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A Method for Collection of Root Exudates from Coconut Palm

The usual methode employed for collection of root exudates from green plants under sterile conditions, has been by growing plants in suitable glass containers containing filter paper, sand or gravel[1,2]. However, such methods can be used only for annuals and are not suitable for perennials for obvious reasons. The present paper deals with a process tried successfully to collect root exudates of coconut palm under sterile conditions.

Fig. 1.

Soil from a portion of the bole region of the palm is first removed up to a convenient

depth to expose the root system. Four to ten vigorously growing roots are then traced up to the tip without injuring them. Soil particles adhering to the root for a length of about 6″–10″ from the tip are then washed carefully using a jet of distilled water. The root portion is then surface-sterilised with 0.1%—mercuric chloride solution and immediately washed several times with sterilised glass distilled water.

Each of the surface-sterilised root is then inserted asceptically into a pyrex glass test tube containing bits of Whatman No. 1 filter paper, previously sterilised at 15 lb. pressure

Fig. 2.

for 10 min. The root tip is put in close contact with the filter paper bits, and the mouth of

the tube is then closed by sterilised cotton. Each such connection is covered by a polythene bag and the entire unit buried in soil.

Four to seven days later the roots are cut above the mouth of the test tube and removed to the laboratory. The filter paper bits are then transferred to a known volume of 70% ethyl alcohol using a glass rod and left undisturbed for 2–3 hours. The elutes are then filtered through a Seitz filter and the filtrates evaporated to dryness in vacuum. The dried residue may now be taken in a suitable solvent for analytical studies.

The efficacy of this method was studied by conducting 13 such trials. Every time 3–6 palms were studied connecting 4–10 roots from each palm. Root portions connected as per the above method, were plated in agar medium to check for possible contaminations. Only 4 out of the 16 connections made in the initial attempt were found to be contaminated. However, in the later attempts it was found that by careful manipulation of the various steps contamination could be avoided. (Test-figs. 1 and 2 illustrate technique).

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A. Ramadasan
K. Radha
K. J. Michael

Central Coconut Research Station,
Kayangulam.
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