

Host range testing of xylem feeders by measuring real time feeding

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We investigated whether the Electrical Penetration Graph (EPG) technique could be used as a rapid method to determine the host-range of invasive xylem feeders. The New Zealand endemic xylem feeder *Carystoterpa fingens* (Hemiptera: Aphrophoridae) was studied as a model insect. Stylet penetration and real time feeding of adult *C. fingens* was monitored on EPG in the laboratory to assess whether 17 plant species belonging to 15 families were hosts. EPG waveforms indicating xylem ingestion were categorized based on their amplitude, frequency, voltage level, and electrical origin. Four plant species on which *C. fingens* spent less than 12% probing and less than 2.3% for xylem ingestion of the total recording time were ranked as non-host plants. Five additional EPG parameters (duration of xylem ingestion as a percentage of probing period, number of xylem ingestion events, length of the longest xylem ingestion event, duration from the beginning of the recording to the first probe, and the time between the first probe and the first xylem ingestion) were measured from the remaining 13 plant species. Plant species with the longest duration of xylem ingestion with the longest xylem ingestion events were deemed to be host plants. Host plant acceptance was also compared by the time taken to start probing and to reach the xylem. Accordingly 17 plant species were ranked from 'hosts' to 'non-hosts' of *C. fingens*.

