Fig S1. Yearly aphid counts per pan trap over the duration of the “Aphid Tracker” network at University of Idaho (https://www.legumevirusproject.org/). The arrival of alate aphids on pan traps indicates relative pest pressure for the region, which 2014 and 2018 having significantly higher densities than any other years on record (Negative Binomial GLM for year effect on cumulative aphid counts weighted by # of sampling events, *P* < 0.001, χ2 = 59.735).

Chart, scatter chart

Description automatically generated

Fig S2. Example 20m transect from a pea field edge (Ryan Road site). First, plant community composition was determined by identifying each plant to species. The coverage of each plant species over the transect was measured to the nearest cm. Aphid sweeps were completed after flags were removed from transects. Legume plant tissue was flash-chilled in liquid nitrogen and stored in a cooler.

A picture containing outdoor

Description automatically generated

Fig S3. Large hairy vetch population on cattle-grazed slope west of Clarkston, WA along the Snake River. Flowering populations of this putative host plant are frequently found in disturbed areas. In addition to our structured sample of 60 locations, moderate to high densities of pea aphids were anecdotally observed along road sites in these hosts during the 2018 summer season.

A field of purple flowers

Description automatically generated with medium confidence

Fig S4. Example detection assay for PEMV (electrophoresis gels based on amplification product of PEMV-coat protein). All visible bands were scored as ‘virus presence’ in recipient columns of plants, while no sign of a band was scored as ‘virus absence’. In this case, samples from sites in lanes 3, 5, and 9 had PEMV (Wawawai Park and two of the nearby opportunistic samples on Wawawai Park Road). The remaining lanes between 1-9 were negative. 11 is the negative control (uninfected plant tissue), 13 is a positive control (infected plant tissue from greenhouse colonies), and 14 is DNA ladder for reference. Lanes 10 and 12 were empty and not loaded with any sample.

A picture containing text, wall, white, door

Description automatically generated

1 2 3 4 5 6 7 8 9 10 11 12 13 14