2024 Blackeye Bean Variety Evaluation

By: Michelle Leinfelder-Miles, Farm Advisor

We evaluated blackeye bean varieties in a commercial field in Stanislaus County. Seven varieties from the University of California blackeye breeding program were planted on July 1st. The soil type at the trial location was well-drained (Dinuba and Hanford sandy loams, Tujunga loamy sand, Fig. 1), and the soil temperature was approximately 74°F at the time of planting. Each variety was planted across twelve 30-inch beds, on a row length of approximately 450 feet. The seeding rate was 40 pounds per acre. This was a non-replicated evaluation due to a limitation in seed; therefore, no statistical analysis is presented.

The trial was planted in a field of CB46, and fertility and pests were managed by the grower in the same manner as the field. Descriptions of the entries are provided in Table 1, and data are presented in Table 2. Stand counts were made approximately two weeks after planting on July 16th. The stand was assessed as the number of plants per two-foot length. Twelve replicate counts were averaged. We evaluated aphid and lygus damage on August 16th, and we also scouted for diseases but observed none. The grower had made one insecticide treatment prior to our data collection. For lygus, we took 10 sweeps from four locations in each plot and counted the lygus. Data were averaged and are presented as a 10-sweep count. For aphids, we used a rating scale from 0 to 10 that accounted for visible crown damage and aphid incidence (over at least 50 percent of the plant population). Overall, aphid pressure was low.

The beans were cut on October 15th, and we harvested on November 8th. All twelve rows of each variety were cut and harvested for yield analysis. We evaluated harvest samples for 100-seed weight (a measure of seed size) and lygus stings. The data represent the average of five replicate 100-seed samples. The advanced breeding line CB2 outperformed the other varieties at this trial location. It has stronger nematode resistance compared to the industry standard, CB46, so potentially nematode pressure was impacting the yield of other varieties at this location. The aim is to register CB2 this year, putting it on the path for commercial use. CB77 is a newly registered (https://acsess.onlinelibrary.wiley.com/doi/10.1002/plr2.20176), aphid-resistant line that also performed well at the trial. Pending approval from the CA Crop Improvement Association, CB77 will be available for certified seed production this year (https://fsp.ucdavis.edu/seed-catalog/cowpea-varieties/calblackeyeNo77).

We would like to thank Martin Squires for cooperating with us on this trial and the CA Dry Bean Advisory Board for assistance with statewide research prioritization.

Figure 1. The trial was planted in a commercial field with well-drained soil in Stanislaus County.

Table 1. Description of blackeye bean entries. (Courtesy of Bao-Lam Huynh, UC Riverside)

Entry	Line Name	Characteristics
CB5	California Blackeye 5	Blackeye cultivar (industry standard), large seed, resistant to *M. incognita* nematode, susceptible to aphid and Fusarium wilt diseases
CB46	California Blackeye 46	Blackeye cultivar (industry standard), resistant to *M. incognita* nematode and Fusarium race 3, susceptible to aphid and Fusarium race 4
CB77	California Blackeye 77	Blackeye cultivar (newly released), CB46 background, resistant to aphid, *M. incognita* nematode and Fusarium wilt race 3
CB50	California Blackeye 50	Blackeye cultivar (industry standard), large seed, resistant to Fusarium wilt races 3 and 4, susceptible to aphid
CB2	N2	Advanced breeding line, CB46 background, stronger nematode resistance than CB46
CB69	20KN-069-6-1	Advanced breeding line, lygus tolerance
CB74	07KN-74	Advanced breeding line, lygus tolerance

Table 2. 2024 blackeye bean variety evaluation results – Stanislaus County.

Variety	Stand Count (plants/ac)	In-field Lygus Counts (#)	In-field Aphid Score	Beans with Lygus Stings at Harvest (%)	100-seed Weight at Harvest (g)	Harvest Moisture (%)	Yield at 13% moisture (lb/ac)
CB2	86394	6	1	2	22.3	12.3	2611
CB5	76230	3	0	7	24.3	12.4	1796
CB46	76956	4	0	2	21.9	11.9	2346
CB50	72600	7	0	3	24.2	12.1	1950
CB69	82038	8	0	4	22.0	12.1	1803
CB74	79860	8	0	2	23.2	10.9	2455
CB77	83490	5	0	3	21.1	11.0	2221