

SHORT SCIENTIFIC NOTES

A Note on Horns in Coconut Fruits

Several theories have been postulated on the development on horn-like structures in some fruits of coconut (*Cocos nucifera* L.). The important among them are: (a) enlargement of certain perianth parts (Masters, 1869); (b) separating carpels of an apocarpous ovary (Costerus and Smith, 1923); (c) supernumerary segments of gynoeceium (Petch, 1924) or acresent staminodes (Furtado, 1926); and (d) protruding fibrous layers of pericarp (Davis, 1965, 1966). According to Menon and Pandalai (1960), the horns are not homologous structures.

During a survey of coconut plantations in the Andaman and Nicobar Islands in 1971-72, the authors came across three palms producing horn-like structures, two at Port

Blair (Corbyn's Cove) and one in Nicobar (West Bay, Katchal). The palms were about 50 years old, looked normal, and constantly produced fruits bearing 1-6 horns every bunch. Davis (1966) reported a palm producing horned nuts in every bunch near Cochin (Kerala State, India). A scrutiny of several fruits bearing horns at various stages (Fig. 1) revealed the following:

The female flowers looked normal from the time of their emergence from the spathe till fertilization. The development of the ovary along with the horns was uniform; the tender horns were concealed within the perianth. There was no marked difference in the size and shape of this abnormal flower with that of normal ones. On removal

TABLE I

Number of horned fruits per bunch and horns per fruit

Bunch	Horned fruits per bunch	Horns per nut per bunch	Total horns per bunch	Mean
1	4	5 4 3 3	15	3.75
2	6	6 4 3 4 3 4	24	4.00
3	5	3 4 6 4 3	20	4.00
4	3	4 3 3	10	3.33
5	8	5 6 3 4 3 3 4 4	32	4.00
6	3	3 3 4	10	3.33
7	2	3 3	6	3.00
8	2	3 3	6	3.00
9	2	3 4	7	3.50
10	4	4 3 3 3	13	3.25
11	7	6 4 5 3 4 3 3	28	4.00
12	1	3	3	3.00
13	4	3 3 4 3	13	3.25
14	5	3 3 4 6 4	20	4.00
15	3	4 3 3	10	3.33
16	6	3 4 3 6 5 3	24	4.00

of the perianth, the horns were visible. The horns varied from 3 to 6 and were seen to



Fig. 1. Development of horns in coconut (fertilization to maturity)

develop as a result of the enlargement of the staminodes. The pattern of horn production in some fruits of one of the palms is given in Table I.

Anatomical studies of young fruits revealed that adjacent horns get united in pairs or in threes along the linear margins, wholly or partially upto the tips even at an early stage of development. After fertilization, the ovary registers a faster growth dwarfing the horns. The few horns that develop with the speed of the carpels possess some structure similar to the stigmatic surface at their tips. The horns grow for seven or eight months only and cover most of the ovary excepting the stigmatic end. The developed horns usually number three in a fruit and look flat or solid, varying in size and shape (generally boat-

like). They curve towards the stigmatic and may or may not bifurcate at the tip. The maximum length of a horn is 26.5 cm with a thickness of about 4.0 cm at the middle. The perianth lobes in every fruit remain distinct from the horn-like structures.

The development of horns in these fruits support the theory based on the enlargement of staminodes. Here, the nuts are normal, having kernel and nut-water, and capable of germinating as usual. Some seedlings raised from these nuts have been planted and are under observation.

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