2023 Wheat Stem Sawfly and Rainfall Report

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Wheat stem sawfly population in 2023

The CSU Wheat Entomology Program monitors the yearly emergence of adult sawflies at Orchard and New Raymer, CO. This monitoring has been on-going since 2011. This year, we surveyed a total of 9 sites, with each location being visited 12+ times throughout April-June. As in all previous years, we collected 100 sweeps at each location.

We saw a significant reduction in sawfly abundance in 2023 data with an average of only 18 sawflies captured per site this year. For comparison, in 2020 we recorded an average of over 99 sawflies per site over the course of the field (Figure 1). We also observed a delayed emergence of adults and delayed sawfly population peak, which occurred in late May (Figure 1).

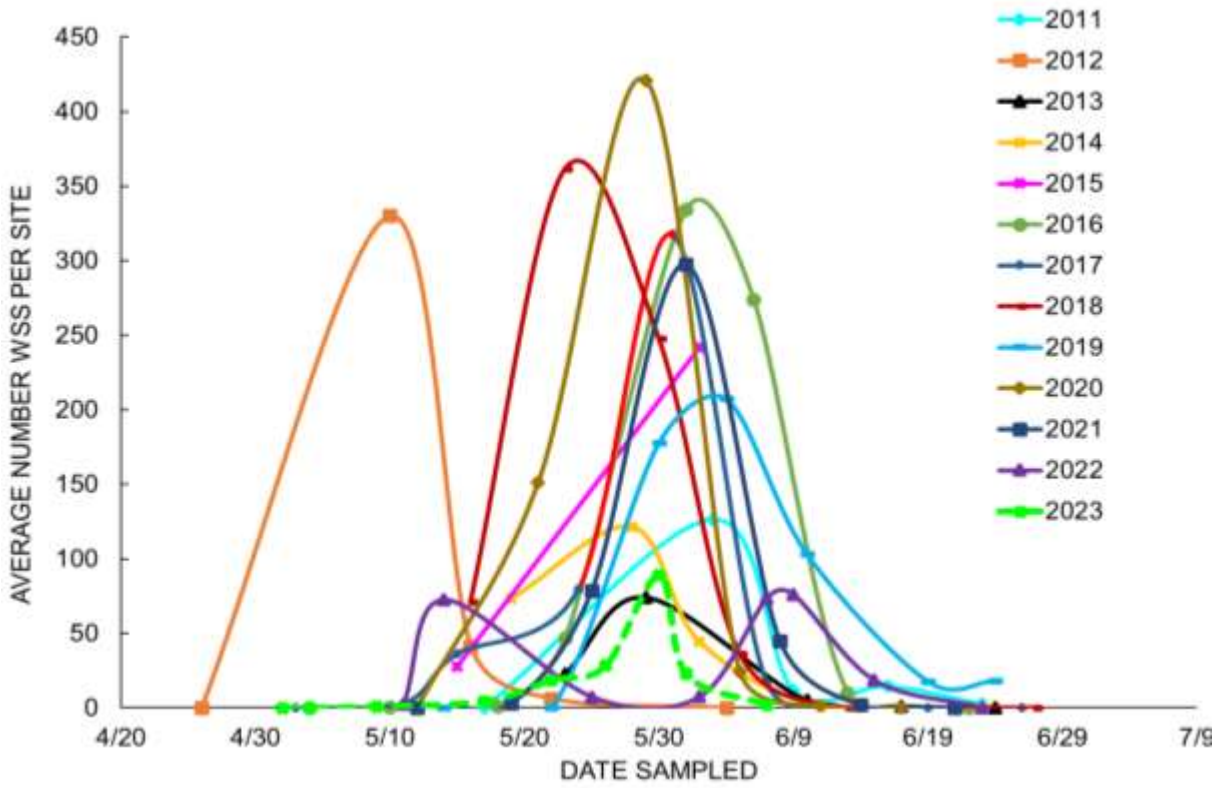

Figure 1. Graph showing historical WSS flight numbers in New Raymer and Orchard, CO. The dashed line in green is the 2023 data.

The Impact of Local Weather

Orchard and New Raymer experienced significant precipitation throughout much of the winter and spring. Heavy rains and flooding were common events we encountered during our field work. We suspect that all this moisture made conditions unsuitable for sawfly emergence and survival. Many of the sawflies were likely drowned within the wheat stubble (Figure 2). The precipitation was also coupled with frequent wind speeds above 10mph, further making conditions worse for the sawflies.

Figure 2. Drowned sawfly found within flooded stubble in Orchard, CO.

These conclusions are supported by the work of Ph.D. student Henrique Vieira's research, who is currently modeling the effects of climatic variables on sawflies. Preliminary analysis revealed that increased precipitation (snow and rain) results in sawflies residing longer within the wheat stubble thereby delaying emergence (Figure 3A). Further increased precipitation results in lower sawfly population densities per 100 sweeps (Figure 3B).

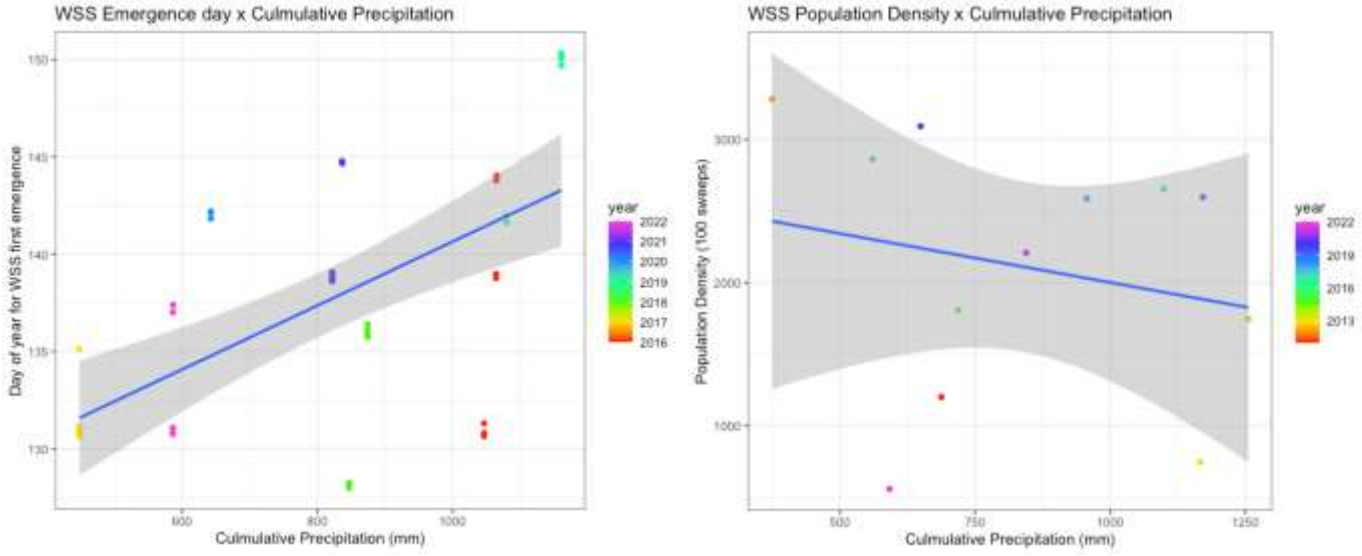

Figure 3. A) Effect of precipitation on WSS emergence and B) Effect of precipitation on WSS population density per 100 sweeps.

Future Updates

We will better understand the full impact of this year's climate on the CO sawfly populations after we complete our statewide survey. Due to a delayed harvest this year, we expect to complete the fieldwork for this project in late August/early September.