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## The Value of Grazed Corn Residue for Crop and Cattle Producers

Jay Parsons

*University of Nebraska-Lincoln*

D. D. Redfearn

*University of Nebraska-Lincoln*

M. E. Drewnoski

*University of Nebraska-Lincoln*

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# Cornhusker Economics

## The Value of Grazed Corn Residue for Crop and Cattle Producers

Market Report	Year Ago	4 Wks Ago	
<b>Livestock and Products.</b>			
<b>Weekly Average</b>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight. . . . .	*	*	*
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb. . . . .	197.51	175.56	186.11
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb. . . . .	162.56	145.77	158.10
Choice Boxed Beef, 600-750 lb. Carcass. . . . .	204.83	219.55	213.09
Western Corn Belt Base Hog Price Carcass, Negotiated . . . . .	61.04	NA	*
Pork Carcass Cutout, 185 lb. Carcass 51-52% Lean. . . . .	76.05	72.66	81.62
Slaughter Lambs, woolled and shorn, 135-165 lb. National. . . . .	147.93	156.37	159.56
National Carcass Lamb Cutout FOB. . . . .	376.18	392.1	395.06
<b>Crops.</b>			
<b>Daily Spot Prices</b>			
Wheat, No. 1, H.W. Imperial, bu. . . . .	4.98	3.94	3.97
Corn, No. 2, Yellow Columbus, bu. . . . .	3.53	4.05	4.18
Soybeans, No. 1, Yellow Columbus, bu. . . . .	8.05	7.92	8.00
Grain Sorghum, No.2, Yellow Dorchester, cwt. . . . .	5.49	6.34	6.55
Oats, No. 2, Heavy Minneapolis, Mn, bu. . . . .	2.85	3.20	3.03
<b>Feed</b>			
3.03Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton. . . . .	180.00	177.00	*
Alfalfa, Large Rounds, Good Platte Valley, ton. . . . .	110.00	*	115.00
Grass Hay, Large Rounds, Good Nebraska, ton. . . . .	100.00	*	105.00
Dried Distillers Grains, 10% Moisture Nebraska Average. . . . .	110.00	140.50	143.50
Wet Distillers Grains, 65-70% Moisture Nebraska Average. . . . .	37.00	48.50	38.00
* No Market			

The Western Corn Belt has historically been corn and wheat cropping systems with cattle integrated on nearby grasslands. Recent agricultural production data ranked Nebraska, South Dakota, Kansas, and North Dakota in the top 10 states for both corn and beef cattle production in the United States. In 2017, these four states had about 20% of the beef cow inventory in the United States with Nebraska alone having 1.9 million beef cows (USDA National Agricultural Statistics Service, 2018). Forage-based livestock production is a fundamental component of these agricultural economies. However, a large quantity of grasslands in this region were converted into annual crops during the mid-2000s (Wright and Wimberly, 2013). To maintain the efficiencies of beef cattle production systems, synergistic use of forage resources in a sustainable manner is essential. In addition to grasslands, this includes the complementary use of corn residue for grazing during the winter months. In this article, we provide an economic assessment of current corn residue grazing in Nebraska as well as some comparisons to Kansas, South Dakota, and North Dakota.

### Value to the Crop Sector

Using \$15 per acre as the most commonly reported corn residue grazing rental rate for Nebraska (Cox-O'Neill et al., 2017), we estimated the current value of grazed corn residue in Nebraska at greater than \$74 million (Table 1) in returns to the crop sector. Rental rates for corn residue grazing in nearby states were much lower than in Nebraska. For comparison, regional estimates of average cash rent per acre for crop residue in 2017 averaged \$7.50 per acre in Kansas. Rental rates for grazed corn residue in South Dakota and North Dakota were \$12.00 and \$5.00 per acre, respectively. A survey of Nebraska farmers in-

indicated that 40% of corn producers currently not grazing corn residue would not consider doing so regardless of potential revenue from the activity (Cox-O'Neill et al., 2017). As such, we estimated that a conservative increase in grazing utilization of 10% of the 4.3 million acres of corn residue available might add \$6.4 million additional value to the bottom line of crop producers in Nebraska (Table 1).

### Value to the Livestock Enterprise

Using a corn residue stocking rate of 3.0 acres per animal reported by Asem-Hiablie et al. (2016), we estimated that 88% of Nebraska beef cows graze corn residue. This implies the current excess of corn residue available in Nebraska is largely due to a lack of cows. Using a corn residue stocking rate of 3.0 acres per animal and 1.3 animal units per animal (Asem-Hiablie et al., 2016) along with 53 grazing days per animal (M. Schmer, unpublished data; 2010 ARMS Corn Phase II Version 23), we estimated a gross value of over \$150 million (\$16.72 per animal unit month (AUM) or \$38.41 per head) for grazed corn residue based on grass rental rates per AUM for Nebraska livestock enterprises (Table 2). This value would need to cover all costs for the cattle producer associated with grazing the residue, including residue rental, fence, water, transportation, and any additional care expenses. We used residue rental rates on a per head per day basis full care to account for all costs associated with grazing corn residue except transportation of the cattle to and from the residue field. Any difference be-

tween gross value and full care rental rates (fence, water, and additional care expenses) in Table 2 accrue to the cattle producer to cover transportation costs and return on investment for using a cheaper feed resource. Under the assumption that cattle are transported in full loads of 36 head and a shipping rate of \$4.00 per loaded mile, we calculated a maximum break-even distance for Nebraska of 172 miles.

Nebraska, South Dakota, Kansas, and North Dakota have numerous crop and livestock management similarities. However, Nebraska perennial pasture rental rates are considerably higher than the other three states. Intuitively, this suggests a greater demand for corn residue grazing in Nebraska compared to the other states. On a percentage basis, Nebraska grazes more than twice as many corn residue acres than South Dakota, Kansas, or North Dakota. Furthermore, in comparing the break-even distance to transport cattle to corn residue for each state, Nebraska's is almost two-fold more than for any of the other three states despite Kansas and North Dakota having a corn residue grazing rental rate half as much as Nebraska's. In all four states, a larger number of corn residue acres are available as a percentage of cattle operations in the east as compared to the west. Our analysis shows why cattle in the western region of Nebraska are much more likely to be transported to corn residue fields in the eastern region on a regular basis compared to the other three states.

**Table 1. Nebraska corn grain and residue production data and current and potential value of grazed corn residue in Nebraska for the crop sector.**

Grain Harvested	Corn Residue					Residue Value	
	Grazed	Baled	Total	Available	Rental	Current	10% increase
			Harvested	To Graze	Rate		
		% of Acres		Acres	\$/A	\$ million	
9,297,080	53.5	0.5	54.0	4,276,560	15.00	74.6	6.4

**Table 2. Nebraska beef cow inventory, corn residue and perennial grass rates, and gross value of grazed corn residue returned to the beef cattle sector.**

Beef Cows		Corn Residue				Perennial Pasture		
Inventory Number	Percent Grazing Residue	Grazed Acres	Grazing	Grazed AUMs	Rental	Grazing Fee Rates	Residue Gross Value	Break-even Distance
	%		Duration Days		Rate			
1,910,000	88	4,973,940	53	3,854,075	1.00	39.80	153.4	172

## Conclusions

Grazing corn residue is not a new practice. Sizable differences in perennial grass pasture rental rates among states with both concentrated corn grain and cattle production result in similar differences concerning the willingness to compensate for utilizing corn residue for grazing. This manifests into differences for both corn residue rental rates and the willingness to transport cattle greater distances to graze corn residue. Due to high costs for perennial grass, Nebraska has a much higher willingness to transport cattle greater distances to graze corn residue when compared to Kansas, South Dakota and North Dakota.

Intuitively, the integration of livestock into cropping systems would be more straightforward when accomplished within a single operation. However, given the recent focus on intensive management of single enterprises and a willingness in Nebraska to transport cattle significant distances to available cropping system feed resources, it is realistic to expect much of the future integration of livestock into cropping systems to occur across multiple operations.

This article is a summary of:

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Jay Parsons,  
Associate Professor,  
Department of Agricultural Economics  
University of Nebraska-Lincoln  
jparsons4@unl.edu  
402-472-1911

Daren Redfearn,  
Associate Professor,  
Department of Agronomy & Horticulture  
University of Nebraska-Lincoln  
402-472-2662  
dredfearn2@unl.edu

Mary Drewnoski,  
Associate Professor,  
Department of Animal Science  
University of Nebraska-Lincoln  
402-472-6289  
mary.drewnoski@unl.edu