

ABSTRACT

**Studies on *Artocarpus altilis* with Emphasis on
in vitro Propagation****Judy Ann Rouse**

This study was undertaken to develop a protocol for the micropropagation of *Artocarpus altilis* (Park.) Fosberg in particular the unseeded form of the species, breadfruit. Factors which influenced the *in vitro* development and proliferation of shoots, initiation and development of roots, and the establishment of *in vitro* cultured plantlets to *ex vitro* conditions in the greenhouse were studied, using breadnut seedling material (shoot tips and nodes). The results were applied to mature breadfruit material.

The addition of cytokinin was found to enhance shoot development from shoot tip and nodal explants of breadnut. Zeatin was the most effective cytokinin. There was an increase in proliferation with increasing zeatin concentration up to 0.5 mg l^{-1} . The total ionic concentration of the medium was also found to be important, at the multiplication and maintenance stage. A medium with a reduced total ionic concentration (N_3ONH_4 , Margara, 1978) when compared with MS(1962) was found to give best shoot growth.

A small percentage of mature shoot tip explants of breadfruit developed shoots *in vitro*. Shoot development and proliferation from shoot tip and nodal explants of these *in vitro* breadfruit shoots was possible on N_3ONH_4 (Margara, 1978) macronutrient formulation, supplemented with zeatin 0.5 mg l^{-1} .

Rooting of *in vitro* produced shoots of breadnut, and breadfruit was observed on multiplication medium and growth regulator free medium. IBA enhanced *in vitro* root formation on breadnut shoots but did not allow rooting of breadfruit shoots. *Ex vitro* rooting of breadnut microcuttings was possible in vermiculite or jiffy pellets under humid conditions similar to that used to harden *in vitro* plantlets of breadnut and breadfruit.

The study indicates that it is possible to micropropagate breadfruit. Multiplication rates higher than those obtained through macropropagation can be expected. The feasibility of using the method on a commercial basis is discussed.