

A histological study of oil palm (*Elaeis guineensis*) endosperm during seed development

ABSTRACT

Information on histological features of oil palm is scarce, especially on seed development. This study aims to examine the cell structure and anatomy of developing oil palm seed. The seeds were analysed by histochemical technique and light microscopy. At early developmental stages, a vacuole fluid-filled endosperm was formed. As the seed developed further, the enlargement of the endosperm size was observed accompanied by cellularisation. Cells were formed from the periphery towards the centre of the endosperm. Accumulation of storage reserves within the cells started at week 10 after anthesis. Polysaccharides were stored in the form of thickened walls whilst lipid and protein were stored in the cytoplasm. At late developmental stages, the endosperm cavity was fully cellularised and storage reserves accumulated within the entire cell. A small cylindrical embryo was seen embedded within the massive endosperm tissue. The endosperm functions as a nutrient reservoir for the embryo. This histological study of developing oil palm seeds provides information on the nature and anatomical changes in endosperm tissues as well as shedding light on the growing points of seed development.

Keyword: Morphology; Embryo; Zygotic embryogenesis; Tenera palms; Light microscopy