

Does fitness drive *Lygus lineolaris* feeding choices?



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Introduction

The omnivorous Tarnished plant bug (TPB), *Lygus lineolaris* (Palisot de Beauvois) (Hemiptera: Miridae) entails one of the most actual phytosanitary problems in North America. Its feeding choices can be driven simply for sensorial preferences, avoiding competition or risk of predation, resource availability, or fulfilling nutrient requirements. The understanding of its feeding behavior is crucial to apply effective IPM strategies.

The objective was to assess the impact of different nutrient compounds on TPB fitness.

Results

Percentage of TPB mortality, mean number of days (\pm error) to adulthood, mean adult's weight (\pm error) and mean adult's body length (\pm error) per each treatment. Means followed by the same letter are not significantly different (Wilcoxon, $\alpha=0.05$).

Treatment	% mortality	Number of days to adult	Adult's weight	Adult's body length
Canola+aphids	11	12.12 \pm 0.27a	5.74 \pm 0.19a	5.22 \pm 0.05a
Canola	10	13.28 \pm 0.28b	5.38 \pm 0.27ab	4.52 \pm 0.09b
Canola+ aphids+ buckwheat+ strawberry	0	13.63 \pm 0.27bc	5.32 \pm 0.28ab	4.40 \pm 0.07b
Strawberry+aphids	10	13.89 \pm 0.25bcd	5.16 \pm 0.16ab	4.33 \pm 0.07bc
Aphids	25	14.33 \pm 0.21cd	4.65 \pm 0.25bc	4.11 \pm 0.18bc
Buckwheat+ strawberry	10	14.27 \pm 0.25de	4.39 \pm 0.17c	4.19 \pm 0.05bc
Buckweat	15	14.71 \pm 0.34de	4.25 \pm 0.16c	4.06 \pm 0.12c
Spider mites	90	16.5 \pm 0.5	3.62 \pm 0.28	4.26 \pm 0.32
Strawberries	45	16.64 \pm 0.70f	3.31 \pm 0.17d	3.68 \pm 0.11d

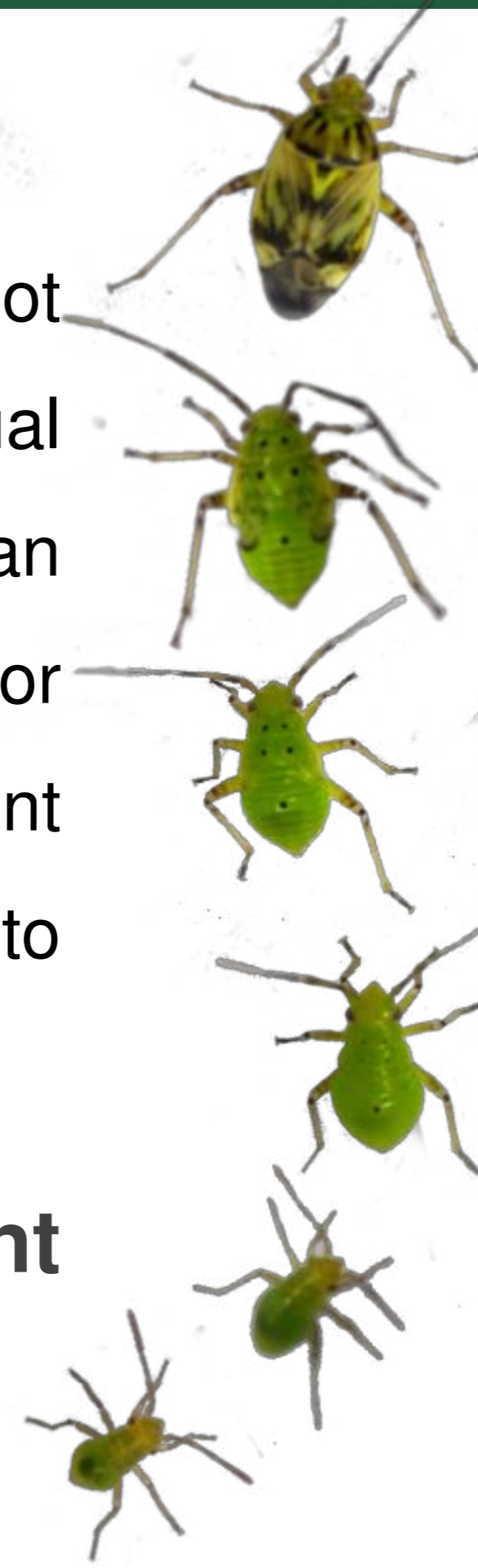
- More than 4 days of difference in developmental time between the different food resources offered.
- Adults were larger and heavier when the developmental time was shorter, highlighting an improvement in fitness.
- Phytozoophagous mixtures tended to improve TPB fitness, especially when canola, and secondly, aphids, were offered.
- With a development time greater than 16 days, and a mortality greater than 40%, spider mites and strawberry flowers represented low quality food resources.

Discussion

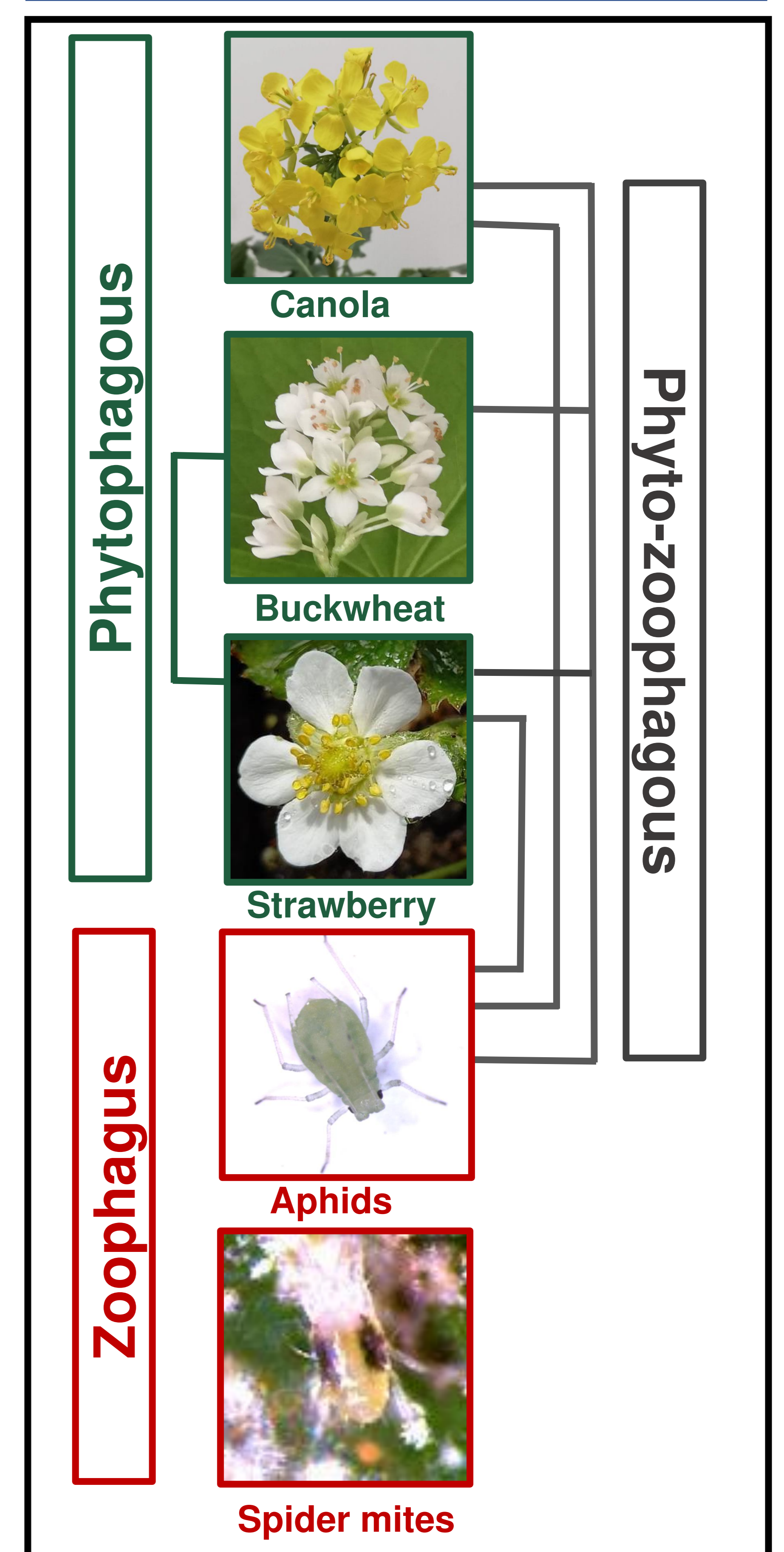
- The nutritional prerequisites of TPB are revealed and suggest that TPB feeding choices may not only be driven for fitness improvement.
- Canola could be use as trap plant.
- This information may help to build a theoretical framework to predict the behavior of mirids according to their degree of phyto-zoophagy and, therefore, help to reduce their impact as pests.

Methods

- Several omnivorous sources were offered to TPB from the beginning of N2 until the adult stage.
- To assess the potential of canola and buckwheat as trap crops and to evaluate aphids and spider mites as potential preys in strawberry fields, these nutritional sources were offered alone and combined.
- The survival rate, developmental time and allometric measures of adults were evaluated.



Food sources tested



Acknowledgements

Solà, M. holds a MITACS Accélération postdoctoral scholarship. The funding for this project has been provided in part through the AgriScience program-cluster on behalf of Agriculture and Agri-food Canada.