

Moreover, by the cold method of extraction, the solubilisation of pectins can be minimised.

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¹ *Jour. Indian Inst. Sci.*, 1920-21, 3, 72.

² *Ibid.*, 1923, 5, 137.

³ *Zeit. Physiol. Chem.*, 1923, 128, 290.

Powdery Mildew of Betel Vine.

OF recent years powdery mildew has been doing much damage to betel vines in Bassein near Bombay. The disease is, however, localised in this area since it has not yet been reported from other parts of the Province of Bombay. The mildew usually makes its appearance during the cold months and practically disappears as the hot weather approaches. Older plantations are more liable to attack than newly planted vines.

The disease is easily recognised by the appearance of yellow spots, which are slightly raised and irregular in outline, and correspond in extent to white powdery patches of mildew on the under surface of the leaves. The patches of mildew are also sometimes found on the upper surface of the leaves. These patches are at first small but increase in extent as they grow together.

Field trials made during the past few years have shown that dusting of betel vines with sulphur of the order of 200 mesh fineness results in complete control of mildew. Usually one application of sulphur dust is sufficient for effective control, but in older gardens two dustings are generally required. In the absence of the treatment the leaves have to be plucked as soon as they are ready for harvest; otherwise they are disfigured by spots and drop down if infection is severe. Apart from checking mildew, sulphur dusting has therefore the effect of prolonging the life of the leaves which can be harvested to suit the market conditions.

The causative fungus of powdery mildew of betel vines is an ectophyte which feeds by sending globular haustoria into the epidermal cells of the leaf. The fungus is new to science, and the name proposed for it is *Oidium piperis* spec. nov.

A detailed account of this investigation together with the technical description of the causative fungus will be published in a separate communication.

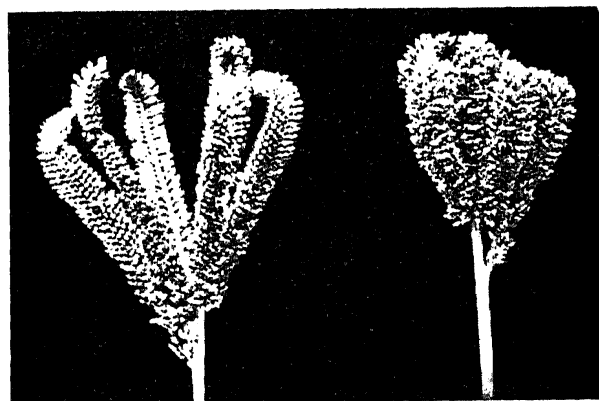
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R. 42—An Economic Recessive Mutant from E.C. 593 *Ragi* (*Eleusine coracana* Gaertn.).

IN 1934, at the Agricultural Research Station, Hagari, a single plant with "In-curved" ears was spotted in a half-an-acre plot of E.C. 593 *ragi*, a strain of *Eleusine coracana* Gaertn. with "Top-curved" ears. This odd plant was labelled R. 42 (R = *Ragi*) and it has bred true to all its characters during the three years it has been under culture.

The authors are of the opinion that this plant arose from E.C. 593 by mutation. The seed of E.C. 593 was obtained from the Millet Breeding Station, Coimbatore, in May 1933. It was under comparative trial in that year (1933-34) with Type-8 *ragi*. No other strain of *ragi* was grown on the Station in that season. Any question of the plant being a mixture of, or a cross with Type-8 is ruled out, as the latter is deeply purple pigmented and R. 42 is a green throughout. In this crop purple pigment is dominant to green throughout.¹ The plant resembles E.C. 593 very closely in all morphological characters such as habit, stem, leaf-shape, etc., except in the shape of ear-head (Fig. 1). The following measurements made on 100 plants in each of these strains amply support this view, *viz.*, that the plant has arisen only by mutation.



E.C. 593.

R. 42.

Strain	Height of plant (cm.)	Number of tillers		Number of fingers	Length of finger (cm.)	Length of peduncle (cm.)	
		Primary	Secondary				
E.C. 593	Max.	105.0	4.0	3.0	7.0	11.5	38.0
	Min.	82.0	1.0	1.0	4.0	7.5	18.5
	Average	92.8	1.8	0.7	5.3	9.3	27.3
R. 42	Max.	105.0	4.0	2.0	10.0	7.5	32.0
	Min.	68.0	1.0	1.0	4.0	5.0	16.0
	Average	89.5	1.8	0.4	6.4	6.2	23.6

Note.—The larger number of fingers with shorter length and lower emergence of R. 42 are in accordance with the characteristics of plants possessing "In-curved" panicles.

It is highly interesting that E.C. 593 from Coimbatore when grown at Hagari has given rise to this mutant. As the difference between the parents and the mutant is in the shape of the ear-head alone, the change seems to have taken place in a single gene only as the "In-curved" head is a simple recessive to the "Top-curved".²

R. 42 was under comparison with E.C. 593 and other varieties of *ragi* for three seasons from 1935 to 1937. In all these years it was the heaviest yielder, giving 9 to 10 per cent. higher yield of grain over E.C. 593.

It is extremely interesting that the loss of a gene should have proved economic, as in nature the occurrence of economic recessive mutants is very rare. E.C. 593 is an excellent strain of *ragi* and the only objection of the cultivators to take this strain has been the shape of its panicle. R. 42 with a type of ear-head that suits the fancy of the cultivators of this tract, it is hoped, will prove more successful in its spread than its parent, E.C. 593.

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¹ Rangaswami Ayyangar, G. N., and Krishna Rao, P., *Ind. J. Agric. Sci.*, 1931, 1, 434.

² —, *et al.*, *ibid.*, 1932, 1, 254.

Sorghum—Purple Pigment in the Late-Seedling Stage.

SORGHUM plants may be purple pigmented or green throughout. The pigmented condition is best seen in the adult plants when the tissues begin to dry up. The parts that show the pigment best are the leaf-sheaths and the glumes. These may be coloured reddish-purple or blackish-purple. Factors P and Q are responsible for these characters.¹

As against this manifestation of purple pigment at the adult stage, sorghum seedlings could, in the very early stages, be separated into those with purple coleoptile and those with green coleoptile. These seedlings may have roots with or without purple pigment.^{2, 3}

In addition to these ordinary manifestations, the purple pigment may show itself at a special stage in the life of the plant. In certain varieties of African sorghum when the heads emerge from the boot, the glumes are tinted purple. Factor G_{ep} is responsible for this special manifestation.⁴

A new type of specialised manifestation of the purple pigment in the life-history of the sorghum plant has recently been met with. In this type, the pigment manifests itself in the late-seedling stage. Usually, whenever the coleoptile is coloured purple the first two seedling leaves are also tinged purple. From the third leaf onwards, they usually remain green without showing purple colour. In this new type of manifestation the purple pigment (which is anthocyanic) manifests itself from the 3rd seedling-leaf up to the 8th or even the 10th seedling-leaf. Leaves above this, continue to be green. This manifestation is independent of whether the coleoptile is purple or green. In the field, pigmented seedlings from 25 to 35 days old stand out well marked from the green seedlings. The pigment is in the nature of a splash and is deeper on the under-surface of the leaf-blade. It is more prominent at the edges of the blade. In the sheath, the colour is deeper towards the base. The junction area (the specialised triangular tissue at the junction of the leaf-blade and the leaf-sheath) is free from this pigment. The tint of the pigment varies slightly between varieties but the steadiness of this late-seedling manifestation is constant within the variety. If this character is missed in the 25 to 35 days stage, it could be picked up in the