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## PRESENT STATUS OF THE POTATO CYST NEMATODES IN THE NILGIRIS, TAMIL NADU

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FIELD-TO-FIELD survey conducted during 1964–70, in the Nilgiris district of Tamil Nadu, for the potato cyst nematodes, *Globodera rostochiensis* and *G. pallida* showed that an area of approximately 3050 ha was infested<sup>1,2</sup>. A random roving survey was conducted during July 1987 to assess the status of the potato cyst nematodes in the Nilgiris. Information on the time of planting, variety and management practices, including application of organic manure and nematicides, and crop rotation followed, were recorded for each holding surveyed. Potato production figures for the district for 1971–76, during which period very high doses of fensulfothion were applied, were also analysed with the objective of assessing yield loss due to the nematodes.

The survey was conducted in the crop planted during April–May 1987 in 48 revenue villages. The intensity of infestation<sup>3</sup> was graded as follows:

Females per inch of root	Grade
None	1
1	2
5	3
> 10	4

The potato area in the Nilgiris represents 1.1% of the total area in the country under this crop. The average production is 6.717 mt/ha. During 1971–76, when massive doses of fensulfothion were applied

under the Indo–German Hill Development Programme, the yield increased to 8–11 mt/ha, and declined steadily thereafter to yields below 6 mt/ha.

Cyst nematode infestation was prevalent in all the three divisions of the district, viz. Uthagamandalam (Ooty), Coonoor and Kotagiri (table 1). Both *G. rostochiensis* and *G. pallida* were found in all three divisions and mixed populations of both the species were more common. The infestation level was grade 2.7 (2.5–8 females per inch of root) in fields where potato was rotated with wheat, garlic, cole crops or finger millet, compared to 2.8 (2.5–8.5 females per inch of root) where potato followed potato.

In Uthagamandalam division farmers generally applied 25–50 kg of carbofuran 3G per ha during planting. The level of infestation was grade 2.84 in the nematicide-treated holdings compared to 3.74 in holdings where no nematicide was applied. In Coonoor and Kotagiri divisions carbofuran 3G was applied at lower doses ranging from 12.25 kg per ha and the infestation level was 3.19 and 2.55 in treated and untreated fields in Coonoor and 2.42 and 2.91, respectively, in Kotagiri.

Both *G. rostochiensis* and *G. pallida* infested the resistant cultivar Kufri Swarna and the mean level of infestation was 1.7 (1–2.5 females per inch of root). The infestation level in susceptible cultivars like Kufri Jyothi and Holland was 2.7 (3.8 females per inch of root).

The mean level of infestation of 2.7 observed in the present survey in susceptible cultivars would result in about 30% loss in yield on the basis of the regression between root population per inch of root and yield<sup>3</sup>. The annual loss in yield then would be 6090 mt, if the infested area is taken as 70% of the total area under potato in the district. The monetary loss would be about 121.8 million rupees per annum.

The yield loss figures arrived at on the basis of the survey compare favourably with earlier data<sup>4</sup> on increase in yield due to fensulfothion application.

The resistant cultivar Kufri Swarna has field resistance to the cyst nematodes. Since it is derived from the clone 62.33.3 ex *S. vernei*, resistance to pathotypes Ro 1, 2, 3 and 4 of *G. rostochiensis* and pa 1 and 2 of *G. pallida* could be expected. Infestation of this cultivar by both the species in 61.5% of the holdings surveyed indicates the presence of the pathotypes Ro5 and pa3 or others not yet identified. The immediate need for identification of pathotypes prevalent in different localities in the Nilgiris and evolving nematode management practices for Kufri Swarna are indicated.

Table 1 Potato cyst nematode infestation in the Nilgiris

Division	Number of villages surveyed	Number of holdings surveyed	Number of holdings infested	Level of infestation (grade)	Nematode species (number of holdings)		
					GR	GP	Mixture
Ooty	84	236	180	2.6	43	41	96
Coonoor	58	260	182	2.7	36	15	131
Kotagiri	47	101	61	2.7	12	5	44
Total	189	597	423		81	61	281

GR, *Globodera rostochiensis*; GP, *G. pallida*.

The following integrated cyst nematode management practices are suggested based on the findings of the present survey and earlier findings.

1. Adoption of a two-year rotation with non-host crops like French bean, pea and garlic, which causes a decline of nematode population by 80–90%<sup>5</sup>.

2. Cultivation of the cyst nematode resistant cultivar Kufri Swarna once in two years combined with application of carbofuran at 1.125 kg a.i. per ha during planting.

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### RARE OCCURRENCE OF *BALANUS AMPHITRITE* DARWIN, 1854, INSIDE THE COCK'S COMB OYSTER *CRASSOSTREA CRISTAGALLI* (LINNAEUS, 1758)

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BARNACLES, by virtue of their ability to settle on any hard object, have attracted the attention of several workers<sup>1–6</sup>. From Indian waters, contributions made by Patil<sup>7</sup>, Bhat and Bal<sup>8</sup>, and Daniel<sup>9</sup> have added much information on this animal group. They are broadly divided into two groups, namely the pedunculate and the sessile barnacles<sup>9</sup>. Pedunculate barnacles are usually collected from floating objects like wood, logs and bottoms of fishing vessels, and sessile barnacles from rocky surfaces, piers, and molluscan and crustacean shells. Only the lepidomorph sessile barnacles (*Octolasmis* spp.) are known to inhabit the gills of crabs and lobsters, leading an ectosymbiotic life<sup>10</sup>. The molluscan forms usually associated with sessile barnacles are *Turritella angulata*, *Murex tribulus*, *Bursa spinosa*, *Pinna pectinata* and *Placenta placenta*. But in most cases, the barnacles were found attached on the external surface of the shell of these organisms.

During our routine survey in the rocky shore at Tuticorin, Tamil Nadu, we came across a live barnacle, *Balanus amphitrite*, attached inside the left valve of the Cock's comb oyster, *Crassostrea cristagalli*. The barnacle was found attached to the adductor muscle (figures 1 and 2). The shell of the oyster measured 4.7 cm in length and 4 cm in width. The barnacle measured 0.89 cm in height and 0.67 cm in diameter. The barnacle was active during collection, with the cilia actively sweeping the water for food particles. This observation is of interest in