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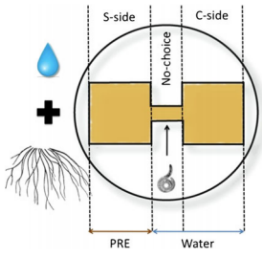
Soil Bioassay



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Protocol status: Other
The protocol is developed based on literature and has not been tested yet.

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Abstract

Neuropeptide-like proteins (NLPs) are a type of neuropeptides that influence and regulate the neuronal behaviour of the nematodes. Altering of the levels of the NLPs lead to a changed behavioural output. With this soil bioassay experiment, the behaviour of the *Globodera pallida* towards the root exudate of the potato plant is studied in the presence and absence of a NLP secreting biofilm. This chemotactic experiment is retrieved from the paper of Farnier and et.al. from 2012.

CITATION

Farnier, Kevin, Bengtsson, Marie, Becher, Paul G., Witzell, Johanna, Witzgall, Peter, Manduríc, Sanja. (2012). Novel Bioassay Demonstrates Attraction of the White Potato Cyst Nematode Globodera Pallida (Stone) to Non-volatile and Volatile Host Plant Cues. J. Chem. Ecol (2012).

LINK

10.1007/s10886-012-0105-y

Image Attribution

https://www.researchgate.net/profile/Kevin_Farnier/publication/224819964_Novel_Bioassay_Demonstrates_Attraction_of_the_White_Potato_Cyst_Nematode_Globodera_Pallida_Stone_to_Non-volatile_and_Volatile_Host_Plant_Cues/links/0912f51108e7676a99000000/Novel-Bioassay-Demonstrates-Attraction-of-the-White-Potato-Cyst-Nematode-Globodera-Pallida-Stone-to-Non-volatile-and-Volatile-Host-Plant-Cues.pdf

Soil Bioassay

1 Two medium sized, 10 L tubs of top diameter approximately 35 cm are to be used for this experiment which will assess the responses of second stage infective juveniles responses to chemical stimuli. One is to contain a young potato plant cultivar which secretes the neuropeptide-like proteins (NLPs) from the biofilm surrounding the roots. The other, to contain a regular young potato plant cultivar without the NLP secreting biofilm as a control set up. The stimuli, Potato Root Exudate (PRE) is secreted by the root of the potato plant. This side of the tub is hereafter refered to as the stimulus side (S-side).

2 Second stage juvenile nematodes were released in the centre of the tub in a 10 µL droplet of water, about 15 cm away from the S-side. The number of nematodes in this drop will not be determined.

2.1 Tubs will be kept in darkness at room temperature, and nematodes will be given 00:30:00 to choose their direction of movement.

3 After 00:30:00 , a section of the soil is to be lifted and removed from the tub with a razorblade and a spatula.

3.1 The J2s will be recovered by re-suspension and separation in 5 mL of water in 12 mL vials.

3.2 The supernatant above each section of soil will be poured into a counting-chamber for determination of the number of J2s under a Leitz stereo microscope. Nematodes recovered from the S-sides of tub will be considered to have been attracted, nematodes in the central section will be considered to have expressed no-choice, and nematodes around the spot of their release will be considered not attracted to potato metabolites.

4 Since the number of J2s inoculated into the tub will not be known, the proportion of J2s found in the different sections is to be calculated based on the total number of nematodes recovered.

5 The experiment will be repeated for each batch of nematodes.

Citations

Farnier, Kevin, Bengtsson, Marie, Becher, Paul G., Witzell, Johanna, Witzgall, Peter, Manduríc, Sanja.. Novel Bioassay Demonstrates Attraction of the White Potato Cyst Nematode Globodera Pallida (Stone) to Non-volatile and Volatile Host Plant Cues
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