furrow may increase risk of phytotoxicity</li> </ul>	<ul> <li>Do not mix with conventional herbicides/insecticides</li> <li>Time application 3 days before or 3 days after conventional herbicide or insecticide application</li> <li>Narrower bands are most effective, do not reduce rate</li> <li>Additional surfactant along w/ glyphosate will <u>not</u> increase risk of injury</li> <li>Do not add deposition aids or any oil based additive when mixing with glyphosate</li> <li>Always add Priaxor 1<sup>st</sup> to spray tank</li> </ul>	<ul> <li>Do not mix with conventional herbicides/insecticides</li> <li>Time application 3 days before or 3 days after conventional herbicide or insecticide application</li> <li>Do not add deposition aids or any oil based additive when mixing with glyphosate</li> <li>Additional surfactant along w/ glyphosate will not increase risk of injury</li> <li>Narrower bands are most effective, do not reduce rate</li> <li>Always add Quadris 1<sup>st</sup> to spray tank</li> </ul>	<ul> <li>Do not mix with conventional herbicides/insecticides</li> <li>Time application 3 days before or 3 days after conventional herbicide or insecticide application</li> <li>Do not add deposition aids or any oil based additive when mixing with glyphosate</li> <li>Additional surfactant along w/ glyphosate will <u>not</u> increase risk of injury</li> <li>This is our least preferred method, but still beneficial</li> <li>Always add Quadris 1<sup>st</sup> to spray tank</li> </ul>

#### RHIZOCTONIA MANAGEMENT OPTIONS



DISEASE SEVERITY	RECOMMENDATIONS
Slight	Seed treatment with Post Quadris/Priaxor
Moderate	Increase Crop Rotation Length, Tolerant Variety, Seed treatment, Post Quadris/Priaxor 1x
Severe	Increase Crop Rotation Length, Tolerant Variety, Seed treatment, AZteroid At-Plant, Post Quadris/Priaxor 1x or 2x

#### ADDITIONAL NOTES:

- Quadris and Priaxor are both SC formulations, always add them 1<sup>st</sup> to spray tank, use good agitation and apply the mixture promptly
- Quadris/Priaxor should never be tank-mixed with any oil-based additives or EC formulations of herbicides/insecticides due to increased risk of injury
- Seed treatments for the control of Rhizoctonia <u>do not</u> provide season long control and should be coupled with post Quadris/Priaxor
- 2018 Rhizoctonia fungicide standard seed treatments by company:
  - Betaseed = Systiva
  - Crystal = Kabina
  - Hilleshog & Maribo = Vibrance
  - Seedex = Tri-Pak (Metlock + Rizolex + Kabina)
  - Ses Vanderhave = Fungicide Pack (Metlock + Rizolex + Vibrance)

## **Questions?**