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Content

RESEARCH ARTICLES

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HUMBOLDTIA NAIRIANA (FABACEAE-DETARIOIDEAE), A NEW SPECIES FROM KERALA, INDIA

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Abstract: A new species of the genus *Humboldtia* (Fabaceae-Detarioideae), from Kerala (SW India), is described here with photographs. It is closely allied to *Humboldtia ponmudiana*, but differs in possessing warty bark; a creamy-white blaze; angled, glabrous branchlets; distinctly shorter, sparsely hairy, isometric stipules and appendages; relatively long petiolules; entire leaf margins; fewer lateral nerves, obscurely looped near the margins; flowers borne on long, axillary or lateral, erect racemes; larger flowers with comparatively long pedicels; glandular bracts and bracteoles; hairy styles; and elliptic-oblong fruits with a shorter beak.A detailed description, ecology and a key to the species for the identification of the genus is also provided.

Keywords: *Humboldtia*, Fabales, Kerala, Eudicots, South West India, Taxonomy

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MORPHOLOGY AND CULTURAL CHARACTERISTICS OF *CURVULARIA LUNATA* (WAKKER) BOEDIJN OF COTTON

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Abstract: Cotton (*Gossypium hirsutum* L.) is one of the most important fiber crop playing a key role in the economic and social scenario of the globe. Curvularia leaf spot appear initially as small circular brown to brownish black spot surrounding with yellow, later it become dark yellow to brown hallow surrounding to brownish black spots and in severe cases, the leaves turned yellow colour and detached easily from the branch resulting in the defoliation. There was a good deal of variation in cultural and morphological characters of the pathogen under the different temperature. In morphological characteristics, the maximum dry mycelium weight (194.70mg) with abundant (16.43 millions/ml) sporulation on potato dextrose broth medium was observed at 25°C and at 15°C there was no growth and sporulation observed after 15days of inoculation. In cultural characteristics, the maximum colony diameter (87.76mm) and abundant (++++) sporulation was recorded at 25°C on potato dextrose agar medium after 10 days of incubation.

Keywords: Cotton, Morphology, Cultural, Sporulation, *Curvularia*

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STUDIES ON FLORAL BIOLOGY AND INTER-POPULATION PHENOLOGICAL VARIABILITY IN THREATENED *ALLIUM STRACHEYI* BAKER FROM WESTERN HIMALAYA

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Abstract: *Allium stracheyi* Baker, an important species used for seasoning dishes, is endemic to Himalaya. The identified germplasm of this species from Pir-Panjal comprised fifteen populations growing between 2224–3080 masl. The plants of this bear tunicated bulbs, flat leaves and a single long scape bearing umbel inflorescence having trimerous flowers. In just opened flowers, anthers appear at two levels with respect to stigma, with maximum flowers having 3 long and 3 short filaments and minor ones having long and short filaments in proportion of 4:2, 2:4, 1:3median:2. Another interesting condition revealed by this species is distylous, with some flowers having long style and others having short style at the same stage of development. The studied plants differ slightly in flower colour, with more plants of higher reaches bearing inflorescences having light-pink flowers, with plants of lower altitudes bearing outnumbering inflorescence with pale-yellow flowers. The studied *A. stracheyi* plants of varying altitudes also show variation in the duration of different phenological events. The plants of higher reaches (2600-3100 m) emerge in April ending and depict vegetative growth till July, flower from 1st to 3rd week of August, develop fruits from mid-August to mid-September, show senescence in October and dormancy till April. In the plants of lower altitudes (2300-2500 m), these events get delayed by nearly two weeks. Higher variability existing in phenological behaviour and floral traits in *A. stracheyi* seems to be the outcome of heterogeneity prevalent with regard to altitude, topography and associated climatic conditions.

Keywords: *Allium stracheyi*, Pir-Panjal, Heterogeneity, Phenological behaviour

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CURVULARIA LEAF SPOT - AN IMPORTANT DISEASE OF COTTON CAUSED BY *CURVULARIA LUNATA* (WAKKER) BOEDIJN

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Abstract: Cotton (*Gossypium hirsutum* L.) is one of the most important fiber crop playing a key role in the economic and social scenario of the globe. It is also known as "The white gold" or "The king of fibers". It is a premier cash crop of our country and belongs to the family *malvaceae*. Curvularia leaf spot appear initially as small circular brown to brownish black spot surrounding with yellow, later it become dark yellow to brown hallow surrounding to brownish black spots and in severe cases, the leaves turned yellow colour and detached easily from the branch resulting in the defoliation. The survey was conducted in the cotton growing regions of Surat, Bharuch and Narmada districts of South Gujarat in the year 2024-25 to examine the presence of *Curvularia lunata* (Wakker) Boedijn pathogen on cotton plants and to record the observation on per cent disease intensity and per cent disease incidence The maximum mean per cent disease intensity was found in the Bharuch district with 32.64 per cent, while the lowest disease intensity of *Curvularia lunata* was found in Surat district with 17.45 per cent and the maximum per cent disease incidence was found in Bharuch district with 12.33 per cent, while the lowest per cent disease incidence was found in Surat district with 7.22 per cent.

Keywords: Cotton, Survey, *Curvularia*, Intensity, Incidence

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VALIDATION OF AN ICP-OES METHOD FOR DETERMINATION OF HEAVY METALS IN LONG PEPPER (*PIPER LONGUM* L.) AND ASSESSMENT OF MARKET SAMPLES

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Abstract: The long pepper (*Piper longum* L.) is an essential medicinal spice commonly used in traditional healthcare. However, due to the growing threat of environmental pollution, the concentration of heavy metals in such medicinal plant materials poses a significant hazard. Therefore, an analytical technique based on ICP-OES which was developed for the quantitative determination of Cd, Cr, Pb, and Ni concentrations was validated in the long pepper samples. The method was tested for several validation parameters, which included linearity, LOD (limit of detection), LOQ (limit of quantification), accuracy, precision, and repeatability. Calibration curves obtained in the study showed excellent linearity with R^2 values ranging from 0.9988 to 0.9994. LOD and LOQ values determined in the analysis were found to fall within the ranges 0.05–0.20 µg/L and 0.15–0.60 µg/L, respectively. Results obtained in recovery studies ranged between 97.8% and 99.2%, and RSD was not greater than 3%. Determination of cadmium, lead, chromium and nickel in both farm and market samples showed that Cromium and Nickel were within permissible limits, whereas Cadmium and lead could not be detected at all.

Keywords: *Piper longum*, ICP-OES, Heavy metals, Method validation, Medicinal plants