Uninoculated plants subjected to varying dosages of oil cake from single to triple showed a gradual incrase in total free amino acid contents as against control plants (Table I). It is suggested that the increased amino acid content might be due to host response in synthesizing new amino acids through metabolic pathways and degradation of old protein.

TABLE I : *Total free amino acid for various treatments*

Treatments		Total free amino acid (readings are expressed in percentage
Uninoculated	(untreated	0.0206
Uninoculated	(Single dosage)	0.0762
Uninoculated	(Double dosage)	0.2269
Uninoculated	(Triple dosage)	0 1405
Inoculated	(untreated)	0.2585
Inoculated	(Single dosage)	0.1069
Inoculated	(Double dosage)	0.0314
Inoculated	(Triple dosage)	0.0286

Each value is an average of four replicates.

In infected plant, subjected to varying dosages of oil cakes, from single to triple, the impact of infection was found to be reduced by the nutritional stress, as seen through the decreased amount of free amino acid as against the infected plant not subjected to nutritional stress. Nutritional stress by oil cakes was found to be an important manure resulting in luxury growth (Mankau, 1963). However, the same oil cake cannot be considered to be responsible for effective control of nematodes.

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Additional host records of root-knot nematode, Meloidogyne incognita

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Root galls have been recorded on several plants on Central Plantation Crops Research Institute farm. From perineal pattern of females, obtained from these galls, the nematode was identified as *Meloidogyne incognita* (Kofoid and White) Chitw. Infested plants, *Amaranthus spinosa.*, *Codiaeum variegatum Cymbopogon flexuosus* (Mala-

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bar lemon grass), *Ixora singaporensis*, *Micrococca mercurialis* *Mu. raya koenigii* *Portulaca grandiflora* Hook and *Ravenala madagascarensis* Sonn. Travellers' palm) are new host records for *M. incognita*.

On inoculation with *M. incognita* populations, *Areca calapparia* type Saigon (VTL-27), *A. macrocalyx* type New Ireland (VTL-43), *A. normanbyii* type Australia (VTL-23), *A. triandra* type Indonesia-1 (VTL-6) and Indonesia-2 (VTL-7) exhibited root galls and supported population build up. They are also new host records for *M. incognita*.

Areca catechu (arecanut) was reported as a host of *M. incognita* in the Philippines by Pizzaro (1969). Nair (1964) reported *M. javanica* on arecanut in India. The cultivars Chickmagalore, Dapoli, Fiji VTL-26), Hirehalli, Indonesia-5 (VTL-11), Local (South Kanara), Mahuva-A, Mangala (VTL-3), Mohitnagar, Peechi, Saigon-1 (VTL-12), Saigon-3 (VTL-14), Saigon-1 (VTL-28a), Saigon-2 (VTL-28b) Saigon-3, (VTL-28c), Singapore (VTL-17), Solomon Islands-2 (VTL-18b), Solomon Islands-3 (VTL-18c), Sreevardhan, Sweet areca, Thirthahalli, Thirthahally oblong and Thirthahalli oval of *Areca catechu* on inoculation with *M. incognita* also produced galls on the root system.

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* VTL-Accession number of exotic types of the *Areca* germplasm collection maintained at Central Plantation Crops Research Institute, Regional Station, Vittal-574243, South Kanara, Karnataka.

Pathogenicity of Tylenchorhynchus vulgaris on Anjan Grass, Cenchrus ciliaris cv. Igfri-s-3108

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Cenchrus ciliaris L., populary known as *anjad*, is an important drought resistant pasture grass of the north and north-western arid and semi-arid areas. It constitutes a co-dominant species of the important grass cover, *Dicanthium-Cenchrus-Lasiurus*.

During surveys, conducted in the *Cenchrus* sown pastures at the Institute, stunt nematode (*Tylenchorhynchus vulgaris*) was found to be associated with the silvi-pastoral system of forage production (Azmi and Ahmad, 1980). Fields as well as green house nurseries of *anjan* grass were found to be harbouring large population of *T. vulgaris*, a nematode species reported to be pathogenic for *bajra* (Vashnav & Sethi, 1978). Therefore, pathogenity studies were conducted, under pot culture, on a promising selection of *anjan* grass.

Fifteen day old germinated seeds of *C. ciliaris* cv. IGFRI-S-3108, were planted (one per pot) in 25 cm earthern pots, containing 500 ml of sterilized mixture of sieved field soil (75 per cent) and sand (25 per cent). The seedlings were inoculated lat r with nemetodes. Twentyfour pots were each inoculated in a logarithmic series (10, 100, 1000, 10000), with one series as uninoculated control. The experiment was replicated six times and lasted for 150 days.