

The following are some hitherto unrecorded observations on the ergot fungus (*Claviceps purpurea* (Fr.) Tul.) under tropical conditions of its growth.

(1) The sphacelial phase of the fungus did not end with the usual 'honey-dew' stage after a period of a week or two of the initiation of the sclerotium formation, but continued up to the time of its (sclerotium) harvest in the crevices on the sides of sclerotium near its base (Figs. 1 and 2). Small drops of 'honey' containing the sphacelial (conidial) spores were observed on the crevices near the base of the sclerotium partly enclosed under the covers of the glumes. This should be termed the secondary sphacelial stage. The spores of this secondary sphacelial stage were akin in all respects, including their viability, with those of the primary sphacelial stage.

(2) Sclerotia, apparently air-dried at the time of harvest, when stored in laboratory without additional sunning in not thoroughly dry glass-stoppered bottles, were soon found to be covered with a white downy growth. These growths, when examined under the microscope, were found to consist mainly of conidial spores of *Claviceps purpurea* (Fr.) Tul., together with a few mycelia. These conidial spores are more lanky than those of the 'honey dew' stage.

It appears that high humidity and high temperature favour continued production of conidial spores and so the continuation of the sphacelial stage.

The average monthly figures for minimum and maximum temperatures and humidity percentage for the period under observation are given in the accompanying table.

Period 1946	Temperature		Humidity		
	Min. ° F.	Max. ° F.	8 hr. I.S.T. %	12.30 hr. I.S.T. %	17 hr. I.S.T.* %
January	54.4	80.6	79.8	34.6	42.1
February	63.8	90.1	85.1	37.1	40.7
March	70.5	93.9	70.3	30.5	36.5
April	73.9	91.9	82.5	55.2	63.2

* I.S.T. (Indian standard time) is 5 hr. 30 min. behind Greenwich mean time.

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J. C. SAHA

Botanical Laboratory,
Presidency College,
Calcutta.

¹ Saha, J. C., and Bhattacharjee, S. K., *Nature*, **156**, 363 (1945).

² Hynes, J. J., *Agric. Gaz. N.S.W.*, Misc. Pub. No. 3218 (1941).

³ Thomas, K. M., and Ramkrishnan, F. S., *Madras Agric. J.*, **30**, No. 12 (1942).

Bud-rot of Areca Palms and 'Hidimundige' in Mysore

DR. M. J. THIRUMALACHAR's note¹ on bud rot of areca palms in Mysore is interesting; but is likely to add to the confusion in the literature of bud-rot. Nowell² was careful to separate red ring disease of coconuts from bud-rot. Bud-rot in the eastern tropics, hitherto fortunately never confused with eelworm attack, is due to *Phytophthora*, and in Mysore, Dr. L. C. Coleman³ and I⁴ have found that the fungus produces bud-rot of areca palms. Bud-rot of palms has also been ascribed to *Bacillus coli*. It is only secondary in red ring.

The 'Hirethota' disease of areca palms differs in almost every respect from red ring of coco-nuts, as seen below.

Hirethota disease	Red ring disease
1. No yellowing or wilting of pinnae.	Yellowing and wilting of pinnae.
2. Green nuts not shed.	Green nuts in all stages of immaturity shed.
3. Leaves shed, bud and crown rot, leaving bare stem.	Leaves not shed, crown not involved in rot.
4. Nema present in vessels of vascular bundles.	Infestation confined to the ground tissue; vascular bundles unaffected in any way.
5. Spread of disease slow, extending over several years.	Rapidity of infestation, in 60-70 days.
6. No red ring in stem.	Red ring present in stem.
7. Copious flow of evil-smelling liquid containing nema.	No ooze.

In spite of the absence of the red ring, the most characteristic symptom, Dr. Thirumalachar identifies the disease with red ring on the plea that it might be symptomatic of the particular host.

In citing references, Dr. Thirumalachar has allowed several inaccuracies to creep in. He says that Nowell and Briton-Jones pointed out the untenability of Johnston's conclusion that bud-rot of coco-nuts is caused by *Bacillus coli*. Briton-Jones alone did that. He attributes to Nowell what Briton-Jones says about various modes of spread of the disease by fauna frequenting the crowns of coco-nut palms. Because seedlings distributed from Hirethota are reported to have transmitted the disease, he accepts what Nowell only conjectured, that fallen nuts may harbour the worms, and concludes that the disease is infectious and is possibly transported by some fauna. The disease is common on old trees, about ten years of age, and is rare on young palms, and to suggest that it occurs at that stage owing to transmission by the seedling is a little far-fetched. According to Nowell², "the rapidity of infestation shown in the infection experiments renders untenable the hypothesis first put forward that infection takes place at an early age without its effects becoming outwardly visible until the tree matures". 'Hidimundige' is present in very widely separated localities where there is no suspicion of its having spread from one centre. Dr. Thirumalachar states that red ring was first described from the British East Indies by Nowell, which is obviously a mistake. In the next sentence, however, he refers to its distribution in the western hemisphere.

Some work has been done in this department on the 'hidimundige' of areca palms. The tops of diseased trees show an internal injury in the crown in the form of a longitudinal cut extending from the top of the stem to a greater portion of the bud, with no outside injury. The inflorescences are attacked even as they are formed, and decay. Affected trees never bear fruit. The crowns dry up within about six to eight months of the attack, and in the affected tissues a saprophytic *Fusarium* and some bacteria occur. In some of the affected palms from Hirethota I noticed an enchytraeid worm, but was not sure if it was pathogenic.

S. V. VENKATARAYAN

Department of Agriculture,
Bangalore,
Mysore.
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¹ Thirumalachar, *Nature*, **157**, 106 (1946).

² Nowell, W., "Diseases of Crop Plants in the Lesser Antilles" (London, 1923).

³ Coleman, L. C., Mysore Dept. Agric. Myc. Ser., Bull. 2 (1910); *Ann. Mycol.* (Berlin), **8**, 591 (1910).

⁴ Venkatarayan, S. V., *Phytopath.*, **22**, 217 (1932).