INTRODUCTION
Spotted Wing Drosophila (SWD) was first detected in the U.S. in 2008. SWD was reported in Wisconsin in 2010 and the first fruit infestations were documented in August 2012. Since then, SWD has been reported every year with infestations primarily affecting fall-bearing raspberry production.

OBJECTIVES
1) Document the distribution of SWD in WI
2) Describe the phenology of SWD in WI
3) Identify the presence and abundance of seasonal morphs in WI
4) Evaluate landscape effect on SWD populations
5) No-choice bioassays to assess host preference

OBJECTIVE 1.
2015 State-wide distribution of SWD
A network of county agents, growers, faculty, and WI Department of Agriculture agents was established to monitor SWD since 2013 throughout the state. Yeast-sugar baited traps were maintained by the collaborators to identify the first detection in the state.

OBJECTIVE 2.
SWD phenology in WI (K. Hietala-Henschell)
Trapping occurred weekly in raspberry crops at 7 farms (total of 13 traps) with yeast and sugar bait in 32 oz. deli cups.

OBJECTIVE 3.
Seasonal morphs in WI (K. Hietala-Henschell)
Two seasonal morphs, the well documented summer-morph and a darker winter-morph have been identified in Wisconsin. Seasonal phenology of both morphs is described (Fig.5).

OBJECTIVE 4.
Landscape effect on SWD populations (E. Pelton)
A two-year field study at 35 farms in three states, WI, MI, and MN, examined landscape effect on SWD timing and abundance. SWD appeared 1-2 weeks earlier in highly wooded areas (60% wooded) when compared to low wooded areas (10% wooded). Additionally, this data suggests that woodland landscapes do not drive population growth or abundance.

OBJECTIVE 5.
No-choice bioassays to assess host preference
We conducted experiments to assess the susceptibility of table grapes, aronia, and tart cherries to SWD. To test susceptibility, we introduced lab reared SWD on undamaged and damaged fruits. Grapes, aronia, and cherries were all assessed for eggs, larvae, pupae, and adults in each separate experiment. Data is still being processed for aronia and grapes. Cherry data is presented below.

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Figure 1. Male SWD
Figure 2. Female SWD
Figure 3. Wisconsin SWD state-wide distribution
Figure 4. Phenology of SWD (mean ±S.E.) captured weekly in 2015 season
- First flies were caught on July 8th, 2015
- Similar numbers of males & females were caught until August
- More females than males were caught from August - September
- Monitoring is continuing for 2015; Last detection in 2014 was the week of November 11th
- Peak trap catch in 2015 was the first week of August; In 2013 and 2014, the peak trap catch was the third week of September

Figure 5. Proportion of SWD seasonal morphs in Wisconsin and number of mature eggs (mean ±S.E.)
- Trap catches consisted of only summer-morphs from July - mid-August; Summer-morphs were caught throughout season
- By mid-October, winter-morphs represented > 50% of SWD trap catches
- Female dissections suggest the reproductive output declines over time; More mature eggs were found in summer-morphs (3.03 ±0.29) when compared to winter-morphs (0.08 ±0.05; H = 84.92, d.f. = 1, p < 0.001)

Figure 6. Female SWD from 2014

Figure 7. Mean number of emerged adult SWD (mean ±S.E.) in no-choice lab bioassay for 2 varieties of tart cherries and raspberry as a control.
- Montmorency cherries seem to be more susceptible to SWD overall, both damaged and undamaged
- Balaton cherries seem to be more susceptible when damaged

Figure 8. Wisconsin SWD state-wide distribution

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