

## Late Planting Winter Wheat

The last several years have been good for grasshoppers; bad for the rest of us! We are seeing them in cropland, grasslands, lawns, and gardens around the County. In 2007, Montana was seeing one million acres of land with 15 or more grasshoppers per square yard. In 2010, that number grew to 17 million acres.

The current 2011 forecast for grasshoppers put together by USDA APHIS out of Helena shows severe infestations this year in central and especially eastern Montana. With continuing warm weather, we will see favorable conditions this fall. Continuing warm weather will favor egg-laying behavior by female grasshoppers and the rangeland hazard will remain high in 2012. Winter wheat will be at risk of attack this fall season.

Planting winter wheat later in the season is one strategy to mitigate damage caused by grasshoppers. Aphids and wheat curl mites can also be curtailed by a later planting date for winter wheat. In 2010, we saw large populations of both of these insects in the fall and had damage to plants in the spring. Aphids can transmit barley yellow dwarf virus and wheat curl mites carry wheat streak mosaic virus. Adult grasshoppers will remain active during the fall season as long as daytime temperatures remain warm. Later planting dates reduce the window of time that the crop is exposed to grasshopper activity. Later planting also reduces the risk of damage by aphids and the wheat curl mite, both of which can vector viral diseases. Late planting of winter wheat will also assist with stripe rust, another issue we saw a lot of in 2011. Late planting, along with seed treatments can protect the seeds for 2-3 weeks after planting.

Perhaps the most persuasive argument for later planting of winter wheat is fully breaking the green bridge. This limits the opportunity for diseases to spread from one year's crop to the next. Volunteer wheat germinating in late summer, or neighboring grass fields, often provide this bridge. By removing all these plants, producers can effectively "break" the disease and insect bridge.

In our County, the first fall freeze historically occurs around September 20 or so. Research recently done in South Dakota found that winter wheat planted on October 1 will yield the same as winter wheat planted on September 15. The study also found that winter wheat planted after October 15 through November 1 had lower yields. These studies were done from 1997-2000 under no-till conditions.

Due to these conditions this fall, vigilant scouting is recommended. Adult grasshoppers can fly and are very mobile; localized densities can change quickly. The migratory and two-striped grasshoppers are prevalent species in the current outbreak. Damage thresholds for emerging winter wheat are 3-7 per square yard within the field, or 11-20 per square yard around the field margin. Typically grasshoppers move into crops from surrounding grassland. In some cases weeds may attract grasshoppers into fallow fields. Treatment strategies are based on protecting crop edges from invading grasshoppers.

Border treatments applied as insecticidal sprays or seed treatments are the main recommendation for protecting emerging winter wheat. Typically, spraying insecticide 150 feet beyond the edge of the crop is a sufficient border. If grasshopper populations are very high they are difficult to control, and continued scouting is required as they can reinvade the protected border. At very high densities borders up to ¼ of a mile and repeated applications may need to be considered. One or two passes with insecticide treated seed (active ingredients imidacloprid and thiamethoxam) around the perimeter of the field is also typically effective. Adult grasshoppers are more difficult to control, and the higher end of the label rate is recommended.

When applying border sprays, *timing* is important. Border sprays beyond the edge of the crop need to be applied just before the wheat emerges; if it is applied too early there may not be enough residual, if it is applied too late, the damage may have already occurred. Systemic seed treatments eliminate the timing concern. Systemic insecticides require feeding to be active, but crop damage should be slowed considerably.

The High Plains IPM Guide, [http://wiki.bugwood.org/HPIPIM:Main\\_Page](http://wiki.bugwood.org/HPIPIM:Main_Page), provides information on sampling, thresholds and treatment options for rangeland and small grain crops. Insect growth regulators (Dimilin) and biological diseases (Semaspore Bait containing *Nosema locustae*) need to be applied earlier in the season and are not effective against adult grasshoppers. In general baits may not be as effective at controlling adults compared to the juvenile nymphs. Additional information can be found on the USDA ARS Sidney grasshopper website, <http://www.sidney.ars.usda.gov/grasshopper/>.

In planting winter wheat this fall, plan carefully to avoid heavy insect pressure. If you have questions, please contact me at the Teton County Extension office at 466-2491. Much of this article was written with the help of Kevin Wanner, MSU Extension Entomologist.