

### THE USE OF VOCALIZATION SCORING TO MONITOR CATTLE HANDLING QUALITY IN SLAUGHTER PLANTS

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#### Background

Quiet handling of cattle at the slaughter plant will help preserve beef quality. Cattle that become agitated or excited during handling are more likely to have tough meat or dark cutting (Voisinet et al., 1997). Previous research has shown that vocalization (moos and bellows) in cattle are correlated with higher cortisol levels (Dunn, 1990). Grandin (1998ab) found that vocalization is correlated with aversive events such as electric prod use. When electric prod use was reduced, the percentage of cattle that vocalized was reduced. Vocalization scoring can be used to objectively monitor handling. Quiet handling also provides the advantage of reducing bruising (Grandin 1981, 2000).

#### Objectives

The objective of this study was to determine if the percentage of cattle that vocalize could be reduced when a slaughter plant made a series of improvements in handling technique and equipment. The question was – would vocalization scores progressively be reduced with each successive improvement?

#### Methods

Vocalizations were scored in a beef slaughter plant as cattle were moved through the single file race and into a conveyor restrainer. The line speed was 200 per hour. Each animal was scored as either quiet (non-vocalizer) or moo or bellow (vocalizer). It was a yes/no scoring system. A total of 700 cattle were scored. One hundred cows were scored on seven different days after the plant had made improvements in handling methods or equipment. The data was collected during a period of several months. After each improvement was made, 100 cattle were scored. Employees were trained to reduce the usage of electric prods and the conveyor restrainer was modified to reduce balking and improve cattle movement. The cows in this plant were a mixture of *Bos taurus* beef breeds and Holsteins.

#### Results and Discussions

With each successive improvement in handling technique and equipment, the percentage of cattle that vocalized was reduced (Table 1). There was a significant improvement from 17% of the cattle vocalizing to 2% vocalizing ( $\chi^2 = 13.08$ ,  $P > .001$ ). The percentage of cattle that vocalized during each successive group of 100 cattle was 17%, 14%, 7%, 10%, 9%, 5% and 2%. The line was always kept full of cattle.

The percentage of cattle that vocalized while they were being moved into the conveyor restrainer was progressively reduced. Training employees to use behavioral principles to move cattle and reduce electric prod use reduced vocalizations. Some of the handling changes that were made were 1) Filling the crowd pen that leads to the single file race half full, 2) Removing electric prods from the hands of the employees and replacing them with a piece of plastic on a stick. The electric prod was picked up only when needed, 3) Teaching employees the principles of flight zone and point of balance (Grandin, 2000).

The following equipment changes were made. 1) Replace the V conveyor restrainer with the center track conveyor restrainer (Grandin 1991, 2000). 2) Add a light at the restrainer entrance, 3) Install a false floor to prevent the cattle from seeing that they were 3m above the floor and 4) Extend the solid metal shield which prevents the animal from seeing the stunner operator until it is fully restrained and riding on the conveyor. The above improvements for improving cattle movement are discussed fully in (Grandin 1996, 2000).

Cattle will often refuse to enter a dark stunning box or restrainer conveyor. When a light is added to the entrance of a stunning box or restrainer, it must not shine into an approaching animal's eyes. It must be indirect. Animals will also balk at the "visual cliff" effect in a conveyor restrainer. The "visual cliff" effect occurs when animals can see that a conveyor restrainer is elevated above the floor. A false floor installed just below the animal's feet will provide the illusion of a solid floor to walk on.

#### Conclusions

Vocalization scoring can be used to monitor the quality of cattle handling. The percentage of cattle that vocalized during handling was reduced with each successive improvement in handling methods and plant equipment.

#### Pertinent Literature

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Table 1. Reduction of the percentage of cattle that vocalized as successive improvements were made in handling practices and equipment.

Groups of 100 cattle	Percentage of Cows that Vocalized	Conditions in the Plant
1.	17%	V conveyor Restrainer – cows balked at the restrainer entrance and excessive electric prod use caused vocalization.
2.	14%	No changes were made
3.	7%	Employee training on reducing prod usage
4.	10%	Continue training employees
5.	9%	Continue training employees
6.	5%	Remove V conveyor Restrainer and replace with center track Restrainer
7.	2%	Improve lighting, install false floor and sheet metal that blocks the cattle's vision (these parts were left out by the equipment installer)