

This series of crosses is evidence for the presence of some activity at this allele in the absence of En. Further, in the presence of En, it responds giving pale and purple sectors--thus the designation r-pa-pu.

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4. Attempted intergeneric crosses involving maize and sorghum.\*

Sixteen maize cultivars (Table 1) and 16 sorghum cultivars (Table 2) were planted at the Agronomy Field Research Center, Ames, Iowa, on three dates (delayed approximately 10 days) during the growing season of 1970. A total of 1,667 control pollinations were made (891 maize x male-fertile sorghum and 796 male-sterile sorghum x maize). The maize cultivar Gangtok-Sikkim matured too late to nick with any male-sterile sorghum and the maize cultivar Pollo was barren; therefore, Gangtok-Sikkim was excluded from all crosses and Pollo was used only as a pollen parent.

Silks were shortened on approximately 1/2 the maize ear shoots pollinated; several ears with shortened silks were self-pollinated and served as checks of damage caused by the cutting procedure. Also, some ears with silks generally considered "too mature" to pollinate were pollinated.

Several male-sterile sorghum heads were bi-pollinated (approximately 48 hours between pollinations) and a few heads were tri-pollinated (approximately 24 hours between pollinations).

Eight ear shoots from each of the maize cultivars (N28 x Mo17), (A619 x A632), and A619 were pollinated by Tx7078 sorghum. Silks were shortened on four of the plants and were left uncut on the remaining four plants. Two ear shoots of each type (shortened and normal silks) were treated on two consecutive days (beginning 24 hours after pollination) with 0.8 ml gibberellic acid solution (45 ppm GA in 0.05% Tween 20) and two ear shoots were untreated. Similarly, eight sorghum heads each of male-sterile Wheatland, Martin, and Kafir 60 were pollinated by the maize

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Table 1  
Maize cultivars used in 1970 intergeneric crossing nursery

Adapted	Unadapted
Crows #1 (O.P. 7-45-3-2-1)*	Zapalote Chico**
B14A*	Maiz Chapalote**
A619*	Japanese Hulless Popcorn
MS214*	Argentine Popcorn**
B57*	Northern Flint**
(A619 x A632)*	Early Teosinte**
(B37 x B70)*	Gangtok-Sikkim**
(N28 x M017)*	Pollo**

\*Seed obtained from Dr. W. A. Russell, Agronomy Department, Iowa State University, Ames, Iowa.

\*\*Seed obtained from Dr. Wm. L. Brown, Vice-President and Research Director, Pioneer Hi-Bred Corn Company, Des Moines, Iowa.

Table 2  
Sorghum cultivars used in 1970 intergeneric crossing nursery

Male-sterile	Male-fertile	
	Adapted types	Basic types
Wheatland*	Plainsman*	Durra**
Martin*	Tx7078*	Kaoliang*
Kafir 60*	Redbine*	Feterita*
Redlan*	Caprock*	Hegari*
	Kafir 60*	Shallu**
	Sooner milo*	Sorghum virgatum**

\*Seed obtained from Dr. R. E. Atkins, Agronomy Department, Iowa State University, Ames, Iowa.

\*\*Seed obtained from Dr. Wm. L. Brown, Vice-President and Research Director, Pioneer Hi-Bred Corn Company, Des Moines, Iowa.

cultivar B57. Four of the eight heads were treated with gibberellic acid and four were untreated.

An abnormal amount of seed abortion (especially on maize ears) was observed, but 148 potential hybrid seeds (139 from maize ♀ and nine from sorghum ♂) were recovered and are being germinated on artificial nutrient media. Approximately 50% of these seeds have germinated and several plants are in the 2-to-3-leaf stage and have been transplanted into clay pots and transferred to a growth chamber. Root tip chromosome analyses are being made on all potential hybrid plants.

One "potential" plant (MS214 ♀ x Feterita ♂) has reached maturity and has a maize phenotype. It was partially male-sterile, however, and, therefore, it has been saved and self-pollinated. The somatic chromosome number of this plant is 20. No further analysis of it has been made.

No treatment appreciably enhanced potential hybrid seedset (Table 3).

Table 3  
Potential hybrid seeds produced by intergeneric crosses  
receiving various treatments

Treatment	Number seeds	% of total
Shortened silks	36	25.8
Old silks	2	1.4
Gibberellic acid	0	0.0
Multiple pollinations	0	0.0

Additional research on the production of maize x sorghum hybrids is being conducted.

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