

What's Cropping Up?

A NEWSLETTER FOR NEW YORK FIELD CROPS & SOILS

VOLUME 24, NUMBER 1 March 2014

Many growers in New York plant their corn crop first, followed by the soybean crop. These growers frequently finish soybean planting in June because of weather delays during the latter half of May. A frequently asked question if planting is delayed into June is “when to switch from a Group II to a Group I variety”. Other growers, however, will switch to a late Group II from a late Group I variety, if planting occurs past June 10. A frequently cited reason for the switch to a later variety is “to get higher pod set on the late-planted Group II variety”.

Some growers, however, have had success by planting soybeans before the corn crop in late April, which begs the question, “just how early can we begin to plant soybeans”. Almost all growers will plant soybeans at about a 1-inch depth, regardless of the planting date. We initiated small-plot research at the Aurora Research Farm in 2013 to answer three questions concerning soybean planting: 1) Can soybean be safely planted in mid to late April under NY growing conditions without a yield penalty, 2) should a Group II or Group I variety be selected if the planting date is delayed until mid-June, and 3) does the 1-inch seeding depth fit all planting dates?

We planted a mid-Group II (AG2431) and a late Group I (AG1832) variety on April 19, May 6, May 17, June 1 and June 15 at 1.0, 1.5, 2.0, and 2.5 inch seeding depths in 15-inch rows with a White row crop planter at a rate of 180,000 seeds/acre. We evaluated early plant establishment at the unifoliate (V1) or early 1st trifoliate stage (V2) about 10-35 days after planting, depending upon planting date. Each planting date x variety x seeding depth plot was

When, What, and How Deep to Plant Soybeans in New York?

Bill Cox, Department of Crop and Soil Sciences, and Phil Atkins, Plant Breeding and Genetics, Cornell University

harvested when moistures were less than 18% (September 27, October 3, and October 15).

Early plant populations had a significant planting date x seeding depth interaction. Despite the interaction, the 1-inch seeding depth consistently had the highest early

plant populations with an average plant establishment of ~135,000 plants/acre (~75% establishment) for the April, early May, and mid-June planting dates and ~145,000 plants/acre (~80% establishment) for the mid-May and June 1 planting dates (Table 1). The interaction occurred because the deeper planting depths had lower plant populations than the 1-inch depth on most but not on all dates (the 2.0 inch planting depth had the same plant establishment on the May 6 and May 17 planting dates and the 2.5-inch depth had the same establishment on the May 17 planting date).

Seed yield had planting date x seeding depth interactions (Table 2). Seed yields were highest at the two May planting dates, May 6 and May 17, which was somewhat earlier than most NY growers plant soybeans. Despite differences in early plant establishment, soybeans yielded the same at all seeding depths on all planting dates, except for the

June 15 planting date (Table 2). It is not clear why soybeans yielded so poorly at the deeper seeding depth on the June 15 planting date.

Seed yield had a planting date x variety interaction (Fig. 1). The Group II variety yielded the highest at the April 19 planting date and then again at the June 15 planting date. The Group I and Group II variety yielded the same on the other three planting dates. Interestingly, when averaged across variety and seeding

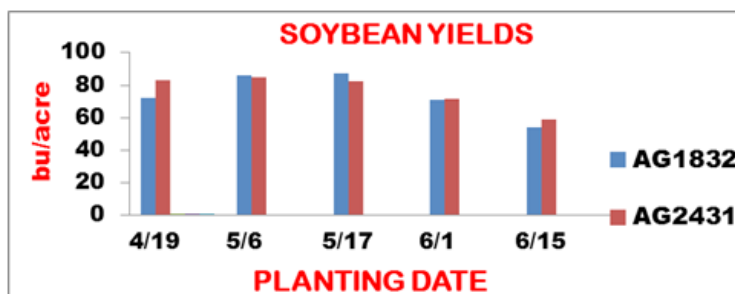


Fig. 1 Yield of a Group I (AG1832) and a Group II (AG2431) soybean variety, averaged across four seeding depths, at five planting dates.

Crop Management

depths, the yield for April 19th planted soybeans averaged 77.5 bushels/acre compared with 71.2 for the June 1 and 56.5 bushels/acre for the June 15 planting dates. Evidently, a planting date about 1-month earlier than normal results in ~25% higher yields than planting about 1-month later than

establishment on the other planting dates. In contrast, the 2.0 depth had ~70% establishment on May 6, June 1, and June 15 planting dates and only 63% on the April 19 planting date. The 2.5 inch depth had ~70% plant establishment on the May 6 and June 1 planting dates

Table 1. Early plant populations of soybean at the unifoliate stage (V1) or early 1st trifoliate leaf stage (V2) at five planting dates and four seeding depths when averaged across two varieties (AG1832 and AG2431).

DEPTH	PLANTING DATE				
	4/19	5/6	5/17	6/1	6/15
inches	plants/acre				
1.0	133,700	136,400	145,500	143,300	134,700
1.5	131,100	121,500	134,800	134,700	123,000
2.0	114,000	130,000	145,400	132,700	127,300
2.5	101,800	123,000	140,100	127,300	110,800
LSD 0.05	6,525†				

†LSD compares seeding depth means within a planting date.

Table 2. Seed yield of soybean at five planting dates and four seeding depths, when averaged across two varieties (AG1832 and AG2431).

DEPTH	PLANTING DATE				
	4/19	5/6	5/17	6/1	6/15
inches	bushels/acre				
1.0	78.7	86.5	83.6	71.9	66.9
1.5	79.3	85.8	86.7	72.9	57.5
2.0	75.3	87.2	82.6	69.0	57.5
2.5	76.8	83.2	82.7	71.1	43.8
LSD 0.05	6.4				

†LSD compares seeding depth means within a planting date.

but only ~55 to 60% establishment on April 19 and June 15. Evidently, the 1- inch planting depth is the optimum planting depth for stand establishment for mid-April to mid-June planting dates, at least under moist soil conditions as in 2013. Nevertheless, seed yield did not vary among seeding depths at the first four planting dates, despite plant population differences. Final plant establishment exceeded 100,000 plants/acre on all planting dates at all seeding depths, which once again reinforces the concept that soybeans can compensate and maintain close to optimum yield, if early plant establishment exceeds 100,000 plants/acre. Weather conditions greatly influence the response of soybeans to planting dates and seeding depths so we will continue this study another year.

normal, at least in a year when moisture stress was not prevalent.

Conclusion

Both the Group I and Group II variety yielded their highest (and similarly) at the May 6 and May 17 planting dates. The Group II variety incurred no yield reduction when planting on April 19; whereas the Group I variety incurred a ~9% yield reduction. The Group I variety incurred ~18% yield reduction when planting on June 1 and ~38% yield reduction on the June 15 planting date. The Group II variety incurred slightly lower yield reductions on these dates (~14 and 29%, respectively). Consequently, the Group II compared to Group I variety had somewhat more stable yields across the 8-week planting period. Seeding depth had a major influence on early plant populations with the 1.0 inch depth having a ~75% establishment on April 19 and June 15 and ~80%