

DATE:

NAME:

THE TOPIC:

**Microtuberization of potato**  
**(Influence of sucrose concentration and the cultivar)**

Microtuberization is valuable method for potato propagation, storage and distribution. Potato tubers are produced *in vitro* from axillary meristems along the shoot. Microtubers are modified stems and contain numerous shoot dormant meristems. Storage at low temperatures for several weeks can break dormancy of microtubers.

**MATERIAL:** intact shoots from established potato shoot cultures of different cultivars

**MEDIA:**

Maintenance of culture: M-S basal salts medium supplemented with sucrose 20 g.l<sup>-1</sup>, pH 5.7 (M-S)

Tuberization medium: M-S basal salts medium supplemented with sucrose 80 g.l<sup>-1</sup>, pH 5.7 (MS-8)

**PROCEDURE:**

1. Transfer tissue culture vessels containing the cultures from the culture room into a laminar flow hood.
2. Prepare the vessels containing fresh medium and the tools (forceps, spatula, scalpel, etc.)
3. Pass the opening of the vessel through the flame.
4. Remove potato shoots from culture vessels and transfer them to a sterile Petri dish.
5. Cut about 2-cm-long microcuttings with shoot tips intact and inoculate them to the maintenance M-S medium.
6. Divide the rest of shoot to one-nodal segments and position the segments vertically by embedding the cut end into the tuberization medium. Note the order of segments of the shoot.
7. Pass the opening of the vessel through the flame carefully. Cap the vessels and label.
8. Cultivate in the phytotron under the light (cool white fluorescent light, 150  $\mu\text{mol.m}^{-2}.\text{sec}^{-1}$ , short day photoperiod = 8 h light/16 h dark) at 21°C for 2 - 3 weeks.

**EVALUATION**

Control the contamination of the culture in the following cultivation period.

Record the shape and the colour of the microtubers produced per cultivar.

Note the influence of the nodal segment position to the microtuber formation. Explain the results.

**LITERATURE:**

1. McCown, B.H. and P.J.Joyce. 1991 Automated propagation of microtubers of potato. In: I.K.Vasil /Ed./, *Scale – Up and Automation in Plant Propagation*, pp.95 – 109. Academic Press, San Diego.
2. Jackson S.D. (1999): Multiple Signaling Pathways Control Tuber Induction in Potato. – *Plant Physiol.*, **119**: 1-8.