

SHORT SCIENTIFIC NOTES

Occurrence of Perfect Stage of a Cucurbit Powdery Mildew

Powdery mildew of cucurbits is very common in Northern India but the perfect stage of this pathogen is rarely found in nature. While studying the powdery mildews of various hosts in Meerut and its neighbourhood, cleistothecia of *Sphaerotheca fuliginea* (Schlecht) Poll. were observed on plants of *Cucurbita pepo* L. The cleistothecia appeared as dark spots dispersed in between the white powdery mass on both surfaces of leaves. Cleistothecia globose, sometimes depressed-globose, varying in size from 52.5–108.5 μ in diameter. Cells fairly large and clear. Some cleistothecia were observed to be in the very early stages of their development. Appendages hypha-like, variable in number and length, brown in colour, simple or sometimes branched, septate. When each of the many apparently mature cleistothecia was crushed over the slide, a single ascus was seen coming out of it. Asci hyaline, ovate or globose, without stalk, 52.5–62 \times 37–46.5 μ in size. No ascospores were observed in any of the asci examined. Similar observations have been made for *Erysiphe cichoracearum* DC. also on *Sonchus asper* Gaertn. and on *Lagenaria vulgaris* Ser. by Stone (1962) and Rajendran (1965) respectively.

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Alkaloids of *Erythrina lithosperma* Miq.

Investigations on the Indian *Erythrina lithosperma* Miq. were made by several workers for its alkaloid content, but no definite informations were available. Previously, we reported¹ the occurrence of several *Erythrina* bases in the bark of this plant. To extend the knowledge of content and distribution of *Erythrina* and indole bases we have now investigated the alkaloidal constituents of *E. lithosperma* Miq. The present communication is an account of isolation and characterization of alkaloids from the trunk bark, seed, leaf and root bark of this plant.

TABLE I
Molecular-ion and fragment-ion peaks in mass spectra of erythrina alkaloids

Alkaloids	M ⁺	m/e
Erysotrine	313	298, 282, 280, 242
Erythramine	399	268, 241, 240
Erysodine	299	284, 268, 266
Erythraline	297	282, 266, 264
Erythrinine	313	298, 283, 282, 280
Erythratinone	313	255, 227, 226, 199
Erysopine	285	270, 254, 252

Dried and powdered plant material was first defatted with petroleum ether (60–80°) and then extracted with ethanol in a soxhlet apparatus. The concentrated alcoholic extract was dissolved in dil. acetic acid (5%), and after clarification, was extracted with chloroform to remove weak bases. The mother liquor was basified (pH 9) and again extracted with chloroform which gave chloroform soluble strong bases. The water soluble alkaloid was isolated as reineckate salt. The individual alkaloids were separated and characterized by column chromatography over alumina (neutral), paper and thin layer chromatography with authentic compounds, pattern of u.v. and i.r. spectra, and preparation of different salts. Alkaloids from different parts may be summarized as follows:

Trunk bark.—Erysotrine (picrate, m.p. 160°); erythramine, 120–121°; erysodine, 202°; erythraline (HBr, 245°); erythrinine 197–198°; erythratinone, 135–136°; erythratine, 173°; and hypaphorine 256°. This is the first reported occurrence of erythrinine from this plant. It has been previously identified by Ito *et al.*² from *E. xbidwilli*.

Seed.—Erysodine, 202°, erysopine, 241–242°; erysonine, 237°, hypaphorine 256°.

Leaf.—Erysopine, hypaphorine.

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A New Bacterial Leaf Spot of Grapevine (*Vitis vinifera*, L.)

A bacterial leaf spot was noticed on leaves of grapevine (*Vitis vinifera*, L.) near Baramati (Poona) in September, 1971. The disease is characterized by the appearance of minute, water soaked spots on the lower side of leaves especially along the main and lateral veins. The spots later become visible on the upper surface as pale brown, round areas surrounded by yellow 'halos'. The spots measure from 0.5 to 2.5 mm. The centre of these spots is raised and rough to touch due to drying of gummy bacterial exudation. The technical description of the pathogen herein named *Xanthomonas vitis-viniferae* sp. nov. is given below :

Short rods with rounded ends measuring $1.30 \mu \times 0.74 \mu$, single but rarely in pairs, gram negative, non-capsulated, motile by polar flagellum, non-sporeformer and not acid fast. Strict aerobe. The organism liquefies gelatin slowly and has a moderate diastatic action on starch. Hydrogen sulphide produced but test for production of ammonia is negative. It reduces litmus and peptonizes plain milk. Nitrate not reduced, indole not produced, M.R. and V.P. tests negative, non-lipolytic, citrate not utilized, good growth on synthetic asparagin medium. Optimum temperature for growth lies between 25° to 30° C. Thermal death point lies round about 53° C. Pathogenic on leaves of *Vitis vinifera*, L. only. Non-pathogenic to *Vitis carnosa* and *Vitis trifolia*.

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Outbreak of Rice Armyworms at Varanasi

The rice armyworms *Mythimna separata* = *Pseudaletia separata* (Walker), and *Cirphis loreyi* Duponchel are causing concern in many rice growing tracts feeding particularly on high yielding dwarf varieties^{1,2}. They have been known to be major pests on sugarcane^{3,4}, jowar and maize^{5,6}, Kodon (*Paspalum scrobiculatum*, oats and wheat⁷⁻¹⁰).

During 1971-72 Kharif season, both the species of armyworms were seen infesting rice crop at Varanasi in minor form. The occasional attack of this pest has also been observed in jowar during the season and also in the previous season. Late planted IR 20, variety of paddy was severely infested during October and November at the earhead stage. The reason for this appears to be congregation of the pest on late planted crop due

to harvesting of early planted paddy crop. The survey of the population was therefore undertaken during November 1971 on the University Farm at 10 days interval. The number of caterpillars were counted in 5 different samples, each consisting of 10 hills and their means were (i) 1.6, 3.6, 2.2, 2.6, 2.6 with the range of 1 to 9 caterpillars on November 10; (ii) 1.7, 2.4, 1.6, 2.2, 1.2 with the range of 1 to 5 on November 20; and (iii) 2.1, 1.9, 2.7, 1.8, 1.5 with the range of 0 to 7 caterpillars per hill on November 30, 1971; indicating the pest to have established itself and may assume a major status in the near future in this locality.

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Control of Fusarium Wilt of Muskmelon with Benlate

Wilt of muskmelon caused by *Fusarium oxysporum* f. *melonis* (Leach and Currence) Snyder and Hans. is a destructive disease in most muskmelon growing areas. Recently, Bhaskaran, et al.¹ recorded the incidence of this disease in India. Results of some attempts to control this disease are reported here.

Four fungicides, viz., Benlate 50% WP [methyl-1 (Butyl carbamyl)-2 benzimidazole carbamic acid], Demosan 65% WP (1,4-dichloro 2,5-dimethoxy benzene), Brassicol 60% WP (Pentachloronitrobenzene) and Brestan 60% WP (Triphenyl tin acetate) were applied (at the rate of 0.5 g of active ingredient/1000 g of air dry soil) to sterilized

soil inoculated with oat-meal sand culture (Rao and Rao²) of the pathogen. The wilt incidence in the above treated soils was recorded employing Delta Gold—a wilt susceptible muskmelon variety.

The infection was least (16.6%) in Benlate treated soils. Although Brassicol also showed good control (32.3% infection) of the disease, there was no significant decrease in disease development in soils treated with Brestan or Demosan. Benlate when treated at different concentrations was found to be effective even at the level of 0.125 g/1000 g of soil. At concentration of 0.25 g/1000 g and above, Benlate showed scorching of the leaves indicating phytotoxicity. Wensley and Huang³ and Fuchs *et al.*⁴ have earlier also reported the efficacy of Benlate in controlling Fusarium wilt diseases.

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Hybridisation of Haploids of Potato in the Plains of India

Hybridisation in the potato ($2n = 48$) is carried on in the open in high elevations like Kufri and Simla where most of the hybrids and varieties flower. Observations made during 1969–70 have shown that a large number of induced haploids ($2n = 24$) flower at the Regional Research Station, Jullundur, Punjab, as profusely as in the hill areas. Some of the selected genotypes were crossed and selfed to find whether seed setting was normal. Adequate moisture was provided to the plants for about 72–96 hours after pollination to ensure a humid atmosphere to facilitate pollen germination and growth. This was effected by caging the plants with a cloth bag over which water was sprayed at intervals of two hours during the day. Protection against frost damage was ensured by covering the plants during nights by means of hessian cloth fastened to stacks.

TABLE I
Percentage berry setting in the haploid crosses at Jullundur and Simla during 1969–70

Year	Place	No. of pollinations	No. of berry set	% setting
1969	Jullundur	190	52	27.37
	Simla	1310	393	30.00
1970	Jullundur	600	148	24.67
	Simla	1478	497	33.63

Data obtained show that berry formation and seed setting are normal in the crosses made in Jullundur and compare favourably with the results of Simla. Each berry contained 50–100 seeds. The results show that it is possible to take up breeding work in the plains regions. A further advantage is that two generations can be studied in one year, viz., F_1 seedling stage in the hills from the seeds obtained in crosses in Jullundur and $F_1 C_1$ stage in the plains with the tubers obtained in the seedlings grown in hills, which was not possible till recently. Maturity of berries is complete by early February in Jullundur. Seeds collected are germinated in Simla in March–April and the tubers of seedling clones are available for planting in the same year in October in Jullundur.

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Simla (H.P.), June 15, 1972. PRAKASH MISRA.

Award of Research Degrees

The M.S. University of Baroda has awarded the Ph.D. degree in Physics to Shri Dahyabhai Jinabhai Vaghari; Ph.D. degree in Chemistry to Kumari H. S. Rama; Ph.D. degree in Geology to Shri Premjibhai Prabhudas Patel. Shri Shashank Krishnalal Munshi and Shri Jagdishchandra Prayagji-bhai Patel.

Berhampur University has awarded the Ph.D. degree in Mathematics to Shri Fakir Mohan Meher.

Sri Venkateswara University, Tirupati, has awarded the Ph.D. degree in Geology to Shri K. Anjanappa; Ph.D. degree in Zoology to Shri M. Ravindranath Gupta.