

## B. Origin and Breeding History of the Variety

California Blackeye 46 is the varietal name proposed for line 8046 of the UC Davis cowpea breeding program. Selection 8046 is a Fusarium-wilt resistant blackeye derived from BC<sub>2</sub>F<sub>7</sub> family of a cross between California Blackeye 5 and an Indian cowpea, PI 166146. The original cross was made in 1972 after tests by Kenneth Kimble, Plant Pathology Dept., UCD, showed the PI to be resistant to Fusarium oxysporum, isolate 793. Screening for resistance to Fusarium wilt throughout the breeding scheme was carried out by K. Kimble.

Field testing began in 1979, initially with evaluation in test plots in the Sacramento-San Joaquin Valley, Riverside and the South Coast Field Station. The crossing and selection and the early field testing in 1979 and 1980 were carried out in the bean breeding project, Dept. of Agronomy and Range Science, University of California, Davis, with Carl Tucker as Project Leader. Additional field testing at Davis, 1980-84 was by Kenneth Foster, Blackeye Project Leader, Dept. of Agronomy and Range Science, UCD. Most field testing off-Davis-site since 1980 was by William Isom, Extension Specialist, U.C. Riverside, with various farm advisors cooperating, and by Anthony Hall, U.C. Riverside.

On the basis of performance tests at Davis and off-site, and on canning and cooking tests, this line was chosen in early 1985 by Tucker/Helms/Buddenhagen as the most suitable immediately available line to replace BE3 and the ill-fated BE77. On the basis of tests carried out by us at West Side Field Station in 1985 and 1986, and on the basis of performance in strip trials carried out in "problem" fields in 1986, this choice was substantiated.

The Fusarium-resistant parent, PI 166146, was an accession from India with an erect indeterminant plant type. Its flower color is purple, with seed being tan colored and only about one-half the size of CB5. It matures in about 100 days.

## C&D. Description and Evidence of Performance Characteristics of 7977.

Of the two varieties of cowpeas that occupy over 90% of the acreage in California, CB5 is the most consistent yielder, is earlier and has a more desirable erect plant type compared with CB3. A major defect of CB5 is its susceptibility to Fusarium wilt. The plant-type of 8046 is a more erect than CB5. 8046 matures in about 90 days or 5 days earlier than CB5 and 10 days earlier than CB3. 8046 may be distinguished from CB5 by its Fusarium-wilt resistance, by its earlier maturity. It differs from BE3 by all of these characters except that BE3 is also resistant to Fusarium wilt. It differs from both BE3 and BE5 in that its seed is slightly smaller, being 19 g/100 seeds compared with 21-23 g/100 for BE3 and BE5. The seed does not "leak" and it has been judged a good canner in both 1986 and 1987 tests carried out by Dee Boles, Davis Canning Co., at Atwater.

FLOWER COLOR - CB5 & 3 (WHITE)

LEAF SHAPE/COLOR - CB5

GROWTH - CB5, SLIGHTLY SMALLER

BUSH/VINER - VINER

EARLIER MAT. - 10 DAY THAN CB3, ≈ 5 DAY THAN CB5

E. Area of Adaptation

8046 has performed well in the blackeye growing areas of the state (Tables 1,2,3,4). It has usually outyielded or equaled CB5 and CB3. Where wilt has been present, it has outyielded CB5 by a wide margin and it has also outyielded CB3 in such locations.

Based on yield data, 8046 appears to be superior to CB3 in yield potential, plant type and harvest management, and greatly superior to CB5 in wilt areas and fully equal to CB5 in yield potential in non-wilt areas. Thus, it may be considered a replacement for either variety, and especially for all areas where wilt occurs.

F. Procedure for Maintaining Stock Seed, Etc.

The specifications for beans of the California Crop Improvement Association are to be followed. Foundation seed is to be planted for registered seed, which is to be planted to produce certified seed. The Foundation seed project will maintain Foundation seed. The Foundation seed project has increased 8046 from breeder's seed and has 340 Cwt # of Foundation seed available for 1987 planting. We recommend that these seed classes be raised on land with no history of Fusarium wilt.

BREEDER'S  
FDN.



Table 1. Yield trials of 8046 and check cowpea lines at W.S.F.S. and Parlier both non wilt sites.

	W.S.F.S. 1985	W.S.F.S. 1986	Parlier 1986
8046	18.6	38.8	33.1
CB5	17.7	37.3	27.5
CB3	17.3	30.3	28.1
7977	16.4	35.6	--
L.S.D. at 5%	3.1	1.8	4.5
C.V. %	12.6	9.7	10.4

Weights given in cwt/a  
 Plots replicated 4 times  
 Plot size - 4 rows 30" centers 32' long,  
 middle 2 harvested

Table 2. Non replicated strip trials in problem fields in various production areas, 1986.

	Colusa	Muller	Andreas	Bengman	DeKraemer
8046	22.4	38.3	28.6	13.5	22.3
CB5	20.8	5.0	17.5	13.2	22.5
CB3	-	20.8	25.1	7.9	-

Weights given in cwt/a  
Colusa is a non wilt site

Table 3. Comparison of 8046 and check varieties at 6 non wilt sites, 1981 and 1982.

	$(\bar{x})$ 1981			$(\bar{x})$ 1982 - Isom		
	Davis	Parlier	Shafter	Kern	Tulare	Madera
8046	23.1	30.7	32.2	33.8	21.4	33.0
CB5	18.3	26.6	33.0	33.0	22.5	48.0
CB3	-	-	-	30.8	22.8	35.7
7977	21.5	26.9	32.8	34.1	24.8	41.5
LSD at 5%	3.1	5.5	2.9	3.9	3.5	8.5
CV %	-	-	-	8.4	11.1	16.2

Weights given in cwt/a  
 Plots replicated 4 times  
 Plot size 2 rows 30" centers 32' long