UI 911—An Improved Black Bean for Idaho

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UI 911 is a black bean cultivar developed to fill a niche for adapted black beans for Pacific Northwest growers. UI 911 matures earlier than traditional black cultivars, allowing it to reach full yield potential in Idaho's shorter growing seasons. UI 911 has larger seed size than UI 906, making it more acceptable to processors. This cultivar has high yields, an upright growth habit, and I gene resistance to bean common mosaic virus (BCMV).

Pedigree

UI 911 black bean was developed by the Idaho Agricultural Experiment Station at Kimberly and was released in 1993. It is an F_6 selection made by John Kolar in 1984 from the 1981 cross Midnight/07055 F3. The pedigree of 07055 is PI209621/2//R75/-RR27/797/3 F5/Aurora. Breeding lines used to develop 07055 had high levels of rootrot tolerance [caused by *Rhizoctonia solani* Kuhn, *Fusarium solani* (Mart.) Sacc. *F.* sp. *phaseoli* (Burkholder) W. C. Snyder and H. N. Hans, and/or *Pythium* spp.]. UI 911 is a sister line of UI 906.

UI 911 was tested in advanced yield trials at Kimberly and Parma, Idaho, from 1986 through 1993, and at 28 locations in the 1994 National Cooperative Dry Bean Nursery. UI 911 was previously tested under the experimental number 85B11.

Disease reaction

UI 911 was tested for resistance to BCMV at Prosser, Washington, and at Kimberly, Idaho. This cultivar has I gene resistance to BCMV, as indicated by a systemic necrotic reaction when inoculated with NL-3. I gene resistance to BCMV prevents seedborne transmission of BCMV, but UI 911 may show yield reduction and/or plant death where necrotic strains of BCMV are present in the field. This may happen when UI 911 is planted next to a susceptible field of beans harboring a necrotic strain of BCMV.

UI 911 is moderately resistant to sugarbeet curly top virus. Its resistance is similar to that of other black and navy cultivars.

Table 1. Growth habit of black beans grown at Kimberly and Parma, Idaho.*[1]

	Kimberly			Parma			
Cultivar	1993	1989	Mean	1993	1989	Mean	Combined mean
UI 911	24	24	24	23	23	23	24
UI 906	22	21	22	22	21	22	22
Midnight	22	21	22	21	20	21	21
T -39	25	24	25	23	22	23	24

[1] First digit indicates vine type: 1=determinate bush, 2=upright short vine, 3=floppy vine. Second digit indicates vine length.

* Data shown only for years when all four black cultivars were tested. 1990 -92 data available upon request for UI 911, UI 906, and Midnight.

Description

UI 911 has an upright medium vine growth habit (CIAT classification Type IIB, Table 1) and longer vines than UI 906 and Midnight. UI 911 has purple flowers and a dull black seedcoat color. Like UI 906, UI 911 has dull green foliage compared to the shiny green foliage found in traditional black bean cultivars. UI 911 has lodging resistance intermediate to Midnight and T-39 (Table 2). Pod position is medium to high on the plant, making UI 911 suitable for direct harvest.

Performance

UI 911 was tested in advance yield trials at Kimberly and Parma, Idaho, to determine seed size, seed yield, maturity, and yield efficiency. Yield efficiency, which is a measure of reproductive growth rate, was calculated as seed yield divided by days to maturity.

In yield trials UI 911 had larger seed than either UI 906 or Midnight (Table 3). Averaged across both locations, UI 911 seed size was just over 2,400 seed/lb (19 g/100 seed), compared to 2,660 seed/lb (17.0 g/100 seed) in Midnight and 2,930 seed/lb (15.5 g/100 seed) in UI 906.

UI 911 seed yields at Kimberly and Parma were greater than UI 906, Midnight, and T-39 (Table 4). UI 911 mean seed yield was 2,480 lb/acre, compared to 2,150 lb/acre for UI 906, 2,060 lb/acre for Midnight, and 1,910 lb/acre for T-39.

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Mean maturity for UI 911 was 90 days after planting in Idaho, 1 day later than UI 906, 4 days earlier than Midnight, and 2 days earlier than T-39 (Table 5).

UI 911 yield efficiency in advanced yield trials was greater than UI 906, Midnight, and T-39 at Kimberly and Parma (Table 6).

UI 911 is well adapted for production in Idaho and other areas with short growing seasons. UI 911 matures 90 days after planting, 4 days earlier than Midnight, and 1 day later than UI 906. UI 911 has a dull black seedcoat color and larger seed than other black cultivars. UI 911 yields well in Idaho. UI 911 has an upright growth habit and I gene resistance to BCMV.

Foundation class UI 911 seed will be available to producers in 1995 through the Idaho Foundation Seed Program, Kimberly Research and Extension Center, Kimberly, Idaho. Plant Variety Protection (PVP), with the Title V option, is pending for UI 911. Under Title V, UI 911 may be sold only as a class of certified seed.

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Table 2. Lodging of black beans of Kimberly and Parma, Idaho.[2]

	Kimberly					Parma			
Cultivar	1993	1989	1988	1987	Mean	1993	1988	Mean	Combined mean
UI 911	1.9	2.5	2.7	3.0	2.5	2.4	2.8	2.6	2.6
UI 906	1.5	1.5	1.5	1.8	1.6	1.6	1.8	1.7	1.6
Midnight	1.4	1.5	1.3	2.7	1.7	2.1	2.0	2.1	1.8
T -39	2.1	3.5	3.2	3.7	3.1	3.4	2.6	3.0	3.1

[2] Lodging scale: 1=erect and 5=prostrate.

Table 3. Seed size of black beans grown at Kimberly and Parma, Idaho (seed/lb).

	Kimberly					Parma				
Cultivar	1993	1989	1988	1987	Mean	1993	1989	1988	Mean	Combined mean
UI 911	2,675	2,232	2,371	2,220	2,375	2,306	2,580	2,547	2,478	2,419
UI 906	3,151	2,690	2,953	2,835	2,907	2,833	3,215	2,851	2,966	2,933
Midnight	3,031	2,305	2,459	2,942	2,684	2,336	2,875	2,682	2,631	2,661
T -39	2,987	2,341	2,611	2,067	2,502	2,538	2,813	2,794	2,715	2,593

Table 4. Seed yields of black beans grown at Kimberly and Parma, Idaho (lb/acre).

	Kimberly					Parma				
Cultivar	1993	1989	1988	1987	Mean	1993	1989	1988	Mean	Combined mean
UI 911	1,508	3,120	2,713	3,374	2,679	2,581	1,560	2,521	2,221	2,482
UI 906	1,289	2,694	1,938	2,732	2,163	2,783	1,141	2,447	2,124	2,146
Midnight	995	2,147	2,069	3,097	2,077	2,363	1,288	2,484	2,045	2,063
T -39	1,257	1,539	1,779	2,372	1,737	2,712	1,610	2,092	2,138	1,909

Table 5. Maturity of black beans grown at Kimberly and Parma, Idaho (days after planting).

	Kimberly					Parma				
Cultivar	1993	1989	1988	1987	Mean	1993	1989	1988	Mean	Combined mean
UI 911	95	85	89	90	90	94	92	83	90	90
UI 906	92	82	88	90	88	93	92	83	89	89
Midnight	99	89	93	99	95	96	91	88	92	94
T- 39	88	87	92	99	92	95	93	88	92	92

Table 6. Yield efficiencies of black beans grown at Kimberly and Parma, Idaho (lbs/acre/day).

	Kimberly					Parma				
Cultivar	1993	1989	1988	1987	Mean	1993	1989	1988	Mean	Combined mean
UI 911	15.9	36.7	30.5	37.5	30.1	27.5	17.0	30.4	24.9	27.9
UI 906	14.0	32.9	22.0	30.4	24.8	29.9	12.4	29.5	23.9	24.4
Midnight	10.1	24.1	22.2	31.3	21.9	24.6	14.2	28.2	22.3	22.1
T -39	14.3	17.7	19.3	24.0	18.8	28.5	17.3	23.8	23.2	20.7

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