

# *Sipha maydis*: A Potential Threat to Colorado Wheat Production

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*Sipha maydis* is an exotic grass feeding aphid widely distributed within its native range in Europe, the Middle East, Asia and parts of Africa. It was introduced to Argentina in the early 2000's when it quickly spread to all of the wheat producing regions of the country and became a significant pest of small grains.

*S. maydis* is easily recognized by the black coloration, white hairs covering the abdomen, and short pore like cornicles. Mature wingless aphids appear to have a hardened, sclerotized abdomen and have a glossy black coloration (Figure 1, Top). Winged forms are produced from established colonies, and are common in many spring 2015 collections from western Colorado. (Figure 1, Bottom).



Figure 1. (Top) *S. maydis* is easily identified by the black coloration, white hairs, sclerotized-appearing abdomen, and short pore-like cornicles. (Bottom) Winged forms of *S. maydis* are produced from established colonies, sometimes in great numbers. They are the dispersal form of the aphid.



Figure 2. Mid and late season infestation on maturing plants are concentrated at the base of leaves. There is chlorosis associated with the aphid feeding. This picture was taken in oats at the fall 2014 collection site in Albuquerque.

*S. maydis* was found by Tessa Grasswitz, a New Mexico State University entomologist, in an oat cover crop in a small acreage farm setting in Albuquerque NM in the fall of 2014. The aphids discovered on the oat cover crop were feeding at the base of leaves and causing a yellowing of the tissue at the feeding site (Figure 2). A short article detailing that discovery was published in [Entomology Today](#) in February 2014. That article triggered a search for the aphid in western Colorado, where it was found almost immediately.

*Sipha maydis* has been collected at several sites in Mesa County Colorado during February and March 2015. All February and early March Mesa County collections were made in winter annual grasses. The initial collection was made along the edge of a winter wheat field about 4 miles east of Fruita

CO. Many dead *S. maydis* were found on currently unidentified winter annual grasses, two large healthy colonies were then found on plants of annual wheatgrass, *Eremopyrum triticeum*.

The colonies were found on a steep south facing slope associated with a field drain ditch. The south facing slope created a warm microclimate which allowed constant reproduction of the aphids during the winter months (Figure 3). *S. maydis* was found in association with Russian wheat aphid, *Diuraphis noxia*, bird cherry oat aphid, *Rhopalosiphum padi*, greenbug, *Schizaphis graminum* (Rondani), and brown wheat mite, *Petrobia latens*.



**Figure 3.** The large *S. maydis* colonies found in February 2015 western Colorado collections were made on winter annual grasses located on south-facing slopes associated with irrigation ditches (arrow points to collection site). *S. maydis* populations on other slopes were much less established.

*S. maydis* was collected at numerous sites east of 19 Rd throughout the spring of 2015. It was commonly found on hare barley and annual wheatgrass far removed from small grain fields. A few *S. maydis* have been collected from wheat and barley fields in late March and early April.

*S. maydis* has now been found in the North Fork Valley of Delta County, in Hotchkiss and in the open desert between Delta and

Hotchkiss. It has also been found in dryland wheat near Egnar (San Miguel County), Dove Creek (Dolores County), and Yellow Jacket (Montezuma County). Farms near Towoac in southern Montezuma County were checked on April 9, but no aphids were found. The aphid was confirmed from San Juan County Utah in a collection of volunteer wheat three miles south of Monticello.

### Life history

*Sipha maydis* does not have a generally used common name at this time. In Argentina, where it has been established since 2002, it is referred to as “pulgon negro”, or black aphid. We have proposed calling it the Hedgehog Grain Aphid because its spiny exoskeleton gives it the appearance of a tiny hedgehog. The scientific literature is very limited on *S. maydis*, with some publications in Asian languages, and the Argentina literature in Spanish. Corrales et.al. 2007 summarizes the distribution and host range of the aphid in Argentina and this publication is at present the greatest source of printed information available. The paper states that an outbreak of *S. maydis* in the late spring of 2005 was devastating to mature wheat plants on the prairies of the Buenos Aires province. *S. maydis* feed exclusively on grasses and is recorded from many genera including *Agropyron* (wheatgrasses), *Agrostis* (bentgrass), *Alpecurus*, *Avena* (oat), *Bromus* (brome), *Dactylus* (orchardgrass), *Elymus* (wildrye), *Hordeum* (barley), *Luzula* (woodrush), *Poa* (bluegrass), *Trisetum*, and *Zea* (corn). Our observations of overwintering *S. maydis* in Mesa County CO to date have been on *Bromus tectorum* (downy brome), *Hordeum murinum* ssp *leporinum* (hare barley), and *Eremopyrum triticeum* (annual wheatgrass).

Corrales et al. (2007) reports that *S. maydis* is found on the youngest leaves of the plants in the fall, and that it prefers mature stages of cereals. It infests the ligula area of flag leaves

in late spring. *S. maydis* causes a yellowing or chlorosis of the plant leaf near the feeding site. The aphid feeding damages mature cereals in the late spring by reducing functional leaf area and inhibiting head growth. (Figure 4)

This aphid reportedly has a holocyclic life cycle in Argentina. This means there is a sexual stage in which eggs are laid as the overwintering stage, with a limited range of host plants. We believe that we have observed non-sexual overwintering in Mesa County, with large populations seen on winter annual grasses in mid February at one site.



Figure 4. *S. maydis* colonies found in February were spread over the lower half of young leaves. There was some chlorosis associated with moderately to heavily infested leaves, but few symptoms on leaves with only one or two aphids present.

### Management

Management to protect the flag leaf from feeding damage is essential to protect yield. It is not known how *S. maydis* responds to insecticides currently used for aphid control in small grains. Insecticide evaluation is considered high priority research. Researchers in Argentina are currently developing resistant wheat varieties. There is no cross resistance to genes developed for Russian wheat aphid or greenbug.

### References cited

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