

## Wheat Entomology Newsletter May 1st, 2023

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### Introduction

We are excited to begin our third year conducting the Wheat Entomology Newsletter! Our team is led by Dr. Punya Nachappa, entomologist and Associate Professor in the Department of Agricultural Biology ([www.nachappalab.com](http://www.nachappalab.com)). Adam Osterholzer, our Research Associate in the CSU Wheat Entomology Program, will help provide content from the field throughout the season. If you suspect insect infestations in your fields, please don't hesitate to reach out to us. Punya is also available on Twitter: @NachappaPunya.

We are also pleased to announce our new CSU Wheat Entomology Program website! We will be making regular updates as our research progresses. Find out more at <https://www.csuwheatentomology.com/>.

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### The Wheat Crop

As reported by Madison Andersen (Colorado Wheat) and Ron Meyer (CSU Extension) earlier this month, wheat crop conditions are proving variable across the state. Yield potential is expected to be low throughout much of Southeastern Colorado due to drought. Kevin Larson (CSU Extension) has reported both poor emergence and losses due to dust storms in this area, despite chiseling efforts to prevent further losses. Regions further to the north have received significantly more moisture, resulting in healthier wheat stands.

Our lab operates primarily in Orchard and New Raymer, CO. These areas had rainfall as recently as April 25<sup>th</sup>, and the wheat fields in these areas have almost full plant coverage. We expect to have no issues obtaining the samples for our projects. Hail damage was noted in fields at Orchard, but not to the extent that would prevent sample use in our studies.

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### Wheat Stem Sawfly

To ensure that we will capture the beginning of the sawfly flight cycle, we began scouting in the field twice per week on April 14<sup>th</sup>. We have not yet observed any adult sawfly emergence. We are dissecting infected stubble on a weekly basis to monitor larval status. By viewing the larvae within the stems, it's possible to predict the date at which adults will emerge in the spring. As seen in Figure 1 below, once larvae begin pupation, they will start to develop wing nodes and legs. Adults typically emerge 3 weeks after pupation commences. A few of the sampled larvae in Orchard have undergone very early stages of pupation so we expect adult emergence in couple of weeks.

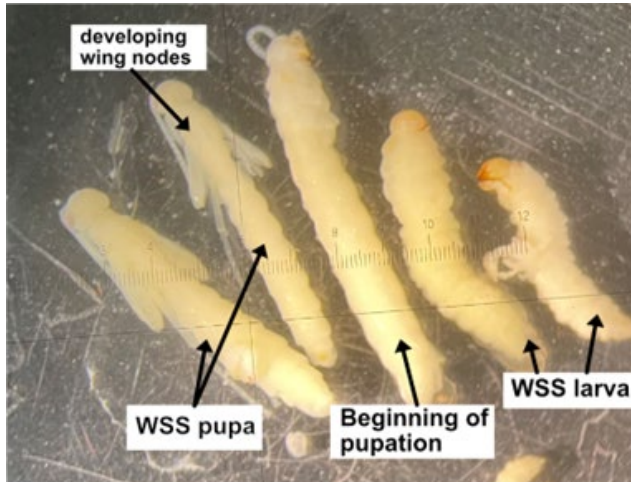


Figure 1: Image depicting WSS at different stages of development. Photo by Dr. Erika Pierce.

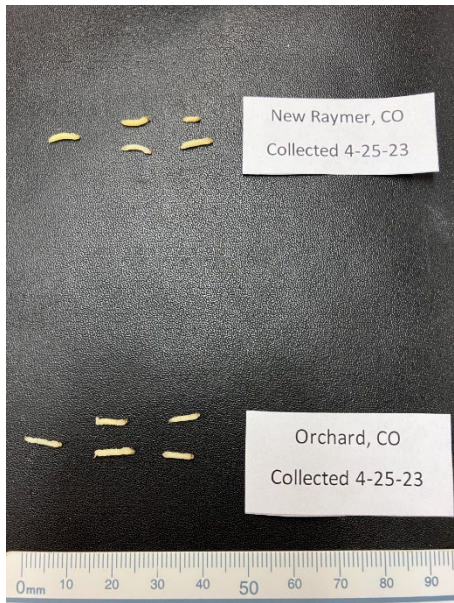
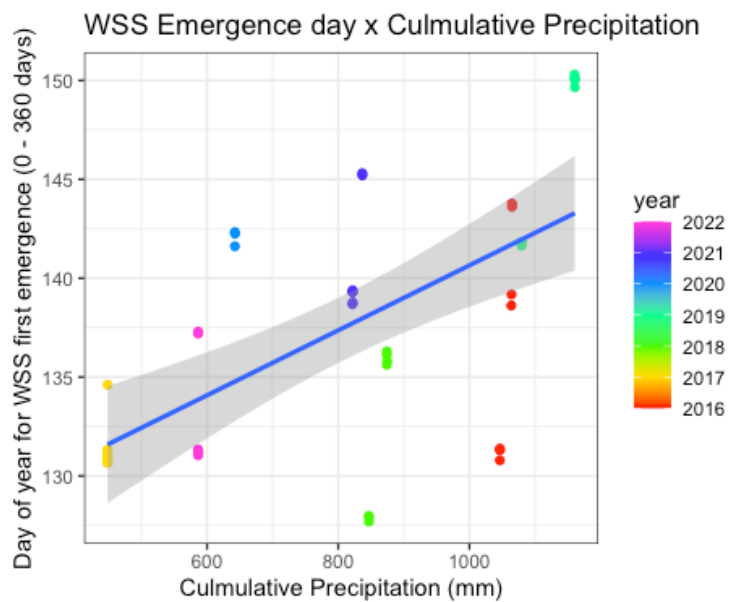


Figure 2 shows larvae recently acquired from Orchard and New Raymer, CO. Larvae at Orchard seem to be noticeably larger and more developed than those at New Raymer. Photo by Adam Osterholzer.

Henrique Vieira, a PhD student in the Nachappa lab is trying to predict sawfly emergence based on climatic variables. Analysis of temperature and precipitation data from New Raymer meteorological station combined with our lab survey data from the past years (2016 – current) revealed a positive relationship between sawfly emergence and precipitation (snow and rain). We see that sawflies can emerge as early as the beginning of May in dry years, and for wet years around late May. Precipitation might potentially



influence population density as well. Temperature did not have an effect on sawfly emergence. Given that we had good moisture this spring and last winter, we predict delayed sawfly emergence this year.

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If you are curious to know what stage the sawflies are in your field, then sample for larvae at the edges of your fields, which will likely have the highest concentrations of sawfly larvae. Here are the steps we follow in our own studies:

- 1) Dig up several clumps of stubble with a shovel, taking care to keep all plant material intact, including the roots.
- 2) Sort through the stubble, gently tugging apart the clumps with your fingers.
- 3) Separate any stubs that have been cut by sawfly from the rest of the stubble (see Figure 3). Sawfly stubs will be short, usually having 1-2 inches of stem visible above ground level. An important feature to look for is a clean, horizontal cut at the top of the stem. There will also be a frass plug at this location, which will have the appearance of compacted saw dust plugging up the opening to the stem interior.
- 4) Using a sharp knife and a set of tweezers, split the stubs open lengthwise. Any larvae within will be visible once the halves of the stubs are separated.
- 5) Compare any larvae you find to Figure 1 for an approximation of their development status.



Figure 3: Image contrasting several sawfly stubs (left), with a non-infested stem (far right). Photo by Adam Osterholzer.

In future newsletters, we will provide further updates regarding the sawfly emergence and infestation intensity.

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### **Additional Pests**

#### **-Brown Mites**

Both Ron Meyer and Kat Caswell (CSU Extension) have noted reports of brown mites being observed in the field. They appear widespread, having been seen from Walsh through the

Burlington area. According to Ron, populations have not yet become large enough to meet the economic treatment threshold. Brown mites typically do well in warm, dry environments. As such, there is the potential for them to become a more severe issue within Southern Colorado. Insecticides remain the best option for managing outbreaks. Previous research has shown that dimethoate insecticides are the most effective of currently registered products.

#### **- Cutworms**

Ron Meyer has reported no signs of cutworm activity across the state at this time. We will note any changes in the situation in our next newsletter.

More information on caterpillars in small grains can be found at:

<https://extension.colostate.edu/topic-areas/insects/caterpillars-in-small-grains-5-577/>.

Pyrethroid insecticides are effective against both army cutworm and pale western cutworm ([https://wiki.bugwood.org/HPIP:Small\\_Grains\\_Army\\_Cutworm](https://wiki.bugwood.org/HPIP:Small_Grains_Army_Cutworm)).

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#### **Wheat Diseases**

For wheat disease updates by Dr. Robyn Roberts, please see:

<https://coloradowheat.org/category/news-events/wheat-pest-and-disease-update/>

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#### **Acknowledgements**

We would like to acknowledge the tireless work of CSU researchers and extension agents for reporting pest problems throughout the state. Special thanks to Kevin Larson, Brett Pettinger, Ron Meyer, Todd Ballard, Sally Jones-Diamond, Dennis Kaan, Kat Caswell, and Michaela Mattes.