nr = combination not recovered
+ associated, - not associated

Cytotype	Test with translocations									
	T2-8	T2-14	T4-5	T9-17	T10-19	T11-12	T20-21	T20-22	T1-7	T6-7
Mo15a		--			--		--	--		
Mo24v1	nr		nr	nr	nr	nr				
Mo34v1			nr		nr	--				
Mo51v1						--				
——/Mo5 H20		--					+	nr		
——H1 or H7									+	+
——Pa H5	--		+		--	--	--			
——/Mo18										+
——/Mo18										+
——/Mo30	--				--	--				
—— gl_2	--		--			--				
—— gl_2					--					--
—— gl_3		--			--		--	--		
—— sm_1					--					

CYTOLOGICAL ANALYSIS OF PHENOTYPICALLY ABNORMAL PLANTS FOUND IN EXPERIMENTAL BLOCKS

J.E. Endrizzi, W.D. Fisher, and G. Ramsey

Dr. W.D. Fisher observed a number of off-type plants in field cultures in 1972 and a number of these were selected for cytological analysis. These plants were stumped in the fall, taken to the greenhouse and potted. The cytological analysis of the selected plants is given below and it can be seen that only one was a simple monosomic, and it involves a D chromosome. This monosomic plant has long fruiting branches, and it is possible that this chromosome could be different from the few D chromosomes we now have identified as monosomes. Five plants contained unequal bivalent which are also very useful in our chromosome identification program. Three of these involve telocentrics and these will be studied further to determine whether they may be different from other unequal bivalents we are currently studying.

Plant No.	Phenotype	Cytological Analysis
AZ615 6833-204-203	Small misshapen ball	24II IV dd
AZ616 6817-208-202	Staggy, small late bolls	25II IIIc1 = 2n+iso
AZ617 6901-342	Staggy, small late bolls	24II IV dd
AZ618 6908-333	Cluster	25II III = 2n + 11
AZ619 6908-327	Staggy	25II s≠ II
AZ620 6908-340	Small bolls	24II IIIv1 (tert. 2n-1)
AZ621 6908-291	Staggy	26II
AZ622 6908-279	Large nodes	25II 1≠ II

(Continued on next page)

Plant No.	Phenotype	Cytological Analysis
AZ623 6908-264	Few bolls	26II
AZ624 6908-247	Long fruiting branches	23II s≠ II IV 1s
AZ625 6908-213	Semi-cluster, bolls with small pores	26II
AZ626 6907-268	Small plant with one boll	26II and 25II 2I (iso)
AZ627 AZ64	Low boll set	26II
AZ628 6711-342	Small leaves, small elongated bolls	25II s≠ II
AZ629 6901-290	Top bolls in cluster	25II 1≠ II
AZ630 Stoneville 7A 164	Long fruiting branches	25II I s
AZ631 Stoneville 256	Small late bolls	26II

In addition to the above stumps that Dr. Fisher collected, he also collected seed from two phenotypically aberrant plants which he labeled (a) Mahan plants 6911-349 and (b) Wild plants 6911-32-7. Seed from both of these plants were planted in the nursery and among the 39 Mahan plants that were present in the field, six were classified on bases of morphological characters 2n-1 for chromosome 4. The remaining 33 plants were normal in appearance. All progeny of the Wild plant 6911-32-7 had crinkle-leaf, some more extreme than others, and all flowered very late in the season producing a very few small bolls. This appears to be a genetic mutant. Four of the plants were stumped for seed increase in the greenhouse.

HEXAPLOID COTTON

H. Muramoto

Over an acre of hexaploid cotton plants was grown in 1973. Selections continued with emphasis on fertility and lint quality. Hybridizations were made at the hexaploid level within several selected progenies in the population with hopes of increasing yield, fiber length, and seed size.

The hexaploids have reached a stage of development and stability that much more rapid progress can be realized by releasing it to the public as noncommercial genetic breeding stock. All available data have been collected and compiled in anticipation for release this year. It is hoped that the hexaploid can be released as a composite of hexaploid cotton lines which have been kept in a bulk population for maximum variability and to insure a wide genetic base for making plant selections.

MITOCHONDRIA AS BREEDING TOOLS IN PIMA COTTON

R.G. McDaniel

A significant association between mitochondrial efficiency and lint yields of Pima cotton has been obtained. Our laboratory tests have demonstrated that analyses of function of plant cell "powerhouses," the mitochondria, give valuable information on yield potential of Pima lines and breeding stocks. Assays of mitochondria from seedlings of ten Pima cotton lines used in the Pima regional yield tests showed significant positive associations with lint yield levels. Correlation coefficients of mitochondrial activity with lint yield were 0.82 at Phoenix, 0.91 at Safford