

belonging to the *Sorghum elegans* group was bloomless. In the least manifestation of the bloom the de-sheathed internode will show a little bloom. But A.S. 4572 was absolutely bloomless.

This rare type was crossed with both heavy bloomed and sparse bloomed types. In the former cross the F₁ was heavy bloomed and in the F₂, 252 plants were heavy bloomed and 84 absolutely bloomless. In the latter cross also the F₁ was heavy bloomed but the F₂ gave 108 heavy bloomed, 35 sparse bloomed and 43 bloomless plants, giving a 9 : 3 : 4 ratio. From this family 17 selections were carried forward and their performance is given below:

Family No.	Character of selection	F ₃ behaviour		
		Heavy bloom	Sparse bloom	No bloom
A. S. 6752	No bloom	..	..	Pure
A. S. 6753	„	..	..	Pure
A. S. 6754	„	..	..	Pure
A. S. 6755	„	..	..	Pure
A. S. 6749	Sparse bloom	..	Pure	..
A. S. 6751	„	..	Pure	..
A. S. 6748	„	..	93	36
A. S. 6750	„	..	52	17
A. S. 6744	Heavy bloom	Pure	..	..
A. S. 6740	„	99	34	..
A. S. 6745	„	38	13	..
A. S. 6739	„	77	..	26
A. S. 6741	„	81	..	31
A. S. 6742	„	97	..	32
A. S. 6746	„	52	..	18
A. S. 6743	„	69	21	29
A. S. 6747	„	40	15	20

From the above table it will be seen that a gene designated Bm is responsible for the

production of bloom in sorghum; bm gives an absolutely bloomless condition where the gene H has no visible expression. Seven selections in the above F₃ segregated for pithy and juicy stalks² also (genes D and d) and a cross collation showed an independent inheritance for bloom and for stalk juiciness genes. The total of the above segregations was, bloom-pithy 417, bloom-juicy 133, bloomless-pithy 141, and bloomless-juicy 50.

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August 8, 1941.

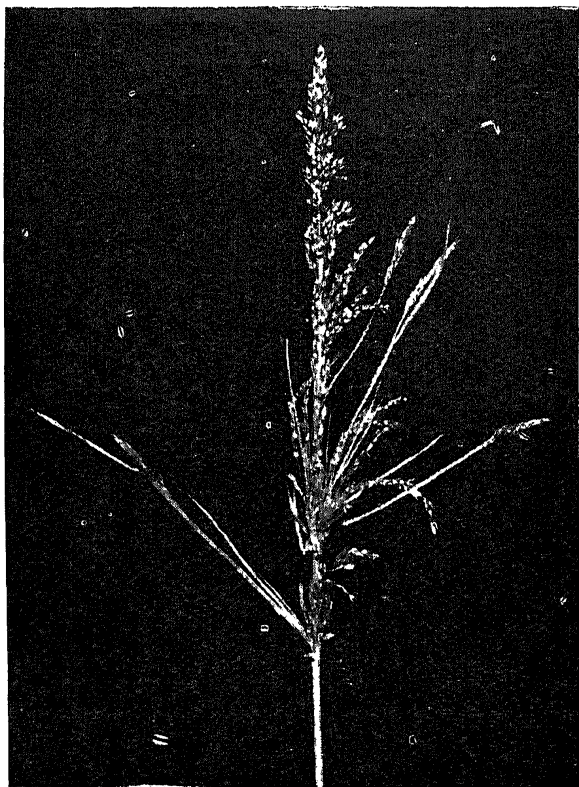
¹ *Proc. Ind. Acad. Sci.*, 1937, 5, 4-15.

² *Madras Agric. J.*, 1936, 24, 247-48.

THE OCCURRENCE AND INHERITANCE OF SHOOTS FROM THE AXILS OF PANICLE BRANCHES IN *SORGHUM SUDANENSE*

THE rare occurrence of the e-ligulate and non-auriculate condition in the leaves of sorghum has been recorded. This has been noted to be a monogenic recessive to the normal ligulate and auriculate condition of the leaves. Non-auriculate plants lack the cushiony pulvinus at the base of the panicle branches.¹

This note records an interesting sequel to the abnormal condition of e-ligulateness. In one e-ligulate type of *Sorghum sudanense* from Russia it was found that every panicle had side-shoots with two to three leaves and occasionally with tiny terminal panicles from the axils of panicle branches (see photograph). All the progeny exhibited this peculiarity in two successive generations. This type was crossed with a ligulate normal paniced type. The hybrid was ligulate and normal. In the F₂, no dihybrid ratios were obtained, there being only 229 normal ligulate plants and 74 e-ligulate plants with axillary shoots in the



* Side-shoots from the axils of panicle branches in
Sorghum sudanense

panicle. An F_3 generation was raised and in it, the three segregating families gave the following figures.

Selection No.	Character of selection	F_3 Behaviour			
		Ligulate		e-ligulate	
		No axillary shoots	Axillary shoots	No axillary shoots	Axillary shoots
S. 328	Ligulate no axillary shoots	30	1	..	12
S. 329	"	57	..	1	17
S. 330	"	73	..	1	22
	TOTAL	160	1	2	51

From the above table it will be seen that there is a close linkage between the factor for e-ligulateness and the factor stimulating axillary shoots in panicles, there being a crossover value of about 0.01 per cent. It is interesting to note that in plants in which these shoots developed from the panicle axils, the axillary buds of the stem also were stimulated

and gave many side-shoots. This teratological phenomenon has proved heritable.

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¹ *Proc. Ind. Acad. Sci.*, 1938, 7, 286-88.

TWO NEW GENES CONDITIONING THE TINT OF THE COLOUR ON THE GLUMES OF SORGHUM

THE glumes of sorghum are reddish purple, blackish purple or brown. Factors P and Q operate and give these three groups. The leaf-sheaths take on the same colour as the glumes.¹ A study of the vast collection of sorghums at the Millets Breeding Station, Coimbatore, reveals many tints on their glumes. Most of the tints remained constant in the progeny and it was obvious that there were other genes in addition to P and Q which were responsible for the tints. With a view to know more about these tints *Sorghum dochna* group was chosen as it exhibited a wealth of tints. In this group the glumes are very coriaceous with the added advantage of prominence due to the grain being almost enclosed and to the absence of transverse wrinkling. Most of the varieties of *S. dochna* have loose panicles and the spikelets get the best chance of exposure to light. The glumes are also very smooth and shiny and for these reasons the glumes of *S. dochna* afford the best theatre for the optimum manifestation of pigment on sorghum spikelets.

Two new types of purple on the mature glumes have been found and these have been termed "Dilute reddish purple" and "Dilute blackish purple" and are brought about by a single dilution gene. In a cross between a dilute reddish purple and a blackish purple type the F_1 was reddish purple. The F_2 generation gave 69 plants with the deeper tint (51 reddish purple, 18 blackish purple) and 20 plants with the dilute tint (16 dilute