



FIG. 1

Left.—A healthy bhendi plant.

Right.—A diseased bhendi plant showing clearing of the veins.

diseased plants, no marked mosaic but only a general chlorosis develops in the young leaves which may or may not show patches of light green. All growth subsequent to infection is dwarfed, the leaves remain small in size and the petioles are reduced in length. Infected plants blossom sparingly and produce few fruits. In nature plants remain susceptible to infection throughout their life. Under the glasshouse conditions, the diseased leaves show thickening of the veins on the lower side; but no foliar growth or enations are produced on the veins.

The virus of yellow mosaic is not sap-transmissible nor is the disease transmitted by the seed. The virus is easily transmitted by grafting.

Insects commonly found feeding on bhendi plants include *Empoasca devastans* Distant, *Empoasca* sp., *Aphis gossypii* Glover and *Bemisia gossypiperda* M. and L. In feeding experiments, the first-named three species of insects failed to transmit the disease, but the white-fly, *Bemisia gossypiperda*, always trans-

mitted the virus. The disease developed as a rule in from two to three weeks after the infective white-flies had fed on the healthy plants. The white-flies transmitted the virus of yellow mosaic to hollyhock plants, *Althaea rosea* Cav., and back to *Hibiscus esculentus*, but were unable to infect plants of 'Sakel' cotton.

B. N. UPPAL.

P. M. VARMA.

S. P. CAPOOR.

College of Agriculture,
Poona,
April 17, 1940.

The Inheritance of a New Type of Purple Pigmentation Manifesting on the Glumes at Anthesis

THE sorghum plant develops purple pigment in many of its organs. Such pigmentation may develop at various times in its growth. One such organ is the glume. The glumes of the spikelets may or may not develop purple pigment. When they develop it, the commonest experience is for the glumes to emerge green and develop the purple pigment in the later stages of growth, from the dough to the ripe stages of the grain. An exception to this general condition has been noted when African varieties with the glumes emerging purple from the boot were met with. The simple dominance of this character has been reported.¹ In this note we are recording the occurrence and inheritance of a new type of purple pigmentation manifesting on the glumes. In this type, the spikelets emerge green from the boot. The purple pigment begins to develop on the glumes concurrent with the march of flowering. The pigment is of a light tint and anthocyanic. This character is best noticed in the full flush of flowering, when most of the glumes are tinted purple. When flowering is over, this faint purple fades away. This type of pigmentation is bound up with the flowering phase of the plant. When this has developed and faded away, the usual later dough grain stage manifestations of purple pigmentation could occur.

This rare type of manifestation occurs in the group *Sorghum conspicuum*, Snowden, from Tanganyika in Africa. One of the varieties from the Rufigi District in the Tanganyika territory, showed this character. In it, one natural cross occurred (A.S. 5939) without the manifestation of purple pigment during flowering. This was sown and the F_2 gave 134 plants without purple and 48 plants developing purple on the glumes at flowering time. From this an F_3 generation was raised. One selection which developed purple, bred pure. Of the three selections with no purple, one was pure for green glumes at flowering time and the two others segregated giving a total of 258 plants without purple and 88 plants with purple at flowering time.

It will thus be seen that a new gene, African in origin and confined to the group *S. conspicuum* has been met with. The effect of this gene is to develop a light purple pigment at flowering time, vanishing with the end of flowering. This character has proved a simple recessive to the common unpigmented condition. Whereas many dominant genes producing purple pigment in various parts of the sorghum plant and at various times in its life-cycle have been traced to Africa, this African recessive purple pigment gene is of added interest.

G. N. RANGASWAMI AYYANGAR.
T. VENKATARAMANA REDDY.

Millet Breeding Station,
Coimbatore,
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¹ *Curr. Sci.*, 1937, 5, 590.

The Occurrence and Inheritance of Purple Hairs on the Spikelets of Sorghum

THE generality of sorghums are hairy in some part or other of their spikelets. This hairiness shows best on the glumes. The pedicels of the pedicelled spikelets and the callus are generally hairy. The glumes may be glabrous, and when hairy, may vary in the intensity of the hairiness. When most intense, they are felty. When

sparse, the hairiness is confined to the top third of the glume, and when sparser still, to a fringe of hairs at the edges. These hairs are usually hyaline. In stray cases these are purple pigmented and show best at flowering time after which the pigment fades away. Purple haired spikelets occur mostly in African varieties. Some Indian varieties and the wild sorghums have also some types with purple-haired spikelets. When the spikelets are hairy, it is usual for the nodal band (the soft tissue at the very base of the leaf-sheath) and the auricular junction (the light-coloured tissue connecting the base of the leaf-blade with the top of the leaf-sheath) to be hairy also; but when the spikelet hairs are purple pigmented, such pigment does not affect the hairs on the nodal band and the auricular junction.

A.S. 4212 is a selection from a North Rhodesian variety and its spikelets have purple hairs. A selection from this, *viz.*, A.S. 5896, which was obviously a natural cross, segregated for this character giving 87 plants with purple-haired spikelets and 31 with hyaline ones. Three purple and one hyaline selections were taken from this family and an F_3 raised. The hyaline-haired selection bred true. All the three purple-haired selections segregated giving a total of 282 plants with purple and 91 with hyaline hairs on the spikelets.

It is thus seen that purple pigmented hairs on the spikelets of sorghum are a monogenic dominant to the usual hyaline condition.

G. N. RANGASWAMI AYYANGAR.
T. VENKATARAMANA REDDY.

Millet Breeding Station,
Coimbatore,
May 8, 1940.

A Modified Form of Acetocarmine

BELLING'S Acetocarmine¹ has been of considerable use to cytologists, in the study of nuclear divisions and any extension of its use would be welcome. As Ganeshan² has pointed out, there are two sources of trouble in its use. First, acetocarmine deteriorates very rapidly