

Annual Ryegrass Variety Evaluation
Pike Ag, LLC
Marion, IL and Ewing, IL Field Sites
2016-17

An annual ryegrass (ARG) variety evaluation was instigated in the fall of 2016 to compare characteristics of 4 ARG varieties compared to a non-cover crop check, planting the plots to corn in spring 2017 which will be taken to harvest in the fall. The 4 varieties in the comparison include LowBoy, PPERC2, KB Royal and Bounty. Two locations in southern IL near Marion (50 miles north of Cairo at the southern tip of the state) and Ewing, separated by about 40 miles north to south were utilized with 3 replications of the ARG cover crops and a no-cover check.



The spring of 2016 was very wet which delayed planting of all field crops. As a result, ARG was seeded with a grain drill at the Marion location on September 24, and the Ewing location was drilled on October 23. Normally, ARG seeding in Southern Illinois is targeted for completion by about September 15, however, it was a warm fall with a late freeze so stand establishment turned out to be satisfactory at both farms. The seeding rate was 12#/ac.

Soil tests to monitor nitrate (NO₃) and ammonium (NH₄) levels and biomass samples for nutrient analysis and total biomass production were collected on May 9 at Ewing and May 11 at Marion. Corn was planted at Marion on May 11 and at Ewing on May 12. Residual soil N was low in all plots and at both locations with NO₃ levels ranging from .34 to 2.8ppm and NH₄ levels ranging from 1.66 to 5.43ppm. With N test levels that low, there was no trend or meaningful difference between ARG varieties or no cover plots. To combat this low N environment for corn establishment N fertilizer was applied in the form of 100# ESN (46#N) at Marion. The Ewing site did not receive an N application at planting, however side dress N was applied early and no signs of deficiency were noted. The Marion site was side dressed with a Y-Drop system at V-6.

Soil cores were taken at the same time as biomass collection. A 2-inch core was taken with a tractor mounted probe to depth of 36". In each ARG variety, rooting was vigorous and extended deeper than the sampling depth in claypan soils. While root mass was not measured, the new variety LOWBOY was observed to have similar rooting mass and density as the other varieties as soil cores were dissected. Heading height of LowBoy was less than 24", whereas Bounty was nearly 40". Given the stature of the plants, the rooting characteristics of LowBoy are impressive and comparable to that of the other varieties tested.



Where biomass was concerned, the vegetative characteristics did result in a marked difference in tonnage of cover produced (table 1)

Table 1 – Biomass (tons Dm/ac)

Variety	Ewing, IL	Marion, IL
LowBoy	1.94	1.32
PPER2	2.46	3.62
KB Royal	2.88	2.53
Bounty	2.22	5.72

With the difference in cover crop planting dates, the ARG at Ewing was just beginning to head and at Marion was pollinating. In many cases, ARG would ideally be terminated earlier, however, the area had 9 to 16 inches of rainfall during the last week of April and the cover crops were allowed to grow to help dry out the soil, whereas earlier burndown applications caused soils to remain wet and delayed planting into late May.

When comparing nutrient levels in the ARG biomass; N, P and K percentage levels were generally similar among the varieties compared (Tables 2 & 3). Where differences were noticed it seemed that varietal maturity might be having an influence. However, due to the differences in tonnage produced, nutrient holding or “tie-up” in the biomass was variable. While no signs of nutrient deficiency in the corn crop have been observed this will be something to watch at harvest.

Table 2 – Nutrient Levels, Ewing, IL

Variety	Tons biomass	N%	#/ac	P%	#/ac	K%	#/ac
Lowboy	1.94	1.57	60.670	0.35	13.0	2.42	92.0
KB Royal	2.88	1.22	69.750	0.28	16.3	2.12	122.6
Bounty	2.22	1.50	78.370	0.29	13.0	2.32	103.9
PPER2	2.46	1.46	71.770	0.29	14.0	2.68	131.6
AVERAGE	2.37	1.43	70.140	0.30	14.1	2.38	112.5

Table 3 – Nutrient Levels, Marion, IL

Variety	Tons biomass	N%	#/ac	P%	#/ac	K%	#/ac
Lowboy	1.32	1.75	46.36	0.19	5.03	2.06	54.58
KB Royal	2.53	1.33	67.41	0.24	12.16	1.67	84.64
PPER2	3.62	1.76	127.32	0.24	17.36	2.17	156.98
Bounty	5.72	0.81	92.74	0.14	16.03	1.74	199.23
AVERAGE	3.30	1.41	83.46	0.20	12.65	1.91	123.86

General Observations

Later than optimum planting dates in the mild fall of 2016 with late September and late October plantings has been a good test for these annual ryegrass varieties. The September planting was well established by the time of a hard freeze and look good throughout the winter.

The October planting was just coming up at that time in early November and all varieties maintained a good stand into the spring in spite of not appearing too vigorous through December and January.

The less aggressive vegetative characteristics of LowBoy proved to be favorable for corn planting with emerging corn having noticeably better color earlier than what was coming up through higher levels of residue, provided especially by KB Royal and Bounty. It should be noted that while the corn planted into LowBoy had a better early appearance, there was no difference in stand and all plots including the no-cover were even by the V-6 stage.

With a lower level of residue, LowBoy provided a nice planting environment and the shorter stature of the plant is not as intimidating as larger varieties in situations of late termination as we worked in this season. This could be helpful to new adopters of cover crops and those trying to delay termination. Weather conditions for crop development have been good to this point of the season and very respectable corn yields can be expected at both locations so we have a good test underway to this point in late July.



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