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Studies on the pollen development of Cocos nucifera L. cv Sri Lanka Tall (Coconut variety 'Sri Lanka Tall') for haploid culture

Production of double haploids through anther and pollen culture has a considerable potential for replacing conventional breeding programs in coconut. The developmental stage of pollen is a critical factor in androgenesis. Routine cytological examination of pollen for determining the correct stage for culture is tedious and time consuming. In the present study a correlation between pollen developmental stage and the age of the spadix in terms of Weeks Before Splitting (WBS) was established for practical convenience of anther and pollen culture. Results are summarized in the Table.

Age of Spadix (WBS)	Description of developmental stage
8	Microspore mother cells (MMC)
7	Isolated MMCs and tetrads after meiosis
6	Released oblong shaped microspores in early uninucleate stage
5	Spherical shaped microspores
4	Microspores with vacuoles and thick exine in mid uninucleate stage
3	Spherical microspores with distinct nucleus in late uninucleate stage
2/1	First pollen mitosis
1/newly open	Binucleate pollen grains with internal deposits.

Table 1: Stages of pollen development in relation to age of the spadix (WBS) in coconut

The late uninucleate stage which is reported as the most suitable stage for androgenesis, could be obtained from three WBS spadices of Sri Lanka Tall coconut whereas it was shortened by one week during severe drought conditions.