



University of Kentucky
UKnowledge

Agronomy Notes

Plant and Soil Sciences

1995

On-Farm Testing of Early Maturing Soybean

Colleen C. Steele

University of Kentucky, colleen.steele@uky.edu

Larry J. Grabau

University of Kentucky, larry.grabau@uky.edu

N. Gift

University of Kentucky

Follow this and additional works at: https://uknowledge.uky.edu/pss_notes



Part of the [Agronomy and Crop Sciences Commons](#)

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Repository Citation

Steele, Colleen C.; Grabau, Larry J.; and Gift, N., "On-Farm Testing of Early Maturing Soybean" (1995).
Agronomy Notes. 31.

https://uknowledge.uky.edu/pss_notes/31

This Report is brought to you for free and open access by the Plant and Soil Sciences at UKnowledge. It has been accepted for inclusion in Agronomy Notes by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.



Agronomy *notes*

Vol. 28, No. 8, 1995

On-Farm Testing of Early Maturing Soybean

C.C. Steele, L.J. Grabau, and N. Gift

Maturity Group (MG) II soybean varieties have performed well in University of Kentucky tests over the past several years. Early planted (late April/early May) tests in the relatively dry years of 1986 through 1989 showed MG II yields to exceed those of MG III or MG IV. Over the generally wetter years 1990 through 1993, MG III and IV yields were slightly better than those of MG II varieties. Across eight years of data, MG II yield averages were virtually identical to those of MG III and IV. Perhaps growers could plant a portion of their soybean acreage to MG II varieties and gain the advantages of earlier harvest, such as more fall planting options and slightly higher early fall cash market prices, while obtaining similar yields as they could with MG IV varieties.

The Kentucky Soybean Promotion Board funded an on-farm study of early maturing soybean varieties for the 1993 and 1994 growing seasons. In 1993, the study included 14 on-farm tests in 8 counties from Nelson County to Union County. In 1994,

three new counties (Simpson, Christian, and Hickman) were added in the Southern Tier and Purchase regions, bringing the total for that year to 9 counties. The project's objective was to test the merits of early maturing soybean varieties across a wide range of on-farm Kentucky conditions. Special concerns included the susceptibility of MG II varieties to the heavier pest pressure they are likely to experience in Kentucky fields than in northern areas, and potential harvest losses of MG II varieties due to low podding heights.

Materials and Methods

Growers were selected with the help of a State Extension Grain Specialist and several county agricultural agents. Each farmer was asked to plant two randomized replications of a strip test which included four MG II varieties and an MG IV check variety. The varieties included in 1993 were 1) Jack, MG II public with SCN resistance, 2) Pioneer 9273, MG II private,

3) IA 2008, public, 4) Stine 2250, MG II private, and 5) Asgrow A4715, MG IV private with SCN resistance. Jack, Pioneer 9273, and Asgrow A4715 were also tested in 1994. On the basis of their yield performance in a 1993 on-station test, Agripro 2880 and Asgrow A2396 were selected for 1994 to replace the other two MG II varieties grown in the 1993 on-farm test. IA 2008 was dropped from the 1994 test due to its consistently low yields in the 1993 on-farm test. While the 1993 on-farm yields of Stine 2250 were acceptable, this variety was dropped for the 1994 on-farm test due to problems in getting the seed in a timely fashion in 1993. Asgrow A4715 was used as the MG IV check variety on the basis of its highly competitive yields in the 1991 to 1993 University of Kentucky soybean variety trials.

Production practices such as planting date, row spacing, seeding rate, and weed control methods were left up to the discretion of individual growers. We provided seed to the growers and visited each field several times during the season to monitor progress

of the crop. Data collected by the researchers included: stand establishment, early August canopy closure, lowest pod height, mature plant height, lodging, and potential stubble losses if harvest had occurred at 2, 4, or 6 inch combine cutting heights. Growers harvested with their own equipment and measured yields in weigh wagons, generally with the help of the local county extension agent for agriculture. Tests were designated as full season, double-crop (after wheat), or late-planted (planted after June 14, but not following wheat).

Results and Discussion

Thirteen tests were completed in 1994. The average yield across all 13 tests was 40 bushels/A, somewhat better than the 1993 yield average of 36 bushels/A across 14 tests. Individual farm yields for 1994, averaged across all five varieties, are shown in Table 1. Farm averages ranged from a high of 64 bushels/A on Joe Sprague's Union County farm to 17 bushels/A on Joe Hagman's Hancock County farm. Interestingly, Sprague also had the highest yielding test in the 1993 on-farm study. In 1994, there was a clearer separation between full season and double-crop/late-planted trials than there had been in 1993. In 1994, all but one of the full season tests were significantly better yielding than any of the double-crop or late-planted tests. The exception was Joe

Hagman's full season test, which was planted on soil that had been removed and replaced by the nearby paper plant. Clearly, the wide range of yields in both 1993 and 1994 provided an excellent opportunity to see how MG II varieties would perform under a wide range of Kentucky on-farm conditions.

Table 1. Average yields of our MG II and one MG IV varieties from 13 on-farm tests in 1994.

Farmer	County	Cropping System	Yield (bu/A)
Sprague	Union	FS*	64**
Peterson	Nelson	FS	60
Luttrell	Ohio	FS	51
Slayden	Hickman	FS	50
Donaldson	Hopkins	FS	49
Kuegel	Daviess	FS	48
O'Nan	Union	DC	39
O'Nan	Union	LP	38
Peterson	Nelson	DC	35
Sisk	Christian	DC	25
Hagman	Hancock	DC	24
Kummer	Simpson	LP	21
Hagman	Hancock	FS	17

* FS, full season; DC, double-crop behind wheat; LP, late-planted, but not after wheat.

** Least significant different (LSD 0.05) for comparing mean yields of different farms was 6 bu/A.

Table 2 shows average variety yields across farms in both 1993 and 1994. To relate the information to common Kentucky cropping systems, we split the tests into full season and double-crop/late-planted groups. In 1993, the top yielding MG II variety (Pioneer 9273) produced full season yields equivalent to those of Asgrow

A4715. Both Pioneer 9273 and Stine 2250 produced yields statistically equivalent to those of Asgrow A4715 under double-crop/late-planted conditions in 1993. In the 1994 full season tests, both Jack and Pioneer 9273 were equivalent to Asgrow A4715. The other two MG II varieties, Agripro 2880 and Asgrow A2396, were only slightly behind the MG IV check variety. Under double-crop/late-planted conditions in 1994, the MG IV check easily out-

yielded all four MG II varieties. Apparently, dry conditions, which persisted through seed fill of the MG II varieties under double-crop/late-planted conditions in 1994, reduced the yield of these early maturing varieties.

With the exception of the double-crop/late-planted tests in 1994, the best MG II varieties clearly "held their own" against Asgrow A4715, which was the most popular single soybean variety in Kentucky in 1994. Careful MG II variety selection appears to be important. For example, IA 2008 performed poorly in our 1993 tests (Table 2). However, as shown by our

1994 data, a number of high-yielding MG II varieties are available.

Table 3 permits a closer look at variety performance on individual farms in 1994. Of particular interest was how MG II varieties might compare to Asgrow A4715 under excellent growing conditions. For the single highest yielding test (Sprague), three

of the four MG II varieties were as high or higher yielding than Asgrow A4715. Similar results were obtained in Sprague's 1993 full season test, which was the highest yielding test of the 14 conducted in 1993. When we averaged yields of all varieties across the top five 1994 tests, the MG II varieties produced 55 bushels/A, equal to Asgrow

A4715. Clearly, MG II yields were competitive with a top-notch MG IV variety when grown under high-yield conditions. Joe Hagman's full season test in Hancock County on disturbed topsoil resulted in poor yields of all varieties tested, indicating that MG II varieties may perform similarly to MG IV varieties on

marginal land. Many of the remaining 1994 tests showed Asgrow A4715 to out-yield most or all of the MG II varieties (Table 3). While an unusual rainfall pattern in some of the state in 1994 (relatively dry August, wetter September) may account for this, these results still raise a question about the yield potential of MG II varieties when planted late and subjected to dry conditions during seed-fill. It is worth noting that MG II varieties produced considerably higher yields under late

April/early May planting conditions than did MG IV varieties in the dry years of 1986 to 1989. Therefore, it would be inappropriate to categorize MG II as having low yield potential under droughty Kentucky conditions.

Stubble harvest losses are a concern with MG II varieties. Across all 1994 studies, lowest podheights of the

were not as serious in that season as in 1994. In any case, growers considering the use of MG II varieties should be equipped to achieve combine cutting heights below the 4 inch level.

Conclusions

Farm average yields varied widely over the two years tested, providing an

excellent opportunity to evaluate selected MG II varieties. With the exception of the drought stressed double-crop/late-planted tests in 1994, the best MG II varieties compared favorably with Asgrow A4715. Also, MG II has produced

higher Kentucky yields than MG IV during previous dry seasons. MG II varieties may be best adapted for full season planting dates to reduce the risk of drought stress during seed-fill. Growers considering MG II should be prepared to reduce combine cutting height in order to minimize stubble losses.

Table 2. Average variety yields (bu/A) from full season or double-crop/late-planted cropping systems in 1993 and 1994.

Variety	Maturity Group	1993 tests*		1994 tests	
		Full Season	Double-crop/ Late-planted	Full Season	Double-crop/ Late-planted
Asgrow A4715	IV	44**	38	50	39
Jack	II	39	33	50	32
Pioneer 9273	II	44	36	49	26
Stine 2250	II	38	36		
IA 2008	II	29	26		
Agripro 2880	II			47	27
Asgrow A2396	II			47	27

* There were 7 full season and 7 double-crop/late-planted on-farm tests in 1993. In 1994, we had 7 full season and 6 double-crop/late-planted tests.

** LSD (0.05) for comparing varieties within a cropping system within each year was 2 bu/A.

four MG II varieties averaged 3.8 inches, compared to 6.6 inches for Asgrow A4715. As a result, MG II harvest losses at a 4 inch cutting height averaged 10.6%, while those of Asgrow A4715 averaged only 1.4%. This difference may have accounted for some of the yield results in 1994, since some producers were cutting around the 4 inch level. In 1993, MG II harvest losses averaged 4.8% compared to 1.5% for Asgrow A4715, indicating that MG II harvest losses


Extension Soils Specialist

OFFICIAL BUSINESS
 PENALTY FOR PRIVATE USE, \$300

Table 3. Yield comparisons at individual farms in 1994 test.

<i>County</i>	<i>Farmer</i>	<i>Cropping System</i>	<i>Asgrow A4715</i>	<i>Jack</i>	<i>Pioneer 9273</i>	<i>Agripro 2880</i>	<i>Asgrow A2396</i>	<i>MG II Average</i>
Union	Sprague	FS*	65**	68	64	65	58	64
Nelson	Peterson	FS	58	61	60	61	62	61
Ohio	Luttrell	FS	50	57	51	50	49	52
Hickham	Slayden	FS	52	53	51	48	48	50
Hopkins	Donaldson	FS	51	50	48	47	48	48
Daviess	Kuegel	FS	54	45	46	47	50	47
Union	O'Nan	DC	47	39	33	34	40	36
Union	O'Nan	LP	52	46	30	28	34	34
Nelson	Peterson	DC	35	33	38	36	34	35
Christian	Sisk	DC	38	25	21	24	18	22
Hancock	Hagman	DC	29	22	26	21	19	22
Simpson	Kummer	LP	35	29	9	17	16	18
Hancock	Hagman	FS	19	20	21	11	13	16

* FS, full season; DC, double-crop behind wheat; LP, late-planted, but not after wheat.

** LSD (0.05) for comparing varieties within a farm was 6 bushels/A.