

OIL PALM TISSUE CULTURE TRACKING SYSTEM (OPTRACKS): VERSION 1

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In vitro propagation of oil palm involves the exploitation of rapid multiplication and regeneration potential of plant cells in the laboratory to generate large numbers of clonal planting materials. This process has many stages and involves selection of explant, media composition, environmental conditions and personnel. These may introduce variables into the system and require an efficient method of tracking the records especially when dealing with large quantities of cultures and plant materials.

DATA RECORDING MANUAL FOR OIL PALM TISSUE CULTURE

Currently, all data entries are done manually on paper and kept in files for future references. Data for each ortet, from ortet selection to field testing, need to be properly recorded for tracking purposes. Furthermore, there are several stages with a lot of input variables that need to be recorded and monitored. This manual process is prone to human error. The number of ortets sampled and clones created keep on increasing making the recording process increasingly complicated. The process of manual data recording and tracking is very time consuming and tedious. This limitation will affect overall planning and efficiency of the current system.

OBJECTIVE

To develop a software for computerized audit trail and bar coding to enable monitoring and recording of oil palm tissue culture materials.

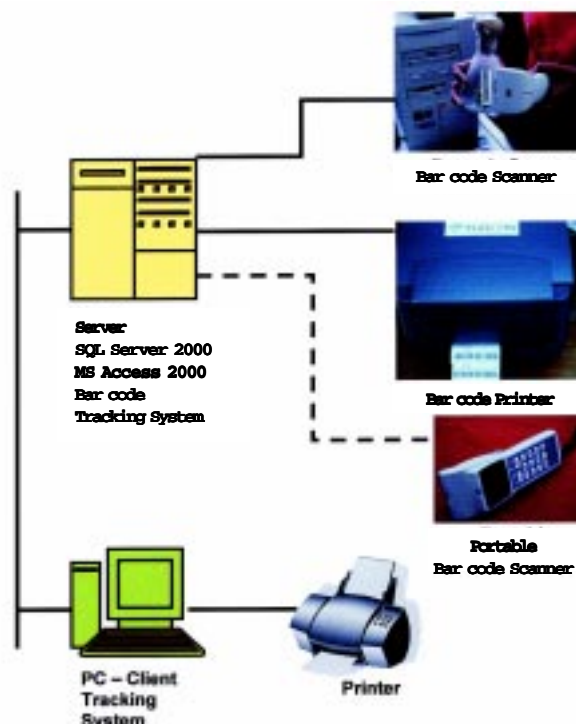
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The scope of this Oil Palm Tissue Culture Tracking System (OPTRACKS) is to perform tracking on the

tissue culture process. The system keeps the detailed information on each step of the tissue culture process which involves ortet introduction, callus formation and multiplication, embryogenesis, embryoid multiplication, shoot development and rooting of plantlets, hardening and conditioning in nursery (Figure 1).

A bar code label, which contains the production batch and sequence number (Anon, 2003), is printed via the proposed Barcode Printer and pasted on the petri dish, jar or flask and finally, nursery plant in each stage of tissue culture process where appropriate. Using a bar code scanner attached to a workstation,

HARDWARE CONFIGURATION REQUIRED FOR OPTRACKS VERSION 1



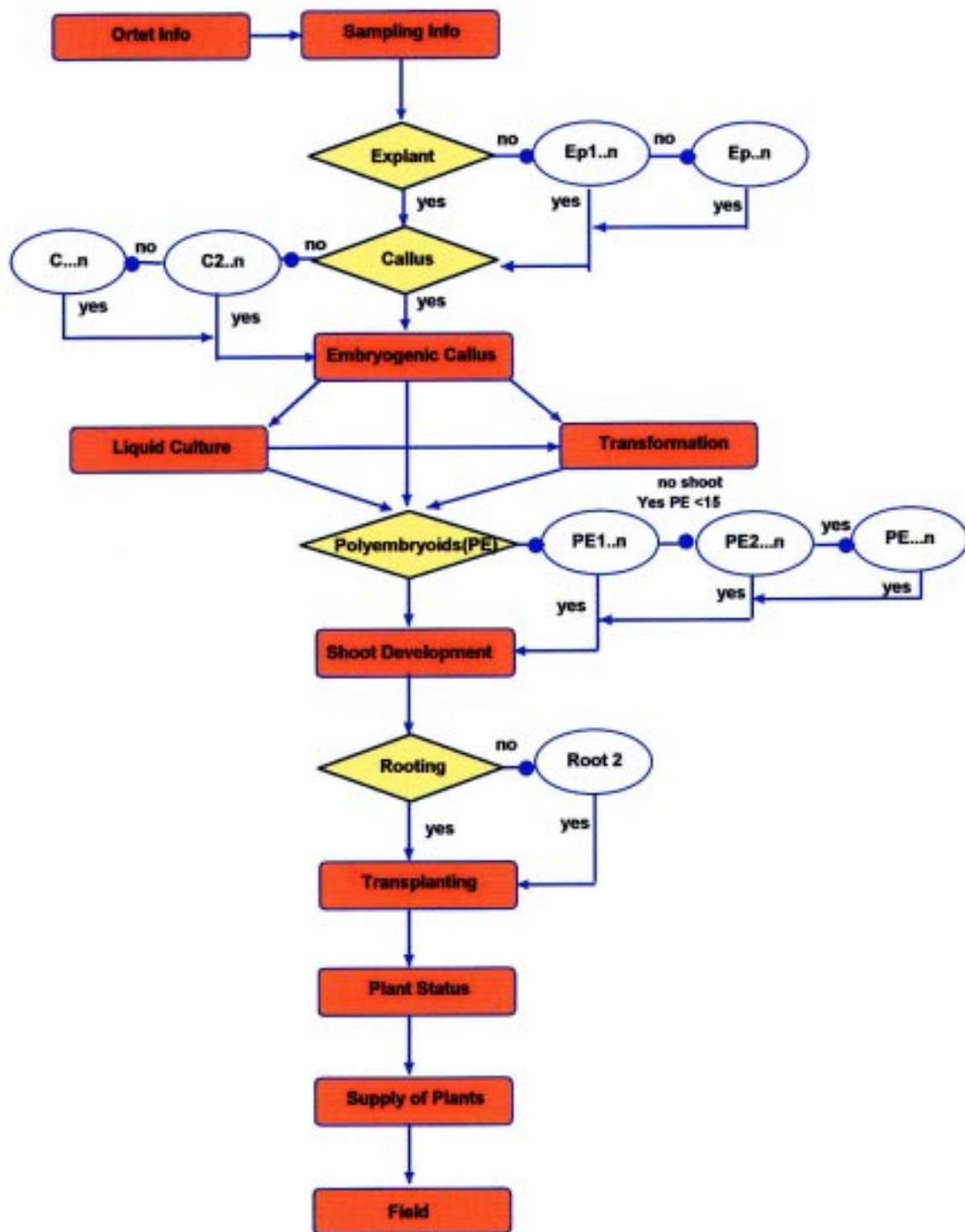


Figure 1. Process flow in oil palm tissue culture system at MPOB.

the operator can scan the bar code and the system will display the detailed information for that particular stage of culture, e.g. explant, callus, embryoid, shoot, rooted plantlet or nursery plant (Figure 2). The system also provides facilities for laboratory managers and research scientists to generate information and reports for the management of a tissue culture laboratory, and subsequently for research and development

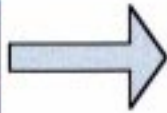
purposes. The system therefore assists efficient running and management of an oil palm tissue culture laboratory (Yasmin *et al.*, 2000).

The system consists of the following functionalities:

- security login system;
- maintenance of tables;
- inquiry of cultures or planting materials;



User entering the system



OPTRACKS screen



Entering relevant data for particular stage of cultures.



A bar code label is produced and printed via a bar code printer and pasted on petri dish, jar, flask, nursery or field palm.



Tracking by using scanner on bar code label.



The system will display the detailed information for particular stage of cultures.

Figure 2 . Process flow in OPTRACKS by using bar coding system.

- report analysis; and
- housekeeping system.

Some applications and usefulness of this system include:

- a. tracking information on tissue culture process;
- b. quality control;
- c. planning and marketing strategies; and
- d. highlighting information for commercial exploitation.

REFERENCES

ANON (2003). *Bar Coding for Beginners*. Symbol Technologies, Inc. p. 1-8.

YASMIN, O; NOORLIDA, B; ZAINUDIN, M; NORZULAANI, K and TAN, H (2000). Data tracking system for monitoring of *in vitro* cultured plants. *Proc. of the 12th National Biotechnology Seminar*. 12-15 November 2000. p. 443-444.

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