

further investigations.

2. In the "two mutations" cases, it is noted that one of the two mutated sectors is smaller than the other. This suggests that the two mutations did not appear simultaneously, but successively. The possibility of development of two contiguous sectors is not supported by our results.

3. The examples including three mutations show that the same ear can bring three mutations, or one cell can contain two viable mutations (ex: mixed progenies in the J, K, L, M families).

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1. The identity of South African maize germ plasm.

Most of the maize varieties grown in South Africa before the advent of hybrid maize can be traced to importations made in the first decade of the present century. According to the records given by Burt-Davy (1914) these importations were had from various sources abroad but all seem to have originated in the United States.

With the subsequent expansion of maize production as a commercial crop, the white dents became the dominant type, founded largely on a singularly restricted genetic base. The few varieties concerned were principally Hickory King, Champion White Pearl, Iowa Silver Mine and the Horse Tooth types. The yellow dents were less important but their origin is as clearly to be traced to American importations except that some of the varieties which later became popular showed infusions of flint sources. A number of flints were also imported but of these few became established varieties. In most cases, the early variety trials and farmers' reports referred to flint varieties named White and Yellow Congo, White and Yellow Botman with unspecified origin. Noticeably, both these varieties have both white and yellow variants. Burt-Davy (op cit) also refers to "Kaffir mielies" as being mixed white, red, blue and yellow flints grown in the Native territories. These flints, says

Table 1

Character	Material from					
	Lesotho		Umbazwana		Jozini	
	Av.	S.E.	Av.	S.E.	Av.	S.E.
1. Glume length (mm)	11.2 ±	1.61	9.8 ±	.91	9.6 ±	.85
2. Number of leaves above ear	4.3 ±	.60	5.76 ±	.50	5.93 ±	.60
3. Number of Prim. Tassel Branch	15.72 ±	6.96	26.56 ±	4.05	24.6 ±	3.76
4. Number of Sec. Tassel Branch	3.30 ±	2.18	11.06 ±	4.34	14.06 ±	6.51
5. Plant height (cms)	192.6 ±	17.76	193.3 ±	19.35	285.0 ±	22.76
6. Tassel exsertion (mm)	86.2 ±	25.44	47.8 ±	22.16	56.16 ±	29.52
1. Degree of denting	1.10 ±	.30	1.96 ±	.57	3.7 ±	.75
2. Ear length (mm)	153.5 ±	25.83	133.5 ±	15.34	187.0 ±	21.92
3. Kernel length (mm)	8.02 ±	.85	8.16 ±	2.64	7.3 ±	.91
4. Kernel row number	9.5 ±	1.67	12.0 ±	1.38	10.93 ±	2.80
5. Shank diameter (mm)	12.5 ±	2.37	9.8 ±	1.47	9.6 ±	1.56
6. Shank length (mm)	141.0 ±	62.44	108.5 ±	26.89	123.3 ±	51.3

Table 1 (Continued)

Character	Material from					
	S.A. Flint Singles		B37 x H49		Non-selected corn belt lines Brown's data	
	Av.	S.E.	Av.	S.E.	Av.	S.E.
1. Glume length (mm)	10.2	± 6.40	10.8	± .63	11.32	± 1.48
2. Number of leaves above ear	5.3	± .42	5.7	± .48	6.00	± 1.09
3. Number of Prim. Tassel Branch	26.5	± 4.61	12.0	± 1.81	17.00	± 6.70
4. Number of Sec. Tassel Branch	7.1	± 3.04	3.0	± .94	2.90	± 3.00
5. Plant height (cms)	231.7	± 11.80	237.5	± 17.96	213.00	± 24.50
6. Tassel exertion (mm)	57.30	± 9.11	56.5	± 15.28	39.20	± 5.84
1. Degree of denting	1.2	± .7	4.9	± .32	2.24	± 1.09
2. Ear length (mm)	182.2	± 17.4	215.0	± 27.59	152.60	± 28.40
3. Kernel length (mm)	11.00	± .86	11.0	± 1.01	10.26	± 1.00
4. Kernel row number	10.8	± 1.34	16.2	± 6.30	14.40	± 2.36
5. Shank diameter (mm)	13.6	± 2.72	11.3	± 1.64	10.40	± 2.56
6. Shank length (mm)	107.7	± 31.2	138.5	± 36.06	101.00	± 41.70

Burt-Davy, were grown in South Africa long before the introduction of dent and were presumably the types grown by the Bantu farmers whose maize fields European pioneers observed in the first half of the previous century.

Burt-Davy states "Cango and Botman are probably the types introduced by the Portuguese from their Brazilian settlements, into the East Indies and China, and dropped at Mossamedes, Cape Town and on the east coast en route." He goes on to say: "An African grown ear of white flint maize, received from the late Prof. MacOwan, Cape Town, about the year 1884, was classified by Sturtevant as differing only in colour from the Chinese samples exhibited at the Centennial Exposition, and from the Milho dourado grown at Rio Claro, in the Province of Goyaz, on the uplands of Brazil."

Jeffreys (1967a, 1967b) has consistently argued that the Bantu in their southward migration did not get their maize from the Portuguese in East Africa but brought it with them from North West Africa from where their migration supposedly started circa 1400. Jeffreys, therefore, argues that maize was introduced into South Africa by the Bantu before white settlement in 1652 and into Africa before Columbus in 1492. Since the Phoenicians appear to have preceded both Columbus and the Vikings in reaching the new world (see Time, May 24, 1968), the likelihood of the Arabs having done so before Columbus and having brought maize to Africa is not entirely remote.

The matter has genetic and plant breeding significance inasmuch as such South African flints will represent genetic stocks with a separate adaptive history. Their recovery and identification before being completely swamped by exotics and latter-day hybrids should be attempted, therefore.

During the 1967-68 season the author was able to grow a small collection of what is now known as Bantu varieties, and the purpose of this note is to give some data which characterize them allometrically. The samples comprise three varieties from Lesotho supplied by Dr. W. H. Wessels of the Potchefstroom College of Agriculture, a mass collection from Umbazwana in Zululand supplied by Mr. H. O. Gevers of the Natal Agricultural Institute at Pietermaritzburg, and some ear samples obtained

by the author from a Zulu farmer who in his offseason served as a petrol pump attendant at a trading station at Jozini in Zululand.

Table 1 gives average measurements from 30 plants of each of these three sources in comparison to the mean of two local yellow flint single crosses (10 plants of each), the locally grown single cross B37 x H49 from the United States (10 plants), and the measurements given by Brown (1967) for non-selected lines.

The standard errors are high and few significant differences are to be had. As a group the Lesotho varieties have small unbranched, strongly exerted tassels and the ears are borne on relatively long shanks when compared to other flints and semi-flints. One of the Lesotho varieties named Rafolatsane is no different from the White Congo variety agreeing also in having off-white grain colour, early maturity and profuse tillering. This raises the question as to whether White Congo was introduced into Lesotho or was selected there in the first place. If some of its characters are adaptive responses to the short season with cool nights as found in the high altitude of Lesotho, then this might prove to have value in breeding programmes.

The Zululand material has highly branched tassels and the Jozini specimens were rather tall. It is anticipated that these lowland varieties might have some resistance to streak virus.

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