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

A. K. HANDIQUE

Department of Botany and Plant Breeding, NEHU School of Agricultural Sciences and Rural Development, Medziphema 797 106, India.

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

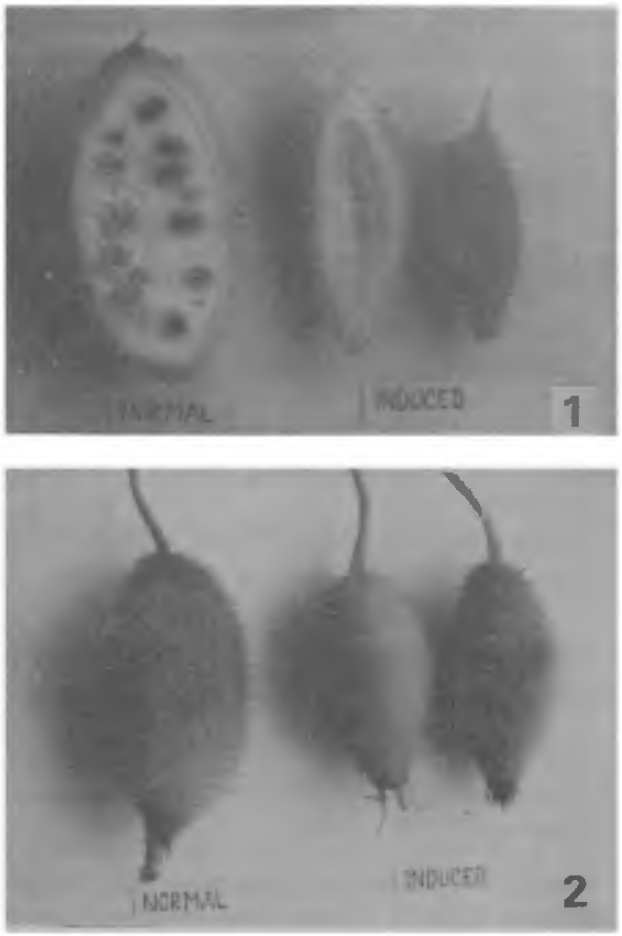
of hormones. Pollens of three different plants; one unrelated (*Hibiscus rosa-sinensis* L.), one distantly related (*Cucurbita moschata* Duch. ex Poir.) and the other closely related (*Momordica charantia* L.) were used. The selected female flower buds were bagged on the previous day and pollinated using fresh pollens between 9 a.m. and 10 a.m. when stigmatal receptivity was high. But this attempt was unsuccessful.

Four hormones were taken for the present study viz. indole acetic acid, gibberellin, kinetin and α-naphthaleneacetic acid. For each hormone two concentrations viz. 50 and 100 ppm were taken. Before applying hormone the stigmas were removed from the selected flower buds on the previous day of blooming to avoid natural pollination and the hormone was then applied. This was done by dipping the flower bud in a small beaker containing a particular hormone solution for a few seconds. On the day of blooming and the next day hormone was applied twice a day. In the following two to three days hormones were applied once a day. The control sets were left for open pollination. The results show that except α-NAA, there was no response to the other three hormones (table 1). In the case of α-NAA the response was total and dose-dependent. In the case of 50 ppm, although only 22% treated ovaries developed into parthenocarpic fruits, the other ovaries showed partial growth and remained fresh even for 12 days (the usual time for attaining full size and maturity). But the results with 100 ppm were very impressive as 95% treated ovaries turned parthenocarpic. The parthenocarpic fruits were with or without hollow interior and contained rudiments of ovules (figure 1).

Table 1 *Induction of parthenocarpy*

Agents for stimulus	Degree of parthenocarphy	Size of parthenocarpic fruit (% volume of normal fruit)
Pollen grain		
H. rosa-sinensis	– (30)	–
C. moschata	– (30)	–
M. charantia	– (30)	–
Hormones		
IAA		
(50 and 100 ppm)	– (50)	–
GA_3		
(50 and 100 ppm)	– (50)	–
Kinetin		
(50 and 100 ppm)	– (50)	–
α-NAA		
50 ppm	11 (50)	48–51
100 ppm	47 (50)	52–57

Figures in parentheses indicate the number of ovaries treated.



Figures 1 and 2. 1. The interior of normal and parthenocarpic fruits, and **2.** Normal and parthenocarpic fruits.

One drawback observed was that the parthenocarpic fruits were smaller than the normal fruits (figure 2). Compared to normal fruits their shape was somewhat elongated. The size of parthenocarpic fruits was expressed as per cent volume of the normal fruit. For this, the fruit was immersed in a measuring cylinder containing the required amount of water. The increase in water level was noted and from this difference, the size of parthenocarpic fruit was calculated as: $(V_p/V_n) \times 100$ where V_p is the volume of parthenocarpic fruit and V_n the volume of the normal fruit.

It is obvious that in *M. cochinchinensis* physical stimulus as provided by false pollination is ineffective although there is a record to the contrary in a related plant *M. dioica*[3]. It is chemical stimulus that works, which is a specific one as the plant

responds to only α-NAA. For the commercial application, however, further experimentations are necessary to screen a wide range of concentrations to improve the manner of application.

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A NEW WILT DISEASE OF HORSE-GRAM IN INDIA

D. MISHRA
Department of Plant Pathology, College of Agriculture, Bhubaneswar 751 003, India.

A severe wilt disease of horse-gram [*Macrotyloma uniflorum* (Lam.) Verdc] was observed in the Central Research Station, Orissa University of Agriculture and Technology, Bhubaneswar, during January 1986 on a one-month-old crop. Disease incidence ranged from 30 to 40%.

Symptoms of the disease first appeared as yellowing on the lower leaves which then proceeded upwards involving all the leaves. Under severe conditions, the stems also became yellow and infected plants could be well marked in patches from a distance. The uprooted infected plants showed rotting at the collar region below the soil level. Roots and rootlets showed extensive rotting with dark brown discoloration. Infected plants became stunted and lateral root formation was checked.

The pathogen was isolated from infected collar and root regions on potato dextrose agar (PDA) medium. Microscopic observations revealed the following: mycelium white to pale buff, flocose, septate and 1.6–4.7 μ wide; ascomata orange-brown to red, globose, 274.5–480.2 μ long and 321.6–447.6 μ in diameter; rhizoidal hyphae present, osteolate, consisting of vertically-oriented rows of hyaline thin-walled cells; asci cylindrical, thin-walled, 76.4–87.1 × 9.5–13.2 μ in size, not evanescent and 8-spored; ascospores univariately arranged, buff to salmon-pink in mass, pale yellow individually, globose to ellipsoidal, 9.3–13.2 × 6.2–12.8 μ (av. 11.3 × 9.5 μ) in size; ascospore wall 0.5–2.1 μ thick, rough and wavy margin. Based on these morphological characters the fungus was identified as *Neocosmospora vasinfecta* E. F. Smith var. *vasinfecta*[1] and confirmed by the CMI, Kew, England (IMI 302469).

For pathogenicity test, potted plants of the variety DHG-51, raised in sterilized soil, were inoculated with 15-day-old fungus culture grown on maize-meal and sand medium. An uninoculated set was maintained to serve as control. The wilting symptom was observed within 10 days after inoculation. On reisolation, the infected roots yielded pathogen identical to the original one characterized above.

Vasudeva[2] and Saharan[3] reported the isolation of *N. vasinfecta* from roots and seeds of horse-gram. However, this report constitutes a new report of *N. vasinfecta* var. *vasinfecta* causing wilt of horse-gram.

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COROLLOSPORA INTERMEDIA, A LIGNICOLOUS MARINE FUNGUS FROM INDIA

D. R. RAVIKUMAR* and
A. PURUSHOTHAMAN
CAS in Marine Biology, Annamalai University, Parangipettai 608 502, India.
** Present address: CAS in Botany, University of Madras, Madras 600 025, India.*

DURING the study on lignicolous marine fungi in the Vellar estuary, Tamil Nadu, we recorded one species of ascomycetous fungus, *Corollospora intermedia* which is a new record from India. Identification was made with the help of Kohlmeyer and Kohlmeyer[1]. A brief description of the fungus is given in this paper.

Corollospora intermedia, Schmidt, Nat. Naturschutz. Mecklenburg 7: 6 (1969), (figures 1–3).