Field Season 2019

We sampled eight locations for weedy plant cover, pea aphids, and PEMV in Colton, Uniontown, Pullman, and Albion, WA. Non-agricultural sites were chosen based on discovery of a large-scale survey of PEMV in the 2018 field season. Each location had a pair of samples ~5km apart from each other in an agricultural and non-agricultural ecosystem. Traps we set out starting April 24, 2019 and full sampling started on April 27: we measured % cover in 5m transects of Hairy Vetch (*Vicia villosa*).We measured three attributes of aphid populations: Frist, we recorded rate of aphid arrival using passive pan trap sampling. Second, we used sweep netting to sample Pea and Vetch in agricultural and non-agricultural systems respectively. Third, we tested aphid in pan traps for PEMV using rtPCR, and if aphids >10 aphids were observed in sweep netting, we sampled one entire vetch or pea occupied by pea aphids and tested that plant tissue for PEMV as well.

To meet assumptions of time series models used for forecasting and intervention analysis, we sampled each location every 72 hours starting on April 27. Using a rotating 3 day schedule, we sampled on day 1 Nisqually Canyon (vetch), Wawawei Landing (vetch), Colton farm (pea), and Uniontown farm (pea). Day 2 we sampled east Pullman (vetch), Rose creek (vetch), Palouse Conservation Farm (pea), and Albion farm (pea). Day 3 plant and aphid samples were processed. Example monitoring calendar shown in Table 1.

Each visit to the location would entail the following sampling: count of pea aphids in pan traps, sweep netting of 5m transect of vetch or pea, growth stage of vetch on % cover transect. Growth stages included: sprouted vetch, mature vetch, vetch flowering, % of flowers, producing seed, and evidence of seed release.

Example monitoring calendar for April 30 – May 12.

A screenshot of a computer

Description automatically generated

Fig. 1. Dots indicate locations with observed and uncontrolled Pea aphid outbreaks in 2018, with color indicating dominant host-plant species in survey. We sampled 4 pairs of agricultural and non-agricultural ecosystems. These locations are highlighted with purple arrows.

