

AN INVESTIGATION OF THE NARROW LEAF DISORDER
OF CHILLI (Capsicum annuum L.)

By

JAYAKODY ARACHCHIGE UPALI THILAKASIRI SENEVIRATNA

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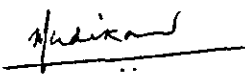
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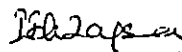
(Prof. J.M.R.S. Bandara)

Examiner



(Dr. N.K.B. Adhikaram)

Examiner



(Dr. (Mrs.) I J. Zoysa)

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ABSTRACT

A new disorder in chilli plants (Capsicum annuum L. var. acuminatum Fingerh) was first reported in Sri Lanka in 1982 and named the narrow leaf disorder (NLD). The disorder was first reported from Girandurukotte in the Mahaweli system C in the yala in 1986 has not been reported from any other country.

The characteristic symptoms of NLD affected chilli plants are filiform leaves, short internodes and the development of usually dormant axillary buds, resulting in very bushy and stunted plants. The initial symptom, which can appear at any stage after the appearance of true leaves, is the development of interveinal chlorosis on the youngest leaves. The morphology of flowers and pods appear unchanged, but the size and number of pods is drastically reduced resulting in a loss in yield.

No change was observed in the under ground parts of young NLD affected chilli plants, but crooked and short tap roots with compacted lateral roots were seen in older plants, affected at an early stage. No changes were observed in the tissues of affected plants except in the leaves.

There was no evidence that the disorder is seed-borne or insect-borne. The involvement of a soil-borne causal factor was demonstrated by the development of the disorder on potted plants grown in soil from affected fields or on sterilized soil watered with soil water extract from such fields.

The filtrate of a soil extract made from the soils around the roots of affected plants and filtered through Whatman filter paper No.1 could induce the disorder in healthy plants. The disorder-inducing factor was filtered out by a millipore filter paper of pore size 0.8 μ m or less. The residue collected from the millipore filter paper could cause NLD if added to healthy chilli plants.

The soil-borne causal factor appears capable of increasing from an initial concentration suggesting that it is a soil-borne microorganism or a factor closely associated with such a microorganism.

No microorganism which could be responsible for NLD was isolated from any chilli plant or from soil from affected fields on potato

dextrose agar (PDA), yeast extract dextrose calcium carbonate agar (YDA), nutrient agar (NA), soil extract agar (SEA) or on media incorporating root matter or exudates from roots of chilli plants.

The effects of the causal factor in the soil extract were significantly suppressed over a 9 week period by tetracycline and streptomycin both at 1000 ppm while penicillin did not retard the initial symptoms at any concentration.

The causal factor was shown to be capable of survival in soil suspension for over 72 hrs but its presence in irrigation water in the field was not demonstrated. The development of the disorder was favoured by higher soil temperatures and higher soil moisture levels.