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Black Grass Bug in South Dakota

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BLACK GRASS BUGS

- Native to western rangelands, pastures, and non-cropland areas.
- Primarily damaging to wheatgrass pastures, especially crested and intermediate wheatgrasses.
- Damage both forage yield and quality; specifically, digestibility and intake or palatability are negatively affected.
- Forage utilization by grazing or mowing is recommended for management.

Black grass bugs can cause considerable damage to wheatgrass pastures and rangelands in western South Dakota and other western states. The bug is a native species and has become more of a problem for ranchers in recent years, coincident with extensive seeding of near-monocultures of wheatgrass species (*Agropyron* and *Thinopyrum* spp.). Pastures of mixed native grass species are less affected by the black grass bug. Bug-damaged range grasses have resulted in reductions in yield and quality, demonstrated by research conducted in Montana that measured significant reductions in digestibility (ADF) and intake (NDF) (Blodgett et al. 2006).

IDENTIFICATION

There are several insects that form a complex, described by the common name, black grass bug; *Labops herperius* is the most common, followed by *Irbisia brachycera*. There are 34 *Labops* and *Irbisia* spp. found in North America. Black grass bugs can reach ¼- to ⅜-inch in length when mature and are black in color. One species, *L. hesperius* has light-colored outer margins of the wing covers, while *I. brachycer*a is uniform black in color. Immature stages are similar to adults but smaller in size and lack fully developed wings.

LIFE CYCLE

Black grass bugs have one generation per year, overwintering as eggs in grass stems and hatching in the spring as grass plants begin to grow. Immature and adult bugs feed by puncturing and sucking plant tissues. Black grass bug adults live for about 4 weeks. Because adult wings are not fully functional, bugs have a limited ability to disperse, so spread occurs slowly and significant infestations may remain fairly localized.

Photo credit: Frank Peairs, Colorado State University, Bugwood.org

DAMAGE

Immature bugs begin feeding starting at the leaf tip, moving down the leaf, concentrating their feeding on the upper leaf surface. Their piercing, sucking mouthparts withdraw chlorophyll-containing cell contents, leaving

a series of white feeding marks on plant leaves called ***stippling***. When large numbers of black grass bugs are present, white marks coalesce, causing leaves to appear white as stippling occurs over a large area of the leaf surface. Damaged leaves appear to be "frosted," so black grass bug damage may be mistaken for frost damage. Repeated and heavy (~1,000 bugs/sq ft) infestations have been noted to kill host plants. Drought conditions exacerbate damage by black grass bugs, decreasing the plant's ability to recover from black grass bug feeding.

PLANT SUSCEPTIBILITY

Differences in susceptibility to black grass bug feeding on native and introduced grass species have been noted. Black grass bug prefers feeding on grasses, with feeding damage documented on crested wheatgrass, pubescent wheatgrass, intermediate wheatgrass, and other wheatgrass species. Several grasses have been ranked for susceptibility to black grass bug damage; from most to least susceptible, intermediate wheatgrass, Kentucky bluegrass, slender wheatgrass, orchardgrass, smooth brome, and mountain brome. Pastures or rangeland consisting of mixed native grass species are less affected.

CROPLAND

Black grass bug feeding has been noted on the edges of small-grain fields adjacent to wheatgrass pastures. Stippling may appear on wheat foliage where bugs have fed but is not considered economically damaging to wheat.

SAMPLING

Check pastures and range in the spring beginning in late April in South Dakota, taking care to observe any off-color, distinguishing possible frost damage from stippling and paying special attention to predominant wheatgrass pastures. In the South Dakota black grass bug survey, the majority of respondents reported bug activity April through June, with the peak occurrence in mid-May (Figure 1).

Black grass bugs are difficult to detect by visually inspecting plants, as they tend to drop to the ground when disturbed. However, they can be easily detected by using a sweep net to sample foliage. If black grass bugs are present, check the extent of the infestation by taking sweep samples beginning at the field edge and progressing into the field, observing patterns of BGB infestation.

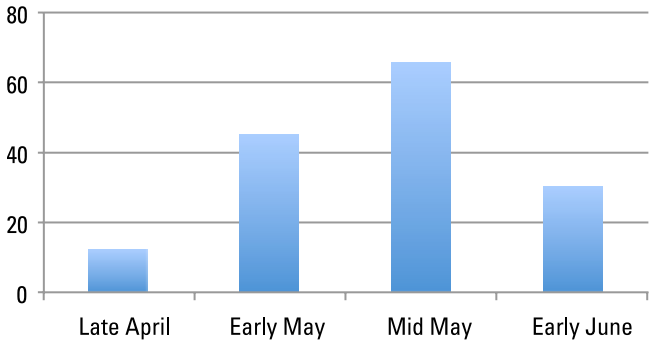

Figure 1. Number of observations of the seasonal occurance of black grass bug in eight western S.D. counties, 2000–2006.

FORAGE QUALITY

It has been observed by many ranchers that black grass bug damage results in unpalatable forage. Many have observed cattle refusing black grass bug-damaged forage. In a Montana study, higher black grass bug-damaged leaves had not only reduced levels of crude protein, sulfur, and phosphorus concentrations but also greater acid detergent fiber (ADF) and neutral detergent fiber (NDF) (Blodgett et al. 2006). Higher ADF values indicate lower digestibility, and higher NDF values indicate lower intake, verifying observations of ranchers. Many producers responding to the South Dakota survey reported reduced feed value, poor acceptance, reduced weight gain.

YIELD REDUCTION

Infested pastures have been observed to have a reduced forage yield.

SEED PRODUCTION

Heavy black grass bug infestation interferes with production of wheatgrass seed. Damage by BGB has been noted to reduce yield, plant height, seedhead production, and seedhead height.

ECONOMIC THRESHOLD

No economic thresholds have been established.

MANAGEMENT

- Pasture management is one of the primary ways to manage black grass bug. Nitrogen fertilizer applied to plots supported higher populations of BGB, while phosphorus, potassium, and sulfur applications had no effect on bug populations.
- Spring mowing or grazing by livestock reduced BGB feeding injury and reduced oviposition rates of surviving females. Late summer mowing or grazing removed stems and eggs, reducing black grass bug population the next spring.
- Wheatgrass pastures that are not fully utilized during the growing season provide winter protection and habitat that favors survival of overwintering eggs.
- Early spring grazing limited feeding injury and reduced number of eggs.

CHEMICAL CONTROL

Insecticides have been found to control BGB populations in pastures and seed production fields. Current recommendations can be found in the High Plains IPM guide at highplainsipm.org. One well-timed insecticide application may reduce bug numbers for many years due to their slow rate of spread and re-colonization.

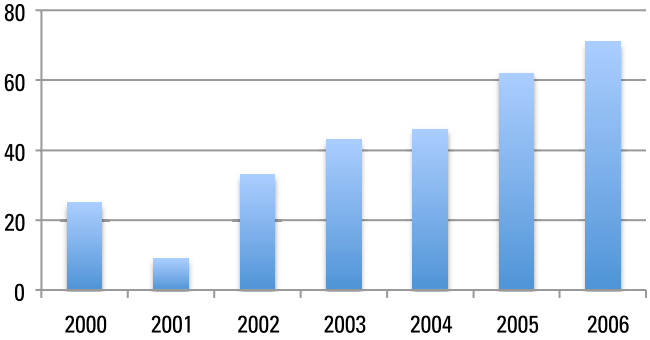

Figure 2. Black grass bug observations in eight western S.D. counties, 2000–2006.

SOUTH DAKOTA SURVEY

A survey was conducted in eight western counties in 2007. Of the over 200 who responded to the survey, 40% indicated that they had seen or experienced problems with black grass bug, the majority of those observations coming from Perkins County.

SURVEY RESULTS

- 68% noted BGB in crested wheatgrass, and 17% observed the bugs in intermediate wheatgrass.
- Respondents noted that black grass bug infestations have become more frequent in recent years (Figure 2). The majority especially noted BGB problems in drought years.
- 69% noted fields with recurring BGB populations.
- 56% noted that cattle were affected when fed BGB-infested hay or graze. Comments included reduced weight gain or problems with intake.
- A few that tested their forage noted lower hay quality where black grass bugs had been present.

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