Paper ID: NSALS '26-183 (Oral)

Resistance Behavior of Hybrid Clones of Cluster Onion (*Allium cepa*) against Anthracnose Disease Caused by *Colletotrichum gloeosporioides*

U.J. Kirunsiga✉, S.J. Arasakesary, S. Sritharan
Department of Agricultural Biology, Faculty of Agriculture, University of Jaffna, Jaffna, Sri Lanka
✉*jeyajeya14kethee@gmail.com, TP: +94765570910*

Red onion (*Allium cepa* var. *cepa)* is an important cash crop cultivated in Sri Lanka. Onion Anthracnose caused by *Colletotrichum gloeosporioides* is a major disease affecting onion production in the Dry zone of Sri Lanka. When environmental conditions are conducive, it spreads rapidly and affects the entire field, especially after the rainy season. Management of this disease is challenging because the fungus can survive in crop residues and plant debris. Screening of fifth-generation hybrid clones of cluster onion (*Allium cepa* Aggregatum Group) for resistance behavior against Anthracnose disease is essential for farmers to reduce pesticide usage and yield losses. The development of advanced hybrid clones, such as fifth-generation hybrids, is a crucial step in stabilizing these traits and ensuring consistent performance under field conditions. This study aims to evaluate the resistance behavior of fifth-generation hybrid clones of red onion against Anthracnose disease caused by *Colletotrichum gloeosporioides*. Forty-four hybrid clones were selected, and they were used as treatments. Two experiments were conducted. Growth parameters were taken in experiment-1. Disease incidence and disease severity index were taken in experiment-2. Completely randomized design for pot experiment-2 and randomized complete block design for field experiment-1 were used to perform ANOVA, and Tukey mean separation was administered to identify the best treatment at $P<0.05$ using SAS 9.1. According to the results, a resistant hybrid clone was identified as a cross of MICLO1 × MH4 (E19), while moderately resistant hybrid clones were crosses of TVM6 × MICLO4 (E32), Vethalam (E44), MH4 × TVM6 (E21), TVM6 × MICLO4 (E31), and TVM6 (E43). Bulb yield was also significantly reduced ($P<0.05$) due to Anthracnose in the onion. Therefore, the hybrid clones E19, E32, E44, E21, E31, and E43 (TVM6) were selected as promising based on disease tolerance capacity. These lines could be used for crop improvement programs or promoted for future variety release.

Keywords: Advanced hybrid clones; *Colletotrichum gloeosporioides*; onion anthracnose; red onion; resistance

Underlined is the presenting author.