The microflora such as *Achromobacter*, *Escherichia* and *Neisseria* reported by Rajagopalan and Sivalingam[8] were not encountered in the present study. Such variation in species composition of bacterial flora observed might be due to the effect of environmental conditions and the bacteriological status of water as bivalves respond rapidly to ambient bacterial load. The predominance of the genus *Vibrio* in the pseudofaeces indicates its preference in an enteric habitat. Since pseudofaeces constitute mostly the undigested material, recovery of the genus *Vibrio* in maximum numbers agrees with the findings of Prieur[10] who observed the presence of intact cells of *Vibrio* in the hindgut of *Mytilus edulis*. Thus the preponderance of *Vibrio* recorded from the pseudofaeces can be attributed to the resistance of bacteria to the digestive secretions of the host and their subsequent proliferation in the gut[10].

The presence of bacteria belonging to 'Enterobacteriaceae' group indicates their origin from faecal pollution in the estuary. No reason could be attributed to the occurrence of maximum number of proteolytic forms in the mantle and lipolytic forms in the pseudofaeces. However, the present study is only preliminary and a long term monitoring of the bacterial flora harboured in the animal, surrounding water and sediment will gain paramount importance to understand the impact of environment on the bacteriological quality of *P. viridis*.

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1. Appu Kuttan, R. K., Prabhakaran Nair, T., Mathew Joseph and Thomas, K. T., *CMFRI Bull.*, 1980, **29**, p.30.
2. Kuriakose, P. S. and Nair, K. B., *CMFRI Bull.*, 1980, **29**, p. 33.
3. Rangarajan, K. and Narasimhan, K. A., *CMFRI Bull.*, 1980, **29**, p. 39.
4. W.H.O. *WHO Tech. Rep.*, 1974, **550**, 62.
5. Simidu, U. and Aiso, K., *Bull. Jpn. Soc. Fish.*, 1962, **28**, 1133.
6. Shewan, J. M., Hobbs, G. and Hodgkiss, A., *J. Appl. Bacteriol.*, 1960, **23**, 379.
7. Buchanan, R. E. and Gibbons, N. E., *Bergey's manual of determinative bacteriology*, Eighth edition, Waverly Press Inc., Baltimore, U.S.A., 1974.
8. Rajagopalan, K. and Sivalingam, P. M., *Mal. Appl. Biol.*, 1978, **7**, 43.
9. Thankappan Pillai, C., *CMFRI Bull.*, 1980, **29**, p. 41.
10. Prieur, D., *Kieler Meeresforsch Sondern*, 1981, **5**, p. 376.

UNRECORDED PATHOGEN ON BETELVINE CAUSING ANTHRACNOSE

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BETELVINE (*Piper betle* Linn) is grown in an area of 8221 ha in Karnataka alone and is considered to be a good foreign exchange earner in India. However, this crop suffers from many destructive diseases and one of them is anthracnose caused by *Colletotrichum* spp.

During 1984–85 an intensive survey was made in various districts of Karnataka and the anthracnose incidence was as high as 19%. A close examination of the infected vine indicated depressed lesions on various parts of the vines. On the leaves, the lesions were circular to irregular, light to dark brown surrounded by a yellowish halo, the centre of such spots later turned straw yellow in colour. The spots often coalesced to form bigger patches. On the stems, branches and petioles small, black, irregular specks were seen which occasionally ruptured the cortex underneath. Often the spots grew along the length of the stem in which case the part of the vine above the diseased internode wilted.

Tissue isolations from various parts of the plants yielded a species of *Colletotrichum*. Pathogenicity test was proved and typical symptoms appeared on vines after 4 to 7 days of inoculation. The fungus colony was greyish black and smooth. Conidia were oblong hyaline, non-septate with rounded ends, having oil-globules in the centre, formed in aggregates in culture and measured $8.6\text{–}19.9 \times 3.5 - 6.5\ \mu$. Comparing the descriptions of various species of *Colletotrichum* recorded on betelvine, the fungus under consideration has been identified as *Colletotrichum gloeosporioides* (Penz) Penz and Sacc. The fungus culture has been deposited in C.M.I. herbarium with accession Herb. IMI 286338.

The review of literature revealed that *C. piperis* Petch[1], *C. dasturi* Roy[2] and *C. capsici* (Syd) Butler and Bisby[3, 4] have been recorded on betelvine from various parts of India. Similarly, *Glomerella cingulata* (Stonem) Spauld and Schrenk[5], causing anthracnose has also been recorded on betelvine. However, there is no record of *C. gloeosporioides* on this crop. Hence, this constitutes a new species of *Colletotrichum* on betelvine.

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1. Dastur, J. F., *Proc. Indian Acad. Sci.*, 1935, **B22,** 189.
2. Roy, T. C., *J. Indian Bot. Soc.*, 1948, **27,** 96.
3. Singh, R. A. and Shankar, G., *Mycopath. Mycol. Appl.*, 1971, **43,** 109.
4. Maiti, S. and Sen, C., *PANS*, 1979, **25,** 150.
5. Dastur, J. F., *Agric. Livestock, India*, 1931, **1,** 26.

EFFECT OF HOST CELL INJURY ON GERMINATION AND COLONIZATION OF *CERCOSPORIDIUM PERSONATUM*

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CERCOSPORIDIUM PERSONATUM (B & C) Deighton, is a serious pathogen of groundnut causing 'Tikka' leaf spot disease. It starts its parasitic life as a biotroph maintaining the integrity of cells but turns necrotrophic later forming discrete lesions of moribund tissues. It was, therefore, of interest to see whether injury to cells or tissues predisposes the plants to infection or in any way helps to hasten the infection process.

Conidial suspension of *C. personatum* was prepared and sprayed on to the abaxial surface of groundnut leaves. Before spraying, each half of the leaves was mildly injured using a sterile spatula while the other half was left undisturbed to serve as controls. Leaves were incubated in moist chambers and the number of spots was counted on the 15th day. While 93 dark-brown spots appeared on the ten injured halves, only 65 were observed on the corresponding uninjured halves. Though cell injury seems to favour the fungus in colonization, there was no effect on incubation time.

To understand how the host cell injury favoured the fungus the effect of diffusates from the injured and uninjured halves on germination of spores was also studied. Diffusates were collected, filter-sterilized and used as media for germination of *C. personatum* conidia. After 24 hr, the percentage of germination as well as the germ-tube length was recorded. Germination was appreciably higher in the diffusates from injured (75.3%) and uninjured cells (76.6%) than the controls (65.5%) but did not differ significantly between them in this effect. Similar results were obtained for germ-tube growth also.

It appears that cell injury by virtue of providing nutrients to fungus favours colonization, but has no effect on the pre-colonization phase. That the fungus behaves as a biotroph during the initial stages also substantiates the view.

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RELATIVE EFFECTS OF NITROGEN NUTRITION ON STOMATAL AND NONSTOMATAL COMPONENTS OF PHOTOSYNTHESIS IN WHEAT

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EARLIER studies show that the effect of nitrogen on photosynthate production is primarily brought about by effects on the size and duration of leaf area[1,2]. However, the overall response of photosynthesis to nitrogen nutrition has not been well defined. In the present study the effect of nitrogen nutrition on the photosynthetic efficiency of wheat (*Triticum aestivum*) was analyzed.

Wheat plants were grown under field conditions at high nitrogen (250 kg N/ha) and low nitrogen (110 kg N/ha) fertilizer treatments. Phosphorus and potash were given as basal dose and nitrogen in split doses before and after double ridge stage formation. All the