

## **Exploring the Interplay of EPG, PSbMV, and Aphids as Vectors in Pea Plants**

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This study investigates plant-host-vector interaction using Electrical Penetration Graph (EPG) patterns of pea aphids during feeding on healthy and plants infected with Pea Seedborne Mosaic Virus (PSbMV). Recent studies have shown considerable change in infected host plant physiology which in turn changes their insect vector behavior. EPG has been used as a technique to investigate the fine-scale feeding behaviors of hemipterans such as aphids where and how long it takes to feed in different plant tissues. One of the viral pathogens in pulse crops, specifically peas, is the Pea Seedborne Mosaic Virus (PSbMV), known to be transmitted non-persistently by aphids. Aphids are subjected to a pre-starvation regimen before being attached to gold wire using conductive silver paint which is subsequently connected to a brass pin that is linked to an amplifier. The connected aphids are strategically positioned on individual plants within a Faraday cage. Signals received from the EPG (Electropenetrography) monitor are precisely captured during 8-hour recording breaks. A minimum of 15 aphids per treatment undergo recording. The EPG signals are undertaken detailed analysis utilizing the A2EPG software, with subsequent semi-automated parameter calculations performed using Microsoft Excel-based 'Saria' spreadsheets. The goal is to detect the potential correlations between aphid-feeding activities in virus-infected and non-infected plants evaluating the waveforms and duration of electrical penetration.