

Trapping of *Lygus rugulipennis* in Norwegian strawberry crops

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The European tarnished plant bug (ETB), *Lygus rugulipennis*, is a highly polyphagous insect pest which in strawberry causes malformation of the berries. No effective biocontrol agents or other alternative methods are available. «Softpest Multitrap», a CORE Organic project, aims to develop a semiochemical trap for strawberry that attracts ETB and the strawberry blossom weevil, *Anthonomus rubi*, simultaneously. We investigated the effect of adding a plant volatile from strawberry («PV2») to commercially available sex pheromone traps used to monitor ETB populations. PV2 is an *A. rubi* attractant. We also studied the relationship between ETB trap catches (males) and berry damage.

Methods

Ten sites (6 in strawberry crops, 4 in semi-natural boundary vegetation) in Akershus, South-Eastern Norway, were each provided with 5 traps: two transparent cross-vented collision traps (Fig. 1a) and three green cross-vented funnel traps (Fig. 1b). The three funnel traps were baited with PV2 lure only, ETB sex pheromone lure only, and both lures, respectively.



Figure 1. Plexi glass collision traps (A) and green-vented funnel traps (B) were set up in April.

Traps were emptied every fortnight through the 2013 growing season. ETB nymphs was monitored by tap sampling (crop habitat) and sweep-netting (semi-natural habitat). To survey ETB damage, ca. 100 berries from each of the 6 crops were scored on a scale of 1 (no damage) to 4 (totally damaged) just before picking started.

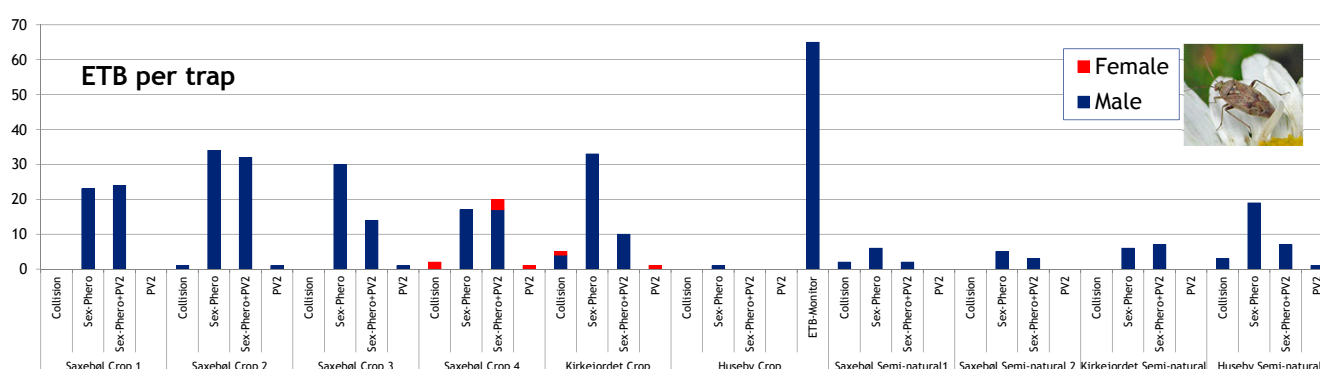


Figure 2. Total catches of adult *Lygus rugulipennis* (ETB) in the 10 sites through the season. In Huseby Crop, the only trap until 6 June was one baited with sex pheromone. This site is excluded from further analysis.

Results

ETB was hardly found in collision traps or funnel traps with PV2 alone (Fig. 2). Very few females were caught. Traps with both PV2 and sex pheromone tended to catch less than traps with pheromone only ($p=0.05$, $F_{1,15}=4.57$, effect of lure, two-way ANOVA of total $\sqrt{\text{male catch}}$, excluding PV2 only traps). Catches were significantly bigger in strawberry than in semi-natural boundary ($p<0.001$, $F_{1,15}=33.8$, same ANOVA as above).

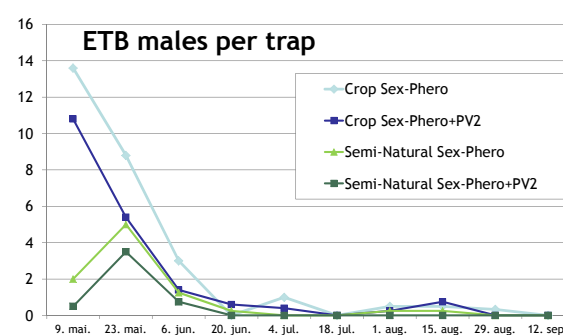


Figure 3. Average catches in two habitats and two lure combinations through the season.

ETB overwinters as adult, with one generation per year in Norway. Catches in the crop peaked at the start of the trapping period (Fig. 3), shortly after snow melt (Fig. 1B). From mid June catches dwindled and never recovered, meaning that traps caught overwintered males but not new adults (emerging in late summer).

The first nymphs appeared in early July, peaking in mid to late July according to tap-sampling and sweep-netting data (not shown). In the berry damage assessment the overall percentage of severely damaged berries (score 3+4) was 20.5, ranging from 5 to 28. More data is needed to investigate the relationship between pheromone catch and nymphs or % damage (Fig. 4).

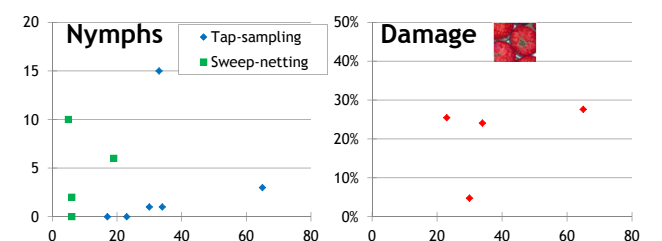


Figure 4. Total no. of males in traps baited with sex pheromones (x-axis) vs. total no. of nymphs (left) and % berries with severe damage (right).

Conclusions

ETB sex pheromone traps in must be deployed very early in the season to achieve maximum catch in Norway. To trap females or the new generation, other attractants must be added. The *A. rubi* attractant PV2 may act as a slight antagonist in ETB trapping, especially early in the season.

Acknowledgements

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