

## **Addressing New Pest Developments in a Small Grain IPM System – 2013-2014**

**Joanne Whalen, Extension IPM Specialist; Bill Cissel, Extension IPM Agent; Mark Van Gessel – Extension Weed Specialist; Nancy Gregory, Extension Plant Diagnostician; Nathan Kleczewski, Extension Plant Pathologist**

Currently, small grain IPM programs in Delaware, delivered by both private consultants and agribusiness and supported by University of Delaware Extension and Applied Research programs, have a multi-disciplinary approach including insect, weed, and disease management. The primary objects of the first year of this 3 year program were (1) Aphid management as it relates to both new thresholds and Barley yellow dwarf management and (2) Weed management of newly emerging weeds and resistance management. This was the first year of a three year Extension IPM Project. Over the next two years, this project will also projects related to monitoring and management of Fusarium Head Blight in small grains.

### **(I) Weed Management Results – 2014 Surveys and On Farm- Trials –**

Please refer to document entitled “Weed Survey and Control of Weed Species in Small Grains” - M. Van Gessel, and B. Scott

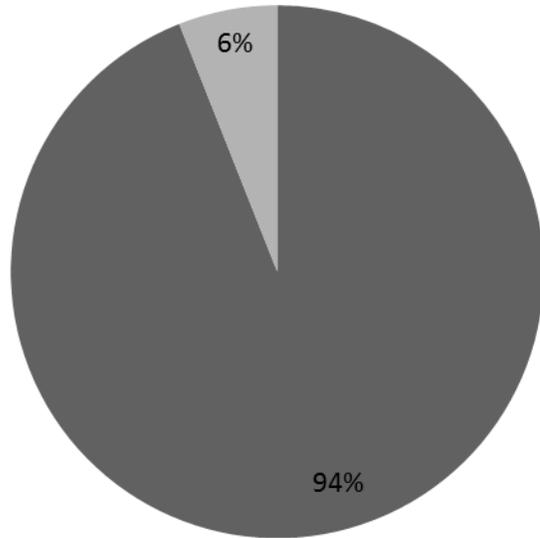
### **(II) Aphid Monitoring and Barley Yellow Dwarf Virus (BYDV) and Testing**

One objective of this survey was to evaluate sampling techniques and new potential action thresholds developed in the south for managing aphids in small grains. A second objective was to identify fields with BYDV and critical plant stages for aphid control to reduce losses due to BYDV. There are four species of aphids that infest small grains in Delaware; bird cherry oat, English grain, corn leaf, and green bug aphid, all of which are capable of transmitting BYDV.

Thirty-one small grain fields were sample on a weekly basis from mid-October to early December and again from March to April to determine aphid species composition and abundance by examining one foot of row in ten random locations throughout each field and recording the number of aphids for each species. In the fall, these same field were surveyed for BYDV symptoms. In late May and early June, the same fields were again evaluated for symptoms of BYDV by looking in a ten foot radius in ten random spots throughout each field. No BYDV virus symptoms were detected in the fall surveys. Most of the samples exhibiting potential virus symptoms in the spring were determined not to be potential candidates for BYDV screening; therefore, they were not sent off for analysis. Only samples from two fields were submitted to Agdia, Inc. in the spring for virus screening. One of the samples was negative for all viruses, but tested positive for *Clavibacter michiganense tessellarius*, causal agent of bacterial mosaic in wheat. The second sample tested positive for BYD-PAV strain, but with a mild reaction most likely due to low titer late in the season.

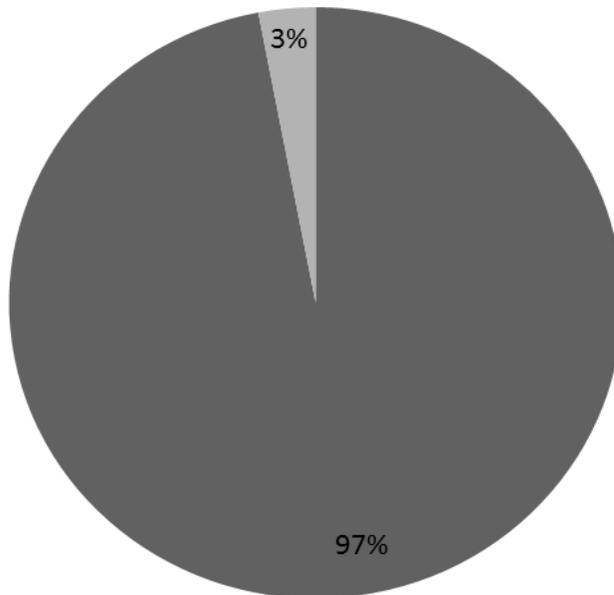
Across all fields surveyed, aphid populations were low. Bird cherry oat aphids were the predominant species, followed by corn leaf, English grain, and green bug aphid, detected in 97%, 94%, 65%, and 58% of the fields surveyed, respectively.

**Percent Fields Infested with Corn Leaf Aphid  
All below threshold levels**



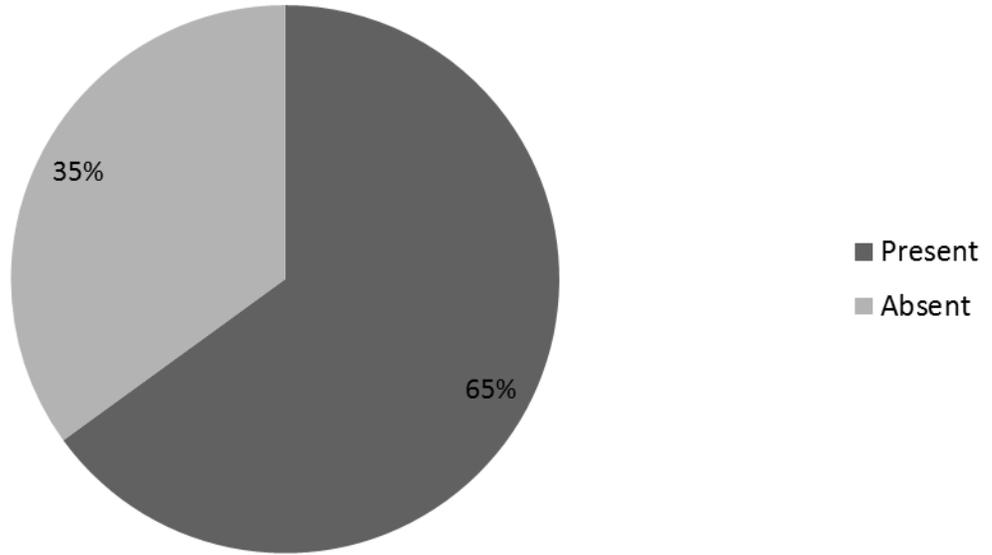
■ Present  
■ Absent

**Percent Fields Infested with Bird Cherry Oat Aphid  
All Below Threshold**

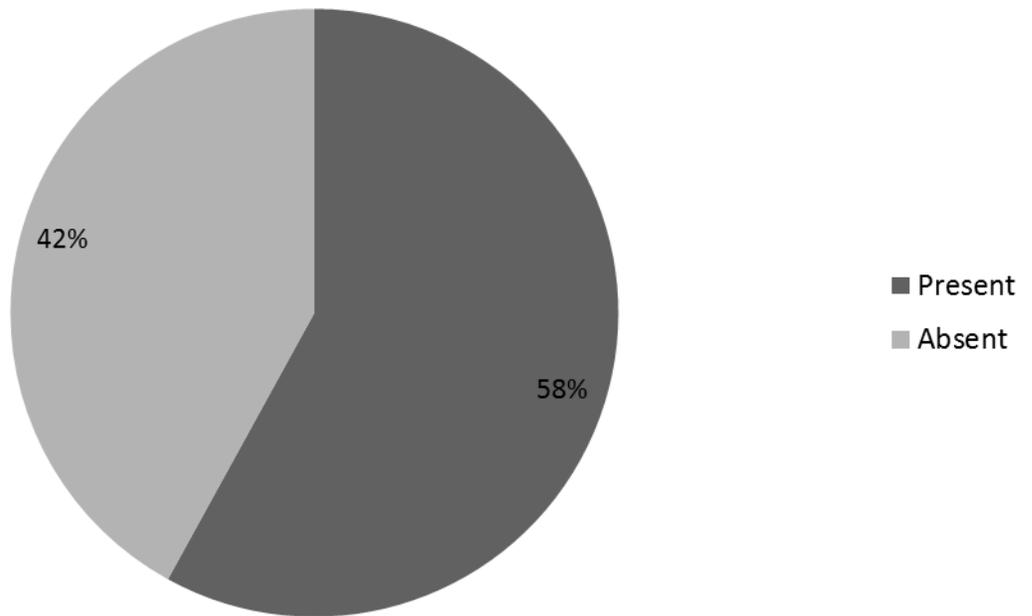


■ Present  
■ Absent

**Percent Fields Infested with English Grain Aphid  
All below threshold levels**



**Percent Fields Infested with Green Bug Aphid  
All below threshold levels**



**Percent Fields with Barley Yellow Dwarf Virus Symptoms**  
**All extremely low incidence levels - spring symptoms only**

