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PAPER

Fungal diseases and associated pathogens of big onion (*Allium cepa* L.) prevalent in the Matale district, Sri Lanka

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Big onion (*Allium cepa* L.) is a condiment grown for its pungent and flavorful bulbs. Most parts of the big onion plants are prone to different diseases of fungal origin. As these diseases cause heavy losses to the yield, it is important that the presence of the more prevalent diseases is evaluated and the causative fungi characterized. This will provide the background essential to carry out appropriate disease management practices. Therefore, the present study aims at surveying the prevalent diseases of onion at different stages of growth and isolating and identifying the causative fungi. Matale district was selected for the first stage of the study as about 23.5% of onion fields in Sri Lanka are located in this district.

Thirty onion fields in different locations in the Matale district were observed. The prevalence and details of symptoms present in different plant parts i.e. bulbs, leaves, flower stalks were recorded and the parts were collected. Diseased and healthy big onion seedlings (7 -30 day old) were also collected. Appropriate sections of disease specimens (scales, leaves, flower stalks, seedlings) and healthy seedling samples were surface sterilized and the causative fungi isolated using Potato Dextrose Agar (PDA) supplemented with tetracycline.

The more common symptoms observed in the fields were lesions at the collar region of seedlings (damping off -22% per field), yellowing of leaves and leaf die back (70% per field), formation of 2-3 mm wide oval shaped patches on leaves (5% per field) and flower stalks (1% per field) and discoloration and softening of bulbs (12% per field). A *Fusarium* sp. was isolated and identified from infected bulbs showing discoloration and softening. *Colletotrichum gloeosporioides* was isolated from the infected leaves and flower stalks. *Fusarium*, *Curvularia*, *Alternaria*, and *Sclerotium* spp were isolated and identified from seedlings showing damping off symptoms.

Koch's postulates were carried out to confirm the pathogenicity of *Fusarium* sp., two *Curvularia* sp. and *Alternaria* sp. isolated from seedlings. A spore suspension (1×10^5 spores/ml) of each isolate was added to soil containing 10 day old healthy seedlings while controls were treated with sterilized distilled water. Collapse of seedlings and lesions at the collar region associated with damping off was observed in seedlings inoculated with *Fusarium* sp. No symptoms were caused by the two *Curvularia* sp. and *Alternaria* sp. A 60% disease incidence was shown in seedlings inoculated with *Fusarium* sp., whilst only 5% - 6% disease incidence was shown by seedlings inoculated with two *Curvularia*. and *Alternaria* spp. and the controls. These results confirm that the *Fusarium* sp. isolated was the causative agent of damping off disease of big onion seedlings in the Matale district.

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