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IN VITRO PROPAGATION OF PERSEA INDICA

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OPSOMMING

P. indica *is suksesvol in vitro vermeerder. 50% sukses is behaal met die oorplant van 4 weke oud plantlies in potplandgrond*

SUMMARY

P. indica *has been successfully propagated in vitro. A 50% success rate has been obtained with the transplantation of 4 week old plantlets in putting soil.*

INTRODUCTION

Persea indica is very susceptible to *Phytophthora cinnamomi* and is a useful plant In research on avocado root rot. *P. indica* Is not indigenous to South Africa and seed is unobtainable. For root rot research, plants which are produced vegetatively have considerable advantages over seedlings because genetic variations are reduced.

This paper reports on the successful *in vitro* propagation of *P. indica.*

MATERIALS AND METHODS

Shoots (3 to 5 cm) were taken from one year old *P. indica* seedlings growing in the greenhouse. Shoots were sterilized for 15 minutes in a 1% sodium hypochlorite solution to which Tween was added as a wetting agent. This was followed by two successive rinses in sterile distilled water. Each shoot was then cut into a tip cutting (5 mm) and one or two one node cuttings, depending on the length of the shoot. Cuttings were placed on a modified Murashige and Skoog (1962) medium (MS). The basal medium (BM) contained the following major elements, half strength (MS), minor elements full strength (MS), FeNaEDTA (25 mg/ℓ), sucrose (30 g/ℓ), myolnosltol (100mg/ℓ), $NaH_2PO_42H_2O$ (170 mg/ℓ, adenine sulphate (80 mg/ℓ), ascorbic acid (25 mg/ℓ), glbberellic acid (1 mg/ℓ), glycine (2 mg/ℓ) and pyridoxine HCI, thiamine HCI, nicotinic acid and pantothenic acid (calcium salt) all at 1 mg/ℓ. For the initial culture and subsequent multiplication 2 mg Nbenzyladenine (BA) was added to 1ℓ BM (Medium 1). Rooting was induced on BM plus 2 mg/ℓ 3-indolebutyrlc acid (Medium2). For both media the pH was adjusted to 5,8. Cuttings were cultured in 25x150 mm test tubes containing 15 ml medium on a filter paper bridge for support. Cultures were incubated at 24°C with a photoperiod of 16 h. When roots were well developed plantlets were transferred to potting soil in plastic bags and placed in a mist bed for 30 days before transfer to the

greenhouse.

RESULTS

Both the tip cuttings and the axillary buds of the one node cuttings developed into shoots and reached a height of 6 cm within five weeks. At this stage little or no proliferation was observed. Callus sometimes developed at the base of the cuttings. These shoots were again divided into tip and one node cuttings and again sub cultured on medium 1. Axillary buds developed and up to 12 side shoots were obtained from each cutting. Growth continued even after seven subcultures but the multiplication rate decreased slightly.

Explants transferred to medium 2(BM + IBA) started to root within three weeks. Within 7 weeks 65% of the cuttings were rooted. The roots developed more readily on the stronger shoots. Weak shoots rooted better after an additional culturing on BM without any growth substances prior to transfer to medium 2. Strong piantlets with well developed rootlets were ready for planting In pots within 4 weeks. A 50% success has been obtained.

CONCLUSION

Tissue culture of *P. indica* was done successfully and rapid propagation has been achieved. Using this method a 100 fold proliferation within 4 months is possible. The most advanced *P. indica* plants ex tissue culture are at present 80 cm high and grow very well in potted soil.

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