Settling behavior of the potato psyllid, *Bactericera cockerelli* (Šulc) (Hemiptera: Triozidae) on potato germplasm with putative resistance to *Candidatus* Liberibacter solanacearum (Lso)

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Fig 1. Potatoes infected with Lso darken upon frying.
Photo: Erik Wenninger

The potato psyllid, *Bactericera cockerelli* (Šulc), (Hemiptera: Triozidae) is a persistent vector of the bacterial pathogen *Candidatus* Liberibacter solanacearum (Lso). Potatoes infected with Lso typically exhibit blackened stripes when fried, hence the name zebra chip disease (ZC). Additional symptoms in potato include chlorosis, stunting, leaf curling, leaf purpling, swollen axillary buds, and aboveground tubers. ZC reduces both tuber quality and yield and can devastate entire fields, causing millions of dollars of losses. Host resistance to ZC has been pursued as a possible means of pest management; however, no commercial potato variety has been found to exhibit ZC resistance. Several germplasm lines are being tested for resistance via antibiosis and antixenotic effects. These germplasms are being screened in Lso transmission studies as part of a separate experiment. Here, we examine settling behavior of potato psyllids on these lines using no-choice and paired-choice (with cv. Russet Burbank) tests. These experiments will help us to understand what roles psyllid host choice and settling behavior play in any ZC resistance observed in these breeding lines.

Objective:

- Examining settling behavior of potato psyllids on different potato germplasm in order to find plants which may have antibiotic or antixenotic effects on potato psyllids.

Materials and Methods:

- We recorded: time spent on plant leaflets, probing, walking, jumping and cleaning.
- 5 min observations, scored video with CowLog.

Results & Discussion:

- Preliminary, still collecting data
- There seems to be some variation in feeding behaviors among germplasm lines. (Tables 1&2)
- More observations are needed before further conclusions can be drawn.
- This data can be used in order to develop improved germplasm lines.

Table 1
Mean ± SEM incidence data of psyllid behaviors on different potato varieties.

Variety	n	Tasting/Probing	Cleaning	Jumping	Walking
A07781-3LB	4	0.8 ± 0.9	0.8 ± 0.3	0.0 ± 0.0	0.5 ± 1.3
A07781-4LB	5	5.4 ± 2.9	0.6 ± 0.5	0.0 ± 0.0	1.2 ± 0.5
A07781-10LB	9	4.8 ± 1.3	0.6 ± 0.3	1.4 ± 1.0	4.3 ± 1.7
PALB3016-3	2	1.5 ± 1.1	2.5 ± 1.8	2.0 ± 1.4	3.5 ± 1.8
Payette Russet 5096	2	0.5 ± 0.4	0.5 ± 0.4	0.0 ± 0.0	0.5 ± 0.4
Western Russet 6097	10	1.5 ± 0.6	0.0 ± 0.0	0.0 ± 0.0	1.0 ± 0.7

Table 2
Mean ± SEM duration in seconds (s) of psyllid behaviors on different potato varieties.

Variety	n	Tasting/Probing	Cleaning	Walking
A07781-3LB	4	31.0 ± 26.8	36.4 ± 19.2	64.4 ± 76.5
A07781-4LB	5	180.0 ± 64.5	52.9 ± 47.3	5.8 ± 6.7
A07781-10LB	9	182.0 ± 40.8	25.0 ± 13.3	66.5 ± 71.6
PALB3016-3	2	137.5 ± 97.3	64.4 ± 45.5	84.7 ± 76.9
Payette Russet 5096	2	0.2 ± 0.1	2.7 ± 1.9	2.2 ± 2.2
Western Russet 6097	10	173.3 ± 43.8	0.0 ± 0.0	8.8 ± 20.4

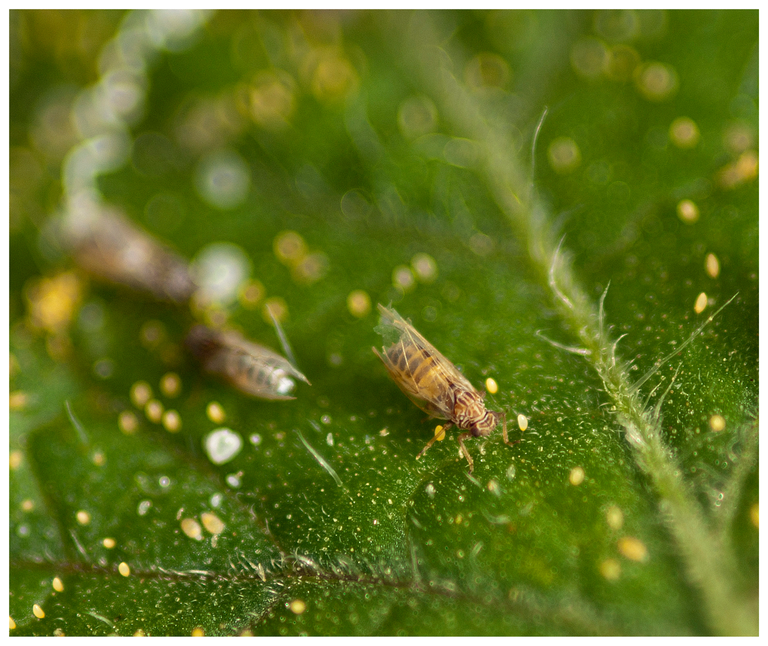

Fig 2. Adult *Bactericera cockerelli* on leaflet.
Photo: Austin Fife

Fig 3. Late instar nymph of potato psyllid.
Photo: Austin Fife

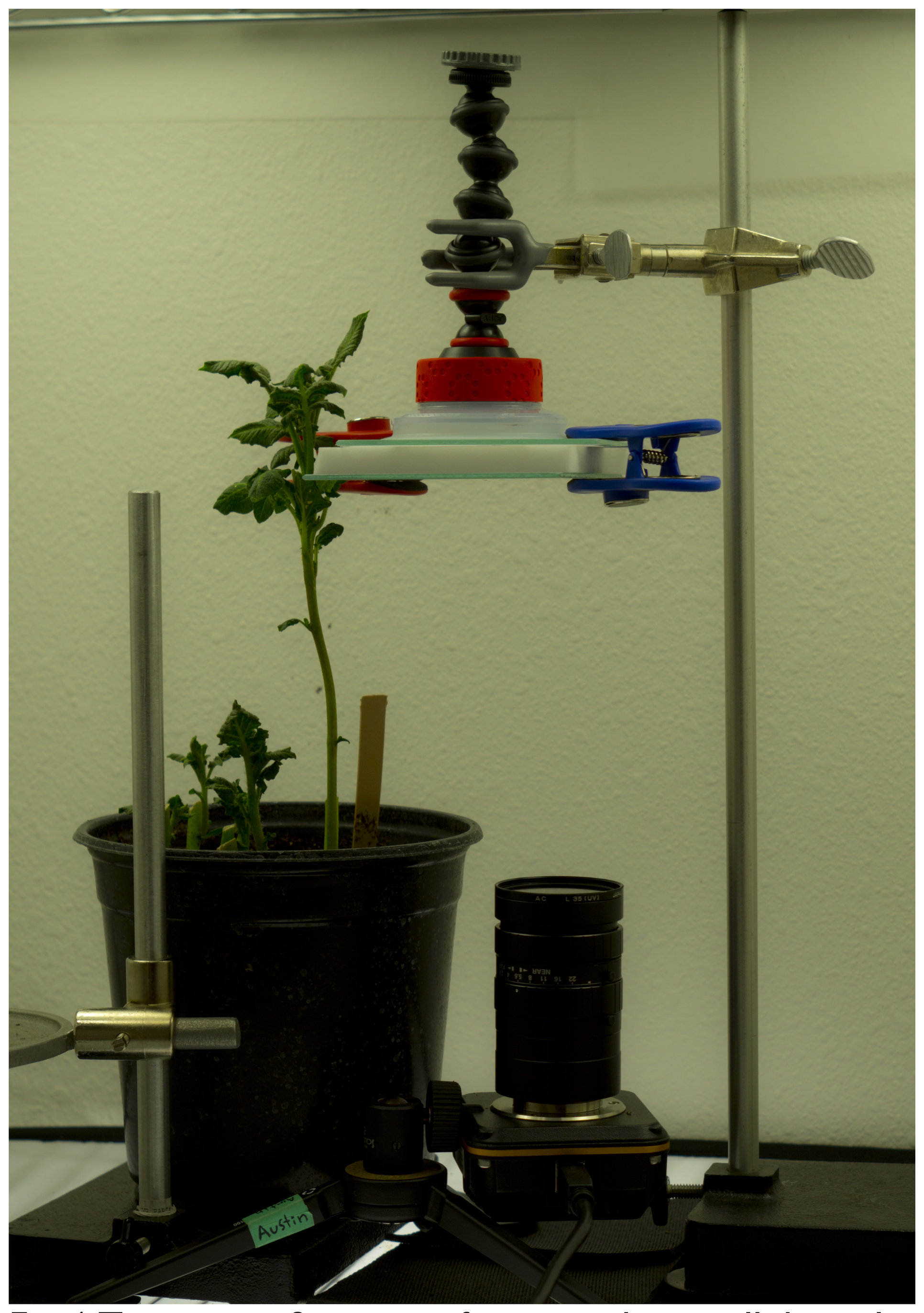

Fig 4. Testing configuration for recording psyllids on live plants. Photo: Austin Fife

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References:

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