larger stomata (Fig. 1 C) were evident measuring 23–25 × 18–20 μ and 50–55 × 47–50 μ respectively. Stomata with highly elongate guard cells (Fig. 1 E) were observed towards basal region of the galls, *i.e.*, towards the midrib. The stomata appear curiously smaller along the mid region of the gall with a characteristic circular outline (Fig. 1 D). On specific stomata, the upper ledges were enormously thickened. Contrary to the normal occurrence of two subsidiary cells, three subsidiary cells were also observed (Fig. 1 F and G). Stomata occur in closely agglomerated groups of two sharing a common subsidiary cell (Fig. 1 H, I and J). In an extreme case, three stomata occurred in very close proximity, that the guard cells were almost abutting on each other (Fig. 1 K).

Observations on the anomalous stomata of *Rivea* galls indicate that they are functional, but for the change in morphology and distributional patterns. Fall in the stomatal index is significant, since there is an enormous growth resulting in the gall. Effects of wounding and hormone treatments have been known to inhibit stomatal development, and the occurrence of stomata of lower stomatal index on *Rivea* galls is in conformity to the basic principles of gall formation, which involve wounding and hormone effects through insect action.

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OCCURRENCE OF A NEW RACE OF *HELMINTHOSPORIUM MAYDIS* ON MAIZE

DURING the month of September, 1975 a very severe peculiar leaf blight of maize (Fig. 1) was observed on two hybrids (EH 2310 and EH 2420) at Punjab Agricultural University, Ludhiana. The diseased specimens were examined microscopically and were found to be associated with *Helminthosporium maydis*.. Brown blotches were observed on leaf sheaths and husk covers, underneath which the kernels showed dull black appearance because of rotting (Figs. 2 and 3). The isolation of infected grains also yielded *H. maydis*. These hybrids were under strict pathological evaluation and observed to be tolerant to the prevalent race 0, of *H. maydis*[1]. Moreover, the symptoms were quite different from that of leaf blight caused by race 0, which causes small diamond-shaped lesions on leaf lemina[2]. These facts warranted further study of this disease.

FIG. 1 FIG. 2 FIG. 3

FIGS. 1–3. Disease symptoms on leaf lamina, leaf sheath, ear husks and kernels (*Fig. 3—Middle one is healthy ear).

The seedlings of EH 2310 and EH 2420 were inoculated with spore suspension. Within 6–7 days, the fungus induced symptoms of blight quickly. Cobs at milk stage were inoculated by keeping the culture bits underneath the husk covers. The blotches on husk cover and kernel rotting were observed after 7 days of inoculation. The infection type produced on leaves, husks and kernels was same as observed in field and resembled to race T[2], which caused havoc in U.S.A. in 1970[3]. This race was reported to be specifically adapted to 'Texas male sterile' cytoplasm[2]. However, varieties with normal cytoplasm were also later on reported to be susceptible[4], as is the case with present hybrids. This is first record of such a virulent race in India on maize which is being compared with T race and details will be reported later. It is worth mentioning that T race had been recorded in India on sorghum[5].

Under field conditions, almost 100% of plants were infected and the ear and grain development was very badly affected (Fig. 3) resulting in drastic reduction in yield. In comparison to standard hybrid (Ganga 5 = 3250 kg/ha), the grain yield of these hybrids was lower by 30 to 40%.

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SHORT SCIENTIFIC NOTES

Induction of Amber-grained Mutants in Bread Wheat Var. Inia-66

Inia-66, a bread wheat variety (L. Rojo-64 × Sonora-64) introduced to India from Mexico, although possesses very high yield potentiality could not be accepted for commercial cultivation due to the drawback of having red-grained type. With a view to rectify this defect, induction of mutants having amber-grain colour was attempted with the use of gamma radiation (30 kR and 40 kR) and combination of radiation and ethyl methane sulphonate (30 kR + 0·2% EMS). The frequency of occurrence of amber-grained mutants in M_2 generation is shown in Table I. All the mutants bred true for amber-grain colour in subsequent generations. Except for the grain colour, the mutants were having identical morphological characteristics and equally high yielding potentiality like that of parental variety. Moreover, three amber-grained mutants have shown trace resistance to brown rust whereas the parental variety is highly susceptible to brown rust. In the evaluation trials the commercial potentiality of an amber-grained mutant could be established.

TABLE I

Frequency of amber-grained mutants in M_2 generation in Inia-66

Treatment	No. of M_1 plants studied	Nos. of M_2 plants studied	Nos. of mutants isolated	Frequency of mutants per 100 M_2 plants
Control	150	4950	..	..
30 kR	120	4500	3	0·07
40 kR	30	1200	..	0·00
30 kR + 0·2% EMS	150	4050	3	0·07

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Colorimetric Estimation of Iron with Haematoxylin

Haematoxylin [3, 7, 8, 5′, 6′,-Pentoxy (indeno 2′, 1-3, 4-Chomene)-dihyride-(3, 4)] has been used for the colorimetric determination of aluminium, boron, niobium, tin, lanthanides[1] and is a metallochromic indicator for aluminium, bismuth, copper thorium and zirconium[3]. It's reaction with iron (III) has also been studied[4].

Haematoxylin forms a bluish complex with iron (III) in the pH range 5·5–6·0 with acetate buffer. This reaction has been found to be most