



Screening field collected Lepidoptera larvae for new virus isolates

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INTRODUCTION

- Baculoviruses are suitable for organic farming and show a high level of safety for humans and non-target invertebrates.
- Few baculoviruses have been developed into biopesticides in Canada.
- Many brassica crops are grown organically in Canada (for example: cabbage, kale, broccoli).
- Three lepidopteran insects are major pests on these crops: *Plutella xylostella* (diamondback moth), *Trichoplusia ni* (cabbage looper), *Pieris rapae* (imported cabbageworm).
- Resistance development to biologically based insecticides such as *Bacillus thuringiensis* subspecies *kurstaki* and spinosad has reduced the number of products available to organic growers.

OBJECTIVE

To screen field collected lepidopteran larvae for baculovirus isolates that have the potential to be developed into biopesticide products.

METHODS

- Diamondback moth, cabbage looper, and imported cabbageworm larvae were collected from 17 farms throughout the southwest and interior of British Columbia in 2014 (figure 1).
- Collected larvae were separated by species and site and frozen.
- Frozen larvae were homogenized and fed to healthy 2nd instar larvae in leaf disk assays according to procedures developed by Dr. Imme Gerke and Dr. Jacques Drolet (outlined in figure 2).
- To date, assays have been completed with diamondback moth and those with cabbage looper are in progress.

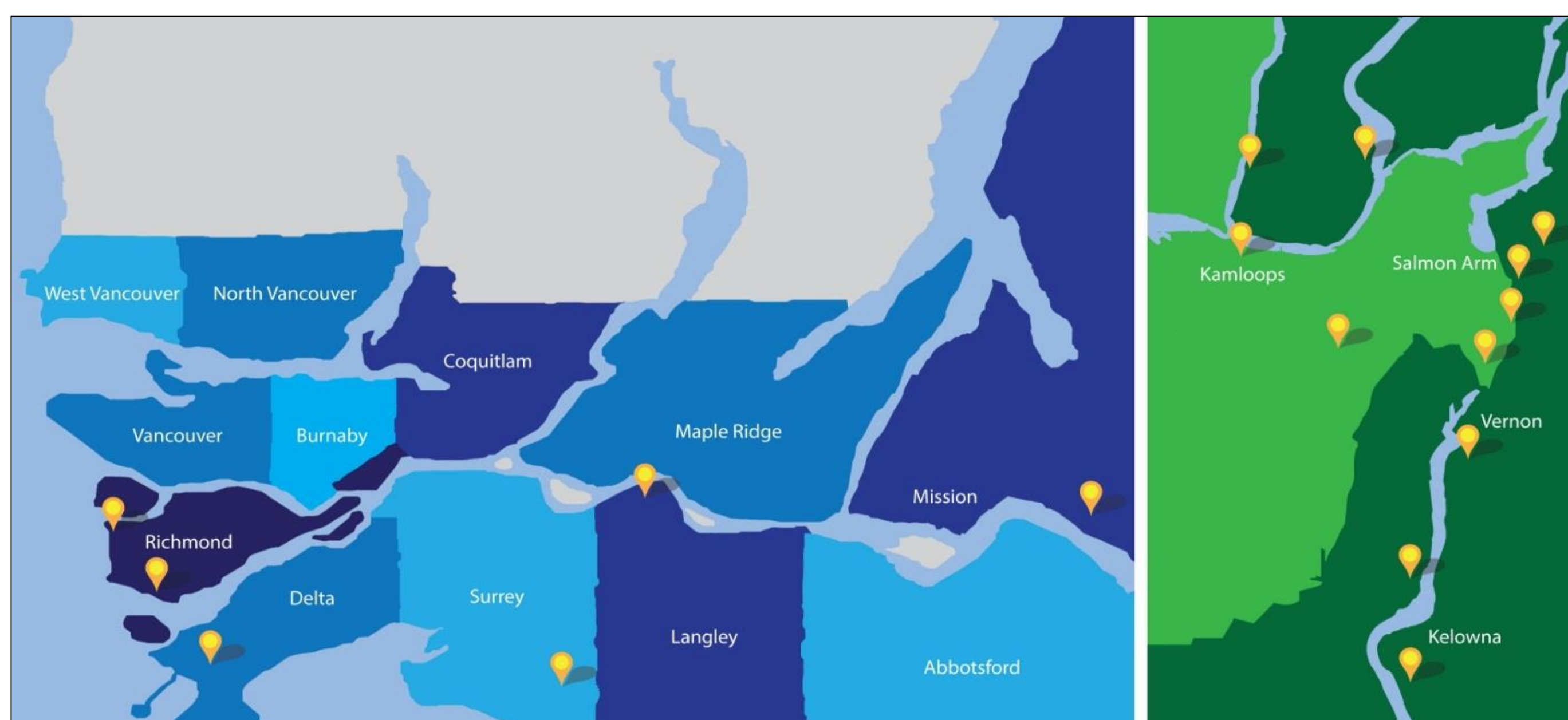


Fig. 1. Map of field locations where larvae were collected from in the southwest of BC (blue map) and the interior of BC (green map) in 2014.

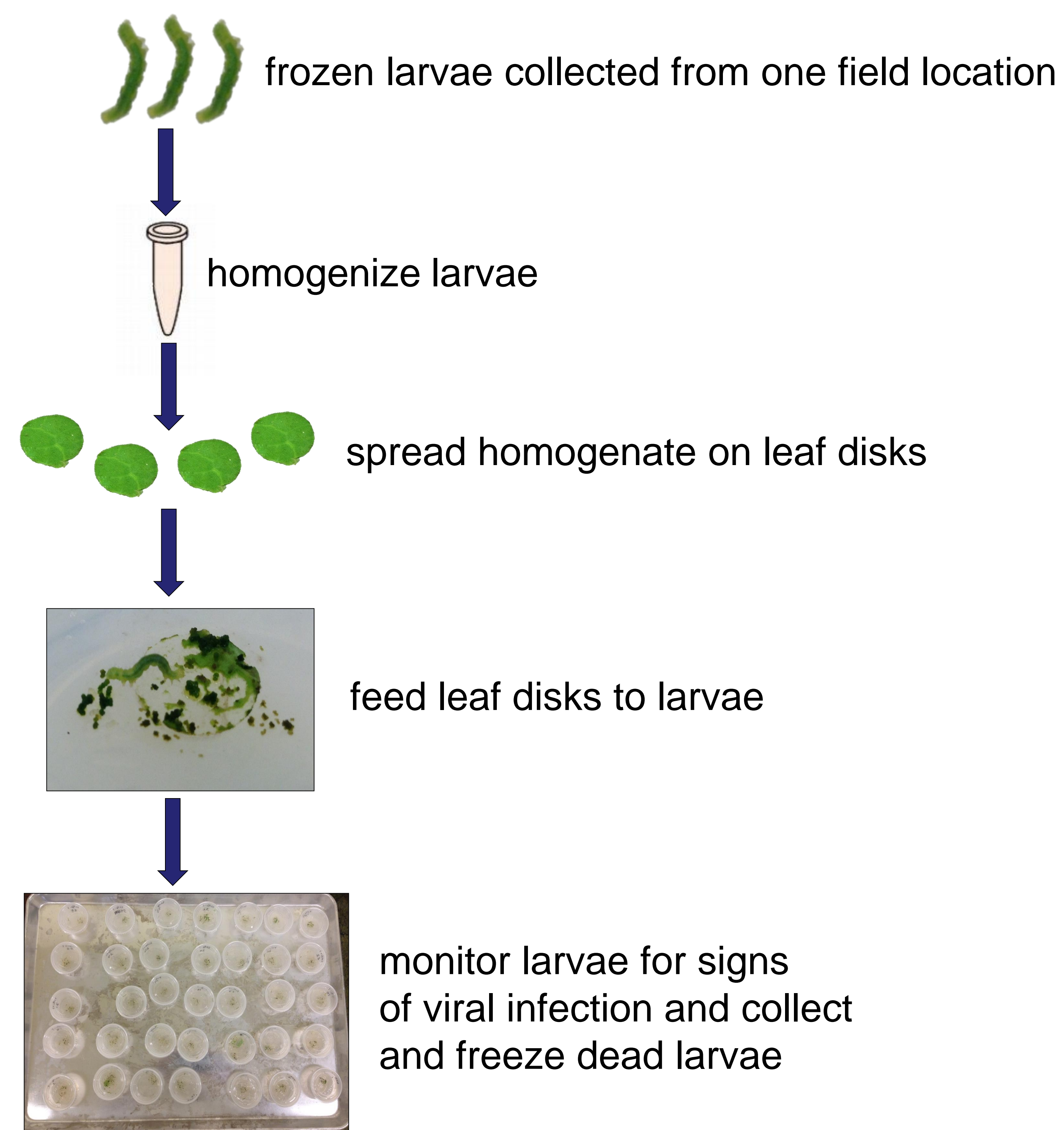
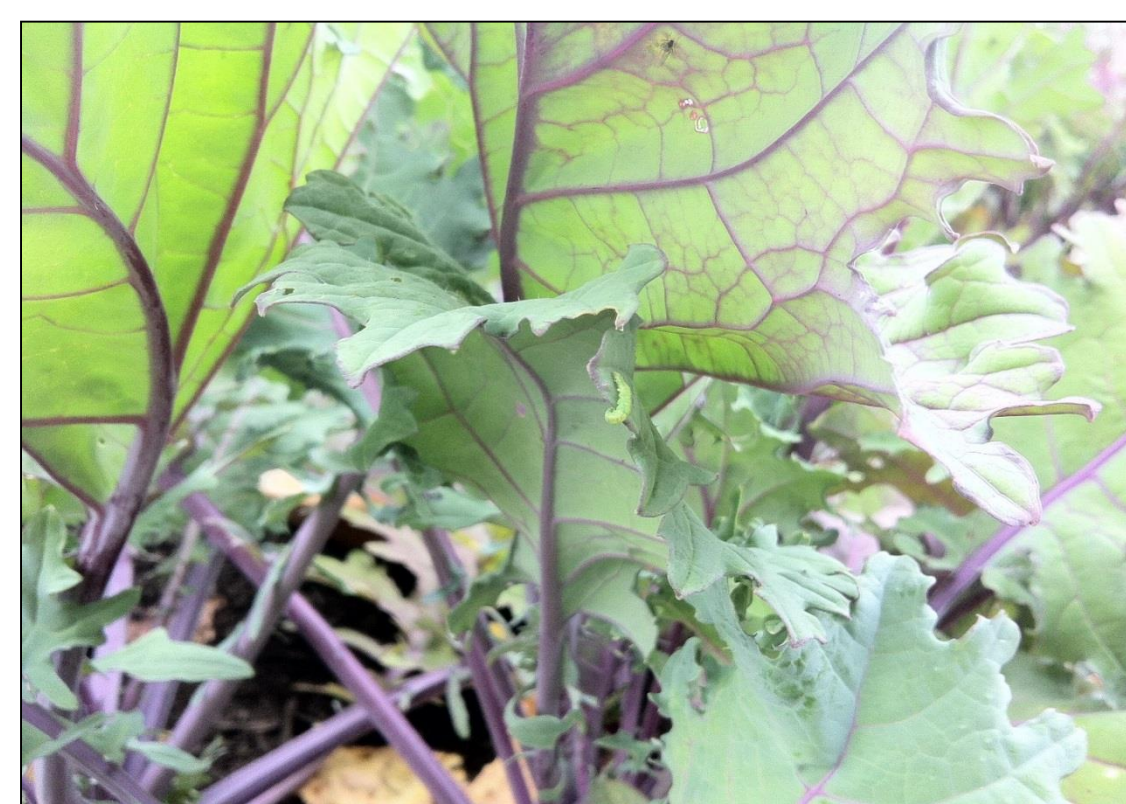


Fig. 2. Outline of the assay procedures used to screen larval samples for baculovirus isolates.

RESULTS AND FUTURE RESEARCH

- Mean assay mortality for diamondback moth larvae was high (52% southwest and 69% interior), however control mortality was high in many of these assays.
- Assays are in progress for cabbage looper samples and to date mortality is low in treated (8% southwest) and control samples.
- Currently we are examining cadavers under the microscope to determine if larval deaths are due to virus infection.
- To propagate further infections dead larvae suspected of viral infections will be fed to healthy larvae.
- Molecular tools will be used to confirm suspected viral infections.
- Field collections will be performed this summer in BC and additional screening trials will take place in 2016.
- Field trials with the greenhouse registered virus product, LOOPEX (Sylvar Technologies Inc.) will be performed this summer and in 2016 to determine its' suitability for the control of lepidopteran pests in brassica crops.

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