

# Boost Grazing with Berseem Clover

New annual legume shows promise for pasture and hay production.

by Barb Baylor Anderson, field editor

Producers looking to refresh pastures for grazing season may find adding berseem clover will increase feed nutritional value and cattle productivity, especially in the southern half of the country. Research with the relatively new annual legume shows promise for pasture and hay production, and can be used for some applications in the northern half of the United States, as well.

“Berseem clover is a cool-season, annual legume that is native to the Mediterranean region,” says Jerry Hall, president of Grassland Oregon, Salem, Ore. The seed-breeding company developed the berseem clover variety known as Frosty, and released it for commercial use in 2015.

“We began to research cool-season cover crop and forage opportunities a few years ago in response to escalating nitrogen prices. We wanted a crop that might fix a significant amount of nitrogen so producers could reduce nitrogen input use,” says Hall.

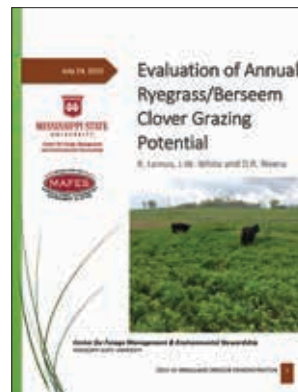
In addition to the nitrogen benefit, Hall says

Frosty has salt tolerance, was bred for improved cold tolerance, has a later maturity than other clovers and a synergistic relationship with alfalfa.

Two types of berseem clover are available — single-cut and multi-cut. Single-cut varieties, like Balady, grow quickly and go to seed with a narrow window for harvest. Multi-cut varieties, like Frosty, can deliver multiple harvests in a single season.

“Frosty does not winterkill until it drops below 5° Fahrenheit (F). That allows for wider adoption in the U.S. We have seen fall planting success all the way into Tennessee,” he says. “Frosty can be adapted farther north in the Midwest by planting it in February and March.”

Hall adds research indicates that producers can plant berseem clover for annual permanent pasture production to improve



feed quality or as a row-crop cover crop where cows can be turned in and grazed. Berseem clover prefers slightly alkaline loam and silty soils with a pH greater than 6.

“In a declining alfalfa field, you can drill Frosty in during the fall or spring to thicken your stand. If you spring-plant Frosty, you

can get 4 tons per acre over the summer versus the returns you might see from corn or soybeans. It provides high-quality forage in a short time,” says Hall.

A low, hard seed count also helps establish berseem clover quickly, filling in bare spots where alfalfa has winterkilled.

“Bale quality resembles alfalfa and feeds similarly,” Hall adds. “It dries down the same, maintaining its green color and increasing the forage value.”



► **Above:** Producers can plant berseem clover for annual permanent pasture production to improve feed quality or as a row-crop cover crop where cows can be turned in and grazed.

## Better quality, better gains

Rocky Lemus, Mississippi State University Extension forage specialist, has been evaluating berseem clover for the last couple of years. He wanted to see how it might compare to crimson and arrowleaf clovers in improving grazing systems and reducing hay supplementation.

“Legumes make good forage, and many producers can look at using berseem clover to extend grazing in winter. It does improve feed quality and forage yields,” Lemus confirms. “Depending on the establishment method — prepared seedbed or sod seeding into perennial pastures — and grass companion forages, it can increase dry matter per acre and extend the grazing season.”

Lemus’ research confirms the higher forage value translates into greater cattle performance. In evaluating late-fall and early-spring grazing, he says 500- to 550-pound (lb.) stockers saw 3- to 3.5-lb. daily live weight gains when grazing a mixture of Frosty and Lonestar annual ryegrass. He says including Frosty in the mix extended the grazing period and lowered nitrogen costs by 14%. Cattle gained 0.87 lb. per day more than on just ryegrass with commercial fertilizer.

Lemus analyzed berseem clover against annual ryegrass and Bermuda grass in different combinations, in both prepared seedbeds and sod pastures. Grazing began when annual ryegrass or berseem clover reached 12 inches in height. Forage samples were collected in each paddock, and grazing cages were randomly placed in each paddock to determine forage availability.

Animals were weighed at each pre- and postgrazing period in each treatment to estimate daily gain. Initial grazing times and length of time varied among treatments. Between grazing periods, animals were removed from experimental pastures and

**Table 1: Forage quality for each treatment within each grazing cycle**

Establishment	Treatment	Grazing cycle	Forage quality					
			CP*	ADF	NDF	IVTDMD	Fat	Lignin
Prepared seedbed	M+B	1	23.13	18.53	31.14	91.29	2.92	0.69
	M+N		26.14	17.94	29.57	92.40	3.22	1.27
	L+B		23.04	20.15	32.48	91.20	3.06	1.11
	L+N		25.50	19.31	31.38	91.85	3.21	1.08
Prepared seedbed	M+B	2	13.97	28.01	43.66	84.88	3.14	1.39
	B		20.95	25.31	38.28	85.21	2.82	3.00
	M+N		20.89	28.25	44.64	86.89	3.25	2.97
	L+B		21.54	30.23	43.59	88.29	3.22	3.64
	B		23.30	27.60	36.32	83.16	2.71	3.74
	L+N		22.50	27.80	42.28	89.12	3.27	2.74
Bermuda grass sod	L+B	2	17.25	26.95	38.60	82.53	2.79	1.90
	B		22.36	26.41	34.95	82.84	2.73	3.26
	L+N		13.57	29.48	45.57	81.79	2.94	0.74
Prepared seedbed	M+B	3	14.46	35.35	53.89	75.83	2.64	3.95
	B		20.56	33.97	43.95	78.56	2.40	5.83
	M+N		12.17	36.03	55.25	75.97	2.55	4.05
	L+B		14.68	36.00	54.55	78.53	2.55	3.82
	B		20.02	36.09	45.98	76.03	2.14	5.39
	L+N		19.35	32.51	49.56	80.90	2.82	4.40
Bermuda grass sod	L+B	3	10.56	35.20	51.00	74.30	2.54	3.80
	B		20.65	30.48	39.63	81.20	2.51	4.53
	L+N		10.54	37.03	55.24	75.76	2.78	2.98

\*CP = crude protein, ADF = acid detergent fiber, NDF = neutral detergent fiber, IVTDMD = *in vitro* true dry-matter digestibility.

placed on spare pastures where they received mineral and hay supplementation as needed.

Lemus notes crude protein declined with each grazing cycle, although grazing cells containing only berseem clover maintained higher crude-protein levels throughout the study. Variations in gain per acre were recorded within each grazing cycle, and

average daily gains (ADG) varied within each treatment. Treatments containing annual ryegrass and berseem clover mix had higher ADG compared to the berseem clover alone and annual ryegrass alone.

“Research shows an 80/20 alfalfa/berseem clover mix can increase yield, crude protein and water-soluble carbohydrate levels in hay

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**Table 2: Estimated cost of establishment and cost of gain for the grazing demonstration during the 2014-2015 grazing season at Starkville, Miss.**

Establishment	Annual ryegrass	Clover	Nitrogen, lb./acre	Calendar days of grazing	Grazing head days	Total gain per acre, lb. beef/ac	ADG, lb./ac	Total pasture cost, \$/ac <sup>1</sup>	Cost of gain, \$/lb.
Prepared seedbed	Marshall	Berseem	25	98	98	383.58	3.91	109.85	0.29
	—	Berseem	0	19	19	23.88	1.26	95.20	3.99
	Marshall	—	100	105	105	423.88	4.04	125.20	0.30
Prepared seedbed	Lonestar	Berseem	25	93	117	650.75	5.56	110.45	0.17
	—	Berseem	0	68	64	222.39	3.47	95.20	0.43
	Lonestar	—	100	93	147	689.55	4.69	125.95	0.18
Bermuda grass sod	Lonestar	Berseem	25	34	34	158.21	4.65	129.20	0.82
	—	Berseem	0	34	34	102.98	3.03	111.20	1.08
	Lonestar	—	100	34	79	216.42	2.74	128.70	0.59

<sup>1</sup>Pasture cost includes seed cost and fertilizer cost. Labor, equipment and land rent were not included in the analysis.

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fields,” says Hall. “We had no recorded cases of bloat and cows selectively grazed for the berseem clover.”

Lemus’ economic analysis found seed and fertilizer costs increased when berseem clover was planted into Bermuda grass due to the increase in seeding rate needed to ensure successful seed germination. He found cost of gain was generally much lower with the prepared seedbed.

“Higher biomass production with annual ryegrass in the prepared seedbed along with a longer grazing season resulted in an increased total gain per acre and lower cost of gain,” says Lemus.

Based on findings, Lemus encourages producers to take advantage of the later maturation of berseem clover. Producers can retain ownership longer.

**“Legumes make good forage, and many producers can look at using berseem clover to extend grazing in winter.”**

**— Rocky Lemus**

### Berseem clover’s many applications

Berseem clover may offer producers many applications to manage grazing:

- ▶ **Cover crop.** The high nitrogen fixation and low hard seed count make berseem clover adaptable to organic or non-organic farming.
- ▶ **Short-season forage crop.** In northern states, producers can grow in late spring/summer. In southern states, consider late fall/winter/early spring production.
- ▶ **Food plots.** Grassland Oregon’s Jerry Hall says deer love berseem clover.
- ▶ **Alfalfa hay/silage crops.** Producers can thicken declining alfalfa stands or fill in winter-killed alfalfa fields.

“Producers who want to try Frosty should order seed early. We are cautiously increasing seed production every year, but we also are selling out,” says Hall.

“You get more gains and less saturation in the market if you can sell two to three weeks later than everyone else. This fits well with stockers who want good-quality forage to fill the gap between ryegrass and Bermuda grass,” says Lemus. “Animals not preconditioned for legumes should not have problems either since there are no incidences of bloat with berseem clover in our study.”

Lemus says his work verifies use of

summer annual grasses and clovers provide opportunity for the forage industry. Grass following berseem clover shows better growth and quality from nitrogen left in the soil, grazing management with a grass-clover mix in a prepared seedbed can provide a competitive advantage to producers and hay feeding intervals can be reduced.



**Editor’s Note:** A former National Junior Angus Board member, Barb Baylor Anderson is a freelancer from Edwardsville, Ill.