

EVALUATION OF RED ONION (*Allium ascalonium* L. GENOTYPES) (BREEDING LINES) FOR LEAF TWISTER DISEASE

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ABSTRACT

Red onion (*Allium ascalonium* L.) is cultivated in northern region in Maha and Yala season. This crop is susceptible to various bulb, root and foliar diseases caused by fungi reducing the quality and quantity of its yield. Leaf twister disease caused by *Colletotrichum gloeosporioides* is a most devastating disease in onion cultivation. At present, there is no resistant variety or cultivar identified for leaf twister disease for commercial cultivation in Sri Lanka. As there is a need to identify and select resistant or tolerant varieties for leaf twister disease and best variety with preferred growth parameters to increase yield and productivity. Therefore, a study to identify resistant or tolerant genotype for leaf twister disease and to evaluate their characteristics was conducted at Regional Agricultural Research and Development Centre, Northern region of Sri Lanka (Kilinochchi). Seven red onion lines viz: TVM-6, CON-5, Vethalam, TV Red, Jaffna local, True seed and ANKCLO-1 were tested. Bulbs of the lines were planted in Randomized Complete Block Design (RCBD) in three replicates. Each plot had 100 bulbs planted with 10cm × 10cm spacing. *Colletotrichum gloeosporioides* affected red onion sample was isolated, sterilized and in order to inoculate in antibiotic added PDA media. Isolated *Colletotrichum gloeosporioides* inoculum was applied as a foliar application to experimental field. Disease severity index was recorded (using 0 to 7 scale 3 times at 2 weeks interval after inoculation of spores). Randomly selected 20 plants from each plot

were used for data collection on disease severity. Plant heights, Number of clusters per plant, Number of Leaves per plant, Bulb size & shape and total bulb yield were recorded. These data were subjected to ANOVA using SAS programme 9.4 version. Analysis of the data revealed that the TVM-6 had the significant least disease severity index (4.76%) and ANKCLO-1 has 22.86% disease severity. Jaffna local had highest disease severity index (93.33%) and Vethalam, CON-5, True seed and TV Red had 51.43%, 63.81%, 82.86%, and 83.81% respectively. The data revealed that, TVM-6 could be a resistant variety, ANKCLO-1 had identified as a moderately resistant variety. TVM-6 can be select as a potential variety to release and used as a parental line for further breeding programme to produce resistant progeny for leaf twister disease. Also, farmers can cultivate TVM-6 and ANKCLO-1 cultivars during rainy season to reduce the incidence of leaf twister disease and to increase the productivity. CON-5, Vethalam, TV Red, True seed and Jaffna local had identified as a highly susceptible varieties for leaf twister disease. Highest yield had been observed in TVM-6 as 10.69 tons/ha.

KEYWORDS: Breeding, *Colletotrichum gloeosporioides*, Leaf twister disease, Red onion, Resistant cultivar.

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