

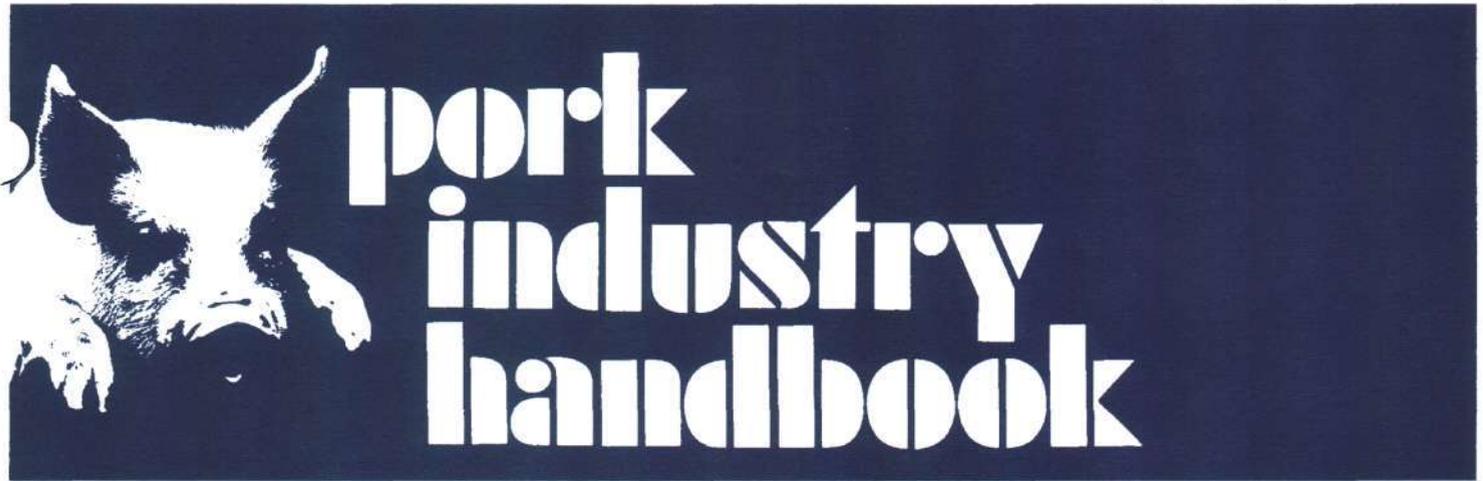
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Handling Hogs: Pork Industry Handbook
Michigan State University Extension Service
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September 2002
6 pages

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Michigan State University Extension

Handling Pigs

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Introduction

Gentle handling and good husbandry practices will improve swine productivity. Reproductive performance tends to be high on farms where sows show little fear of humans, while on farms where sows are fearful of humans, reproductive performance is lower. Research shows that the performance of finishing pigs is positively affected by good stockmanship. Mistreated finishing pigs have lower weight gains.

In addition to daily handling, most growing pigs are "worked" at discrete stages of production. These include processing at birth (see PIH-18), castration, weaning, and moving to nursery, transportation, growing and finishing, and transporting to market. On some farms, the nursery and grower buildings are eliminated, and weaned piglets move directly into a wean to finish building. Sows (and for the most part boars) are handled during breeding, artificial insemination, heat detection, pregnancy checking, vaccination, and farrowing/weaning (see PIH-1, PIH-8, and PIH-74).

Handling Pigs

Pigs are handled for specific reasons, such as medicating or redistributing into larger or different pens. Animals accustomed to frequent, close, gentle contact with handlers are less likely to experience a production setback by nonpainful procedures such as being weighed or being moved down an aisle. Painful procedures, or rough handling, can result in stress that negatively impacts production or handling. Thus, for maximum reproductive performance, the person who manages breeding animals should not perform painful procedures on the pigs.

People entering the finishing pens and walking the aisles once a week has no effect on weight gain, if the animals are handled gently. The pigs become accustomed to people in the pens and do not become excited. However, weight gains are

lower and stress hormone levels increase if a handler occasionally slaps or shocks the pigs with a prod. Even when the handlers are gentle most of the time, pigs probably become stressed when rough handlers enter their pen, because they fear a possible unpleasant experience. This is critical to remember when checking feeders and waterers.

Mixing and fighting. When pigs are mixed, they go through a period in which they establish social relationships. One or more pigs dominate and the others become subordinate. A socially stable pen is the desired environment, so each pig should have a stable social relationship with the other pigs.

Establishing social order requires that some, but not all, pigs fight. Some pigs submit without a fight. But, when pigs fight, they do not eat. Even the pigs that submit without fighting

Table 1. Relative pig performance setback because of mixing pigs and fighting.

Weight at mixing	Weight gain depression	Added days to market	Other problems ¹
8-40	None measurable	0	Wounds
40-80	7 days	0	Wounds
80-150	28 days	0	Wounds and Injury
Over 150	28 days	7 or more	Wounds and Injury

¹Source: McGlone, 1987

do not eat very much while the other pigs are fighting, thus reducing weight gain. Because newly weaned pigs do not eat much, fighting may not have a measurable negative effect on their performance. Older growing pigs, however, eat at a productive rate, and any disruption in feeding (such as pigs fighting) causes reduced weight gain. The older and heavier the

pigs, the more negative the effects of fighting (see Table 1). Larger pigs (especially over 150 lb [68 kg]) are very strong and can cause large wounds and extensive injuries. Mixing pigs over 150 lb (68 kg) should be avoided as much as possible. If many pigs are ganging up on one pig, move the victim to a sick pen.

There are several procedures available to reduce fighting among mixed pigs. The first rule-of-thumb is to minimize other stressors. When mixing pigs, avoid overcrowding, poor ventilation, sharp or broken equipment, and do not mix when disease is obvious. Mix all the pigs at the same time in a strange new pen. Whenever possible, mix an approximately equal number of pigs from various sources or pens, otherwise, the newcomers will be severely attacked. Avoid mixing pigs when the air temperature is above 90°F (32°C). Practical experience has shown that mixing several hundred strange pigs together results in less fighting than mixing small numbers together in small pens. The study summarized in Table 1 housed pigs in small groups. Genetic factors also affect fighting.

Providing regrouped pigs with areas to escape attack reduces fighting. Small, fence-line, hide boxes, large enough for a pig's head and shoulders, reduce aggression. The use of masking odors is not recommended because they may increase fighting. However, boar odor or the presence of a live boar reduces fighting. Both practical experience and research indicate that there are genetic differences in the amount of fighting among pigs, for example, tail biting is more frequent in some genetic lines. Other factors affecting tail biting are nutrition, overstocking, or poor ventilation.

Grouping larger pigs into uniform weight pens is not recommended, even within a common age group, although runts and poorly performing pigs may be housed together. For pigs housed in small groups, heavier pigs (i.e. 125 lb [57 kg]) put into uniform weight pens are often as variable in weight at market time as pigs that were not regrouped during growing or finishing. Social interaction among pen mates is one important factor that causes weight variability in a pen.

Pig Behavior During Handling

Pigs have wide-angle vision and are sensitive to sharp contrasts of light and dark. The lighting in weighing, breeding, and loading areas should be bright, but evenly distributed because pigs balk and may refuse to move if they encounter shadows, puddles, bright spots, a change in flooring type or texture, drains, metal grates, or flapping objects (see Figure 1). Animals reared under artificial illumination in buildings without translucent white curtains often refuse to move outside into bright daylight.

Pigs reared in enclosed buildings may balk at full daylight, but lights can be used to attract them into trucks at night. Lamps can be used to attract pigs onto scales or other facilities, with the lamps illuminating the area into which you want the pigs to move. Lamps must not shine directly into the eyes of approaching animals. In buildings where pigs are not exposed to natural daylight, moving the animals out of the building into bright daylight may be difficult. If the building has curtains, it is easier to move pigs if the curtains are opened for 30 minutes prior to movement, allowing the pigs to become accustomed to daylight. The use of translucent curtains that admit natural light helps facilitate handling. Pigs balk if air blows in their faces due to negative pressure through the door as they exit a building, so opening the curtains and shutting off fans to prevent air drafts in their faces facilitates movement out of the building. The

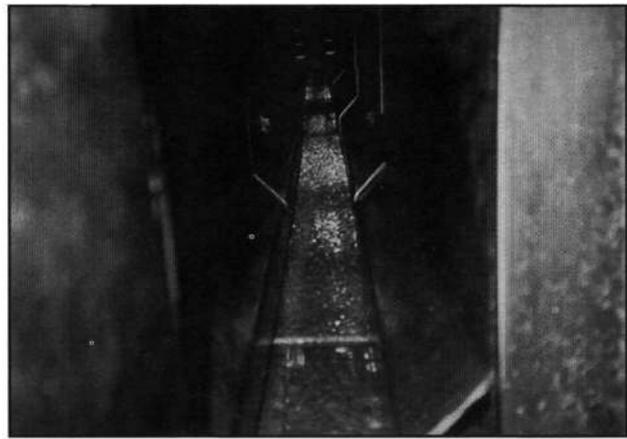


Figure 1. When pigs encounter reflections as shown above, they may refuse to move.

ventilation system must be turned back on as soon as the pigs are moved because heat stress or pit gases can quickly kill pigs if they are in an unventilated building.

Loading pigs onto trucks will be easier if the alley extends outside the building for at least 15 ft (4.5 m) before the ramp begins. The worst design is a loading ramp where the incline begins right at the building wall. Loading trucks is easier in buildings where there are 34 in to 36 in (86 cm to 91 cm) alleys compared to 24 in (61 cm) alleys. New finishing buildings should have a minimum alley width of 34 in (86 cm) which allows two market weight pigs to walk side-by-side. Market weight pigs should be moved out of the building in small groups. Move five or six market weight pigs at a time down a 34 in (86 cm) to 36 in (91 cm) wide alley and only three at a time down a 24 in (61 cm) alley.

Pigs will stop when a solid barrier is placed in front of them because it prevents them from seeing an escape pathway. That is why a portable solid panel is efficient for moving pigs. A light aluminum panel with a hinge in the middle is recommended for separating pigs out of a pen. Partially inflated plastic bags or flags made from lightweight plasticized cloth are other useful tools for moving or sorting pigs (see Figure 2). Animals will

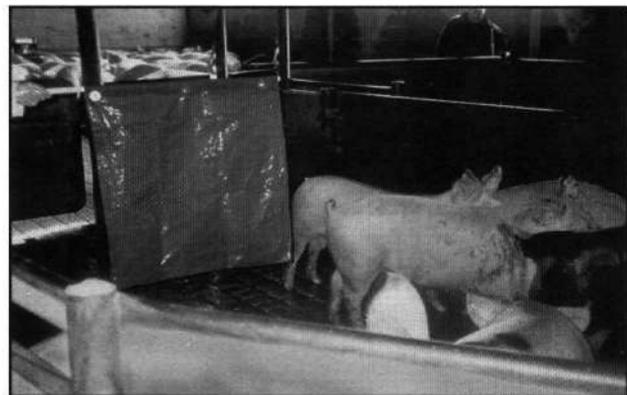


Figure 2. A flag can be used to turn a pig by blocking its vision on one side.

move away from the rustling plastic bag or flags. Flags act like a lightweight flexible portable panel; they can be used to turn a pig by blocking the vision on one side. Flags may vary in size from 12 in (30 cm) x 12 in to 30 in (76 cm) x 30 in. square. Another useful tool is a plastic paddle that looks like a small oar.

Pigs will leave a building more easily if the last 16 ft (4 m)

of alley by the door is temporarily covered with solid, nontranslucent material that is attached securely to the fence. The plywood prevents pigs that are being moved out the door from seeing pigs in the adjacent pens.

Pigs are easier to sort and handle when they are calm. Excited pigs are more likely to pile up and be difficult to separate during sorting. It is helpful if handlers understand the point of balance at the shoulder. A pig goes forward when a person is behind the shoulder, and it will tend to back up if a person stands in front of the shoulder. A pig moves forward when a person quickly walks past the point of balance in the opposite direction of desired movement.

A broom or a plastic paddle is useful for backing up a pig. Sows readily back out of crates if they are tickled or pressed on the snout with a broom. **Electric prods should never be used on breeding stock, and their use should be discouraged on other animals on the farm.** Repeated electric prodding causes a hog's heart rate to increase with each successive shock, and excessive prodding can kill pigs.

When pigs are transferred from pens that have expanded metal or plastic floors to pens with concrete floors, they should be allowed to become accustomed to walking on concrete before driving is attempted. The pigs will be balky and difficult to drive until they have been on concrete for at least 30 minutes. Pigs are easier to move if they have had previous experience with being handled and driven.

Practical experience has shown that pigs from excitable genetic lines are difficult to remove from the finishing pens if no one has entered the pens during finishing. Excitable pigs bunch together more tightly when they become agitated, and they are more likely to squeal if slapped. This is especially a problem in wean-to-finish operations. Pigs from excitable high-lean genetic lines balked more while being moved down an alley (Shea Moore, personal communication, 1998). Experience on large farms has shown that walking in the finishing pens from 10 to 15 seconds per 50 pigs every day produces animals that are easier to drive, load, and handle at the packing plant. Ideally, the pen walker should walk through each pen every day to accustom the pigs to getting up and quietly moving around them.

When feeders and waterers are checked, the person should walk through the pigs. Walking the pens as little as once a week has a significant affect on pig excitability. The individual should walk in a different random direction each day and avoid standing still in a pen. Standing still encourages pigs to chew on boots instead of learning to be driven. Pigs that are easier to drive and move may have lower death losses.

Excitability can be reduced by providing these pigs with toys and extra contact with people in their pens. Playing a radio in the building reduces a pig's startle response to sudden noises. In one trial, toys and five to ten minutes of contact with people once a week for five weeks in the finishing pens made pigs easier to drive. It is possible to get animals so tame that driving them is difficult. Pig reaction to people in the pens and toys will vary depending upon type of housing, genetics, husbandry, procedures, and other factors.

Crowd Pen and Chute Design

Many farms have poor loading and handling facilities because no space for facilities was designed into the building. Efficient loading and handling facilities require adequate space.

Funnel-shaped crowd pens must never be used for pigs because they will become jammed in a funnel. Two jammed

animals will keep pushing forward, and the animals will become severely stressed. A pig crowd pen must have an abrupt entrance to the chute to prevent jamming.

Figure 3 illustrates a pig crowd pen and double-file loading chute with a small offset fence equal to the width of one pig at

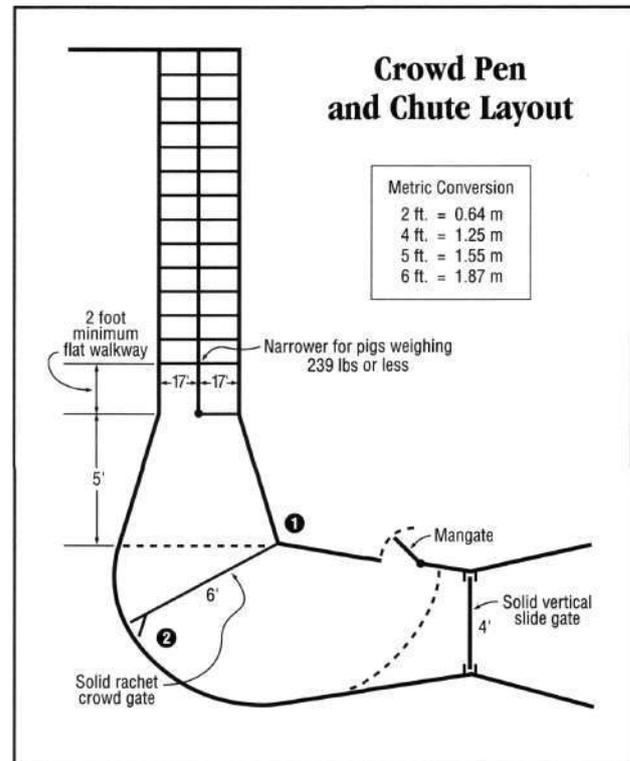


Figure 3. A crowd pen and chute for pigs that prevents jamming at the chute entrance. When the crowd pen is full, the handler stands in Position 1 and directs the leaders into the chute. After the crowd pen is partially empty the handler steps through the mangate into Position 2 and pushes the crowd gate around.

the chute entrance. The offset fence enables one pig to step aside to allow another pig to pass. The design enables the handler to reach both the leader pigs and the pigs in the rear of the group. This helps prevent pileups. With a shorter chute, a pen similar to Figure 3 can be used to direct hogs onto a scale. To reduce costs, an inexpensive curved alley could be constructed from wood, and the ramp portion could be a portable unit. Pigs move up a ramp more easily if they are outside the building before they encounter the ramp.

Experience has shown that loading ramps with solid fences are more efficient. The crowd pen and a crowd gate should be solid; a solid crowd gate prevents the pigs from turning back and attempting to return to the pens they just left.

Twin single-file chutes side by side facilitate loading (Figure 4). The two outside fences are solid to prevent balking caused by distractions outside the fence. The divider fence between the two chutes is "see through" to promote following behavior.

A common mistake is building a chute too wide. A loading ramp should be designed so that two pigs can walk up side by side. If a partition is built down the center, each single file chute should be 16 in to 17 in (41 cm to 43 cm) wide for market weight pigs. The width of entire ramp should be 34 in (86 cm).

A pig's heart rate increases as the angle of the ramp

increases. The maximum recommended angle for a nonadjustable loading ramp is 20 degrees (about 48 in x 11 ft long) (1.2 m x 3.38 m). If space permits, make the angle 15 degrees (about 48 in high x 15 ft long) (1.2 m x 4.6 m). Forty-eight inches (1.2 m) is the standard height of most semi-trailers. On concrete ramps, stairsteps with a rough surface are recommended. For market weight hogs, a 2 1/2 in (6.4 cm) rise and a 10 in (26 cm) tread width works well. On wooden ramps, cleats should be spaced 8 in (20 cm) apart. The above step and cleat dimensions are recommended for pigs weighing more than 180 lb (82 kg).

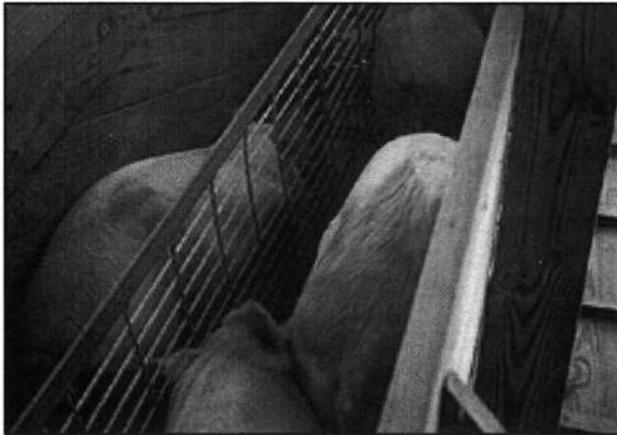


Figure 4. Pigs move rapidly up a loading ramp with a “see through” divider down the middle. The outer fences should be solid.

Ramps for small piglets should have smaller, closely spaced cleats to prevent injury to the dewclaws when the piglets walk down the ramp. Dewclaws may be injured when piglet’s feet slip between cleat spacings that have been designed for larger animals. To prevent slipping and spreader injuries, all floor surfaces in handling areas should be nonslip. A light broom finish is too smooth for areas where pigs are loaded or worked. Imprinting the pattern of expanded metal into concrete provides a long-lasting nonskid surface. A very rough broom finish can also be used.

Pig Transport

Death losses often double on hot, humid days. When daytime temperatures and humidity reach the alert level on the National Institute for Animal Agriculture Livestock Weather Safety Index (Figure 5), deliver pigs to market before 11 a.m. When temperature and humidity reach the danger level, haul pigs at night.

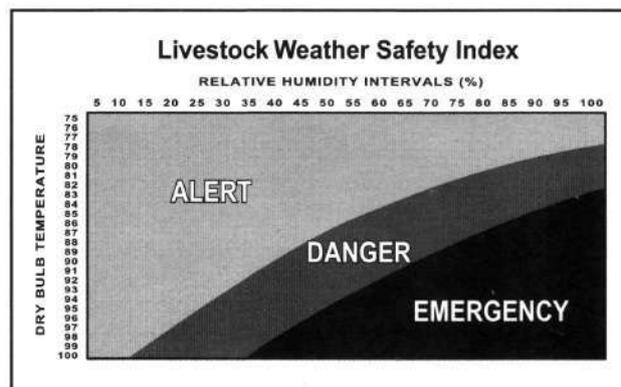


Figure 5. National Institute Livestock Weather Safety Index.

Never use straw bedding when the temperature is over 60°F (16°C). The pigs will become too hot. Use either wet sand or wet shavings. Open nose vents to ventilate trucks during the summer. Pigs must be loaded and unloaded promptly. During the summer months, heat and humidity build up rapidly to dangerous levels in a stationary vehicle. When the temperature exceeds 80°F (27°C), sprinkle hogs with water before loading or spray hogs in the truck after loading to provide evaporative cooling. Installation of a sprinkler system in the trucks is strongly recommended in the southern areas of the U.S. Never throw large amounts of cold water on a pig that has collapsed from over exertion. The shock to its system may be lethal. Wet the ground around the pig or apply small amounts of tepid water. Do not put cold water on the animal’s head.

Wind chill can kill pigs during the winter. In winter and during cool temperatures, use straw bedding to keep the pigs warm. On aluminum trailers, cover at least half the ventilation holes with plastic plugs, or install solid panels to prevent frost bite. Nose vents must be closed in cool weather; open farm trucks should be covered. Frost bite can cause tissue damage especially on pigs near the side of a poorly bedded trailer.

Table 2. Recommended transport space requirements during cool weather.

Average weight, lb	Average weight, kg	Number hogs per running foot of truck floor (92-in. truck width)	Sq. ft. per head	Sq. m. per pig
50	23	5.0	1.53	0.14
100	45	3.3	2.32	0.21
150	68	2.6	2.95	0.27
200	91	2.2	3.48	0.32
250	113	1.8	4.26	0.39
300	136	1.6	4.79	0.44
350	159	1.4	5.48	0.50
400	181	1.2	6.39	0.59

Source: National Institute of Animal Agriculture

To minimize death losses, a 200 lb pig needs a minimum of 3 1/2 sq. ft (0.33 sq. m) per animal when the weather is cool. The above space allowance was developed by the marketing boards in Canada to reduce death losses, bruises, and injuries. A 230-lb (104-kg) pig requires 4.4 sq. ft (0.4 sq. m) when the temperature is over 75°F (24°C) and humidity is high. In Europe the EC Working Group recommends 5.5 sq. ft (0.51 m²) per 265-lb (120-kg) pig. Pigs need more room when transported during hot weather. When the Livestock Weather Safety Index is at the alert level, load 10 % to 20 % fewer pigs.

In farm trucks, use partitions to separate pigs from different social groups (pens) and divide the load with partitions to prevent pileups. Trucks should be cleaned after each shipment to prevent skin blemishes and disease transmission. Drivers should stop and start smoothly to prevent animals from being thrown off their feet. Careful driving reduces losses.

Pigs to be slaughtered on the same day should be fasted 6 to 10 hours prior to loading. Fasting pigs for more than 18 hours prior to stunning may result in significantly less carcass weight, but water should be provided at all times. If they will be slaughtered the next day, feed them lightly. Pigs with full stomachs are more likely to die during transport. Fasting may reduce PSE (pale, soft, and exudative) meat. By reducing

glycogen levels a total fast of less than 12 hours prior to stunning will usually not cause carcass shrink. Producers selling directly to packers should contact the packer for specific fasting recommendations.

Conditions at the farm can affect handling and the incidence of damaged meat. Some hogs have weak hindquarters, and they are more likely to fall down and "split." The damaged meat has to be trimmed. This problem can be corrected by changing breeding stock. Slick floors also contribute to the splitting problem.

Some pigs that are grown rapidly to heavy weights have weak bones that are more likely to break during transport and handling. Weak bone problems can be reduced by mineral supplementation or changes in genetics.

Meat Quality and Bruises

Careful transit and gentle handling at the slaughter plant will maintain meat quality and reduce bruising and death losses. Bruising costs the swine industry 22 million dollars annually and losses from PSE (pale, soft, and exudative) and DFD (dark, firm, and dry) meat are even higher. These losses are passed back to the producer in the form of lower payments or reduced purchases. Overheated pigs and pigs that carry genes for stress susceptibility are more likely to have poor quality meat and higher death losses. PSE is caused by both genetic and environmental factors (see PIH-26, "Porcine Stress Syndrome").

Resting hogs for 1 to 4 hours at the packing plant before slaughter and sprinkling during hot weather will maintain pork quality. Rough handling and excessive electric prod usage at the

packing plant will lower pork quality. Tests conducted at packing plants indicated that reducing electric prod use and exercising quiet handling in the stunning chute reduce PSE by 10%.

Since both genetic and environmental factors affect the incidence of meat quality problems, producers and packers must work together to improve pork quality. Marketing systems that reward a producer solely on leanness may encourage producers to produce pigs that have many pounds of lean pork, but pork having poor meat quality. Some rapidly growing pigs produce tougher meat with large muscle fibers. Quality and quantity are sometimes two conflicting goals. Genetic selection for maximum weight gain and pounds of pork is sometimes selection for more PSE and quality problems and higher death losses. Selection for maximum muscle mass may increase death losses. Producer payment systems should be designed to reward both quality and quantity so that a balanced animal is produced.

Conclusion

Good handling facilities, knowledge of pig behavior, and consistent, gentle handling will help make your operation more productive and profitable.

Additional Reading

Grandin, T., 2000, *Livestock Handling and Transport*, CAB Publishers, Wallingford, Oxon, United Kingdom.

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