

Prathumma Wongwila 2014: Study of Hybrid Vigor in Kamphaeng Saen Sugarcane Hybrids Series 2007. Master of Science (Plant Breeding), Major Field: Plant Breeding, Faculty of Agriculture at Kamphaeng Saen. Thesis Advisor: Associate Professor Rewat Lersrutaiyotin, D.Agr. 115 pages.

Heterosis and heterobelthiosis were studied in plant cane of sugarcane hybrids of 12 crosses, each cross had 10 hybrids. RCBD with 3 replications was used. Each plot had 1 row of 1.5 m. in length, having 3 stools, at Cane and Sugar Research and Development Center, Kamphaeng Saen Campus, Nakhon Pathom province. The results revealed that maximum, minimum and average number of hybrid having significantly positive heterosis in each cross were 10, 2 and 7.9 hybrids in fiber percentage, 9, 2 and 8.1 hybrids in brix, 10, 0 and 6.9 hybrids in CCS, 5, 0 and 3.3 hybrids in cane yield, 7, 0 and 1.5 hybrids in stem diameter and 1, 0 and 0.4 hybrids in stem length, respectively. The results of maximum, minimum and average number of hybrid having significantly positive heterobelthiosis in each cross had the same tendency as those of heterosis. The percentage of total hybrids having significantly positive heterosis were high in brix, fiber percentage and CCS (67.5, 65.8 and 57.5 percentage, respectively), intermediate in cane yield (27.5 percentage) and low in stem diameter and stem length (12.5 and 3.3 percentage, respectively). Significant difference of heterosis among crosses were observed in every characters, except cane yield. Crosses that had highest heterosis percentage were cross between Kamphaeng Saen 98-024 and KU 60-1 in cane yield, fiber percentage and stem length (13.20, 21.16 and 0.74 percentage, respectively) and cross between Kamphaeng Saen 00-92 and K 84-200 in brix (11.92 percentage) and cross between KU 60-1 and K 84-200 in CCS and stem diameter (10.67 and 1.47 percentage, respectively). The female parents that had highest percentage of hybrids having significantly positive heterosis were Kamphaeng Saen 01-41-5, KU 60-1 and Kamphaeng Saen 00-92 (80.0 percentage) in fiber percentage, KU 60-1 and Kamphaeng Saen 00-92 in brix and CCS (90.0 and 80.0 percentage, respectively), Kamphaeng Saen 00-92 (35.0 percentage) in stem diameter, Kamphaeng Saen 98-024 (35.0 percentage) in cane yield and Kamphaeng Saen 98-024, KU 60-1 and Kamphaeng Saen 01-41-5 (5.0 percentage) in stem length. The male parents that had highest percentage of hybrids having significantly positive heterosis were KU 60-1 in fiber percentage and cane yield (95.0 and 40.0 percentage, respectively), Kamphaeng Saen 00-92 (90.0 percentage) in brix, K 84-200 in CCS and stem diameter (90.0 and 36.7 percentage, respectively) and Kamphaeng Saen 98-024, KU 60-1 and Kamphaeng Saen 01-41-5 (5.0 percentage) in stem length.

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Student's signature

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Thesis Advisor's signature