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Original Article

Unusual Spike Development of Primitive Fern *Helminthostachys zeylanica* (L.) Hook. (Ophioglossaceae)

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Abstract

Unusual spike development is reported in *H. zeylanica* L. (Hook) from Petchiparai, Kanyakumari district of Tamil Nadu. It is a very rare and interesting observation in primitive fern.

Key words: Spike, *Helminthostacys zeilanica*, Kanyakumari, Primitive fern.

Introduction

The monotypic genus Helminthostachys (*H.zeylanica*) a endangered fern represents one of the three members of the primitive order ophioglossabs. It occurs in Sri Lanka, Malay Peninsula, China, Japan, Phillipines, Solomon Islands, New Caledonia, New Guinea, Australia and India. During a study of endangered ferns from south India, the authors have come across this genus in the middle of Feb 2012. It was found growing in the shaded parts of the Coconut trees of Petchiparai dam side areas. Due to the canopy of trees, there were diffused light in the area and the soil remained moist throughout the year. The soil was blackish, rich in organic matter and had a high water holding capacity. These circumstances favored vigorous growth and abundance of *H. zeylanica.* Not only this genus, but others ferns as O*phioglossum* species, and *Lygodium microphyllum* were also found in this area.

Helminthostachys zeylanica (Linnaeus) Hooker, Gen. Fil. t.47b.1842; Beddome, Ferns S. India t.69. 1863; et Handb. Ferns Brit. India 467, t.292. 1883; Clarke in Trans. Linn. Soc. II Bot. 1: 587. 1880; Baishya & Rao. Ferns & Fern-allies Meghalaya 32, t.10 1982. *Osmunda zeylanica* Linnaeus, Sp. Pl. 2: 1063. 1753.

Erect herb, upto 60 cm tall. Rhizome slender creeping, bearing many fleshy roots, glabrous. Common stalk upto 45cm long, covered with membranaceous sheath at base. Sterile segments palmatifid to palmate, with 5-11 leaflets, glabrous; leaflets subsessile, horizontally spreading, oblong-lanceolate, obtuse to finely acute base cuneate, margin crenulate; midrib prominent. Spike solitary, arising from the base of the barren segment with a distinct peduncle; lateral branches one or two upto 8-15 cm long, cylindrical, green turning pinkish to purplish brown on maturity.

Ecology: Grows in open moist places along submarshy habitats; abundant in tropical wastelands.

Specimen examined: South India: Tamil Nadu, Kanyakumari, Petchiparai, M.S.Sundari, 04,09.02.12 (SPC)

Uses: The young plants are cooked and eaten as green vegetables. The rhizome has medicinal value and use in the treatment of dysentery, malaria, sciatica and also as tonic (Benniamin and Manickam, 2007).

Observation and Discussion

During our study, we came across a few interesting specimens of *Helminthostachys zeylanica* from a shaded parts of the coconut trees. The fertile spike, which is normally unbranched (Fig.1) (Manickam and Irudayaraj 1994; Benniamin, 2005). But the material which has collected from the above mentioned locality is characterized by branched spike. It is very rare phenomena. The forking takes place from the middle of the spike.

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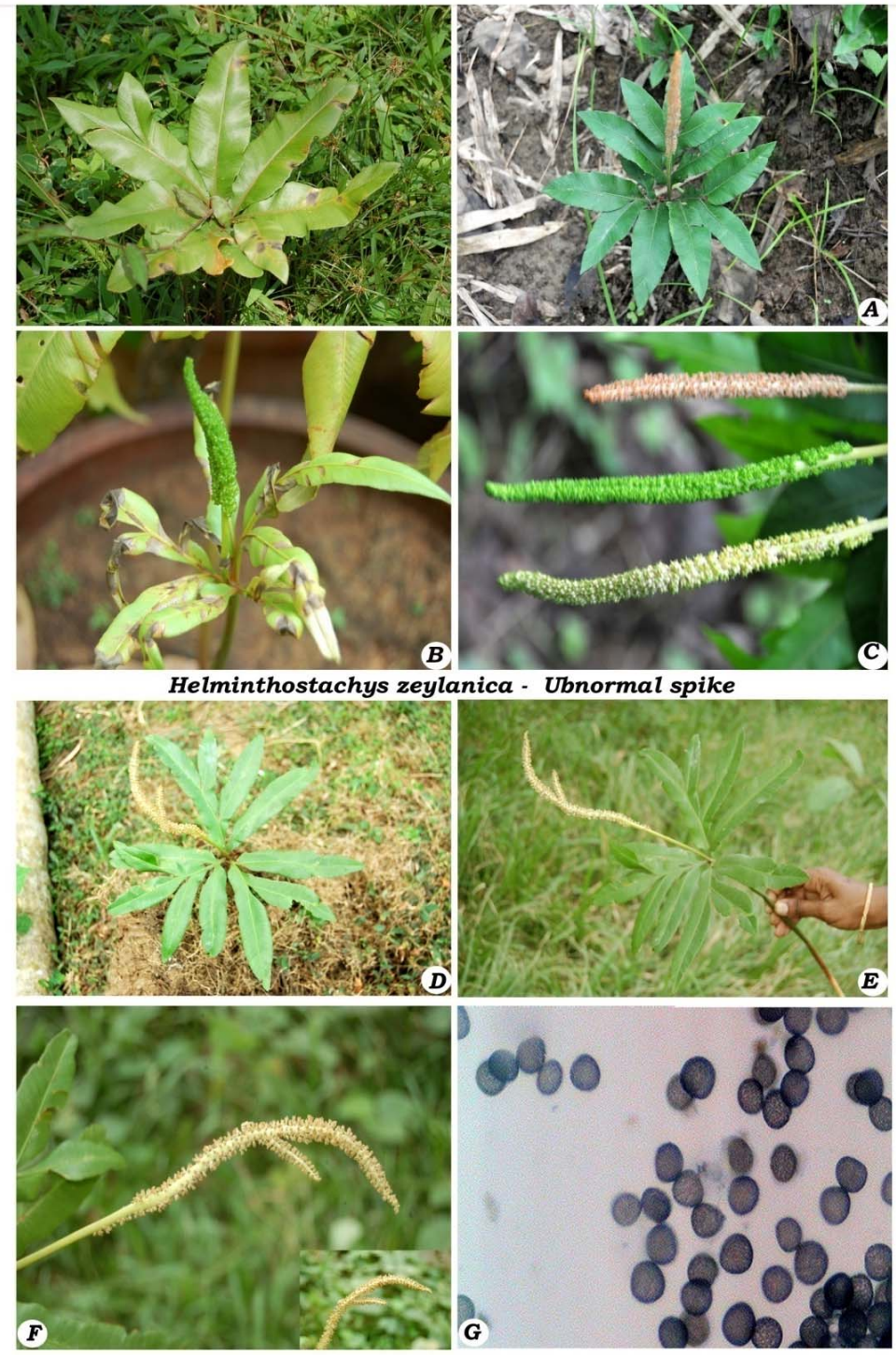
Plate - 1 Helminthostachys zeylanica - Normal spike



Helminthostachys zeylanica - Ubnormal spike

A -C H.zeylanica - normal spike, D-F - Ubnormal spike, G. Normal spores

Bower, (1926) refers that the spike of *Helminthostachys zeylanica* is often subjected to accessory branching, and according to him the branching may be combined with correlative vegetative growth where sporangia are absent. But, in specimen under consideration, the branching of the spike and the branching of the rachis of the barren segment run parallel. The sporangia are quite normal with spores in them (Fig.2). It is concluded that the habitats influence the branching of spike in *H.zeylanica*. Presence of both branching and unbranching spike as observed by the present author in the same habitat may be due to the Environmental variation. Most of the Pteidophytes are highly sensitive even to the slightest environmental modification and much of them recess in the undisturbed, inaccessible humid forest shades under tree canopies. These characters are mostly influenced by the environmental conditions such as climate, soil, exposure, temperature, humidity and wind. Hence the genetically manifested characters in a species do not manifest themselves in exactly the same way in different individuals. This is to adapt themselves to the existing microclimate, thereby producing lot of variation. It should also be noted that all variations observed may not be for the survivability of the species. Even without these variations the species could also hold on. Any change in the environmentatal condition would affect the growth of the ferns and variation would be enormous when compared with hardy flowering plants.

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