

PASTURE LEASING ARRANGEMENTS IN KANSAS

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Introduction

Pastureland is Kansas' second largest agricultural land use. As a resource, grazing land supports the beef and sheep industries, provides habitat for wildlife, and provides surface water to streams. Within Kansas, pastureland is separated into two classes, tame and native. These are more commonly referred to as improved pasture and rangeland. Tame pasture is primarily introduced grass species that are planted and managed with agronomic practices (seeding, fertilizer, etc.). The major species are smooth brome grass, tall fescue, and bermuda grass. More recently, native species have been planted using similar practices with similar performance characteristics. Native pasture is rangeland that contains grasses native to the region, without improvement through agronomic practices.

In conjunction with the Land Use Value Project, the Department of Agricultural Economics at Kansas State University participates in the collection and dissemination of survey information. The following represents a summary of the most recent survey on pasture lease arrangements in Kansas. This information should be useful to Extension personnel, consultants, lenders, producers, and landowners to better understand the various pasture leasing arrangements that exist in Kansas.

Sources of Pasture Leasing Information

Kansas Agricultural Statistics (KAS) conducts one survey each year in conjunction with the Land Use Value Project in the Department of Agricultural Economics at Kansas State University (KSU). There are four surveys rotated by KAS in conjunction with KSU: irrigated leases, non-irrigated leases, pasture leases, and input costs. During 2006, the Pasture Lease Survey was conducted to gather data on the 2005 calendar year. The most recent prior survey, conducted by KAS/KSU, of pasture leasing arrangements was compiled in 2002 with data from 2001.

KAS divides Kansas into nine crop-reporting districts (Figure 1). By design the KAS surveys conducted for the Land Use Value Project tend to be focused toward landowners (i.e., landlords). This is because the purpose of the Land Use Value Project is to calculate landlord net income for different soil types in the KAS crop reporting districts for the Kansas Department of Revenue. Direct comparison between the 2006 and the 2002 survey results is appropriate as they were both performed by KAS/KSU, the sampling procedures and population were the same, and both used comparable formats.

KAS follows the same sampling procedure for all of their surveys conducted jointly with KSU. They draw the sample from their database, which contains landowners, producers, and owner/operators. The sample size is large enough to ensure that a statistically significant number of responses are received from each district. This survey resulted in 789 complete observations on pasture leases (Table 1), as compared to 692 observations in the 2002 survey. Survey observations are identified by crop reporting district. Along with pasture rental rates, each survey respondent indicated the type of: a) pasture ownership/rental regime, b) beef enterprise, c) grazing system, d) water source, e) fence construction and repair arrangement, f) weed control cost sharing agreement, and g) fertilizer cost sharing agreement. A copy of the survey is available upon request and additional information pertaining to the survey is available from the Kansas State University Department of Agricultural Economics or from Kansas Agricultural Statistics. Email inquiries can be sent to Leah Tsoodle at ltsoodle@ksu.edu.

Enterprise Classification

The 2006 Pasture Lease Survey provides information about the distribution and characteristics of the structure of Kansas livestock enterprises. There has been little change in the structure of the beef industry in Kansas in the past four years (Tables 2a and 2b). As a general rule, producers in Kansas focus on cow/calf production, with two-thirds of all observations falling into this category. An additional 19% of respondents have stocker feeder operations or both cow/calf and stocker feeder operations. A typical producer grazes his pasture all season long as opposed to intensive or rotational grazing. It appears that fewer operators are renting pasture to meet their grazing needs. This might imply that more producers are either purchasing land or have reduced the scale of their operation since 2002 and are only producing on land that they currently own. Additionally, this finding might reflect the trend to a higher percent of hobby ranchers. Finally, it may reflect a sampling bias in favor of landowners.

Cash Rents

The distribution and characteristics of producer leases are addressed within the 2006 Pasture Lease Survey. Table 3 illustrates the distribution of cash rents for both Tame and Native pasture, by crop reporting district. In general, cash rent increases moving from west to east and from south to north. This pattern is highly correlated with temperature and rainfall patterns. It reflects the fact that, within Kansas, natural forage production increases as rainfall increases and temperature decreases. Increased grass production potential is reflected in rental values.

Generally, Tame pasture is valued more by producers than Native pasture, as illustrated by the difference in rental value. As an example, in SC-60, on average, Tame pasture rents for 9.7% more than Native pasture. The difference in rental value between Tame and Native has changed appreciably since 2002. For example, in C-50, the 2002 survey indicated that Tame pasture was worth only a 1.6% premium over Native. In 2006 the premium was 12.1%. In EC-80 the pricing ratio is decreasing, here a 9.0% premium in 2002 fell to 4.6% in 2006. Additional research would be needed to determine if these changes are statistically significant.

Pasture Size and Fence Requirements

The mode pasture size and average feet of fence per acre were calculated by crop reporting district. An underlying assumption for this calculation is that a single boundary fence is common to adjoining pastures. As a result, only one half of the perimeter fence is reported. The 2002 results are provided for comparison purposes. As a general rule, the mode size of Native pastures tends to be larger than Tame pastures (Table 4a). This reflects the more management intensive nature of Tame pasture.

The amount of fence required per acre is a function of pasture size, shape, and number of cross fences. As the pasture size increases, the amount of fence per acre decreases, and as pasture size becomes more irregular, the amount of fence per acre increases. As a result, we would expect smaller pastures to have a higher average feet of fence per acre but a larger pasture may still have the higher average if the larger pasture shape is inconsistent. The mode average feet of fence per acre for both Native and Tame pastures is shown in Table 4b with 2002 data for comparison.

Fence Construction

The most prevalent wire for Kansas pasture fencing is barbed wire (Table 5a). In Western Kansas, 4 strand fences are typical, while 5 strands are the mode in all other areas. Additionally, Western Kansas tends to use more treated posts with other areas trending towards steel posts. These results, along with typical post spacing, fence life, and cross fencing figures (Table 5b), are fairly consistent with the 2002 survey.

Total and Water Maintenance Costs

For Native pasture, total maintenance costs have increased substantially since 2002 while water maintenance costs have decreased (Table 6a). On average, the total annual maintenance costs have risen by approximately 48%, while the average annual cost of maintaining the water supply has decreased by approximately 30%. Total maintenance costs tend to increase as one moves from west to east across the state.

For Tame pasture, total maintenance costs have increased substantially since 2002 while water maintenance costs have decreased (Table 6b). On average the annual total maintenance cost has risen by approximately 84%, while the average annual cost of maintaining the water supply has decreased by approximately 39%.

While the higher total maintenance costs coincide with higher costs of new fencing, the trend in water maintenance costs bears explanation. In 2002, most of Kansas was suffering drought conditions, which would have forced dredging of farm ponds and higher volume well pumping thus increased water maintenance expenses. Adequate rainfall in 2006 ensured drought measures were unnecessary, and thus water maintenance costs were lower.

Comparing the 2006 costs between Tame and Native pasture, we find that both fence and water costs are higher in Tame pasture. This is consistent with the 2002 data, and probably a reflection of the higher management intensity associated with Tame pasture.

Fertilizer Application

Table 7 summarizes the type and quantity of fertilizer applied on a per acre basis in various parts of the state. As a general rule, the percentage of producers using fertilizer decreased in 2006. For the most part overall fertilizer usage increases in the Eastern portion of the state due to higher rainfall and a larger percentage of more intensively managed Tame pasture.

Landlord's Share of Expenses

Due to the nature of livestock production, the vast majority of pastureland is leased on a cash basis. However, it is not unusual for landlords to participate in yearly expenses, especially those that impact the long-term asset value of the land. Tables 8a and 8b provide information on the type and percent of expenses in which landlords participate. As a general rule, landlords provide the materials and labor for the construction of new fences and pay at least a portion of fertilizer costs. The tenant will typically cover labor and materials for all pasture and fence maintenance expenses. In an analysis of the 1998 Pasture Lease Survey, O'Brien (2000) showed that alternative landlord-tenant cost share arrangements for fence repair and replacement, weed control, and fertilizer did not have a significant impact upon pasture rental rates in the statewide model.

Conclusion

The pastureland rental market in Kansas is quite dynamic. Changes in farm policy, commodity prices, and technology obviously will affect farm structure, and rental arrangements. It is not always apparent what the forces are that have been driving current rental changes. Some possible influences have been discussed and both quantitative and qualitative data provided. However, one of the most powerful influences, the effect of the traditional arrangements present in a region, has not yet been considered. Albright, et al (1996) suggested that traditional arrangements, which have been in place for lengthy time periods, may not be affected by changes in markets, legislation, or farming practices. Other extension specialists contend that, relatively speaking, tradition is changing rapidly.

Related K-State Research and Extension publications pertaining to pasture-land leasing arrangements include the following:

Albright, Martin, Daniel O'Brien, and James Sartwelle. "Crop Lease Arrangement Market Issues and Trends." Kansas State University, Department of Agricultural Economics, Manhattan, Kansas, 1996.

Buller, et al, "Economic Evaluation of Season-Long and Intensive-Early Stocking System." Contribution number 90-274-S from KAES, 1990.

Jones, Rodney, "Summer Grazing of Steers in Western Kansas." Publication Number MF1007, October 2001

Jones, Rodney, "Summer Grazing of Steers in Eastern Kansas." Publication Number MF1008, October 2001

Langemeier, Larry N. "Pasture Rental Arrangements for Your Farm." North Central Regional Publication #149 (NCR 149), revised 1997

O'Brien, D., "Factors Affecting Kansas Pasture Rental Rates." K-State Research and Extension, November 2000

Tsoodle, Leah, Bill Golden, and Allen Featherstone. "Determinants of Kansas Agricultural Land Values." Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Mobile, Alabama, February 1-5, 2003

Figure 1: Kansas Crop Reporting Districts

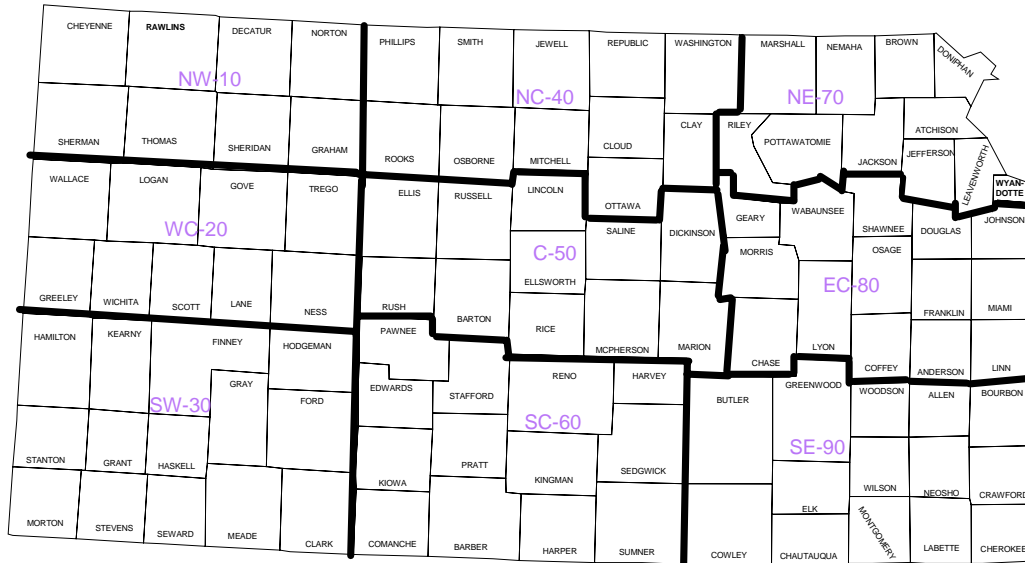


Table 1: 2006 Pasture Survey Summary

District Response Rate

District	Surveys Sent	Responses	Response Rate
Northwest-10	79	33	41.8%
West Central-20	76	35	46.1%
Southwest-30	93	46	49.5%
North Central-40	162	82	50.6%
Central-50	191	104	54.5%
South Central-60	206	111	53.9%
Northeast-70	217	100	46.1%
East Central-80	250	129	51.6%
Southeast-90	279	149	53.4%
State Total	1,553	789	50.8%

Table 2a: 2002 Pasture Survey Summary**2002 District Mode Classifications**

All values are the mode unless otherwise stated.

	Pasture Classification	Type of Operation	Grazing Type
NW-10	Own and Rent Pasture	Cow/Calf	Season-Long
WC-20	Own and Rent Pasture	Cow/Calf	Season-Long
SW-30	Own and Rent Pasture	Cow/Calf	Season-Long
NC-40	Own all Pasture	Cow/Calf	Season-Long
C-50	Own and Rent Pasture	Cow/Calf	Season-Long
SC-60	Own all Pasture	Cow/Calf	Season-Long
NE-70	Own all Pasture	Cow/Calf	Season-Long
EC-80	Own all Pasture	Cow/Calf	Season-Long
SE-90	Own and Rent Pasture	Cow/Calf	Season-Long

Table 2b: 2006 Pasture Survey Summary**2006 District Mode Classifications**

All values are the mode unless otherwise stated.

	Pasture Classification	Type of Operation	Grazing Type
NW-10	Rent all Pasture	Cow/Calf	Season-Long
WC-20	Own and Rent Pasture	Cow/Calf	Season-Long
SW-30	Own all Pasture	Cow/Calf	Season-Long
NC-40	Own and Rent Pasture	Cow/Calf	Season-Long
C-50	Own all Pasture	Cow/Calf	Season-Long
SC-60	Own all Pasture	Cow/Calf	Season-Long
NE-70	Own all Pasture	Cow/Calf	Season-Long
EC-80	Own all Pasture	Cow/Calf	Season-Long
SE-90	Own all Pasture	Cow/Calf	Season-Long

Table 3: 2006 Pasture Survey Summary

District Average Cash Rents & Tame/Native Rent Ratio

	<u>NATIVE</u>			<u>TAME</u>			2006		2002
	Average	Minimum	Maximum	Ave.	Min.	Max.	Ratio Ave.	Individual Ratio Ave.	Ratio Ave.
NW-10	\$11.31	\$7.50	\$18.00	\$11.60	\$3.00	\$18.00	102.6%	84.4%	100.8%
WC-20	\$10.93	\$8.00	\$15.00	\$11.17	\$10.00	\$13.50	102.2%	100.0%	104.3%
SW-30	\$10.36	\$5.00	\$20.00	\$12.20	\$10.00	\$20.00	117.8%	100.0%	110.8%
NC-40	\$19.65	\$8.00	\$115.00	\$21.38	\$8.00	\$85.00	108.8%	99.7%	108.9%
C-50	\$15.81	\$10.00	\$38.09	\$17.72	\$12.00	\$40.00	112.1%	99.6%	101.6%
SC-60	\$13.46	\$5.00	\$30.00	\$14.77	\$8.50	\$23.00	109.7%	104.9%	95.5%
NE-70	\$25.43	\$7.50	\$90.00	\$33.25	\$7.50	\$96.00	130.8%	111.4%	115.5%
EC-80	\$19.86	\$12.00	\$45.00	\$20.77	\$10.00	\$45.00	104.6%	103.8%	109.0%
SE-90	\$22.34	\$6.00	\$87.00	\$25.98	\$6.00	\$87.00	116.3%	112.2%	113.4%

Table 4a: 2006 Pasture Survey Summary

District Mode Pasture Size

Intended Use: Will be used as the typical base pasture size; used to determine initial fence costs.

	Native Mode Pasture Size				Tame Mode Pasture Size			
	2006		2002		2006		2002	
	Acres	Responses	Acres	Responses	Acres	Responses	Acres	Responses
NW-10	80	5-Tie	80	10	40	2	120	2
WC-20	160	7	160	10-Tie	40	1-Tie	120	1-Tie
SW-30	80	9	160	12	40	4	160	5
NC-40	80	10	160	15-Tie	80	1-Tie	40	10
C-50	80	9	160	16	40	1-Tie	40	5
SC-60	80	9	80	17	40	4	80	4-Tie
NE-70	80	7	80	9-Tie	80	5-Tie	40	22
EC-80	80	11	80	23	40	9-Tie	40	25
SE-90	80	8-Tie	80	21	40	11	80	26

Table 4b: 2006 Pasture Survey Summary

Mode Average Feet of Fence per Acre

Intended Use: Will be used as the typical base fencing requirement; used to determine initial fence costs.

	Native				Tame			
	2006		2002		2006		2002	
	Feet	Responses	Feet	Responses	Feet	Responses	Feet	Responses
NW-10	56.8	3	45.3	2	0.0	0	38.5	1
WC-20	52.1	4	25.0	6	55.6	1	0.0	0
SW-30	48.7	6	24.3	7	52.8	1	33.8	3
NC-40	65.5	22	39.5	5	35.1	5	52.8	1
C-50	49.3	15	38.8	6	61.1	3	0.0	0
SC-60	40.6	15	16.7	5	39.9	11	19.4	2
NE-70	34.1	9	45.7	6	64.9	15	57.5	4
EC-80	57.9	19	37.5	8	90.8	24	39.6	2
SE-90	51.1	22	72.9	5	87.3	17	60.6	7

Table 5a: 2006 Pasture Survey Summary

District Mode Typical Fence Data

All results are the mode. Intended Use: Will be used to determine initial fence cost and annual ownership cost.

	2006		2002		2006		2002	
	FENCE TYPE	# RESP.	FENCE TYPE	# RESP.	POST TYPE	# RESP.	POST TYPE	# RESP.
NW-10	4-Wire Barb	27	4-Wire Barb	44	All Treated	20	All Treated	42
WC-20	4-Wire Barb	18	4-Wire Barb	49	All Treated	9	All Treated	22
SW-30	4-Wire Barb	17	4-Wire Barb	29	All Steel	6	All Steel	10-TIE
NC-40	5-Wire Barb	37	4-Wire Barb	37	All Hedge	19	3 Steel/ 1 Wood	15
C-50	5-Wire Barb	49	5-Wire Barb	39	All Steel	27	All Steel	20
SC-60	5-Wire Barb	54	4-Wire Barb	42	All Steel	28	All Steel	27
NE-70	5-Wire Barb	52	5-Wire Barb	42	All Steel	20	4 Steel/ 1 Wood	17
EC-80	5-Wire Barb	70	5-Wire Barb	60	All Steel	50	All Steel	39
SE-90	5-Wire Barb	102	5-Wire Barb	62	All Steel	73	All Steel	43

Table 5b: 2006 Pasture Survey Summary

District Mode Typical Fence Data

All results are the mode unless otherwise stated.

	2006		2002		2006		2002		2006		2002	
	POST SPACING		POST SPACING		PASTURE SIZE CROSS FENCED		PASTURE SIZE CROSS FENCED		FENCE LIFE		FENCE LIFE	
	(FEET)	# RESP.	(FEET)	# RESP.	(ACRES)	# RESP.	(ACRES)	# RESP.	(YEARS)	# RESP.	(YEARS)	# RESP.
NW-10	16.5	5	20	12	320+	5-Tie	None	26	30	5	20	13
WC-20	16.5	10	16.5	10	320+	7	None	24	20	5	20	11
SW-30	12	6	16.5	11	320+	7	None	12	40	5	25	5
NC-40	15	13	15	14	None	21	None	28	30	15	40	15
C-50	10	12	16	16	None	20	None	22	50	13	50	14
SC-60	12	16	16	20	None	20	None	35	30	10	30	12
NE-70	10	13	12	18	None	15	None	28	50	13	50	12
EC-80	12	27	15	16	None	18	None	26	20	16-Tie	50	14
SE-90	10	29-Tie	12	23	None	30	None	30	20	24	20	15

Table 6a: 2006 Pasture Survey Summary

Native District Average Maintenance Costs

Averages are calculated using native pasture acres and represent total annual costs.

	NATIVE			NATIVE		
	2006			2002		
	Average Maintenance Cost (\$/ACRE)	Average Water Cost (\$/ACRE)	Water Source	Average Maintenance Cost (\$/ACRE)	Average Water Cost (\$/ACRE)	Water Source
NW - 10	2.07	0.76	Well	1.37	0.83	Well
WC - 20	3.72	0.74	Well	2.67	0.88	Well/Windmill
SW - 30	3.26	1.35	Well	2.80	1.06	Well
NC - 40	5.19	1.18	Pond	3.80	1.20	Pond
C - 50	4.95	1.11	Pond	3.25	1.07	Pond
SC - 60	5.45	1.04	Pond	2.62	0.79	Pond
NE - 70	11.24	0.45	Pond	4.19	1.71	Pond
EC - 80	8.34	1.40	Pond	4.21	3.98	Pond
SE - 90	7.68	1.27	Pond	10.24	1.94	Pond
Average	5.77	1.03		3.91	1.50	

Table 6b: 2006 Pasture Survey Summary

Tame District Average Maintenance Costs

Averages are calculated using tame pasture acres and represent total annual costs.

	TAME					
	2006			2002		
	Average Maintenance Cost (\$/ACRE)	Average Water Cost (\$/ACRE)	Water Source	Average Maintenance Cost (\$/ACRE)	Average Water Cost (\$/ACRE)	Water Source
NW - 10	No Response	No Response	Well	0.04	0.97	Well
WC - 20	No Response	No Response	Well	No Response	No Response	Well/Windmill
SW - 30	5.31	1.17	Well	3.07	1.50	Well
NC - 40	5.67	1.00	Pond	3.35	2.96	Pond
C - 50	10.57	1.36	Pond	6.49	7.61	Pond
SC - 60	9.51	2.57	Pond	2.77	1.36	Pond
NE - 70	9.61	1.81	Pond	4.16	1.42	Pond
EC - 80	9.07	2.32	Pond	7.70	4.66	Pond
SE - 90	7.05	1.58	Pond	7.65	1.63	Pond
Average	8.11	1.69		4.40	2.76	

Table 7: 2006 Pasture Survey Summary

District Average Fertilizer

All values are the averages of respondents applying fertilizer

District	Producers Using Fert.	Nitrogen # Per Acre		Phosphorus # Per Acre		Pot ash # Per Acre		Mode of Month Applied	
		2006	2002	2006	2002	2006	2002	2006	2002
NW-10	0.0%	No Response	No Response	No Response	No Response	No Response	No Response	No Response	No Response
WC-20	0.0%	No Response	No Response	No Response	No Response	No Response	No Response	No Response	No Response
SW-30	2.2%	100.0	86.7	36.0	10.0	No Response	0.0	March	April
NC-40	6.1%	70.0	61.0	26.6	15.0	No Response	0.0	March	Feb./March
C-50	10.6%	68.3	68.3	22.0	27.5	No Response	15.0	February	Feb./March
SC-60	9.9%	96.2	73.7	33.0	39.3	No Response	30.0	March	April
NE-70	39.0%	100.4	112.2	54.2	44.0	227.0	38.3	Feb./March	March
EC-80	27.1%	81.1	113.3	39.3	59.9	33.3	68.3	March	February
SE-90	25.5%	81.4	96.5	34.4	37.8	67.9	47.1	March	March

Table 8a: 2006 Pasture Survey Summary

District Mode Landlord Percent of Costs

All values are the mode unless otherwise stated.

	Brush & Weed Control Chemicals	Brush & Weed Control Application	Brush & Weed Control Other	Burning	All Other Pasture Costs	Total Pasture Maintenance Costs
NW-10	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WC-20	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SW-30	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NC-40	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
C-50	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SC-60	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NE-70	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
EC-80	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SE-90	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 8b: 2006 Pasture Survey Summary

District Mode Landlord Percent of Costs

All values are the mode unless otherwise stated.

District	Fence Maintenance Material Costs	Fence Maintenance Labor Costs	Total Fence Maintenance Costs	Fertilizer Costs*	New Fence Material Costs	New Fence Labor Costs
NW-10	0.0%	0.0%	0.0%	No Response	100.0%	100.0%
WC-20	0.0%	0.0%	0.0%	No Response	100.0%	100.0%
SW-30	0.0%	0.0%	0.0%	50.0%	100.0%	100.0%
NC-40	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
C-50	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
SC-60	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
NE-70	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
EC-80	0.0%	0.0%	0.0%	100.0%	100.0%	100.0%
SE-90	0.0%	0.0%	0.0%	50.0%	100.0%	100.0%

* Represents average share for respondents applying fertilizer