lation of cajanol, cajanin and other related phytoalexins in etiolated stem of pigeonpea challenged with *H. carbonum*[5,6].

Phytoalexin surveys in the Papillionoideae, a subfamily of the Leguminoseae suggest that cajanol is of exceptionally rare occurrence. Indeed, apart from *C. cajan*, this isoflavanone has only been obtained from the hypocotyls of *Stizolobium deeringianum* (tribe Erythrineae) challenged with *H. carbonum*. There it co-occurs with various other isoflavanoids including genistein, 2 hydroxygenistein, dalbergioidin and a third isoflavanone provisionally identified as isoferreirin, (5,7,4′-trihydroxy-2′-methoxy isoflavanone). In *S. deeringianum*, the latter compound might represent the immediate biosynthetic precursor of cajanol[6].

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CHLOROPHYLL CONTENT IN RICE AS INFLUENCED BY THE ROOT-KNOT NEMATODE, *MELOIDOGYNE GRAMINICOLA* INFECTION

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THE root-knot nematode, *Meloidogyne graminicola* is one of the limiting factors in rice production. The symptoms of infection and root damage are expressed as stunting and chlorosis in plants[1]. Mohanty *et al*[2] observed a reduction (20–39.5%) in chlorophyll *a* and *b* fractions due to infection by this nematode in a susceptible rice variety. Such reductions were also observed in the root, root-lesion and lance nematode infections in rice[3,4]. In the present studies, changes in chlorophyll *a* and *b* fractions occurring in the resistant and susceptible rice varieties, following infection by the root-knot nematode, *M. graminicola* have been estimated.

Five rice varieties [MW 10, IR 36, Udaya (resistant), Annapurna and Parijat (susceptible)] were selected and the seeds of each variety were sown in 30 polypots containing 200 g steam sterilized soil at the rate of one seed/pot. When the seedlings were five days old, 15 seedlings from each variety were inoculated with 100 infective juveniles/pot. Thirty days after inoculation, leaves from both inoculated and uninoculated plants of each variety were clipped separately and soaked in 80% acetone, ground and extracted. The extract was centrifuged at 12,000 g for 5 min to allow the debris to settle. The supernatant was decanted and the volume made up to 25 ml with the addition of 80% acetone. The absorbance of the extract was recorded on spectrophotometer (Spectronic 20) and the chlorophyll was expressed[5] as mg/g. (i) Chlorophyll $a = 0.0127 \times \text{OD}663 - 0.00269 \times \text{OD}645$, and (ii) Chlorophyll $b = 0.0229 \times \text{OD}645 - 0.00468 \times \text{OD}663$, where OD (optical density) was estimated by absorbance by chlorophyll.

The *a* fraction of chlorophyll in the uninoculated plants ranged from 1.86 mg/g in Udaya to 2.50 mg/g in Parijat and in the inoculated plants, from 1.55 mg/g in MW 10 to 2.67 mg/g in Udaya (table 1). There was an increase by 43.5% in *a* fraction of chlorophyll due to nematode infestation in Udaya while in the other varieties there was a decrease from 2.2 in IR 36 to 20.8% in Annapurna.

The *b* fraction of chlorophyll in uninoculated plants ranged from 0.74 mg/g in Udaya to 0.88 mg/g in IR 36 and Parijat (table 1). In the inoculated plants, the *b* fraction ranged from 0.59 mg/g in MW 10 to 0.92 mg/g in Udaya. As with the *a* fraction, the *b* fraction of chlorophyll increased in Udaya by 24.3% while in the other varieties there was a decrease from 4.5% in Parijat to 28.6% in Annapurna.

These results confirmed the earlier reports on the reduction in chlorophyll *a* and *b* fractions (by 20 to 39.5%) due to this nematode infection in susceptible rice varieties[2]. Such reductions were also reported

Table 1 *Chlorophyll content in healthy plants and plants infected by Meloidogyne graminicola*

Variety	Chlorophyll *a* (mg/g leaf tissue)		Chlorophyll *b* (mg/g leaf tissue)	
	Healthy	Inoculated	Healthy	Inoculated
MW10	1.88	1 55 (17.5)	0.75	0.59 (21.3)
IR 36	2.30	2.24 (2.2)	0.88	0.83 (5.7)
Udaya	1.86	2.67 (+43.5)	0.74	0.92 (+24.3)
Annapurna	2.21	1.75 (20.8)	0.81	0.63 (28.6)
Parijat	2.50	2.23 (18.0)	0 88	0.84 (4.5)

Figures in parentheses indicate percentage reduction or increase (+) over healthy plants.

due to root, root-lesion and lance nematode infection in rice[3,4].

It is interesting to note that the reduction in chlorophyll *a* and *b* fractions was consistently higher in susceptible var. Annapurna (20.8 and 28.6%) and resistant var. MW 10 (17.5 and 21.3%). On the other hand, in Udaya both the fractions showed increase by 43.5 and 24.3% which could be due to the ability of plants to compensate for the ill-effects of the nematode injury to roots. The imbalance of chlorophyll fractions in the susceptible varieties may be correlated with the general chlorosis due to nematode infection in rice as in the leaves of chickpea plants affected by *M. javanica*[6].

In the rice var. Udaya, the nematode incidence being low, had less adversely affected the leaf chlorophyll which increased due to excitation by higher translocation of nutrients as in the case of low levels of *Hirschmanniella mucronata* incidence in susceptible rice var. IR 8 where no appreciable reduction in chlorophyll was observed and hence this nematode was found to be a highly successful parasite causing least lethal changes in nematode plant interface[3]. Consequently, even in root-knot nematode infestation the foliar symptoms were not discernable in a resistant variety like Udaya.

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HORMONAL INDUCTION OF PARTHENOCARPY IN *MOMORDICA COCHINCHINENSIS* SPRENG

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Momordica cochinchinensis Spreng. (Cucurbitaceae) is a popular summer vegetable in eastern and southern India[1]. The fruit is the edible part which is ovate oblong and takes between 9 and 14 days to mature and contains numerous seeds. In a young and developing fruit the seed coat is whitish, soft and delicate but subsequently it turns ash-coloured to black and hard, which is a major thaw in consumers' taste. In view of this, it is obvious that the development of parthenocarpic fruit will greatly enhance its food value and consumer acceptability. For the first time induction of parthenocarpy in *Momordica cochinchinensis* is reported here.

The development of parthenocarpic fruit can be artificially induced[2] in cucurbits using the spores of *Lycopodium* to provide false stimulation of pollination. It is also well known that fruit development can be made independent of fertilization or seed development by providing artificial stimuli, which may be dead pollen, pollen extract, incompatible pollen, auxins or synthetic hormones. For working on induced parthenocarpy in *M. cochinchinensis* there are some natural advantages. Since the plant is dioecious, emasculation is not required. The style is fleshy but short and the stigma is conspicuous with considerable surface area, which facilitates large number of pollen to adhere.

A two-pronged attempt was made to induce parthenocarpy — incompatible pollens and a range