

Methods to Improve Seed Sets in Cluster Onion Hybridization

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Onion is an economically valuable vegetable crop which is naturally cross-pollinating entomophily with two crop cycles as seed–bulb and bulb–seed. Seeds and bulbs are the primary propagation materials in bulb production. A cluster onion hybridization experiment with reciprocal crossing parental combination has been carried out since 1996 at Regional Agricultural Research and Development Centre, Killinochi. Hybrids onions do have a several benefits, but they usually produce less seeds than open pollinated cultivars. Accordingly, this study was conducted to determine the method/s to improve the seedsets in cluster onion hybridization. Hybridization was made between the three lines namely MH4, MICLO1, TVM6 and the parents were subjected to treatments with combination *viz*, vernalization, non-vernalization, covered by shade insect proof net, open environment, with and without Indole Acetic Acid application using Randomized Complete Block Design. Vernalized covered IAA application (V.CO.IAA), vernalized covered without IAA application (V.CO.NIAA), vernalized opened IAA application(V.NCO.IAA) , vernalized opened without IAA application (V.NCO.NIAA), non vernalized covered IAA application (NV.CO.IAA), non vernalized covered without IAA application (NV.CO.NIAA) , non vernalized opened IAA application (NV.NCO.IAA), non vernalized opened without IAA application (NV.NCO.NIAA) were the eight treatment combination effected. Seed set percentage was recorded from those different eight treatment combination with their reciprocal crossing were analysed in ANOVA using SAS programme. The results revealed that significantly high seedset percentage on vernalized IAA application (83.89%) when crossing between MH4 with MICLO1 than that of non-vernalized uncovered without IAA application (51.92%). The same treatment had significantly higher seedset percentage in reciprocal crossing as well (83.02%). Vernalized IAA application had more significant impact on seedset percentage in MH4 crossing withTVM6 (80.76%) & MICLO1 crossing with TVM6. Among all varietal crossing vernalization and IAA application impact on seed set percentage. However, each varietal crossing covering was not significantly impacted on seedset percentage but covering is more advantageous to minimize the spread of disease while hybridization in cluster onion.

Keywords: Cluster onion, Vernalization, Indole Acetic Acid (IAA)