Blackeye Bean Production Tips

2/97

This publication will provide quick answers to some of the most common questions growers have regarding blackeye beans. For more in-depth information, refer to the publications, which are available at your county University of California Cooperative Extension Office, or farm advisors listed on the last page.

Variety Selection

For commercial production, there are essentially two varieties, B46 and CB88, grown on most of the acreage. CB46 is the more commonly planted of the two. These varieties have almost completely replaced the old standard, CB5, which was large-seeded with good production under disease-free conditions but which was susceptible to Fusarium wilt.

Seed of CB46 is small and dense with fewer splits than CB88. It cans well but export markets may prefer larger seed. The CB46 plant tends to be more compact than CB88, especially if grown on sandy soil or if it is stressed early in the season. Planting B46 on 30-in beds is recommended unless a field is known to produce very vigorous growth. CB5 should only be grown on land that has not been previously planted to blackeyes unless the grower wants to take the risk of having reduced yields from Fusarium wilt disease.

Variety Characteristics

Variety	Fusarium Wilt (race 3)	Root knot nematode (*M. Incognita*)	Plant type	Seed size
CB88	Resistant	Resistant	Vigorous	Smaller than 5, larger than 46
CB46	Resistant	Resistant	Compact	Small seed, excellent quality
CB5	Susceptible	Resistant	Vigorous	Large seed

Planting

Planting Date. Don't plant until the average soil temperature at the seed depth is 66°.F and the forecast is for at least 3 days of warming weather. The latest planting date depends on the risk one is willing to take for rain at the end of the season. July 4th is considered the unofficial deadline for late plantings, but success depends on timing of fall rains.

Planting Depth. Seeds should be placed 1.5 to 2 inches into moisture.

Seeding Rate. Seeds should be placed about 3 to 4 inches apart. Pounds of seed per acre will vary depending on seed size and density.

Row Spacing. Blackeyes are planned as single rows on 30-inch beds or on 38-inch beds and also as double rows on 40-inch beds. Reserarch results were inconclusive in determining which was best for double rows on 40-inch beds it is especially important to have a cutter arranged before planting as this system requires significant changes in the length of the cutting blade.

Fertilization

Blackeyes produce their own nitrogen if they are inoculated with Rhizobium bacteria. Rhizobia occur naturally in many soils, especially if backeyes were grown previously. Rhizobin may also be added either with a peat inoculum in the planter or as granules placed near or with seed using a Gandy applicator or similar equipment. The peat inoculant is relatively inexpensive and is often considered as "cheap insurance." The granules are more expensive but ay be more effective when blackeyes are planted for the first time in a field r where soil conditions are marginal. Some growers provide preplant "starter" nitrogen at rates of 30 to 50 lbs per acre when planting CB46 to encourage plant growth for better competition against weeds. Past research would indicate that a yield response to this application, provided Rhizobia bacteria are present, would be unlikely.

Trials have not indicated a need for phosphorus unless soil tests are lower than 5 ppm. Potassium is rarely considered to be a limiting nutrient.

Irrigation

Proper irrigation is critical to achieve maximum yields. Blackeyes should be planted into moisture either on preirrigated beds or flat. This allows for uniform emergence and helps with weed control. Beginning the season with a full soil profile helps buffer subsequent irrigatin management. Blackeyes can withstand some water stress before the appearance of flower buds. Yields won't be reduced but plants may be smaller. CB46 can remain small if stressed at this point, which may not hurt yields but could impact weed control in late season. Water stress during bloom, pot set, and pot filling results in reduced yields and/or small seed. Overwatering, especially where drainage is poor, can lead to Pythium root and stem rot. Intervals between irrigations depend on the soil water holding capacty the infiltration rate, and the amount of water applied. If soil does not seal after layby, irrigations should be aplied when approximately 50 percent of the available water has been depleted in the top 3 foot of soil or when an 18-inch tensiometer reads about 65 centibars. Biweekly water use in Kern County for two planting dates is shown in the following table. Once blackeye growth covers 90 percent or more of the soil surface, and during the time when leaves are still green, crop water use is similar to reference crop (tall grass) evapotranspiraton.

Blackeye Water Use (inches)		
Date	**Plant April 25**	**Plant July 1**
5/6	0.32	
5/20	1.09	
6/3	2.40	
6/17	3.89	
7/1	4.14	
7/15	4.14	1.35
7/29	4.00	2.60
8/12	3.71	3.63
8/26	3.15	3.37
9/9	2.51	3.04
9/23	1.27	2.62
10/7	0.53	2.09
Total	31.16	18.70

Weed and Insects
Refer to UC IPM Guidelines for more details on weed and insect control. Follow all label directions.

Weed Control. Cultural practices and available preplant incorporated (PPI) herbicides do a very good job controlling most weeds, but growers should avoid planting blackeyes in fields with heavy pressure from nightshade, groundcherry, nutsedge (especialloy purple nutsedge), or annual morningglory.

Planting to moisture, which leaves a dry mulch on the surface, gives blackeyes a chance to emerge before most weeds. this practice, combined with subsequent cultivation and vigorous blackeye growth, contributes to weed control. However, a preplant incorporated herbicide is usually also applied. Phytotoxicity, mainly on sandy soils, has been observed with some herbicides when applied at high rates and soil temperatures are low.

For common summer weeds such as lambsquarter, pigweed, seedling, johnsongrass, and watergrass, the preplant incorporated herbicides trifluralin (Treflan) or pendimethalin (Prowl) provide season-long control. If nightshade and groundcherry are problems, ethalfluralin (Sonalan) by itself will provide soe early control of these weeds plus season-long control of general grasses and broadleaves. Dual or Lasso i addition to the above herbicides will provide early season control of nightshades, groundcherry, and suppression of yellow (but not purple) nutsedge. The problem with all the nightshade and groundcherry herbicides is that they lose their effectiveness before the end of the season.

The two most commonly used "basic" preplant incorporated herbicides:

1. pendimethalin (Prowl). Often used alone and provides season-long control of grasses and many broadleaves but has no activity on nightshades, groundcherry or nutsedge.
2. trifluralin (Treflan). Often used alone and provides season-long control of grasses and many broadleaves but has no activity on nightshades, groundcherry, or nutsedges.

Preplant incorporated herbicides used when there are nightshade, groundcherry, or yellow nutsedge problems:

1. ethalfluralin (Sonalan). Provides relatively long season control of grasses and many broadleaves including early control of nightshade suppression of groundcherry. In the sa echenical family a Prowl ad Treflan so would not be used in combination with those materials.
2. metolachlor (Dual). Controls many grasses and broadleaf weeds but has shorter residual than Prowl, Treflan, and Sonalan. Suppresses yellow nutsedge and some nightshade species. Complements Prowl, Treflan, and Sonalan i weed spectrum controlled.

Pre plant incorporated herbicides that are registered but not commonly used:

1. alachlor (Lasso). Similar to Dual, it controls many grasses and broadleaf weeds but has shorter residual than Prowl, Treflan, and Sonalan. Suppresses yellow nutsedge and also has some activity on nightshade species. Compliments Prowl, Treflan, and Sonalan in weed spectrum controlled. class I herbicide classification has reduced use.
2. DCPA (Dacthal). Has activity on many broadleaves and grasses but not widely used due to cose and plantback restrictins.

Postemergence grass herbicides:

1. Sethosydim (Poast). Effective in controlling summer grasses when applied at appropriate timing.
2. clethodim (Prism). Possible registratin by early summer of 1997; effective in controlling summer grasses.

Remember: One of the best weed control tools is a vigorously growing blackeye field that shades out late season weeds.

Insect Pests. *Lygus* bugs are a major insect pest, reducing yields by blasting buds and causing floral and small pod abcission when they feed. In addition seeds in more mature pods are damaged due to lygus feeding, reducing seed quality. Lygus are monitored with a sweep net. An average of one-half lygus per sweep from the floral bud through early pod stage is the treatment threshold; as pods develop, the threshold increases to one lygus per sweep (a sweep is one pass of the net over two ros of beans).

Insecticides commonly used to control lygus bugs:

1. dimethoate (Cygon). Often the first material used; also effective against cowpea aphid.
2. acephate (Orthene). Can sometimes increase spider mites.
3. methomyl (Lannate). Usualy only used when beet armyworms are also a problem.
4. aldicarb (Temik). Apply sidedressed; may delay the need to spray for Lygus, although there has not been any research to confirm this. Probably would not be effective on large populatons migrating into a field. (Note: 90-day preharvest interval.)

Twospotted, strawberry, and Pacific spider mites are frequently problems especially along dusty roasides.

Miticides to control spider mites:

1. aldicarb (Temik). apply sidedressed; should help reduce spider mite problems early in the season, but the length of protection is nt known. (Note 90-day preharvest interval.)
2. propargite (Comite). can be applied during the season, but coverage is always a problem, especially wen applied by air.
3. dicofol (Kelthane). Most effective when applied by ground. Some resistance h as been found in spider mites to this meterial.

The cowpea aphid, the black aphid found in blackeyes can cause significant damage by killling plants (even large ones) and has the potential to transmit viruses It does not occur every year in every field. Large populatons have developed as early as May and as late as the last half of August. No threshold has been determined, but growers and PCAs need to watch infestations and determine if natural enemies will reduce the aphid populatin or if the aphids are spreading. Dimethoate (Cygon) has been effective in controlling this aphid. Temik at planting or early sidedress will control early apid infestatins, avoiding the need for a prebloom spray should an early infestatin occur, thereby keeping beneficial isects inthe field longer.

Worms, including saltmarsh caterpillar, beet armyworm, or weternyellowstriped armyworm, sometimes develop high populations, usually late the season. No threshold for treatment as been determined, so growers and PCAs must evaluate the damage being done, the stage of the womrs and the crop, and the time to harvest. the species of worm influences the choice of insecticide Materials include acephate (Orthene), methomyl (Lannate), and Bacillus thuringiensis (Dipel Javelin). To be effective on armyworms, Bt materials must be applies at early instar stages.

Leafminers have become a sporadic, but sometimes damaging pest in recent years. There is no insecticide registered on cowpeas that will control larvae feeding in leaves. Some registered insecticides will kill adults, but new migrations fro other fields or emergence from pupae within the bean field result in a rapdi srsurgence of populations. Leafminers tend to increase numbers inmid to late sumer, so double crop beans are expecially vulnerable. Keeping early season pesticide sprays to a mnum will increse the likelihood that natural predatin and parasitism will control the population

Publications

1. *Blackeye Bean Productin in California*, UC DANR Publication #21518, 23 pages ($7.50)
2. *Color Photo Guide to Dry Bean Pests*, UC DANR Publicatin #3339PS2, 4 pages ($4.00)
3. *IPM guidelines for Dry Beans* (http://www.ipm.ucdavis.edu/PMG/selecnewpest.beans.html), UC PMG Publication 19, 43 pages (This publicatin is reproduced at county offices, so price varies from free to $4.30, depending on the county.)

UC Cooperative Extension Farm Advisors Working with Dry Beans

County	Farm Advisor	Telephone
Butte	Doug Munier	(916) 865-1107
Colusa	Mike Murray	(916) 458-0577

Fresno	Shannon Mueller	(209) 456-7261
Glenn	Doug Munier	(916) 865-1107
Kern	Blake Sanden	(805) 868-6218
Kings	Bruce Roberts	(209) 582-3211 Ext. 2730
Madera	Ron Vargas	(209) 675-7879
Merced	Bill Weir	(209) 385-7403
San Joaquin	Mick Canevari	(209) 468-2085
Stanislaus	Jesus Valencia	(209) 525-6654
Sutter/Yuba	Michael Cahn	(916) 741-7515
Tehama	Doug Munier	(916) 865-1107
Tulare	Carol Frate	(209) 733-6483