

AGROBIOLOGICAL CHARACTERISTICS AND COMBINING ABILITY OF EARLY MAIZE INBRED LINES

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Summary

Maize is a tropical plant, thus very sensitive to cold which greatly affects the germination, growth and accumulation of any matter to seeds. This research is conducted to evaluate the tolerance to cold of inbred lines through their agrobiological characteristics as well as general combining ability in the cold outdoors. The results show that different maize lines have distinctive about agronomic characteristics and seed yield. The yield of lines ranged from 2.167 to 3.433 tons/ha. Among which, 13 lines has a yield of over 3.0 tons/ha ha, equivalent to 3 checks C88N, T8 and T5. The highest yield lines are C373, C628 (3.433 tons/ha), C28 (3.366 tons/ha), C354, C252 (3.333 tons/ha), C431, C795 (3.233 tons/ha). Topcross is used to evaluate the general combining ability (GCA) for graining yield between 26 inbred lines (S8-S12) with 2 tester T5 and B67CT. As a result, line C352 has a highest general combining ability ($g_i = 13.807$). Followed by lines C16 ($g_i = 8.827$), C431 ($g_i = 8.533$), C838 ($g_i = 7.972$), C801 ($g_i = 6.788$), C769 ($g_i = 6.335$). Besides, there are 5 lines including C608, C783, C855, C628, C252 having high g_i value (3.595 - 4.780). Lines with high variance specific combining ability are C18 ($\sigma_{si}^2 = 70.193$), line C373 ($\sigma_{si}^2 = 64.432$), C475 ($\sigma_{si}^2 = 54.794$). Among the inbred lines, C18, C373, C475, C855 have high effect specific combining ability (Line * Tester) with the tester 1 (T5), while lines C63, C431, C769, C571 and C50 with the tester 2 (B67CT). Within the scope of the study, the most suitable for early maturing, cold-tolerant, high-yield maize hybrid breeding are C352, C16, C431, C838, C769, C628 and C252, especially 2 lines C431, and C769.

Keywords: *Cold tolerant, Inbred maize self-fertilized lines, combining ability.*