Dry seeds of black gram were treated with different doses of X-rays and ethyl methane sulfonate (EMS) singly as well as in combination as described elsewhere[1]. Though a large number of dwarf mutants were found in M_2 generation only one dwarf mutant from 40 kR X-rays and 0·3% EMS treatment was fertile.

The mutant was characterised by a drastic reduction in the length of the internodes, petioles and peduncles (Fig. 1). The leaves were dark green

FIG. 1. (1) Normal, (2) Mutant.

in colour, blades were shrunken into folds and the veins were swollen in addition to the reduced leaf size. The mutant was photoinsensitive and mature in 80–85 days like the parent strain. Though there was a drastic reduction in all the vegetative parts, floral organs were not reduced and produced some pods with viable seeds. The mutant bred true in subsequent generations.

To ascertain the mode of inheritance, reciprocal crosses were made between the normal and mutant as described by Sen and Jana[3]. The F_1's from all the crosses were normal indicating that the mutant character is recessive. All the F_2 progenies segregated into normal and mutant in 3 : 1 ratio (Table I) indicating a single gene difference. This

TABLE I

Inheritance of dwarf mutant in black gram

Parents	Segregation in F_2		X^2 (3 : 1)	d
	Normal	Mutant		
Normal × Dwarf	177	53	0·47	0·5–0·3
Dwarf × Normal	150	45	0·40	0·7–0·5

was further confirmed in F_3 as all the dwarf F_2 plants bred true. Out of 10 phenotypically normal F_2 plants, four bred true while the rest segregated like F_1. The gene symbol Dw/dw was proposed for this allelic pair. The availability of a fertile dwarf type with less vegetative growth offers scope for evolving an ideal plant type described by Jain[2].

The first two authors are grateful to CSIR, New Delhi, for awarding Senior Research Fellowship.

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A NEW SPECIES OF *PHYLLACHORA* NITSCHKE APUD FUCKEL ON *ORYZA SATIVA* L. FROM GORAKHPUR (U.P.), INDIA

DURING a survey of plant diseases, plants of waterlogged cultivated "Boro" variety of *Oryza sativa* L., in the low lying areas of Gorakhpur were seen infected during the month of October 1973. The infected leaves exhibited black, oval, distinct tar spots (0·5–1·0 mm. dia.), uniformly distributed throughout the lamina (Fig. 1 *a*). The spots first appeared on the upper surface of leaves but were later present on the lower surface also. The plants, which were less submerged, had less of the infection. The sections through the spots of infected host leaves, on examination, revealed them to be perithecia of some species of *Phyllachora*[1]. The perithecia in surface view showed a dot in the centre of each indicating an ostiole but possibly it remains rudimentary even in mature perithecia. The vertically compressed shape of the perithecium, indistinct ostioles, irregular arrangement of ascospores within the ascus and presence of both apical and basal paraphyses are features which are distinct from those reported for the existing species of *Phyllachora*. But for the presence of both apical and basal paraphyses and dark peridium, the structures showed slight resemblance to *Nectria* type centrum as defined by Miller[3] (1949) and Luttrell[2] (1951).

Pathogenicity tests were performed by spraying ascospores *cum* hyphal aqueous suspension of the fungus on young healthy leaves. Symptoms appeared gradually after 6–8 days.

The specimens of the diseased leaves were examined by Dr. Sivanesan of the C.M.I., Kew, who confirmed the fungus to be a new species of *Phyllachora*, as this fungus does not resemble with the existing species.

The detailed morphological characters of the fungus are as follows :

Phyllachora gorakhpurensis, Srivastava and Bhargava, sp. nov.—Perithecia vertically compressed,, slightly oval, 100–130 μ high and

160–230 μ broad ; ostioles not very distinct : situated below upper epidermis as well as lower epidermis (Fig. 1 *b*). Hymenium basal ; asci clavate, bulged in the middle, 45–50 μ high and 8–16·5 μ broad ; ascospores arranged haphazardly in the ascus (Fig. 1 *b* and *c*). Ascospores elliptical, 7–8·5 μ in diam. (Fig. 1 *d*). Paraphyses basal as well as pendent from the roof of perithecia (pseudoparaphyses -apical paraphyses). Basal paraphyses projecting beyond the asci, apical reaching upto the base of asci, 1·1·5 μ broad (Fig. 1 *b*). Peridium loose, pseudoparenchymatous, dark and distinct except in the basal region (Fig. 1 *b*).

On living leaves of *Oryza sativa* L. water-logged variety (Gramineae), Bichhia fields, Gorakhpur, October 1973, Leg. Y. N. Srivastava.

Phyllachora gorakhpurensis, Srivastava et Bhargava, Spec. nova.—Perithecia perpendiculum compressa ; levis ovata, 100–130 μ alta et 160–230 μ lata ; ores non distincti ; situata et sub superam epidermen et super inferam epidermem. Hymenium inferum ; asci clavati, extensi in medio, 45–50 μ alti et 8–16 μ lati ; ascospores ordinati casu in asco (Fig. 1 *b* et *c*). Ascospores ellipticales, 7–8·5 μ in diameteriores (Fig. 1 *d*). Paraphyses et inferi et penduli a tectu peritheciae (pseudoparaphyses-paraphyses apicales). Inferiores paraphyses ultra ascum, apicales attingentes lasum asci, 1–1·5 μ lati (Fig. 1 *b*). Peridium mobile pseudoparenchymatous, niger et distinctus praeter in inferiore parte (Fig. 1 *b*).

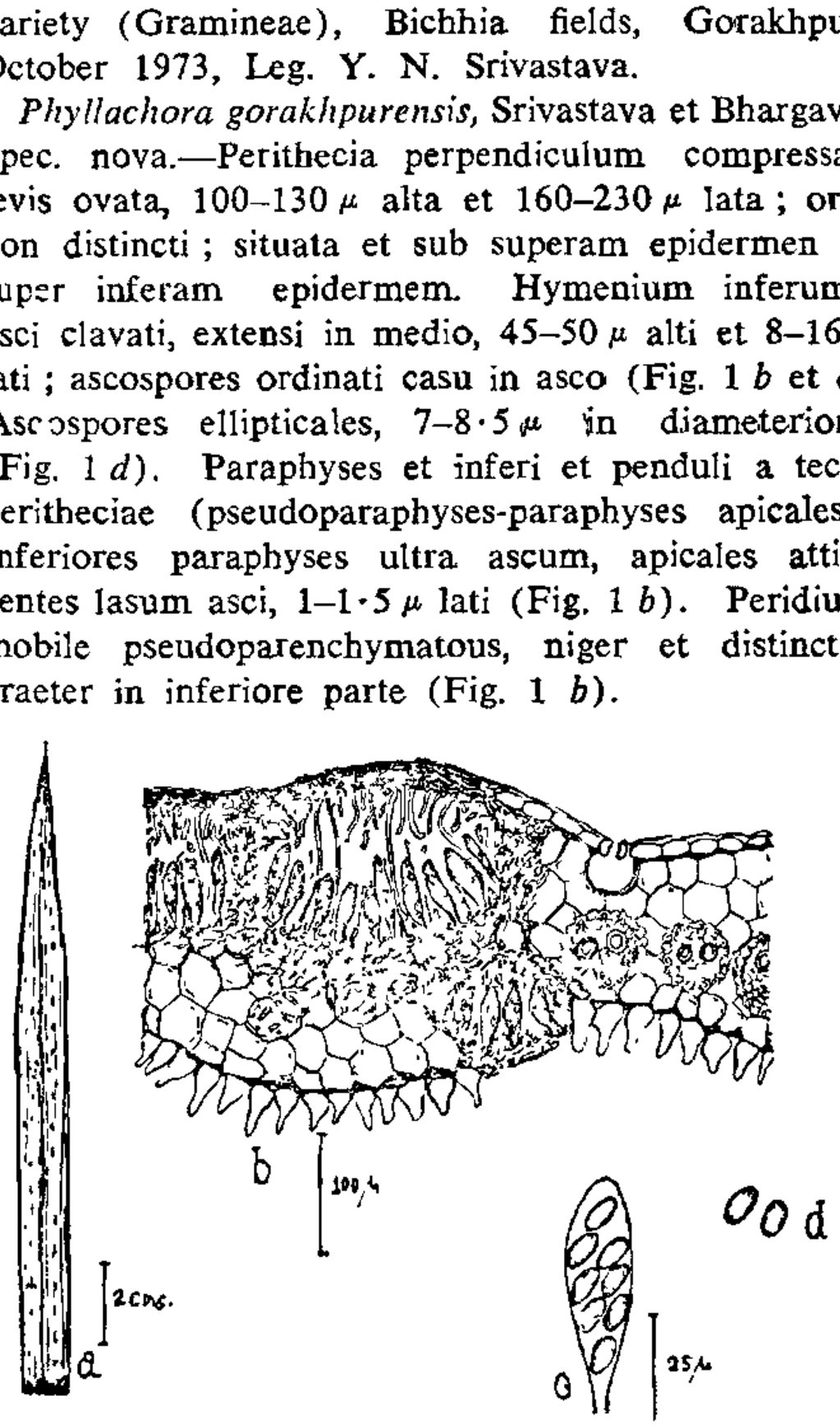

FIG. 1. *a,* Infected *Oryza sativa* leaf showing tar spots. *b,* V.T.S. of the host leaf through tar spots showing perithecia. *c,* Single ascus. *d,* Ascospores.

In viventibus foliis *Oryzae sativae* L. aquae collectae (Gramineae), in agris Bichhiae, Gorakhpur, mense Octoberi 1973, Leg. Y. N. Srivastava.

The type specimen has been deposited in the Herb. I.M.I., Kew, at No. 187024.

The authors are thankful to Dr. A. Johnston, Director and Dr. Sivanesan, Mycologist, Commonwealth Mycological Institute, Kew, England, for their help during the identification of the fungus. They are also thankful to Rev. Fr. Lawrence Mendonca, Parish Priest, Catholic Church, Gorakhpur, for Latin diagnosis and to Dr. Y. B. Singh, Principal, and Dr. G. C. Srivastava, Head, Botany Department, St. Andrew's College, for providing laboratory facilities to senior author. Thanks are also due to Dr. A. B. Sinha and Mr. J. S. Srivastava, for their help and to U.G.C. for financial assistance to one of us (Y. N. S.).

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STIGMATIC EXUDATES AND PLANT STERILITY: A CHROMATOGRAPHIC AND SPECTROPHOTOMETRIC STUDY

THE use of ultraviolet spectrophotometry in the analysis of stigmatic exudates has been reported by Martin[1,2] and others[3,4,5]. The authors also observed[3,6], in the UV profiles of the stigmatic exudates of a sterile mutant of *Impatiens sultani,* the absence of a peak characteristic of fertile plants. A summary of the data, obtained from a spectrophotometric and chromatographic analysis of a variety of mutants of *Impatiens,* presented here suggest a positive correlation between stigmatic exudates defective of some compounds absorbing UV light in the 250–300 nm region and plant sterility.

Association of specific UV peaks and fertility was tested in a dozen varieties of *Impatiens* available in our Botanical Gardens, but four colour mutants of *I. sultani* (known as 'Pink', 'Crimson', 'Orange' and 'Magenta') and one of *I. heddomei* (called 'White') showing various degrees of sterility were chosen for a detailed study. *In vitro* germination tests indicate that the approximate pollen viability of mutants vary from 2% in Pink to almost 100% in Magenta. Fruit setting is observed in Magenta, Crimson and Orange while Pink and White are sterile. *In vivo* observations revealed that viable pollen germinate on the stigmas of Magenta, Crimson and Orange but not on those of White and