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Summary with Implications

A survey was conducted to explore factors influencing corn residue grazing recommendations by crop consultants and producer practices in Nebraska. Approximately 80% of consultants recommended grazing corn residue, while 63% of producers allowed grazing. Of producers who did not graze, about 50% cited concerns related to soil compaction, inconvenience (lack of water, fencing, and land/equipment damage), and lack of access to livestock. Producers who allowed and consultants who recommended grazing were more likely to perceive that grazing residue increased subsequent grain yields. Most consultants (56.0%) and producers (43.8%) reported making decisions in regards to grazing based on their own observation. Findings from this survey can be used to design extension education and research involving the impacts of grazing corn residue on subsequent grain yield and soil attributes. Extension could also be a conduit linking cattle owners with crop producers that reported not having access to livestock for grazing.

Introduction

While crop yields, soil properties, and animal impacts due to grazing of corn residue have been assessed by research studies, consultants and producers perceptions and factors influencing producer decision to graze or not graze corn residue are still unclear. Currently, it is estimated that only 25% of Nebraska's corn residue acres are grazed. It can only be postulated that concerns of degrading soil and associated impacts on subsequent grain yield or the limited number of cows in the area to graze the residue could be some reasons for the low percentage of corn residue being grazed.

Even though corn residue is a potential forage source for grazing cattle, how the residue is used or managed post-harvest is determined by the land owner. Therefore, this survey was developed to better understand the factors influencing perceptions and behaviors of crop consultants and producers in Nebraska regarding grazing corn residue.

Procedures

Crop consultants (940) and crop producers (545) in Nebraska were surveyed. The survey had 16 questions for consultants and 14 for producers. There were some similar questions across surveys to allow for comparison between responses of consultants and producers. Online-survey software was used to create, distribute, and store data for both surveys. Surveys were distributed using an electronic mailing list of crop consultants and producers developed by University of Nebraska Extension educators. The survey was open from January 15, 2015 to February 15, 2015. The Institutional Review Board (IRB) at the University of Nebraska-Lincoln approved this study.

Results

Background Information

The survey return rate was 24.9% (234/940) for the consultant survey. Most consultants directly farmed either 0 acres (31.5%) or 1–999 acres (45.3%). Consultants indicated that the majority of their land was either irrigated by sprinkler or rain-fed. Seventy-six percent of consultants influenced 4000 or more acres. The majority of influenced acres were either sprinkler irrigated or rain-fed acres with,

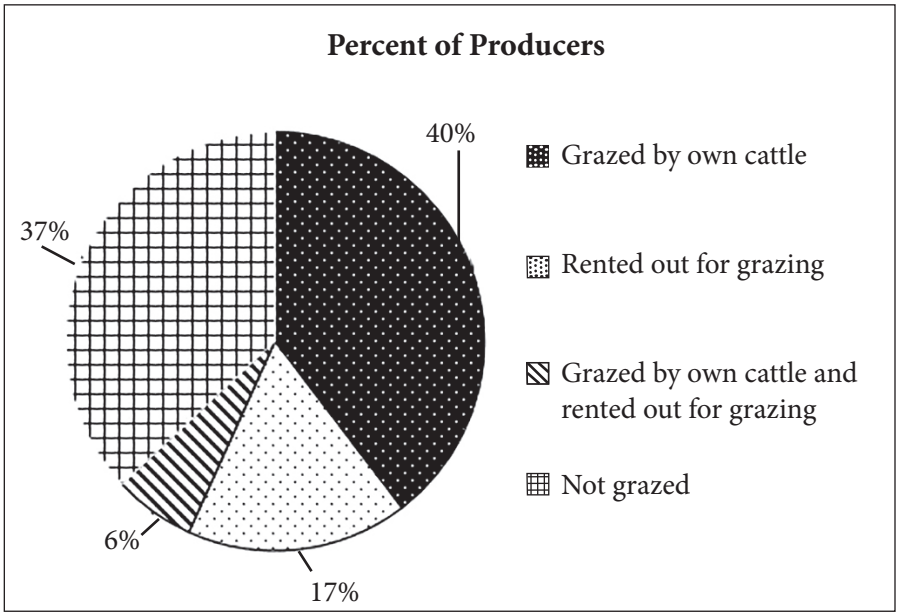

Figure 1. Percent of farmers grazing corn residue with their own livestock, renting corn residue to others or not grazing corn residue.

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Table 1. Producers and consultants response to: How large of an impact does grazing cornstalks have on the yield of next year's grain crop?

Corn	Producer	Consultant
	# Responses (% of Respondents)	
Decrease yield	17 (18.5%)	38 (20.7%)
No impact	46 (50.0%)	75 (40.8%)
Increase yield	29 (31.5%)	71 (38.6%)
Soybean	**Producer**	**Consultant**
Decrease yield	17 (19.1%)	28 (15.1%)
No impact	43 (48.3%)	89 (48.1%)
Increase yield	29 (32.6%)	68 (36.8%)

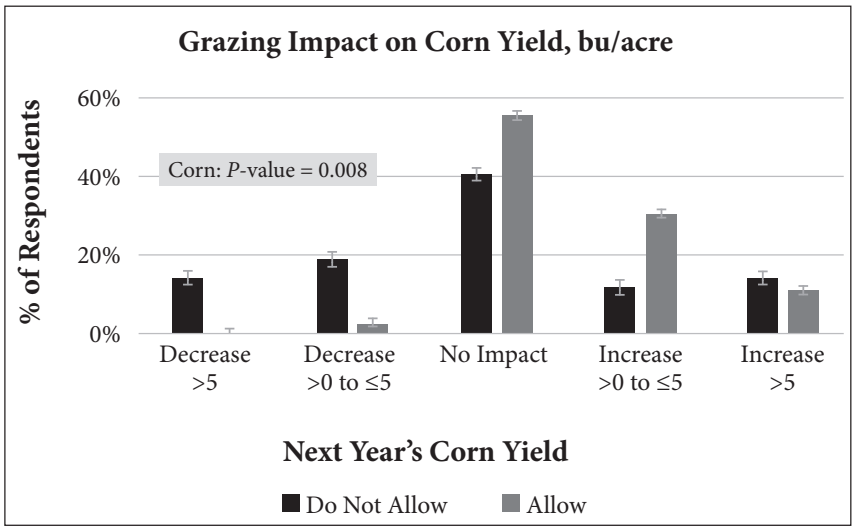

Figure 2. Producers that allowed grazing (n = 36) versus producers that didn't allow grazing (n = 42) and their thoughts on how grazing corn residue impacts the following year's corn crop yield (bu/acre).

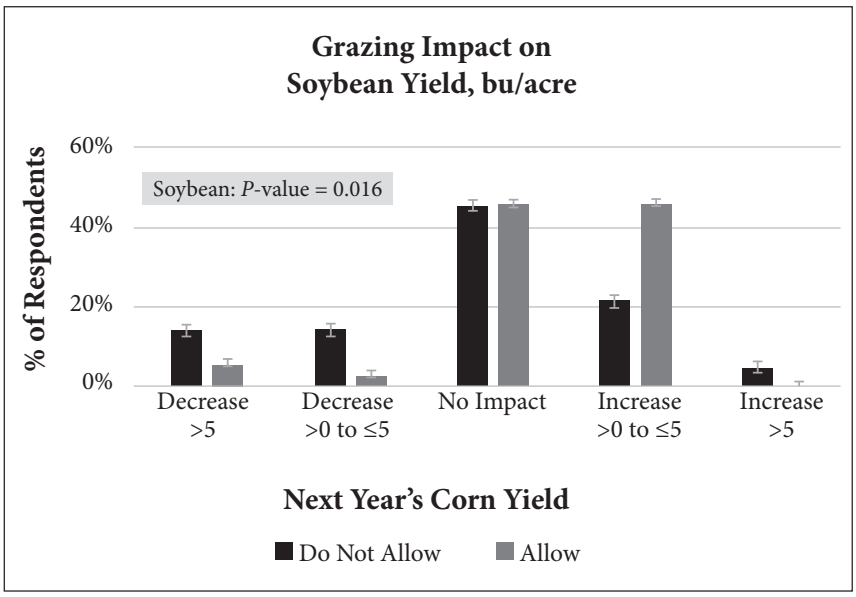

Figure 3. Producers that allowed grazing (n = 36) versus producers that didn't allow grazing (n = 42) and their thoughts on how grazing corn residue impacts the following year's soybean crop yield (bu/acre).

about 50% under no-till management. Eighty-two percent of consultants reported that they recommend clients graze corn residue with livestock.

The producer survey had a return rate of 23.9% (130/545). Forty percent of producers farmed 200–999 acres, 30.7% farmed 1000–3999 acres, and 20.2% farmed 1–199 acres, and 3.5% farmed 4000 or more acres. The majority of their land was either sprinkler irrigated or rain-fed. About 80% of producers reported utilizing a no-till farming practice. About 40% reported that corn residue was grazed by their own cattle, 17% indicated they rented their corn residue out for grazing, and 6% stated that they did both (graze their own cattle and rent out). While about 37% indicated their corn residue was not grazed (Figure 1).

Perceptions of Land Productivity/ Monetary Impact

Comparisons and frequencies were analyzed between responses indicating the perception of participants of grazing impact on yield and if they recommended or allowed grazing (Table 1). Consultants that recommended grazing corn residue and producers that allowed grazing had similar perceptions that grazing had a neutral to positive impact on subsequent grain yields (Table 1). Producers that did not allow grazing were more likely ($P = 0.008$) to reply that grazing corn residue had no impact to a slight decrease on the subsequent corn yield (bushels per acre), while producers that allowed grazing replied that grazing corn residue perceived that grazing had no impact or resulted in a slight increase on the subsequent corn yield (bushels per acre) (Figure 2). This difference was also present ($P = 0.016$) for producers perception regarding subsequent soybean yields (Figure 3) after grazing corn residue. Research suggests that grazing has no impact or may even slightly increase corn and soybean yields (2013 Nebraska Beef Cattle Report, pp 38–39; 2015 Nebraska Beef Cattle Report, pp 53–55). Based on the results from this survey, a portion of crop consultants and producers perceive decreased subsequent grain yields; even though the few published studies on corn residue grazing report grazing has neutral to positive impacts on subsequent grain yields.

Producers were also asked to address

Table 2. Comparisons between producers that currently rent out grazing and currently do not allow grazing and their perceptions on grazing rental rates.

Grazing rental fee[1]	Currently rent out for grazing (n=26), %	Currently Do Not Allow (n=50), %
Free	23.5	14.0
$1 to $15 per acre	58.8	28.0
$16 to $25 per acre	17.7	8.8
$26 to $35 per acre	0.0	4.0
> $35 per acre	0.0	6.0
Would not allow grazing regardless of rental fee	—	40.0

[1]What rental fee do you charge (currently rent) vs. what rental fee would you need (do not allow) for cattle to graze corn residue.

Table 3. Comparisons between producers who currently do not graze but would consider grazing for a fee and those that would not consider grazing regardless of the rental fee.

What are the reasons your corn residue is not grazed?[1]	Do not Allow, but would Rent for a Fee (n=30), %	Would not Allow Regardless of Rental Fee (n=20), %
Reduces subsequent year's crop yields	0.0	10.0
Negative impact on farming practice	10.0	55.0
Lack of water for livestock	26.7	40.0
Lack of fencing	10.0	30.0
Livestock producers will not pay the perceived value of stalks	30.0	25.0
Interferes with fall field work	23.3	25.0
Causes compaction	20.0	65.0
Other	60.0	30.0

[1]This question was a select all that apply so percentages will be over 100%.

corn residue rental rates (Table 2). Of the producers that currently rent out grazing, 23.5% reported not charging a rental fee, 58.8% had a rental fee rate ranging from $1 to $15 per acre, and 17.7% charged $16 to $25 per acre. Forty-two percent of producers that did not allow corn residue grazing indicated they would allow cattle to graze corn residue if offered $15 per acre or less, 18% would allow cattle to graze corn residue for $16 to $35 plus per acre, and the remaining 40% would not allow grazing regardless of the rental fee offered.

Of the producers that were currently not grazing residue, the reasons for not grazing corn residue were compared between those that would allow grazing for a rental fee with those that would not allow grazing regardless of the rental fee (Table 3). The majority of respondents that would not allow grazing regardless of rental fee indicated that they felt grazing caused compaction (65%) on their field or had a negative impact on their farming practices (tillage or planting; 55%). Sixty percent of the producers that would allow grazing for a rental fee selected "other", and based on their comments approximately 70–75% of those respondents indicated they did not have access to livestock for grazing. Consultants that did not recommend grazing indicated the following reasons were very or somewhat important: grazing had a negative impact on farming practices (73%), grazing reduces subsequent grain yields (63%), and livestock producers would not pay the perceived value of corn residue (56%).

Source of Information Regarding Grazing Corn Residue

Fifty-six percent of consultants indicated they based client recommendations regarding grazing corn residue on their "own observation", while 31.6% indicated they received information from the University of Nebraska Extension (Figure 4). Producer responses to this question were similar to consultants, with 43.8% basing their decisions regarding grazing corn residue on their "own observation", followed by 22.3% basing decisions on information received from University of Nebraska Extension. For both consultants and producers, their own observation and the University of

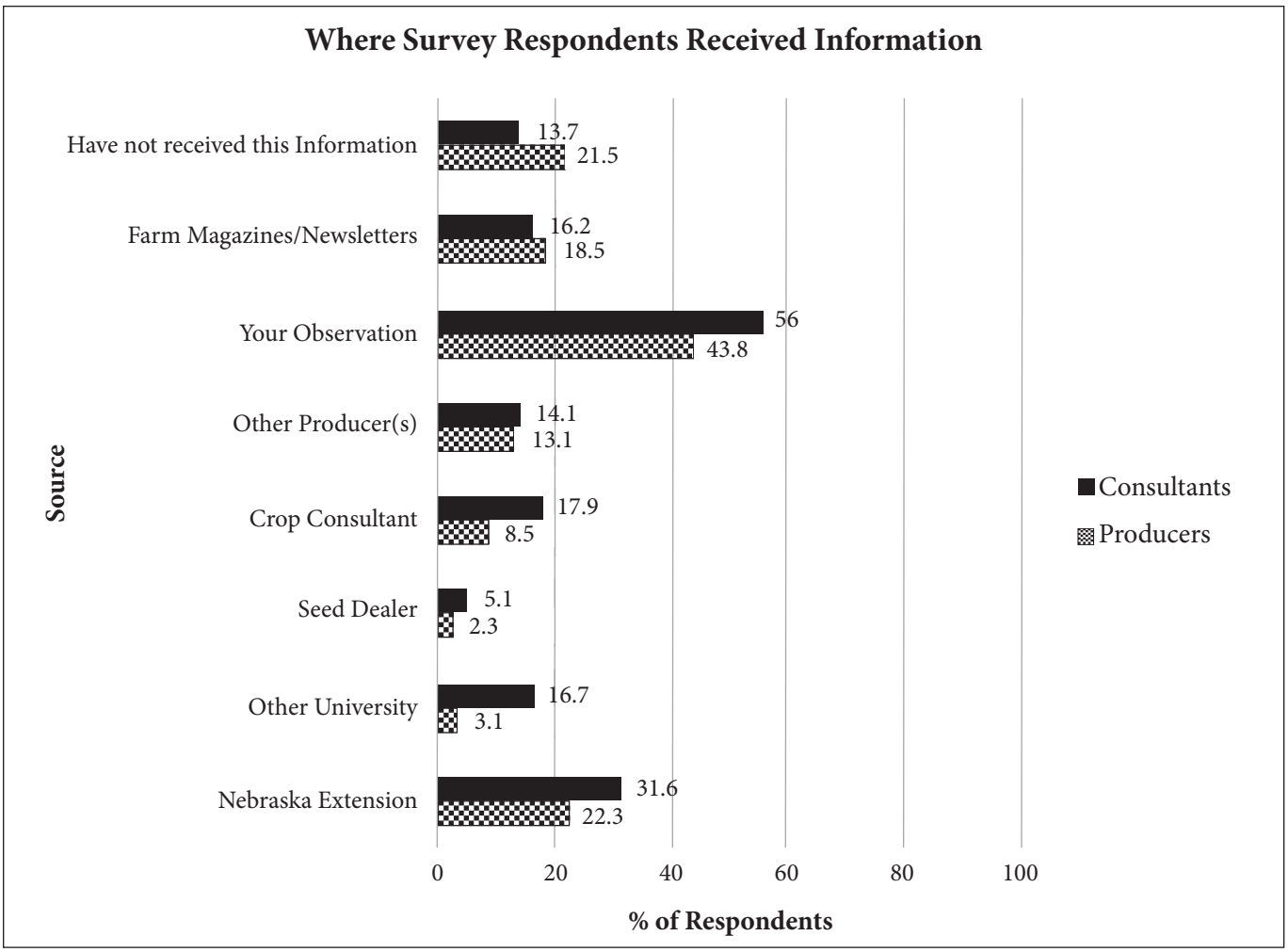

Figure 4. Where Survey Respondents Received Information.

Nebraska Extension remained the first and second choice regardless of whether they recommended/allowed grazing or did not recommend/allow grazing.

Conclusions

The purpose of the survey was to gain a better understanding of factors that influenced perceptions, attitudes, and behaviors of crop consultants and producers relative to grazing corn residue. The results indicated that the majority of consultants and producers had a neutral perception toward grazing impact on subsequent crop yields and that a large portion of consultants recommend grazing. The results also indicated that producers who did not allow grazing did so mostly because of concerns related to soil compaction, inconvenience (lack of water, fencing, and land/equipment damage), and lack of access to livestock. To our knowledge, this survey was the first to investigate factors influencing corn residue grazing recommendations of crop consultants and practices of producers.

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