THE FLORAL ANATOMY OF ENSETE SUPERBUM (ROXB.) CHEESM.

V. D. TILAK* AND R. M. PAI**
(Communicated by Prof. V. Puri, F.A.SC.)
MS received 22 April 1974; after revision 9 September 1974

ABSTRACT

The floral anatomy of Ensete superbum is described in detail. Anatomical and ontogenetical evidence has been discussed in regard to the appendicular nature of the inferior ovary. The extension of the carpellar ventrals into the style is an important anatomical feature. The condition of the nectary is discussed. Anatomical evidence supports Schumann's interpretation of the perianth. Reduction of the androecium marks a significant deviation from the rest of the studied families of the Scitamineae except the Strelitziaeae in that the posterior member of the inner staminal whorl is aborted.

INTRODUCTION

In the earlier contributions, observations on the floral anatomy of some genera of the Marantaceae—a family generally regarded as the most highly evolved amongst the Scitamineae (see Lawrence 1951) were presented (Tilak and Pai 1966, 1968, 1970). The Strelitziaeae, the Heliconiaeae and the Musaceae, considered primitive in the order, were simultaneously studied and the present paper is the first amongst the series and deals with the vascular anatomy of the flower of Ensete superbum (syn. Musa superba Roxb.).

MATERIALS AND METHODS

The flowering material was collected from Dhareshwar, N. Kanara, and fixed in F.A.A. Serial transverse sections of the paraffin embedded material (12–18 μ thick) were stained in crystal violet using erythrosin as counter-stain.

OBSERVATIONS

Female flower

The pedicel contains a central group of a large number of discrete vascular bundles surrounded by numerous peripherally disposed strands (figure 1).
Upwards, from the central group of strands, two traces in each of the postero-lateral and anterior and the antero-lateral and posterior positions shift out (figure 2). The outer bundle in the former positions is the median bundle of a sepal, whereas the inner one is the DOS bundle (carpellary dorsal-cum-outer staminal strand); the outer bundle in each of the latter radii is the median bundle of a petal while the inner one is the inner staminal strand (figures 2, 3). The rest of the central group of strands function as the placental bundles (figures 3, 4). The remaining bundles of the pedicel extend into the ovary wall with sporadic divisions.

The ovary is trilocular with axile placentation and the ovules arranged in two rows in each loculus (figure 4). The placental strands, in six groups at this level, bear branches to the ovules (figure 4). Within the axile tissue, a crater, irregular in outline and lined by glandular cells, is developed (figure 4). This is the nectary. It proliferates profusely upwards (figure 5). The placental bundles divide repeatedly and many of the resultant strands extend towards this nectary and terminate. The nectary assumes a tri-radiate shape upwards with one of the arms posterior and the other two antero-lateral (figure 6). It becomes closed in the centre forming three glandular clefts. These open at the base of the style (figure 7). The locules are continued upwards as three cavities (figures 5-7) which merge at the base of the style to form a tri-radiate stylar canal (figure 8).

The DOS bundles split into the constituent strands towards the tip of the ovary (figure 5). In some flowers, this division may occur much earlier. The posterior stamen is not represented in all the flowers examined. Its vascular bundle ends at the top of the ovary. The other androecial members are all staminodal (figures 7-8).

The many tiny bundles of the ovary wall divide repeatedly in their upward course: At the top of the ovary, most of them either end or merge with the others to reduce the number. A majority of these bundles extend into the perianth while a few enter the bases of the staminodes.

The style and the posterior tepalum are the first to separate out (figure 7). The style receives the three carpellary dorsals, the six residual placental strands (equal to the number of carpellary ventrals) and 12-15 tiny traces (figures 7-8). The stylar canal is lined by the transmitting tissue. The bundles within the style show fusion amongst themselves (figures 9-10). The carpellary ventrals merge to form three strands (figure 10). These end at the base of the stigma.