biochemical changes incurring in the host-parasite interactions of obligate parasites.

MSCP acknowledges financial assistance of the CSIR, New Delhi.

20 July 1983; Revised 7 October 1983

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SUGARCANE MOSAIC VIRUS STRAIN H—A NEW RECORD FROM INDIA

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SUGARCANE is affected by more than 100 diseases in this country[1]. Of these, mosaic is most widely distributed. The mosaic virus (SCMV) has various strains which differ in their ability to incite infection and induce deterioration in sugarcane. Strains A, B, C, D, E, F and G were identified[2] and revised[3]. Strain G was a variant of B. Later, strain H and I from Louisiana[4,5], J from Ohio[6], K from Meridian, Mississippi[7], L from Meigs, Georgia[8] and strain M from Louisiana[9] were reported. Strains A, F[10], D[11], B[12], C and E[13] and J[14] were identified from India. We now report the occurrence of a strain which was not recorded earlier from India.

The isolate was collected from sugarcane cv. Q49 from Tungabhadra Project Area (TBP), Basapur Village, Karnataka and maintained on the same cultivar since 1980 by vegetative propagation in the insect proof wire mesh. On sugarcane, the infected plants exhibited mild mosaic symptoms with indistinct white stripes (figure 1).

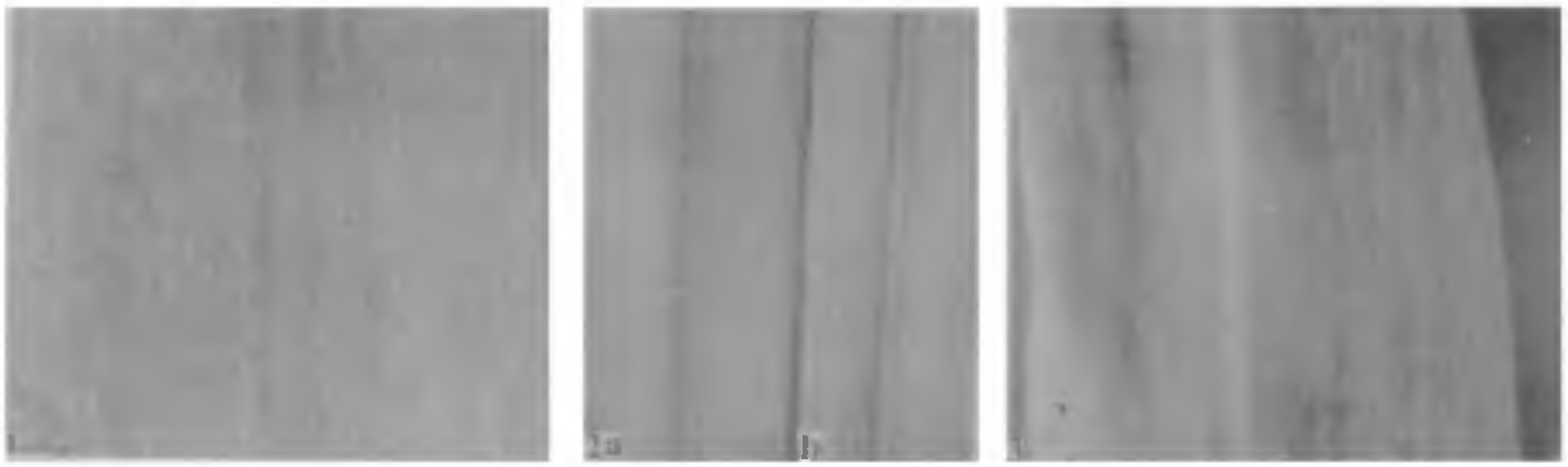
The healthy sugarcane differentials *viz* CP 31/294, CP 31/588 and CO 281 were obtained from the world germplasm maintained at west coast Regional Station, Cannanore, Kerala. Seeds of sorghum differentials-Rio, Atlas, Collier, Sart and Johnsongrass were obtained from Dr A. G. Gillaspie, Jr., Beltsville, Maryland, Dr J. L. Dale, Dr J. O. York, Arkansas, Dr Voigt, Dr S. M. Alcorn, Tucson, Arizona, Dr D. M. Broadhead, Mississippi and Prof. M. N. Prasad, TNAU, Coimbatore.

Eighteen healthy commercial sugarcane varieties were collected from ARS, Perumallapalli, Tirupati and maintained in 23 cm pots by single bud propagation. The discovery of sorghum Atlas as a local lesion host for SCMV-E[15], led to an intensive search with nearly 250 lines of sorghi obtained from different sources (world collection) for this new isolate.

To prepare inoculum, leaves were washed with cold distilled water, blotted dry and cut into small strips. Weighed amounts were ground using mortar and pestle in 0.005 M phosphate buffer (pH 7.5) along with 0.005 M DIECA (sodium diethyl dithiocarbamate), 0.005 M sodium chloride and 0.01 M 2-mercapto-ethanol. The sap was filtered through two layers of muslin cloth; carborundum (400 mesh) was directly added to the sap. Matz's method[16] was used to inoculate sugarcane plants of 1–2 leaf stage for 2–3 times at one week-interval. The sorghi were inoculated by drawing the leaves between the thumb and fore-finger. The symptoms on sugarcane were read at weekly intervals for 4–8 weeks and those on sorghi for 4 weeks.

Farrag *et al.*[17] reported that soybean (*Glycine max*) and green gram (*Vigna radiatus*) as the local lesion hosts for SCMV. So, a preliminary search with 20 lines of green gram (supplied by Associate Director, APAU, Tirupati) was made with this new isolate. The cotyledonary leaves were inoculated and the symptoms were read at 1 week interval.

Physical properties were assayed on sorghum Rio,



Figures 1–3. 1. Sugarcane cv. Q49—original source showing white stripes. **2a.** Sugarcane differential cv. CP31/294 showing uniform, mild mottling. **2b.** Sugarcane differential cv. CP31/588 showing diffused mild mosaic. **3.** Sorghum cv. Rio showing mild mosaic symptoms.

the most susceptible host and fifty plants were inoculated per treatment.

Aphid transmission was conducted with two aphids *viz.*, *Rhopalosiphum maidis* (*Fitch*) and *Melanaphis* (*Longiunguis*) *sacchari* (*Zehnt*) which were maintained on healthy sorghum plants. The aphids were starved for 30 min. and later on were fed on diseased Rio sorghum for 10–15 min. Then they were immediately transferred to young and vigorously growing Rio sorghum in groups of 5–10 aphids/plant and left overnight. In the morning, the aphids were killed by spraying dimethoate and plants were observed for disease development.

For seed transmission, seeds were collected from 5 Rio plants which exhibited typical mosaic symptoms in the glass house. They were raised in seed pans of sterilised soil and were observed for mosaic symptoms for 4 weeks.

On CP 31/294, mild mottling symptoms were developed 23 days after inoculation (figure 2a), disappeared 45 days later and reappeared one month after, a characteristic feature with many of the isolates designated as SCMV-H[3]. Suckering occurred, but growing points were not killed.

On CP 31/588, the new isolate produced only diffused mild mottling, characteristic of strain H (figure 2b). Sugarcane cv. CO 281 reacted by producing very mild mottling. However, the isolate under this study is different from the Philippines isolate[18] which could not infect CP 31/588 and CO 281; but resembled the original isolate from Louisiana in symptomatology on sugarcane differentials[3]. Our isolate produced transient mosaic symptoms in 10–15% of Johnson grass which was easily infected using this buffer. Dosayla and Benigno[18] did not test their isolate on Johnsongrass.

Table 1 *Hostrange*

Test Plant	Symptoms
Sugarcane CV. CP 31/294	mild mosaic
" " CP 31/588	"
" " CO 281	"
" " CO 7702	"
" " CO 7703	"
" " CO 8125	"
" " 79 A80	"
" " 79 A269	"
" " 79 A399	"
" " Q 49	"
" " M 147/44	"
Sorghum bicolor CV. Rio	"
" " Atlas	m, R, n
" " Collier	mm
" " Sart	"
" " TNS*	y, sm
" " Controversum	sm
Sorghum bicolor CV. hewisonii.	sm
" " verticilliflorum	mm
" " saccharatum	y, sm
Sorghum halepense (Johnson grass)	mm
Eleusine coracana	—
Zea mays CV. 110	—
" " 410	—
Oryza sativa (local)	—
Pennisetum purpureum (Elephant grass)	—
Rottboellia exaltata (Raoul grass)	—
Coix lacryma Jobi	—
Cyperus rotandus (Nut grass)	—
Green gram CV. ML 12	y, n
" " MGK 4	"
" " PIMS 1	"
" " T 44	"
" " TT 8E	"

Only important test plants are listed.
mm – mild mosaic, sm – severe mosaic, y – yellowing of spindle leaves, R – reddening, n – necrosis, — = No reaction.
* All 30 TNS varieties showed severe yellowing of spindle leaves and severe mosaic uniformly.

On Sorghum Rio this isolate produced mild mosaic symptoms in the entire leafblade (figure 3). None of the 250 lines of sorghi tested produced local lesions with the new isolate. There is no report of local lesion host with SCMV strain H until today.

Yellowing and necrosis was observed on primary leaves of five lines of green gram one week after inoculation. Though the necrosis resembled the translocated necrotic local lesions[17], the virus could not be recovered. The reaction of the rest of the varieties is shown in table 1.

Physical properties: The dilution end point was between 10^3 and 10^4, the thermal inactivation point between 56 and 58 C and longevity *in vitro* for 72 hr at room temperature (32°C); and these were in accordance with the other SCMV strains.

In three experiments, both *R. maidis* and *M. Sacchari* could transmit the disease from Rio to Rio seedlings showing 50% and 65% transmission, respectively.

No seed transmission was observed in any of the 1200 sorghum seedlings even four weeks after germination.

The symptomatology on sugarcane and sorghum differentials, aphid transmission and physical properties of the present isolate resemble very closely those of strain H reported from other countries[3,7,18].

In the present study, SCMV strain H is thus reported for the first time from India.

KE is grateful to UGC, New Delhi, for financial assistance.

13 July 1983, Revised 26 October 1983

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POST-INFECTION CHANGES OF CHITIN IN BANANA FRUITS

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THE convential method of determining fungal infection in plant tissues is by transferring a portion of host tissues to a suitable medium and allowing the growth of the organism. However, determination of fungal presence through measurements of fungal chitin (cell-wall constituent of most fungi) may have great promise. The assay procedure, which is more rapid than the plating method, is also considered to be more sensitive and needs fewer samples for analysis. This method is based on the alkaline depolymerisation and deacetylation of chitin (a linear polymer of β 1,4 linked N-acetyl-glucosamine) to glucosamine which on deamination yields aldehydes that are colorimetrically estimated. Although glucosamine may be present in many plant tissues, it does not interfere with the determination of the total glucosamine obtained from chitin, since the amount present is known to be characteristics of the species.

Golubchuk *et al*[2] studied the chitin content of hydrolysed crude fibre preparation of 5 varieties of wheat with varying degrees of fungus invasion and concluded that the measurement of chitin could offer promise in the evaluation of deterioration of wheat on storage, but the analytical procedure needed improve-