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Survey of Cattle Feedlot Facilities in the High Plains Region of the United States

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Abstract

Defining the appropriate dimensions and type of feeding facilities for feedlot cattle fed in outdoor pens is important because the characteristics of these facilities have a significant impact on the performance, welfare, and health of cattle housed in those facilities, as well as a considerable impact on the final cost of the project. Although multiple sources can be found in the literature that provide recommendations with regard to design of facilities to be used in outdoor feeding facilities for feedlot cattle, there are no published data that describe the dimensions and type of feeding facilities currently used by the feedlot industry in outdoor feeding operations. Thus, the objective of this survey was to obtain descriptive data regarding outdoor cattle feeding facilities currently used by feedlots in the High Plains region of the United States.

Keywords

feedlot, facilities, survey

Authors

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Survey of Cattle Feedlot Facilities in the High Plains Region of the United States

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Introduction

Defining the appropriate dimensions and type of feeding facilities for feedlot cattle fed in outdoor pens is important because the characteristics of these facilities have a significant impact on the performance, welfare, and health of cattle housed in those facilities, as well as a considerable impact on the final cost of the project. Although multiple sources can be found in the literature that provide recommendations with regard to design of facilities to be used in outdoor feeding facilities for feedlot cattle, there are no published data that describe the dimensions and type of feeding facilities currently used by the feedlot industry in outdoor feeding operations. Thus, the objective of this survey was to obtain descriptive data regarding outdoor cattle feeding facilities currently used by feedlots in the High Plains region of the United States.

Key words: feedlot, facilities, survey

Experimental Procedures

Feedlots were randomly selected from an existing database provided by Zinpro Corporation that contained contact information for 358 feedlots located in 6 states in the High Plains (Texas, Kansas, Nebraska, Oklahoma, New Mexico, and Colorado), with a minimum one-time capacity of 5,000 cattle. An equal proportion of feedlots from each state was randomly selected from the database, and a final list of 247 feedlots was used to send an individual electronic invitation to participate in the study. The survey was conducted during summer of 2015 with a total of 43 respondents completing this survey. The survey was divided into 4 categories: general information, shipping and receiving area, cattle feeding pens, and hospital area.

Results and Discussion

Sixty percent of the participating feedlots were finishing feedlots, whereas 40% were a combination of growing/backgrounding and finishing operations. Out of the 43 feedlots completing the survey (Table 1), 84% of feedlots provided their geographical location of which 31% of feedlots were located in Nebraska, 22% in Kansas, 22% in Texas, 14% in Colorado, 8% in Oklahoma, and 3% in Wyoming. The largest percentage of feedlots surveyed were more than 20 years old (88%), 9% were 10 to 20 years old, and

[1] Zinpro Corporation, Eden Prairie, MN, 55344.

2% were 5 to 10 years old. The age of the most recent addition to the feedlot was fewer than 5 years old for 33% of feedlots, 5 to 10 years old for 33% of feedlots, and greater than 10 years old for 33% of feedlots. Only 2% of feedlots reported to not have any additions within the designated time frames. The feedlot footprint of 26% of feedlots occupied fewer than 100 ac, 47% of feedlots occupied 100 to 500 ac, and 28% of feedlots occupied more than 500 ac for their facilities. The closest packing plant was within 50 mi for 54% of these feedlots, 51 to 150 mi for 41% of feedlots, and 151 to 300 mi for 5% of feedlots. An emergency power source was located on site for 84% of feedlots, while 16% of feedlots did not report having an emergency power source.

Fifty-three percent of feedlots reported having designated alleys for shipping cattle at their facilities; whereas, 47% of feedlots did not have designated shipping alleys. Of the feedlots that utilize shipping alleys, 48% of feedlots had unsurfaced alleys, while 43% of feedlots had a concrete surface in their shipping alley. Forty percent of feedlots only had 1 loading/unloading chute, 47% of feedlots had 2 to 3 loading/unloading chutes, 12% of feedlots had 4 to 5 loading/unloading chutes, and 2% of feedlots reported having more than 5 loading/unloading chutes. Thirty-three percent of feedlots used their truck scale as a pen-scale for weighing cattle, while 67% did not use their truck scale as a pen-scale. Ninety-five percent of feedlots had dedicated pens for receiving cattle in their facilities. Out of 42 feedlots, 10% of feedlots allowed fewer than 50 ft^2/animal of pen space in receiving pens, 31% of feedlots allowed 50 to 100 ft^2/animal in receiving pens, 24% of feedlots allowed 101 to 150 ft^2/animal in receiving pens, 19% of feedlots allowed 151 to 200 ft^2/animal in receiving pens, and 17% of feedlots allowed more than 200 ft^2/animal of pen space in receiving pens. More than 50% of these feedlots allowed an average of 100.2 ft^2 per animal in receiving pens. The average number of cattle housed per pen in receiving pens was 116.4. Fewer than 50 cattle/pen were housed by 3% of feedlots in receiving pens, 15% of feedlots housed 50 to 75 cattle/pen, 33% of feedlots housed 76 to 100 cattle/pen, 13% of feedlots housed 101 to 125 cattle/pen, 18% of feedlots housed 126 to 150 cattle/pen, 8% of feedlots housed 151 to 175 cattle/pen, 3% of feedlots housed 176 to 200 cattle/pen, and 8% of feedlots housed more than 200 cattle/pen. Newly arrived cattle remained fewer than 7 days in receiving pens for 74% of participating feedlots, 7 to 14 days in receiving pens for 12% of feedlots, 15 to 21 days in receiving pens for 7% of feedlots, and more than 21 days in receiving pens for 7% of feedlots. Only 5% out of 43 participating feedlots used shades in receiving pens with 95% not using shades in receiving pens. Long-stem hay feeders were used by 42% of feedlots in their receiving pens, while 58% of feedlots did not use long-stem hay feeders in receiving pens. All feedlots had water tanks in their receiving pens and all but 2 feedlots utilized automatic filling water tanks. A majority of feedlots surveyed indicated concrete as the flooring in receiving facilities (72%) with others indicating unsurfaced floors (21%) or another type of flooring. Out of the 31 feedlots that reported to have concrete flooring in their receiving facilities, 48% of feedlots had a grooved surface on their concrete floors, 45% had a hatch/diamond surface, 3% feedlot had a smooth surface, and 3% of feedlot had other type of flooring.

Ninety-five percent of feedlots had 1 to 3 processing barns in their facilities. Most feedlots (88%) had individual animal scales in their processing facilities. A majority of feedlots (72%) had curved snakes in their processing facilities. With regard to the sides of the snake, 67% participating feedlots had V-slant sides on their snake, 19% of feed-

lots had adjustable sides on their snake, and 14% of feedlots had straight sides on their snake. Thirty percent feedlots brought fewer than 10 cattle to the tub or Bud Box at one time, 35% of feedlots brought 11 to 15 cattle, 30% of feedlots brought 16 to 20 cattle, and 5% of feedlots brought 21 to 25 cattle at one time to the crowding tub or Bud Box. Eighty-eight percent of feedlots mentioned concrete as the type of flooring in processing facilities, 9% of feedlots had a different type of flooring, and 2% of feedlots had unsurfaced floors in its processing facilities. Out of the 38 feedlots that had concrete floors in their processing facilities, 57% of feedlots had a grooved surface, 30% had a hatch/diamond surface, 11% had a smooth surface, and 3% had a different surface. Ninety-five percent of feedlots indicated they had sorting pens in their facilities; whereas, only 5% of feedlots did not have sorting pens. Out of the 39 feedlots with sorting pens in their facilities, 43% of feedlots had hydraulically operated sorting pens and 57% of feedlots had manually operated sorting pens. Twenty-six percent of feedlots had fewer than 3 dedicated sorting pens, 57% of feedlots had 3 to 6 dedicated sorting pens, 14% of feedlots had 7 to 10 dedicated sorting pens, and only 2% of feedlots had more than 10 dedicated sorting pens. Water tanks were reported to be present in sorting pens for 73% of feedlots; whereas, 27% did not have water tanks in their sorting pens.

Sixty-eight percent of surveyed feedlots allowed 151 ft^2 to more than 200 ft^2 per animal of pen space for high-health-risk cattle during the receiving period. Bunk space allowances in feedlots for high-health-risk cattle during the starting period varied, with 2% of feedlots allowing 6 to 8 in./animal, 56% of feedlots allowing 9 to 12 in./animal, 35% of feedlots allowing 13 to 17 in./animal, and 7% of feedlots allowing more than 18 in. of bunk space per animal. Five percent of feedlots had the top section of feed bunks fewer than 20 in. wide, 46% of feedlots had feed bunks 21 to 25 in. wide, 34% of feedlots had feed bunks 26 to 30 in. wide, and 15% of feedlots had feed bunks 31 to 35 in. wide. In regard to the cattle-side height of the feed bunk, 2% of feedlots had feed bunks fewer than 10 in. high, 45% of feedlots had feed bunks 10 to 15 in. high, 38% of feedlots had feed bunks 16 to 20 in. high, and 14% of feedlots had feed bunks more than 20 in. high. Thirty-nine percent of feedlots used flat bottom feed bunks, 39% used round bottom feed bunks, and 22% of feedlots had a combination of both in their finishing pens. All surveyed feedlots used concrete aprons by the feed bunk. Twenty-seven percent of surveyed feedlots had 6 to 10 ft wide concrete aprons; whereas, 56% of feedlots had wider aprons at 11 to 16 ft wide. Ground/well water was the primary water source for all of the 43 participating feedlots. Water supply was routinely tested for water quality parameters by 86% of participating feedlots while 14% of feedlots did not routinely test their water supply. Of the 37 feedlots that tested their water supply, 33% of feedlots tested once every year, 28% of feedlots tested twice every year, and 39% of feedlots tested more than twice every year. Forty-nine percent of feedlots had the water supply located in the pen, 44% of feedlots had the water supply located in the fence line, and 7% of feedlots had the water supply located in the bunk line.

Ninety-five percent of feedlots had concrete aprons by the water tank in finishing pens and 5% of feedlots did not have concrete aprons by the water tank in finishing pens. Out of the 39 feedlots that had concrete aprons by the water tank, 3% of feedlots had concrete aprons fewer than 5 ft wide, 36% of feedlots had concrete aprons 5 to 8 ft wide, 31% of feedlots had concrete aprons 9 to 12 ft wide, 11% of feedlots had concrete aprons 13 to 16 ft wide, 11% of feedlots had concrete aprons 17 to 20 ft wide, and 8%

of feedlots had concrete aprons wider than 20 ft by the water tank in their finishing pens. Continuous flow water tanks were used in finishing pens by 74% of participating feedlots, 12% of feedlots used heated water tanks in their finishing pens, and 14% of feedlots had a different type of water tank. Water tanks in finishing pens were cleaned or checked at a frequency of fewer than once every week by 7% of participating feedlots, at least once every week by 60% of feedlots, 2 times every week by 14% of feedlots, 3 to 4 times every week by 7% of feedlots, and on a daily basis by 12% of feedlots. Soil was used as the pen surface in finishing pens by 100% of feedlots. Fifty percent of feedlots used metal rods or posts for fencing, 39% of feedlots used cable for fencing, and 11% of feedlots used wood posts or rails for fencing in finishing pens. Seventy-one percent of feedlots utilized mounds in their finishing pens, from which 92% of feedlots had 1 to 2 mounds per finishing pen, 4% of feedlots had 2 to 3 mounds per finishing pen, and 4% of feedlots had 1 mound in small pens and 2 to 3 mounds in large pens. Also, 34% of feedlots had mounds that connected with the concrete apron by the feed bunk in finishing pens, and mounds in 66% of feedlots did not connect with the concrete apron by the feed bunk. Windbreaks were used by 43% of feedlots that responded to this survey. Out of the 7 feedlots that used shades in finishing pens, 50% of these feedlots provided a coverage of 10 to 25 ft^2 per animal of shade. Out of 41 respondents, 39% of feedlots used sprinklers in finishing pens for heat stress or dust control and 61% did not use sprinklers in finishing pens. Forty-one feedlot managers responded to questions regarding the width of feeding alleys, from which 5% of feedlots had feeding alleys fewer than 15 ft wide, 12% of feedlots had feeding alleys 15 to 20 ft wide, 22% of feedlots had feeding alleys 21 to 25 ft wide, 17% of feedlots had feeding alleys 26 to 30 ft wide, and 44% of feedlots had feeding alleys more than 30 ft wide. Out of 40 responding feedlots, 82% of feedlots had drover's alleys and 18% of feedlots did not have drover's alleys associated within finishing pens.

Approximately 2/3 of feedlots that participated in this survey provided a dedicated hospital facility. Twenty-nine percent feedlots reported that the hospital doctoring facility was the same as their processing facility and 5% of feedlots reported a different setup; one feedlot had both setups and the other feedlot doctored and returned cattle back to their home pen the same day. Nearly all of the feedlots surveyed had dedicated hospital pens for cattle to recover from injury or disease. Approximately half of the feedlots provided shades in their hospital pens. Out of 40 respondents, 13% of feedlots allowed fewer than 50 ft^2/animal of pen space in hospital pens, 23% of feedlots allowed 51 to 100 ft^2/animal, 38% of feedlots allowed 101 to 150 ft^2/animal, 15% of feedlots allowed 151 to 250 ft^2/animal, and 13% of feedlots allowed more than 250 ft^2/animal of pen space in hospital pens. All of the feedlots in our survey had water tanks in hospital pens, with the majority being automatically filled water tanks. Long-stem hay feeders were used in hospital pens by 46% of the feedlots surveyed.

Implications

Expanding, planning, or building cattle feeding facilities should take into account both published recommendations and practical experience to obtain the facility design that will better fit individual feedlot needs. This paper provides a thorough description of outdoor cattle feeding facilities in the High Plains region in the United States to serve as a benchmark for those looking to build a new facility or enhance an existing cattle feedlot.

Table 1. Descriptive data about cattle feedlot facilities of participating feedlots

Item	≤ 20,000 cattle	> 20,000 cattle	Number of responses	Percent of responses
One-time full capacity (cattle) of feedlot	20	23	43	100
Tub or Bud-Box in processing barn				
Tub	15	17	32	74%
Bud-Box	3	5	8	19%
Space allowance (ft^2/animal) in finishing pens				
50 to 100	1	3	4	10%
101 to 250	12	15	27	66%
> 250	6	4	10	24%
Bunk space (in./animal) in finishing pens				
6 to 9	6	10	16	38%
10 to 12	12	11	23	55%
Water space (in./animal) in finishing pens				
< 3	5	5	10	24%
3 to 6	5	6	11	27%
Don't know	10	9	19	46%
Use of shade in finishing pens				
Yes	4	3	7	17%
Greatest distance (yd; 1 mi=1,760 yd) from feeding pen to loadout				
< 440	3	0	3	7%
440 to 880	5	8	13	32%
880 to 1,320	8	4	12	29%
1,320 to 1,760	3	7	10	24%
> 1,760	0	3	3	7%