REGISTRATION OF PARENTAL LINES

REGISTRATION OF ND262, ND263, AND ND264 PARENTAL LINES OF MAIZE

ND262, ND263, and ND264 (Reg. no. PL-116, PL-117, and PL-118) (PI 522250, PI 522251, and PI 522252) are yellow dent maize (Zea mays L.) inbred lines developed at the Agricultural Experiment Station, North Dakota State University, Fargo. ND262, ND263, and ND264 (tested as ND84-4, ND84-9, and ND84-11, respectively) were selected from NDSF(FS)C1, an improved version of NDSF. NDSF was developed by intercrossing approximately 65 inbreds, which had been selected for early maturity and prolificacy, and inbreds for two generations (1). NDSF(FS)C1 was developed by one cycle of reciprocal full-sib selection with NDSF (2) as the reciprocal tester population. The S1 parents of these inbreds were selected on the basis of their full-sib family performance. ND262 and ND264 are sister lines derived from the same S3 plant, but ND263 was derived from a different S1 plant from that used to derive ND262 and ND264. All three inbreds were self-pollinated for eight generations with selection for desired plant and ear traits. These lines were evaluated for yield and agronomic performance as lines per se and in hybrid combinations. These inbreds were released in March 1988 because of their demonstrated potential to produce early hybrids with yields comparable to the best commercial check hybrids, low grain moisture at harvest, and high levels of lodging resistance. These inbreds are capable of producing hybrids adapted to short-season areas such as central and eastern North Dakota.

ND262 typically produces short plants with ears below the midpoint of the stalk. Plants have medium long, moderately wide leaves and medium sized tassels. Ears with 14 to 16 rows of medium weight kernels are borne on short shanks. ND262 has had above average grain yields in inbred evaluations, and near average ear moisture at harvest in limited testing. ND262 silks about 3 d earlier than CM105 at Fargo and is AES200 maturity in terms of the North Central Corn Breeding Research Committee (NCR-2) classification system. ND263 produces medium height plants with ears below the midpoint of the stalk. Plants have medium long, narrow leaves and small tassels. Short slender ears with 12 to 14 rows of small, shallow kernels are borne on medium length shanks. In an inbred test ND263 had low grain yields, high ear moisture at harvest, and tended to fill indicating that it might not make a suitable female parent for single cross hybrids. ND263 typically silks 1 d later than CM105, and also is AES200 maturity.

ND264 usually produces medium height plants with ears well below the midpoint of the stalk. Plants have medium long, wide leaves and large tassels. Ears with 14 to 18 rows of medium weight and deep kernels are borne on medium long shanks. In one inbred evaluation ND264 had above average grain yields, and near average ear moisture at harvest. ND264 usually silks about the same time as ND262 and is AES200 maturity.

ND262, ND263, and ND264 each were tested in four hybrid combinations in three locations in 1985 and ten hybrid combinations at five environments in 1987. ND262 produced high yields in crosses with ND301 and CM105 in 1985 and with ND256, A654, ND259, and CM105 in 1987. ND263 produced good overall performance in hybrids with ND246, CM105, ND250, ND257, and ND256. ND264 had good overall performance in crosses to ND301, ND246, ND256, CM105, A654, and ND257.

Estimates of general combining ability (GCA) over five environments in 1987 indicated that ND262, ND263, and ND264 each had significantly better GCA effects for grain yield than ND240, ND246, ND257, and ND474; and each had better than average GCA effects for stalk lodging resistance. ND263 had significantly better GCA effects for low grain moisture at harvest than all inbreds except ND246 and ND257, while only CM105 had better GCA effects for grain yield. ND262 and ND264 also had better than average GCA effects for root lodging resistance.

Breeder seedstocks are maintained by the North Dakota Agricultural Experiment Station and can be obtained in germplasm quantities (50 kernels) from H. Z. Cross, Agronomy Department, North Dakota State University, Fargo, ND 58105.

H. Z. Cross* (3)

References and Notes
3. ---. Dep. of Agronomy, North Dakota State Univ., Fargo, ND 58105. Published with the approval of the director of the North Dakota Agric. Exp. Stn. as Journal Article no. 1714. Registration by the CSSA. Accepted 30 Aug. 1986. *Corresponding author.

REGISTRATION OF SD44 PARENTAL LINE OF MAIZE

SD44 Reg. no. PL-119 (PI 524969) is a yellow dent maize (Zea mays L.) parental line developed at the Agricultural Experiment Station, South Dakota State University, Brookings. This line was evaluated for agronomic performance and in hybrid combinations for yield and grain moisture. SD44 was released in March 1987 because of its potential to produce competitive hybrids for central and southern South Dakota.

SD44 was derived by selfing an individual plant selection from a cross of the inbred lines SDp309 and SD30. Selfing was practiced for 10 generations with selection for desirable plant, ear, and root traits. SD44 was evaluated for 5 yr at Brookings and would be considered intermediate to late maturity; flowering 2, 4, 4, and 9 d after A632, A619, A654, and CM105, respectively. Maturity classification of SD44 is AES500.

Plants are approximately 174 cm tall with ear placement approximately 70 cm above ground. They are dark green in appearance and have small tassels and red cobs. Ear length is about 18 cm and ears are borne on 5-cm shanks. There are 18 to 20 rows of medium-sized kernels on each cob. Moisture content of the seed generally has been about 19% at 60 d after pollination. The line has good vigor, ear fill, stalk and root strength, husk looseness, and stays green. It has good specific combining ability with A632, producing a 4-yr average of 7.2 Mg ha−1 compared to 8.2 Mg ha−1 for Pioneer brand hybrid 3901 and 8.1 Mg ha−1 for Pioneer brand hybrid p3732 when tested at Brookings. It produced a 3-yr average of 8.6 Mg ha−1 compared to 8.8 and 9.2 Mg ha−1 for