WHEAT STEM SAW FLY

What do we know so far..

Prairie Grains Conference | Alerus Center, Grand Forks, ND | Thursday, December 12, 2019

OUTLINE

- What do we know about Wheat Stem Saw Fly (WSS)
- What don’t we know
- And it’s not Wheat Stem Maggot (WSM)

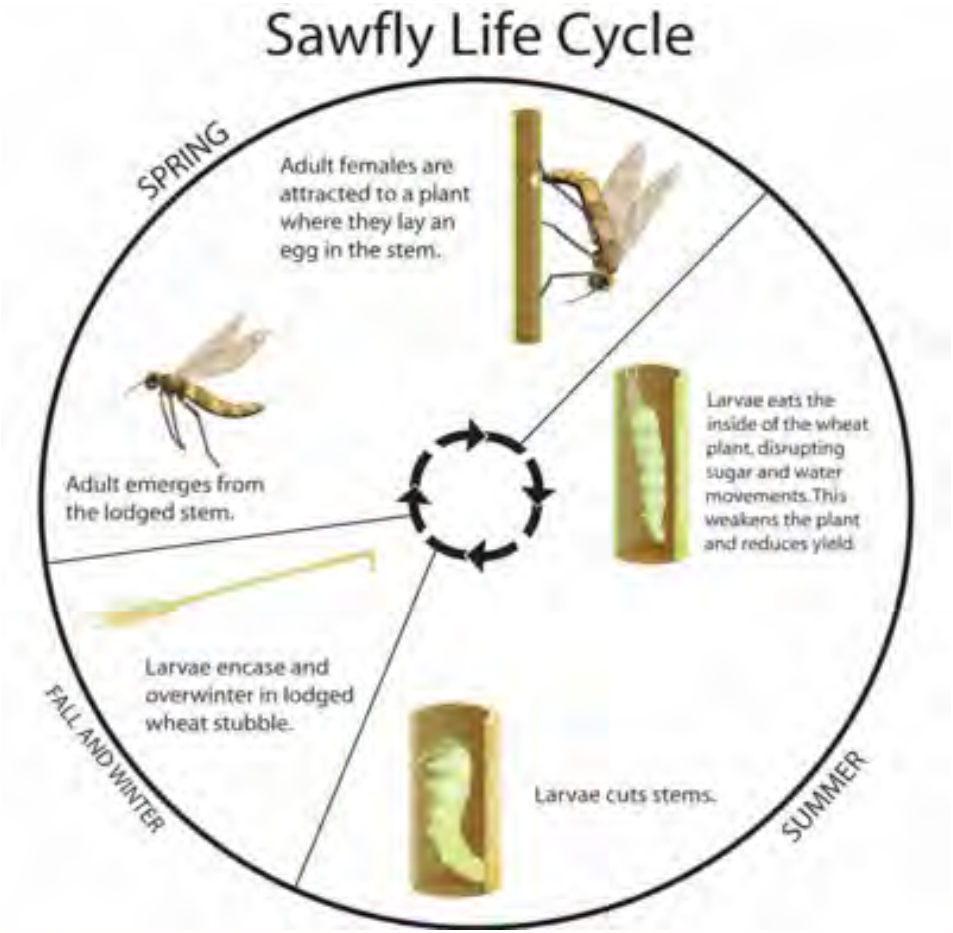
WHAT DO WE KNOW

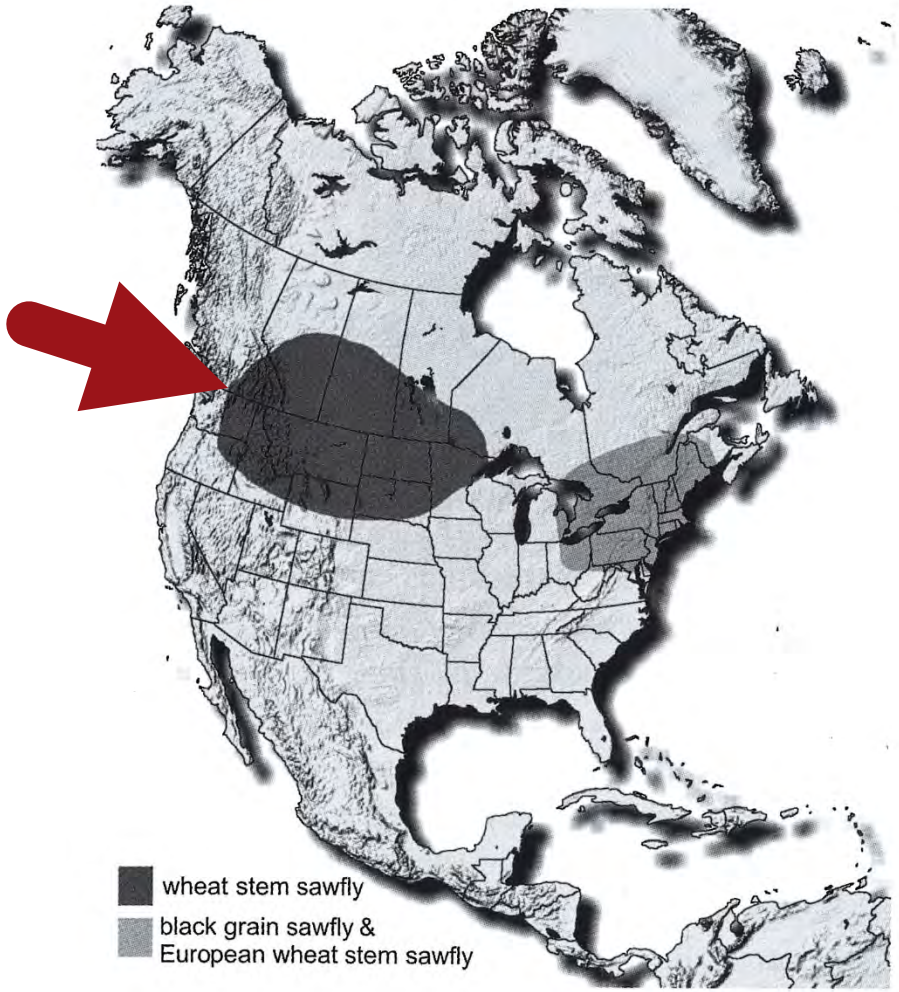
- It's **native** to the prairie (including MN and ND)
- There are **NO** chemical control options

ALL LOOKS NORMAL….

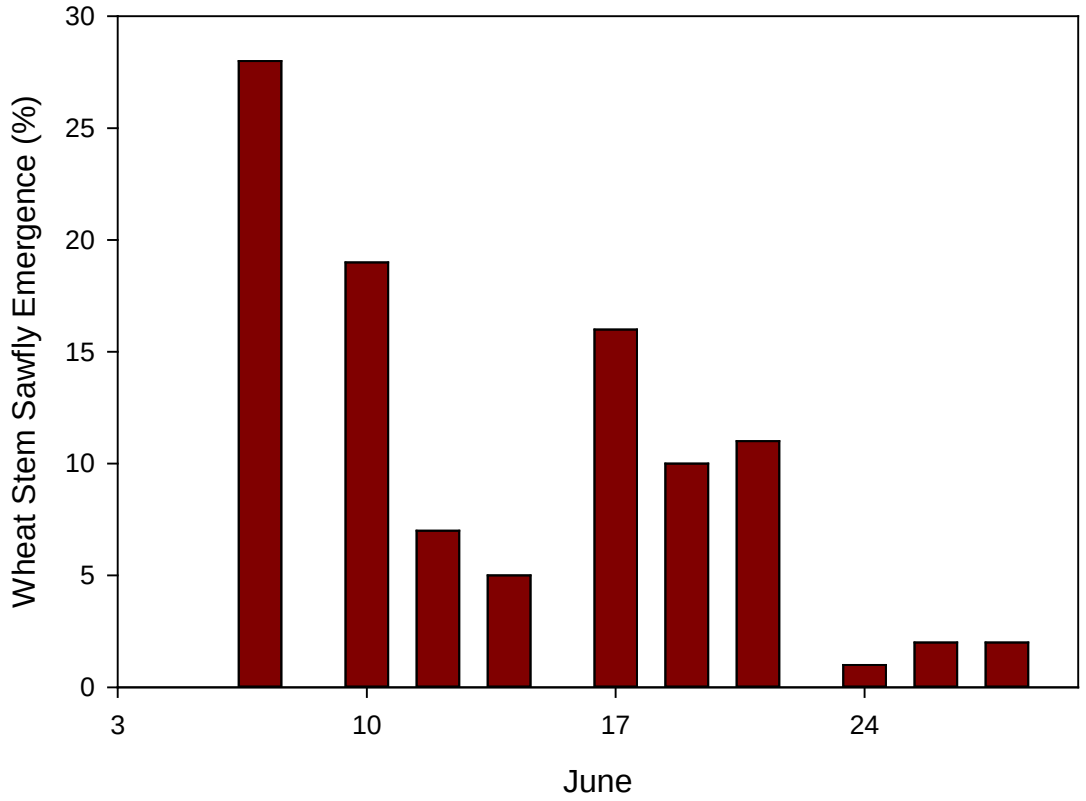
. . . it lodges a few days before harvest (near Mott, N.D. picture by NDSU)

LIFE CYCLE AND DISTRIBUTION



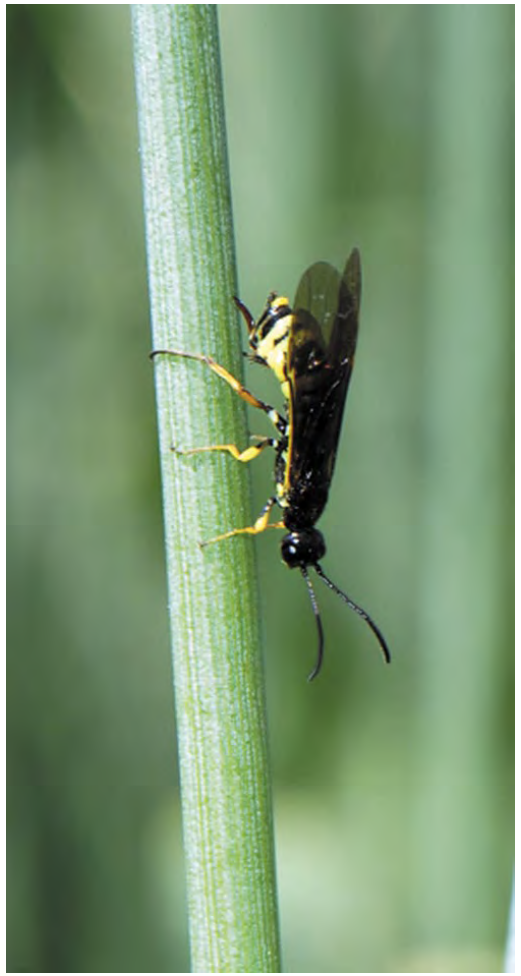


TIME OF EMERGENCE (2019)



- Peak emergence male WSS first week June.
- Peak emergence females WSS about 10 days later.
- T_{base}=40ºF gave the best fit for predicting WSS emergence
  - ~470 AGGD for peak emergence males
  - ~590 AGGD for peak emergence females

IDENTIFICATION



BUILDING A CASTLE

- Larva eats and moves down to the base of the stem
- Chews a notch around inside of the stem

- Plugs the stem just below the notch with frass

= larva now has its own ‘bomb Shelter’ to withstand the harsh winter

= Notch weakens the stem, which usually breaks and causes lodging just prior to harvest (because the wind never blows around here)

MANAGEMENT

- **NO** effective chemical control of adults or larvae

- Very limited to **no** success with tillage
  - Tillage and destruction of standing stubble detrimental to parasitoids populations (no-till systems better than reduced tillage in MT)
- Variety selection
  - Semi-solid and solid stem varieties best option to avoid lodging (reduced success larvae tunneling down to crown)
- Swathing/stripper header to alleviate harvest problems

VARIETY SCREENING

- Little to no stem clipping
  - What happened?
- Very variable data when dissecting 50 stems per plot:
  - Solid stemmed varieties also contained frass (scoring errors?)
  - Mummified larvae indicate parasitism.
  - Recent work indicate that stem solidness disappears as plant matures.

Cultivar	WSS	Cultivar	WSS
Bolles	57.3%	Linkert	56.3%
Boost	30.7%	MN-Washburn	23.3%
CP3530	60.0%	MS Barracuda	62.0%
CP3888	20.0%	MS Camaro	41.3%
CP3910	44.7%	MS Chevelle	36.7%
CP3915	10.7%	ND-VitPro	45.0%
CP3939	36.0%	Prosper	34.0%
Duclair	31.3%	Rollag	55.3%
Dyna-Gro Ambush	48.7%	Shelly	32.7%
Dyna-Gro Ballistic	58.0%	Surpass	59.3%
Dyna-Gro Caliber	32.7%	SY 611 CL2	44.7%
Dyna-Gro Commander	60.0%	SY Ingmar	31.3%
Dyna-Gro Velocity	16.0%	SY Longmire	43.3%
G17C2020	15.6%	SY McCloud	49.3%
Gunnison	38.7%	SY Valda	66.0%
Lang-MN	28.7%	TCG-Climax	14.6%
Lanning	60.7%	TCG-Heartland	36.7%
LCS Breakaway	46.0%	TCG-Spitfire	17.3%
LCS Cannon	39.3%	WB-Mayville	58.0%
LCS Rebel	19.3%		
LCS Trigger	20.3%		
LSD(0.1)	**20.9%**		**20.9%**

MANAGEMENT SUGGESTIONS FOR 2019

- Seed a solid stem variety around the edge of a field where wheat neighbored the field in 2019 and WSS was present.
  - Leading edge effect is very strong

- Seed a solid stem variety in wheat-on-wheat situation where stem clipping was noticeable in 2019.

WHAT WE DON'T KNOW

- Why native populations increased to the point that they are now an economic pest problems rather than a curiosity in HRSW in our area:
  - Dry springs and summers are correlated with outbreaks in MT and SK

- How much parasitism will help reduce amount of stem clipping and thus population over time:
  - We'll know when it happens….

QUESTIONS?