
Hab.—India occidentalis, Khandala, Bombay Presidency.

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1 This form differs in some important points from the form found at Khandala and I hope to give its account in some later communication.

2 Dr. S. K. Pande's letter to me dated 29th October 1940. I take this opportunity to thank most sincerely Dr. Pande for the brilliant suggestion, and to Dr. H. Chaudhuri, Director, Kashyap Research Laboratory, Lahore, for the loan of some books.

3 My best thanks are due to these gentlemen and to Messrs. R. N. Deshpande, S. R. Deshpande, and Y. B. Raje for the help they rendered in getting me the proper material.

4 Mr. R. N. Deshpande's collection, 1932.

5 The author's collection, 1932.


8 ——, op. cit., p. 967.

9 In giving the habitat of this species, Stephani (loc. cit., p. 967) says: "India orientalis. Mangalore". Obviously he is mistaken in the former part of his statement. Mangalore is on the west coast of India.

10 Stephani, loc. cit., p. 964.

SORGHUMS WITH FELTY GLUMES

The distribution and inheritance of hairs in certain parts of the sorghum plant have been recorded in two previous papers.1,2 Both the glumes can be hairy or 'glabrous'. When hairy

the lemmas and the palea are also hairy. All glumes are hairy in some degree or other. The 'glabrous' glumes present a shiny surface with odd hairs and are fringed sparsely with hairs at the periphery. This sparseness is extreme when the glumes are tough and leathery. The hairy condition has been recorded as a monogenic dominant to the 'glabrous' (sparsely fringe hairy) condition.3

In cultivated sorghums the hairs are adpressed to the glume and are from 0.5 to 0.7 mm. in length. Against a background of shiny glumes of the type furnished by Sorghum dochna, these hairs glisten in the sun. There is a general tendency for the nodal band to be hairy when the glumes are hairy, but there are exceptions to this simultaneous manifestation. In wild sorghums the hairs are finer than in cultivated sorghums; in S. sudanense and S. virgatum the length is 0.3 to 0.4 mm. and in other varieties it is 0.5 to 0.6 mm.

A rare type of hairiness in which the hairs are longer (1.2 to 1.5 mm.) and give the glume a felty appearance has been met with in a cultivated variety from Tinnevelly, South India, belonging to the group S. dochna var. burmanicum (Photograph). Similar types of felty glumes are found to occur in some types belonging to S. Roxburghii, S. caffrorum,
in the panicle parts that could be hairy. Though the glume hairs are long, the hairiness on the nodal band retains the usual length (0.1 mm). After the milky stage the hairs begin to drop off.

The relationship of the felty glume to the ordinary hairy glume was pursued in a cross between the felty S. dochna var. burmanicum and another S. dochna which was merely hairy. The $F_1$ was felty and in the $F_2$ two segregating families gave a total of 156 felty to 51 hairy glumes.

A second cross was made between the felty glume and another S. dochna which was ‘glabrous’ (short hairs at the fringe). The $F_1$ was felty and in the $F_2$ two segregating families gave the following figures: 160 felty, 47 hairy, 49 ‘glabrous’ (long hairs at fringes) and 17 ‘glabrous’ (short hairs at fringes), a clear dihybrid ratio. An $F_2$ of 16 families was raised and they behaved as follows: One selection, fringes short hairy: pure. Three selections, fringes long hairy: two pure and one segregated giving 90 long and 33 short hairs at the fringes. Three selections hairy: two pure and one segregated giving 42 hairy and 15 fringes short hairy. Nine selections of felty glumes: three pure, two segregated giving a total of 164 felty and 55 hairy, two segregated giving a total of 186 felty and 58 fringes long hairy, two repeated the dihybrid ratio, the numbers being 131; 39; 38 and 11.

In wild sorghums the hairs are finer and smaller. This is to be expected as they are not as big and robust as the cultivated sorghums. Even in the wild sorghum there are long and short hairs. The gene responsible for the sparse manifestation of glume hairs (‘glabrous’) is rare in the wild sorghums. In a cross between S. Stapfii (long hairs) and S. sudanense (short hairs) a similar monogenic segregation was obtained, the numbers being 81 long and 29 short hairs.

From the above data it will be noticed that a dominant gene designated Gh is responsible for the hairy condition of the glume. Gene gh results in a virtually ‘glabrous’ glume, the fringes being hairy with stray hairs on the body of the glume. Another gene G accentuates the length of the hairs to a felty condition and is a monogenic dominant to gf giving the common hairy condition. Genes Gh and Gf act independently in inheritance.

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1 Curr. Sci., 1939, 8, 115-16.
3 Jour. Madras Agri. Students' Union, 1924, 12, 1-17.

DEVELOPMENT OF GLANDULAR HAIRS IN ORTHOSIPHON STAMINEUS BENTH.

The plants belonging to the Family Labiatae have long been famous for the various essential oils extracted from many of them for the manufacture of perfumes and medicinal preparations. The volatile oils, which impart to the plants their characteristic aroma, are secreted by different types of glands present on the several parts of the plant. The structure and development of these glands and a detailed study of their cytoplasmic inclusions are being investigated by the author.

In Orthosiphon stamineus numerous multicellular glandular hairs are present on the calyx, corolla, anthers, and around the base of the gynobasic style. Non-glandular hairs also occur along with them especially on the calyx and the tubular corolla. A well-developed glandular hair consists of a stalk composed of two to three cells and a shield-shaped head portion of eight cells which constitute the gland proper. The development of a glandular hair commences with the protrusion of an epidermal cell from the rest of its accompanying cells (Fig. 1). This cell divides by a periclinal wall into a glandular head-cell and a stalk-cell (Fig. 2). The stalk-cell divides again periclinally into a middle cell and a basal cell. The