

## **LINE X TESTER ANALYSIS FOR EVALUATION OF NEW MAIZE INBRED LINES**

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### **ABSTRACT**

Ninety nine yellow inbred lines were divided into four sets where each set contained 25, 25, 25 and 24 lines, respectively. These lines were top crossed with two yellow inbred line testers in 2004 summer season at Sakha Agriculture Research Station. All hybrids were evaluated for days to 50% silking as well as grain yield at two locations in 2005 season. The best single crosses from four sets along with two checks i.e. SC155 and SC pioneer 3084 were evaluated during 2007 season. The results indicated that the mean squares variances of locations, lines, testers and lines by testers were highly significant for all traits, except for testers for silking date of set-3 and set-4. Silking date and grain yield traits were affected by non additive gene action for all sets, except for grain yield in set-2. The non additive gene action was more affected by locations for silking date in set-1 and set-2 as well as grain yield in sets- 2, 3 and 4. The parental inbred lines, which revealed significance and desirable GCA effect for earliness were: ten, seven, five and seven from set-1, set-2, set-3 and set-4, respectively. While it was five, four, five, and eight inbred lines from set-1, set-2, set-3 and set-4, respectively, which had a desirable positive and significant values for general combining ability effects for grain yield potentiality in their top crosses. The best tester inbred line for general combining ability effects was inbred, Sk121 for grain yield of set-1, set-3 and set-4, inbred line Sk10 for silking date and grain yield of set-2 and inbred line Sk6241 for silking date of set-1. Results of set-1 showed that the inbred tester line Sk121 with the three new yellow inbred lines Sk-5001/2, Sk-5001/7 and 5003/15 gave three single crosses which were significantly earlier showing 57.25, 58.62 and 58.5 days to 50% silking, respectively. They also showed higher grain yield of 35.31, 35.24 and 35.69 ard/fed, respectively, relative to the commercial check hybrid 155 which showed (61.39 days and 33.3 ard/fed). The two inbred lines Sk-5002/8 and Sk5002/9 with the same tester inbred line Sk-121 gave two new yellow promising single crosses produced significantly better grain yield with 37.33 and 43.46 ard/fed relative to the same check hybrid in set-1. On the other hand, results of set-2, showed that the line Sk-5026/114 was a good combiner with both testers inbred lines i.e. Sk-10 and Sk6241 which gave significantly higher grain yield of 33.09 and 33.60 ard/fed relative to the check single cross 155 which yielded 29.75 ard/fed. Tested inbred lines number Sk6001/133, Sk6001/135, Sk6001/136 and Sk7026/146 with the tester line Sk-121 in set-3 gave four good yield single crosses, which were significantly higher yielding than the check hybrid 155 (28.6 ard/fed) by 3.39, 5.63, 3.59 and 3.27 ard/fed, respectively. Also results of set-4 showed that the tested line Sk5019/72 with the tester Sk121 gave good single cross which was significantly higher for grain yield (31.18 ard/fed) relative to SC155 (28.5 ard/fed). Evaluation trial of the best single crosses showed that four single crosses; SC Sk5019/72 x Sk121, SC Sk5026/114 x Sk10, SC Sk6001/133 x Sk121 and SC Sk6001/136 x Sk121 were significantly higher for grain yield of 34.06, 35.56, 35.86 and 34.4 ard/fed., respectively, compared to checks SC155 (30.96 ard/fed.) and SC pioneer (24.81 ard/fed.). Also, these crosses were earlier than the two checks. This study suggested utilization of the above four crosses in the national maize breeding program.