RELIABILITY OF EPGs IN ANSWERING PLANT-INSECT QUESTIONS

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Studies on interactions between plants and aphids – and other insects with piercing-sucking mouthparts – are now rather wide spread using the electrical penetration graph (EPG) technique. Some reflections and prospects on this method and how to use its results may be appropriate therefore. The technique has shown to be a valuable bioassay to predict what occurs under 'natural conditions'. However, we mostly use potted plants grown in greenhouses while insects are tethered and put on plants without normal host location and selection and without free take off possibilities. EPGs are recorded in half dark laboratories without normal daylight periods. So, we seem to assume that all this doesn't matter or if it would, our control plants or insects are dealing with the same conditions. In summary, these are EPG experiment design aspects.
Another aspect of concern is that after EPG recording and waveform analysis, the data are processed into EPG variables (or parameters), which are used as indicators to support answers to our research questions. In scientific journals and meetings we use these variables to communicate. However, it seems that different authors are using the same variable name but use a different definition and calculation, which causes miscommunication. EPG experimental design aspects and EPG variables will be discussed and examples will be presented of design errors and why variables should be standardised.