Institute of Agronomic Research (IRA) as part of the USAID-financed National Cereals Research and Extension Project. They were released in 1991 for use as source germplasm or as parental lines, principally in the high-rainfall tropical midaltitudes. Few internationally available inbred lines have been developed for this ecology.

The principal nursery and testing sites for development of these lines were located in the Western and Adamawa Plateaus of Cameroon (5° to 8° N lat, 1000 to 1500 m altitude, 1500 to 2200 mm monomodal season precipitation). Resistance to Exserohilum turcicum (Pass.) K.J. Leonard & E.G. Suggs, Cercospora zeae-maydis Tehon & E.Y. Daniels, and Physoderma maydis (Miyabe) Miyabe were rated on the Jos Plateau of Nigeria (9° to 10° N lat, 1350 m altitude, 1500 mm annual monomodal season precipitation). Maize streak virus (MSV) evaluation was performed at IITA, Ibadan, Nigeria (tropical lowland), using artificial field infestation with viruliferous leafhoppers (Cicadulina spp.).

Sixteen second-cycle lines were developed from first cycle inbred lines crossed with one of two reciprocal synthetics (SynA1 and SynB1). The inbred lines were derived in Cameroon from the IITA Midaltitude Streak Resistant (TZMSR) population (2,3). SynA1 and SynB1 had been formed from inbreds initiated in Nigeria from crosses of streak resistant lowland cultivars with East African midaltitude cultivars and hybrids. Three lines were extracted from single crosses between midaltitude lines. These 19 lines are therefore the first recycled lines in the midaltitude program (1). The principal selection procedures included disease nursery and per se selection at S1 to S3 stages, testcross selection (with a single-cross tester) at the S3 stage. Testing as parents of single-cross hybrids was begun at the S4 stage of inbreeding. All lines listed have been used as a parent of at least one outstanding or commercially acceptable single-cross hybrid in Cameroon or Nigeria in 1991. Subline selection in disease nurseries was continued until at least S3 stage, and selected sublines were bulked within the original S1 line parent of the testcross selection to maintain vigor.

Predominant leaf pathogens in the Cameroon selection environments were E. turcicum and Puccinia sorghi Schwein., with occasional pressure from Bipolaris maydis (Nisikado & Miyake) Shoemaker, Pucc. polysora Underw., and Phys. maydis. A higher pressure (or different race) of E. turcicum, P. sorghi, and B. maydis was observed during rating at Jos, Nigeria, in 1991 (Table 1).

It is expected that the primary utility of these lines will be as parents in varietal synthetics, and in inbred source synthetics and crosses for the high-rainfall tropical midaltitudes. The lines all have white kernels, with a range of textures. All lines are resistant to maize streak virus. Maturity classification is late midaltitude, flowering 4 to 9 d later than TZMSR (77 d) and the Zimbabwe Seed Coop hybrid ZS206 (76 d) at Jos, Nigeria, in 1991.

Small quantities (40 kernels) of seed will be provided to crop researchers upon written request. Requests should be sent to the Maize Improvement Program Leader, IITA, PMB 5320, Ibadan, Nigeria. We ask that appropriate recognition of source be given when this germplasm contributes to an improved cultivar or germplasm.


References and Notes

Published in Crop Sci. 34:1419-1420 (1994).

Registration of Four Tropical Midaltitude Maize Germplasm Populations

Four tropical midaltitude maize (Zea mays L.) populations, ATP (Reg. no. GP-289, PI 561620), Early White (Reg. no. GP-290, PI 561621), and Synthetic 4-White (Reg. no. GP-291, PI 561622) field types and sweet corn MSR-su (Reg. no. GP-292, PI 561623), were jointly developed by the International Institute of Tropical Agriculture (IITA) and the Cameroon Institute of Agronomic Research (IRA) as part of the USAID-financed National Cereals Research and Extension Project. They were released in 1991 for use as source germplasm or as cultivars, principally in the high-rainfall tropical midaltitudes of Africa. Few populations have been developed by the international research centers for this ecology.

The principal nursery and testing sites for development of these populations were in the Western and Adamawa Plateaus of Cameroon, and the Jos Plateau of Nigeria. These sites are located between 5° and 10° N lat at 1000 to 1500 m altitude, and receive 1300 to 2200 mm annual monomodal season precipitation. Maize streak virus (MSV) screening was performed at IITA, Ibadan, Nigeria (tropical lowland), using artificial field infestation with viruliferous leafhoppers (Cicadulina spp.).

ATP is a flinty-grained, tall midaltitude population, selected primarily on acid volcanic soils of western Cameroon. Grain color is primarily yellow, with some segregation for white. It is late maturing, requiring an average of 75 d to 50% silk emergence across the Cameroon and Nigerian midaltitude test sites in 1991, approximately the same as the HTA TZMSR population (1) and the Zimbabwe Seed Coop hybrid ZS206.

It is resistant to ear rots and E. turcicum, P. sorghi, and B. maydis. A higher pressure (or different race) of E. turcicum, P. sorghi, and B. maydis was observed during rating at Jos, Nigeria, in 1991. It is expected that the primary utility of these lines will be as parents in varietal synthetics, and in inbred source synthetics and crosses for the high-rainfall tropical midaltitudes. The lines all have white kernels, with a range of textures. All lines are resistant to maize streak virus. Maturity classification is late midaltitude, flowering 4 to 9 d later than TZMSR (77 d) and the Zimbabwe Seed Coop hybrid ZS206 (76 d) at Jos, Nigeria, in 1991.

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