Peronospora. Conidia hyaline, produced singly at the apex of the conidiophore, 1-celled, of irregular form, 42–75 μ long, 10–15 μ wide.

During this study it was observed that the papaya variety Washington showed infection of both *A. caricae* and *Laveillula taurica* in nature.

Occurrence of *Oidiopsal* powdery mildew on *Carica papaya* appears to be a new host for *Leveillula taurica.* In nature it appears that mixed infection by *Acrosporium caricae* and *Leveillula taurica* may occur simultaneously but the former appears to be most prevalent one. *Acrosporium indicum* (Kamat) Subram,[1]. *Ovulariopsis papaya* van der Bijl[2] and *Ovulariopsis caricae* Sawada[3], were not encountered during this study. Further study on screening of different species and varieties is in progress.

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THE OCCURRENCE OF *PSEUDOCERCOSPORA NIGRICANS* ON *CASSIA OBTUSIFOLIA* IN INDIA

THE authors observed small, circular to irregular, light brown spots, 5 to 9 mm in size, on both the surfaces of the living leaves of almost all the plants of *Cassia obtusifolia* Linn. at Modinagar. Microscopic examination of the infected portions revealed the presence of *Pseudocercospora nigricans* (Ckc) Deighton. The present rommunication constitutes the first report of the occurrence of the fungus on *Cassia obtusifolia* in India. The herbarium specimens have been deposited at CMI, Kew, as IMI 222856 and Cryptogamic Herbariuf, M.M. College, Modinagar, as CH-MMCM No. F/59.01.

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CHLOROTIC MOTTLE OF *CHRYSANTHEMUM MORIFOLIUM* (RAM.) HEMSL—A NEW RECORD FROM INDIA

CHLOROTIC mottle of *Chrysanthemum morifolium* was first observed in 1967[1–2]. In India it is being reported for the first time and affects several chrysanthemum cultivars. During winter 1977, most of the leaves of chyrsanthemum plants in our nursery showed mottling of leaves followed by severe chlorosis (Fig. 1). The growth and quality of the blooms of infected plants were also decreased.

FIG. 1

These symptoms are different from known fungal, bacterial or nematode infections[3]. However, Woltz and Jackson[4] have described a similar 'yellow strap' leaf disease apparently caused by accumulation of certain aminoacids in the root zone.

No symptoms were expressed under low light and cool temperature. Further, although clear in the month of March (25–28° C), the symptoms became reduced or less distinct at higher temperatures (above 30° C); expression of symptoms were also masked in summer (above 35° C).

The disease is readily transmitted both by graft and sap prepared in phosphate buffer (pH 7·0 and 0·1 M) and applied with carborundum (600 mesh) powder as an abrasive.

The infective agent was limited to chrysanthemum only. Sap inoculations made on *Chenopodium amaranticolor, C. quinoa, Lycopersicon esculentum,*

Cathranthus roseus, *Datura metel*, *D. stramonium*, *Nicotiana glutinosa*, *N. tabacum* 'Samsun NN', *N. tabacum* 'White burley', *N. plumbiginifolia*, *N. clevandalii*, *Petunia hybrida*, *Zinnia elegans*, *Gomphrena globosa*, *Vigna sinensis*, *Cucumis sativus*, *Dianthus barbatus*, *Calendula officinalis*, *Phlox drummondii* and *Beta vulgaris* were ineffective; none of the plants developed symptoms for a whole month.

These tests revealed that the diseased chrysanthemum did not carry tobacco mosaic virus, chrysanthemum aspermy virus, chrysanthemum virus B; because these agents are easily transmissible to other hosts.

Electron microscope studies (dip preparations) have failed to demonstrate virus-like particles or other structures of possible etiological significance. However, symptomatology, transmission and host range studies revealed that the present disease causing agent was very close to chrysanthemum chlorotic mottle virus described by Dimock *et al.*[2]. Further studies are in progress for ascertaining whether this agent is a viroid.

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SEASONAL PERIODICITY OF CYANOPHAGE AC-1

THE lytic cyanophage AC–1 was first isolated by Venkataraman *et al.*[1] and subsequently Sharma *et al.*[2] described its structure. The present communication deals with the magnitude and seasonal incidence of this phage in a waste stabilization pond.

The waste stabilization pond located near the Agronomy Division of the Indian Agricultural Research Institute, New Delhi, was examined over a 20-month period during 1975 and 1976 for the seasonal distribution pattern of AC–1. Waters from waste stabilization ponds in Nagpur and Ahmedabad as well as the fresh water from Ganges at Hardwar were also examined for the presence of this phage. On every 20th of each month, one litre samples were collected for the assay. Lysis of *Anacystis nidulans* was used as the basis for detecting the presence of the phage. For direct phage counts 50 ml of water were filtered and 10 ml portion of the filtrate was shaken with 0·2 ml of chloroform, allowed to settle for 30 min. and plaque assayed[3], using 1 ml of the treated sample and 1·5 ml of the host alga *Anacystis nidulans*. Salt blanks were used to detect the possible introduction of extraneous cyanophage into the system.

Plates were incubated at 30°C under continuous illumination provided by a bank of fluorescent tubes at a light intensity of 4000 lux. After an incubation period of 10 days the plaque counts were made.

The water sample was also tested against 15 other blue-green algal species, one green alga and 4 heterotrophic and one photosynthetic bacteria (Table I). Most of the blue greens were cultured in Watanabe medium[4] to which A_5 micronutrient solution[5] was added. For *Spirulina platensis*, the medium was supplemented with 18 g $NaHCO_3$/l and *Chlorella* was cultured in Craig and Trelease medium[6]. Cultures in specialized media were *Azotobacter*[7] and *Rhizobium* spp.[8] *Rhodopseudomonas* was cultured under anaerobic conditions in Van Niel medium[9], supplemented with sodium propionate, yeast extract and peptone.

TABLE I

Organisms tested for their susceptibility to cyanophage AC–1 (+ susceptible; — nonsusceptible)

Organisms	Susceptibility
Blue-green algae	
Anabaena spp. (5 strains)	—
Anacystis nidulans	+
Aulosira fertilissima	—
Calothrix brevissima	—
Chroococcus minor	+
Nostoc commune	—
Nostoc muscorum	—
Nostoc punctiforme	—
Plectonema boryanum	—
Plectonema nostocorum	—
Spirulina platensis	—
Tolypothrix tenuis	—
Green alga	
Chlorella vulgaris	—
Bacteria	
Azotobacter chroococcum	—
Rhizobium leguminosarum	—
Rhizobium meliloti	—
Rhizobium trifolii	—
Rhodopseudomonas capsulatus	—

AC–1 could not be detected either in the waste stabilization pond waters from Nagpur and Ahmedabad or in the Ganges water. Particularly striking were the relatively high yields in the samples from the Waste stabilization pond inside the Indian Agricultural Research Institute Campus. Fig. 1 shows the seasonal incidence of AC–1 in this pond over a period of 20 months. Though differences were noticed in the absolute number of plaque forming units during 1975