ABSTRACT

Aspects of the reproductive biology of Myristica fragrans Houtt., were investigated. Floral development from bud initiation to abscission, if unfertilised, takes 1-1½ months, being longer in the female than in the male flower. The flowers are superficially similar and are borne singly or in inflorescences of varying complexity. Female floral production is always synchronised with male flower production.

The flowers are said to be entomophilous; this is supported by isolating experiments of an entire female tree, of branches and of individual flowers. Only exposed female flowers and those which were hand pollinated with nutmeg pollen and re-enclosed, ever developed into fruits. These results suggest not only that pollination is necessary but that it is specific for fruit development.

The sub-basal ovule is usually anatropous, bitegmic and crassinucellate; the single archesporial cell does not function directly as the megaspore mother cell but it eventually gives rise to a monosporic female gametophyte of the Polygonum type. A hypotase is present. Fertilisation is porogamous; the embryo is of the Crucifer type; the endosperm is initially nuclear.

The fruit is a fleshy legume usually containing a single, large, arillate seed with ruminate endosperm; occasionally two seeds are present. All seeds examined contained embryos. The germination percentage is high, 75 per cent; germination occurs within 4-6 weeks, sometimes longer. It is mesogeal, the cotyledons serving as a haustorium. The anatomy of the embryo and seedling is described.

These studies indicate that neither parthenocarpy nor polyembryony occurs and it is recommended that fruit production can be improved by increasing the number of male trees in a population to 10 per cent.