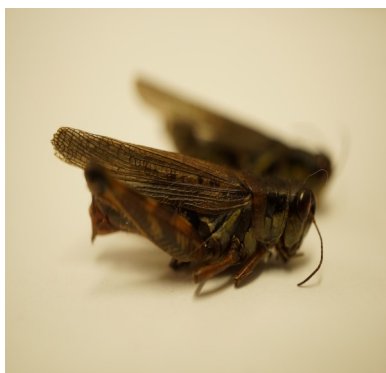


Grasshopper Damage and Controls



Migratory Grasshopper
(*Melanoplus sanguinipes*)

Introduction:

Each grasshopper species can effect a producers crop or ranchers pasture land differently. Seed Head #12 noted the most common species in the BC Peace region and key identification tips to determine what species you as a producer/rancher may be looking at. The importance of identifying grasshoppers to determine what kind of species they are is vital to understanding the potential economic

damage that could occur if the population is above threshold.

This sheet raises the awareness of potential damage and also the potential forms of control to aid a person in how to manage/minimize the damage that may be done by a grasshopper outbreak.

It is important to note that early detection is the best form of prevention. Monitoring should start mid May and continue to early June if possible.

How Grasshoppers Can Damage Your Crop

Losses of a crop can occur in several ways:

- 1) An early hatch of grasshoppers may completely destroy newly germinated seedlings of spring wheat. This occurs when the grasshoppers invade the crop from heavily infested stubble or roadside.
- 2) Grasshoppers may also hatch within the field of growing plants when the crop is seeded in infested stubble. Gradual defoliation through the growing season reduces yield and quality of the wheat by depressing weight of the kernels.
- 3) Toward the end of the season, defoliated plants become susceptible to head clipping by grasshoppers, further decreasing yield. The grasshoppers feed on green areas of the stem close to the head, causing the head to fall to the ground.
- 4) Invasion in late summer of second generation nymphs and adults into the edges of newly emerged winter wheat. The grasshoppers consume the young plants to ground level.

Feeding usually starts at field edges and works its way towards the center.

For More Information

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References:

Grasshoppers of the Western U.S

<http://idtools.org/id/grasshoppers/index.php>
[Accessed December, 2016]

Grasshopper Monitoring and Control in British Columbia

<http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/plant-health> [Accessed December, 2016]

Did You Know?

Two-Striped Grasshopper experiments indicate that in feeding on spring wheat the two-striped grasshopper wastes 6x as much foliage as it eats.

A Migratory Grasshopper light infestation of one grasshopper per square yard in a fallow strip of wheat stubble to an adjoining field margin of young growing wheat concentrates the infestation to 55 grasshoppers per square yard

Two Striped Grasshopper
(*Melanoplus bivittatus*)



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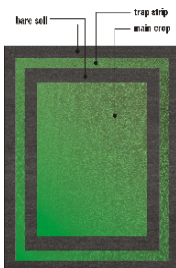
more Seed Head fact sheets available soon on our website

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Grasshopper Controls:

1. Cultural Controls:

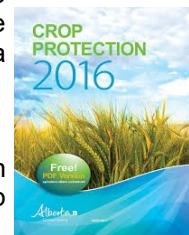
- * **Natural grass stands vs. Tame grass pastures:** Natural grass stands have been found to have less potential outbreaks due to greater plant diversity and fewer pest species of Grasshoppers
- * **Trap strips:** Are cultivated black guard strips 10m wide around the outside of a field. Leave an unworked green strip of at least 10 m before resuming cultivation. Repeat process as often as necessary to produce additional trap sites. All green vegetation must be eliminated between the trap strips if they are to be effective. The black guard strip is enough to ensure that grasshoppers will move promptly into the trap strips to feed. The migration of young grasshoppers from the cultivated guard strips to the trap strips may take several days.



2. Natural Controls:

- * **Natural Enemies:** Birds, Rodents, Other Insects (Lady bugs, Ground beetles, Parasitoid wasps are just examples of a few predators).
- * **Weather:** A huge influencer of Grasshopper populations, as it leads to susceptibility to disease through rain and low temperatures: The fungi species listed next are either ingested on vegetation or on other Grasshopper carcasses.

- * *Nosema Locustae* - Turns Hoppers in to Cannibals. The fungal disease alters the Grasshoppers diet and they start to eat other Grasshoppers.
- * *Entomophaga grylli* - Summit Disease, is another fungal disease that effects Grasshoppers. It alters their habits to stop feeding and climb to the top of a structure and allow the fungal to disperse over a greater area via wind.

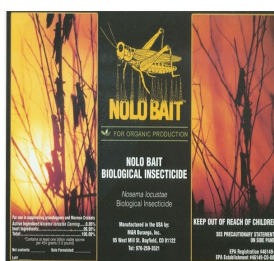


3. Chemical Controls:

Different foliar insecticides are for use on different crops. (Refer to the Alberta Crop Protection Guide 2016)

Insecticides:

- * Organophosphorus = Cygon/Lagon (\$11.20/acre), Malathion (\$9.29-12.39/acre)
- * Pyrethroid = Matador/Warrior (\$9.25/acre)
- * N-Methyl Carbamate = Sevin (\$12.61-18.92/acre)
- * Organophosphate = Dibrom (\$6.00-9.00/acre)
- * Pyrazolyphenyl = Coragen(≈\$20.00/acre)



- * Sevin– Ecobran is spreadable carbaryl bran bait that should be used on very early instar populations – It should be noted that it is not organic!!
- * NoloBait – Spreadable bran bait that infects populations with *Nosema Locusta*

Figure 1. Threshold Levels of Pest Grasshoppers

Number of Nymphs and Adults per Square Metre			
Rating	Field	Roadside	Control Action
Normal	0 to 3	0 to 6	not required
Light	0 to 6	7 to 12	usually not required
Moderate	7 to 12	13 to 24	may be required
Severe	13+	25+	required

Fig 1. Reference

Grasshopper Monitoring and Control in British Columbia
<http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/plant-health/>
 Accessed November 16, 2016

Conclusion:

As noted above there are many ways for pest Grasshopper species to damage a producers crop. Managing outbreaks and limiting damage can be done in many ways as also described. Integrating pest management techniques may help a producer limit economic costs that could be incurred, but also allows

them to have more tools to manage Grasshoppers. The biggest key to protecting a producers field from an outbreak of Grasshoppers is early monitoring and identification. Monitoring should start mid May and continue to mid June.

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