Wheat stem sawfly (Cephus cinctus) is the most economically important insect pest affecting Montana wheat production. In order for wheat producers to maximize production efficiency and profitability, insects, weeds and diseases should be well managed. In the area of insect pests, few of them exclusively attack wheat. However, wheat stem sawfly has a history of more than one hundred years for causing damage and yield losses to Montana wheat production.

Wheat stem sawfly originally attacked native grasses of Northern Great Plains. In the 1920s, wheat stem sawfly apparently became the most detrimental insect pest of spring wheat in the Northern Great Plains. However, over the last few decades wheat stem sawfly has adapted to winter wheat, and winter wheat now sustains extensive damage in the Northern Great Plains. Currently, in the United States wheat stem sawfly is only a major issue in Montana and North Dakota. In recent years, wheat stem sawfly problems in winter wheat production has also spread to other states including western South Dakota, eastern Wyoming, western Nebraska and northeastern Colorado. At current wheat prices, economic grain yield losses caused by wheat stem sawfly damage is estimated to be $250 million per year alone in Montana.

Wheat stem sawfly has a unique life cycle with cryptic (hidden) feeding habitat. The adult is truly a small wasp. It is about three quarter inches long with shiny black body, yellow legs and three yellow bands around the abdomen. The adults are most active when temperature is 70-90°F, with sunny sky and little wind. They are weak fliers and usually search host plants near their emergence sites. However, recent reports indicate that adults can migrate up to several miles in search of their host. In Montana, adults begin to emerge from late May to early June and emergence may continue until early July. Female adults deposit eggs inside developing wheat stems. Multiple eggs can be laid within a stem, but only a single larva survives up to maturity. Eggs hatch about five to seven days after being laid. Throughout the summer, the larvae eat the inside of the wheat plant, disrupting sugar and water movement, weakening the plant and reducing yield levels. As wheat plants mature in summer, the larvae cut the wheat stems at the base to prepare for a period of dormancy called diapause. The diapausing larvae spend whole time inside wheat stubble during the fall and winter. In the spring, adults emerge from the stem, and the life cycle continues.

Because of wheat stem sawfly larvae hidden feeding habitat, it is often challenging to manage the damage with a single control measure. Therefore, several integrated pest management strategies including pest monitoring, host plant resistance, cultural control and biological control have been investigated and developed in Montana and North Dakota. Wheat stem sawfly infestations can be controlled during diapause in the spring and summer at crop growing conditions or after crop harvest in field during fall. During spring and summer periods, infestations can be checked by sweep netting for the adults and splitting the stems for presence of sawfly egg, larva or frass. In the fall, wheat stem sawfly infestation can be surveyed by looking for plugs in infested wheat stubble. The presence of diapausing (inactive stage) larvae inside stems. Based on Canadian research, it is recommended to plant solid stemmed winter wheat varieties if there was a 10-15% infestation in the previous year. Host plant resistance is one of the best integrated pest management strategies for wheat stem sawfly management. Solid stemmed wheat varieties are often known to tolerate wheat stem sawfly damage. In Montana, for instance, “Warhorse” is known as a wheat stem sawfly tolerant solid stemmed winter wheat variety. However, producers should also aware that solid stemmed varieties may produce lower yields compared to hollow stemmed varieties which are usually susceptible to this problem.

Cultural control such as planting trap crops (e.g., barley, oat or rye) along the wheat field margin may be helpful in minimizing damage and reducing adult numbers in the subsequent year. Crop rotation with broadleaf crops (e.g., peas, potatoes, corn and canola) would also be worthwhile to consider when wheat stem sawfly populations are high, since they do not lay eggs in these crops. When infestation level exceeds 15%, producers should consider for some control measures. A parasitism of the wheat crop once kernel moisture drops below 40% to save infested stems before they fall on the ground. Two parasitic wasps, Bracon cephi and B. lissogaster are important biological control of wheat stem sawfly in Montana. These two wasp species can parasitize up to 98% of larvae, but are most effective when populations are low. Currently, there is no effective or producer friendly synthetic chemicals that can be used to manage wheat stem sawfly. An organophosphate insecticide (Thimet 20-G®) has recently been registered in Montana for use to manage wheat stem sawfly. This chemical is restricted and poses many health and environmental risks. Because of this, producers should avoid using it. In this context, the use of plant defense elicitors to “immunize” plants could provide additional management strategies against wheat stem sawfly. Plant defense elicitors are small molecules that activate induced defensive responses in plants, and thus make plants more resistant to pests. Defense elicitors have been used to develop new reduced risk pesticides and plant activators; for instance, defense elicitors with plant active ingredients in Actigard® and Messenger® (Eden Bioscience Corp.) can provide resistance to plants by either of one of the defensive pathways in the plants: salicylic acid mediated resistance or jasmonic acid mediated resistance. Salicylic acid, critical plant hormone that induces resistance in plants to fungal, bacterial, and viral pathogens. The plant elicitor benzyl acetamide(S-BAM) is produced by the fungus Daldinia concentrica. S-BAM is active against the acid S-methyl ester (BTH), commercialized with product name- BION® (in Europe) and Actigard® (in the United States), is a functional analog of salicylic acid. This product was primarily developed for disease control in a variety of crops, but has shown greater resistance to a broad range of fungal, bacterial and viral pathogens. However, Actigard foliar applications have also been shown to confer plant resistance to insect herbivores such as aphids, whiteflies, and leaf miners.
High yielding conventional varieties:

- CDC Falcon (WestBred)
- Judee (MSU)
- Keldin (WestBred)
- SY Monument (Syngenta)
- Northern (MSU)
- Warhorse (MSU)

Clearfield varieties:

- SY Clearstone CL2 (Syngenta)
- SY 517 CL2 (Syngenta)
- WB 4623 CLP (WestBred)

*Protected under the Plant Variety Protection Act

**Requires a Limited Use Agreement through WestBred

Call now to complete your Stewardship Agreement

Great Falls Area Producers
Quality, Certified Bulk Seed Now Available in Great Falls
Contact Rod at AgriBasis Fertilizer, Inc.
Phone: 406-761-4024  4500 18th Avenue North, Great Falls, MT.

Age to castrate horses

Controversy exists as to what is the best age of castrate (geld) a male. Some believe the younger the age of castration, the taller the horse will grow, with less chance of the horse acquiring aggressive behaviors. Others want a horse to remain intact longer so that it will develop more body substance and a shapely, cresty neck. Having a distinctive crest (the topline of the neck) is desirable in many breeds.

Many breeders feel that only a superior horse should be a stallion for breeding purposes; all others should be gelded, with the belief that most good stallions make great geldings.

Some cultures have breeds that are seldom castrated. The majority of male Pure Spanish Horses are left intact. Machismo is thought to be one factor in this philosophy.