

Article title	Drought and Low Nitrogen Tolerant Hybrids for the Moist Mid Altitude Ecology Of Eastern Africa
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Abstract	Maize is the principal food staple of the rural and urban poor of eastern and central Africa, constituting > 50% of the caloric intake derived from cereals in the region. Drought and low soil fertility are among the most important constraints to maize production even in the high potential moist mid-altitude eco-zone. This zone, generally falling within the altitudinal range of 1000-1800 masl and characterized by rainfall of >500 mm and mean temperature of 21.5°C, comprises a total area of approximately 500,000 hectares in Kenya alone, and is among the most densely populated regions on the continent. Though of high potential productivity, fertilizer use is constrained by high costs and lack of credit for small holders. Maize productivity in maize-based cropping systems could be greatly improved using varieties that utilize nitrogen (N) from fertilizers and other sources more efficiently as well as tolerating the periodic moisture stress. Farmers in this region have shown a preference for hybrid maize varieties. The objective of the research described here was to develop hybrid maize varieties adapted this ecology that are tolerant of low soil fertility and drought. Drought and low N tolerant inbred lines developed by CIMMYT-Harare in collaboration with CIMMYT Mexico were crossed with two streak resistant testers (CML202 and CML206) during the 1997-98 minor season. In 1999, the resulting crosses were evaluated across 7 sites and compared with local checks under both stressed (managed drought and low N) and unstressed conditions. The selected best single cross hybrids were crossed with 2 other testers (CML78 and CML384) in 2000 and the resulting 3 way-hybrids were evaluated as in 1999. Grain yield and secondary traits such as Anthesis-Silking Interval (ASI), leaf senescence, and number of ears per plant were used to select the most promising materials. Eight drought and low N tolerant 3-way hybrids were identified which yield 24, 15 and 64% more than the best commercial hybrid checks under optimum, low N and drought stress conditions, respectively. These hybrids have the potential to increase yields, reduce input requirements and improve yield stability for resource-poor farmers in densely populated high potential eco-zones of Eastern and Southern Africa.
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