

SLAUGHTERHOUSE MODERNIZATION



**A practical guide to raising
animal-handling standards
and meat quality in your plant**



**Eyes on
Animals**

Watching
out for their
welfare

WHY MODERNIZING YOUR SLAUGHTERHOUSE WILL RESULT IN MORE PROFIT!

This brochure was created for managers and veterinarians of slaughterhouses, particularly in Turkey. The information and photos inside will help you identify problem areas your plant likely has, and what can be done to solve them in order to have a quick and significant impact on meat-quality and profit.

STRESSED ANIMALS: A MAJOR CAUSE OF BAD MEAT QUALITY

When animals are panicking and stressed or when they are dehydrated due to a lack of drinking water while waiting in the slaughterhouse, meat quality problems such as DFD (dark, firm and dry meat) are induced. DFD is a leading cause of large monetary losses to the livestock industry. Dark-cutting beef is darker and drier than normal and has a shorter shelf life.

Good quality beef has a final pH value of around 5.5. At pH values of 5.8 and above, tenderness and keeping quality of fresh chilled meat is adversely affected.

High meat pH is caused by an abnormally low concentration of lactic acid. Post mortem production of lactic acid requires an adequate content of glycogen in the muscles at slaughter. Ante mortem glycogen breakdown

Poor animal-welfare causes inexcusable pain and fright. Animals are sentient with a developed nervous system like humans. As a business, you will be interested in knowing that poor welfare is not just unethical, but it is a bad business move as well.

Poor welfare leads to poor quality meat which leads to poor profit!

is triggered by increased adrenaline release in stressful situations.

To reduce stress, the lairage, raceway and restraint equipment needs to be designed according to the animal and its behavior. This means the animal knows where to go and is not scared of moving forward. If your workers need to scream, repeatedly prod or twist the tails of animals to make them move forward, it is a fault in the design or equipment, not the animal!

Animals unfamiliar to each other should not be mixed shortly before slaughter nor handled roughly and impatiently.

A majority of the dark-cutting in cattle is due to mounting behaviour, and when unfamiliar bulls are mixed, the physical activity during fighting and mounting increases dark-cutting.

INJURED ANIMALS: FINANCIAL LOSSES BY CARCASS BRUISING

High financial losses are incurred by the livestock industry also as a result of carcass bruising. Bruising is attributed to bad transport conditions, poor design of facilities and ignorant and abusive animal handling (such as sheep being grabbed by their wool or cattle trying to jump over short fencing or falling down due to slippery floors or trip-floor restraint boxes). Contrary to popular belief, livestock can be bruised just moments before slaughter. Thus, humane handling is of vital importance up until the very end when the animal is slaughtered.

LACK OF WATER: IMPACT ON DE-HIDING PROCESS

When animals are not given water at the slaughterhouse, particularly after a long journey or when they have to wait several hours in the waiting pens, the de-hiding (removal of the skin) process is slowed down resulting in loss of time and money. It is important to always have fresh and clean water available for the animals.

Remember, the essence of Halal is good animal-welfare! Halal meat requires that animals are healthy and have been handled gently with as little stress or discomfort.



For further information:
www.halal-slaughter-watch.org
info@eyesonanimals.com

1. HANDLING UNFIT ANIMALS AT ARRIVAL

Farmers and traders bringing animals to your plant should make sure the animals are fit. They are responsible for this. But you are responsible for the way all animals are handled once they arrive, including the ones that are injured or sick. Injured/sick **MUST NOT** be dragged or hoisted but instead put out of their misery at once. The animal should be stunned and bled out, or if stunning is not yet possible at your plant then at least bled out where the animal lies.



**DO NOT
DRAG OR
HOIST
UNFIT
ANIMALS**



**KILL AND BLEED
OUT ANIMAL
WHERE IT LIES**



If possible stun unfit animals before killing them



One of the reasons for having Halal rules is to protect animals from abuse and suffering. A sick or injured animal that can no longer stand up or walk should be stunned and slaughtered on the spot where she or he lays, right away. Dragging or hoisting such an animal towards the slaughter room while still alive should never be tolerated. This is abusive and contradicts the essence of Halal.

2. HEIGHT OF FENCING



LOW FENCE

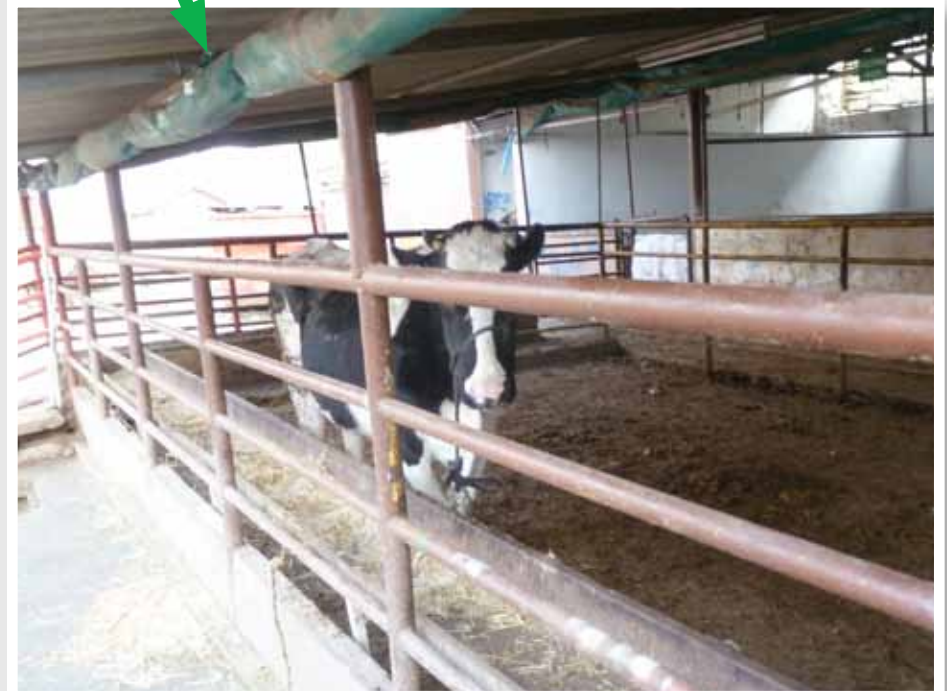
If the fence is too low, the animals will try to jump over it and become injured causing suffering and degrading carcass quality.



HIGH FENCE



Build the fence always taller than the animals.



3. MOUNTING BEHAVIOUR

Cattle, and in particular bulls, will mount one another when they are stressed or when they are mixed together. It is a dominance behaviour as the animals have to re-establish their hierarchy. Mounting of cows by bulls is also induced by stress and by hormones. Never put cows and bulls together in a pen or a raceway. Mounting results in **serious bruising, stress hormones in the meat** and can lead to serious injuries when animals as a result fall or get their legs caught in fencing



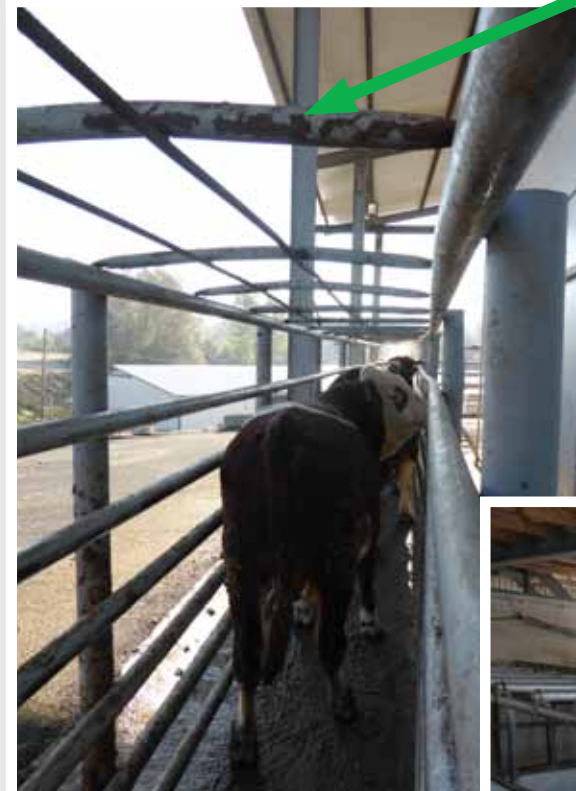
NO ANTI-MOUNTING RACKS

Cattle will mount each other and will get injured as a result.



ADD ANTI-MOUNTING RACKS

Physically prevents cattle from mounting each other. Avoids suffering and stress, resulting in better meat quality.



Waiting areas should also have anti-mountaing racks installed.



4. RACEWAY TO RESTRAINT BOX



DISTRACTIONS: SHADOWS

Animals will hesitate when there are many shadows on the ground as the route for them to take is not clear. They think a shadow is a barrier, or a hole in the ground.



ADD SOLID PANELS



Install plexi-glass boards, or other easy-to-clean material, onto inner part of raceway to block shadows and ease the movement of animals forward.





DISTRACTIONS: PEOPLE AND OBJECTS

Animals will hesitate when they see people and objects ahead. It makes them nervous to move forward.



View of worker and truck ahead scare approaching animals.



Do not allow **clients** to hang around inside slaughterhouse.



ADD SOLID PANELS



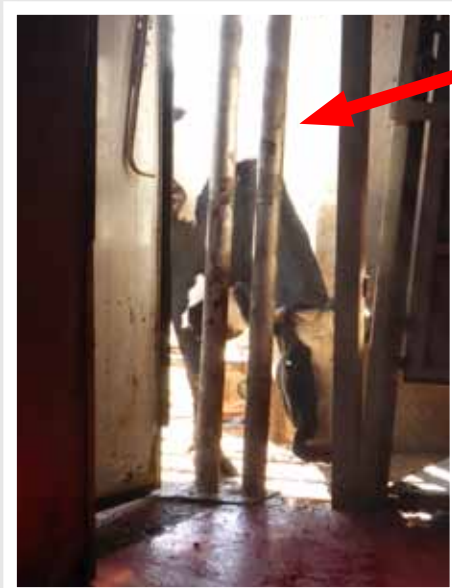
Install plexi-glass boards, or other easy-to-clean material, onto inner part of raceway to block the view of people and objects and ease the movement of animals forward.





DISTRACTIONS: KILLING PROCESS

This photo shows a bad example:



There is an opening between the raceway and entrance to the restraint box. The animal sees the whole slaughter process which is a negative distraction and makes them refuse to enter.

BAD: This is the view the cow in the photo above had. Obviously she will not want to move forward.



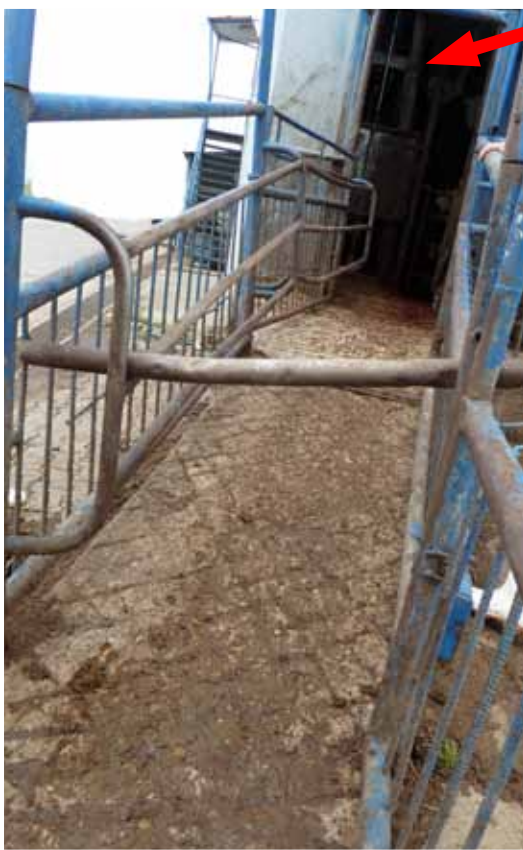
BLOCK VIEW OF SLAUGHTER PROCESS BY SEALING GAP WITH, FOR EXAMPLE, RUBBER CURTAINS





DISTRACTIONS: DARKNESS AHEAD

Farm animals, like people, prefer to move from *dark towards light*. Forcing them to move towards darkness scares them as they do not know what lies ahead. A dark entrance into the restraint box will make the animal hesitate to move forward, adding stress to animal and animal-handler.



INSTALL LAMPS

Install extra lighting but do not shine light directly into their eyes.

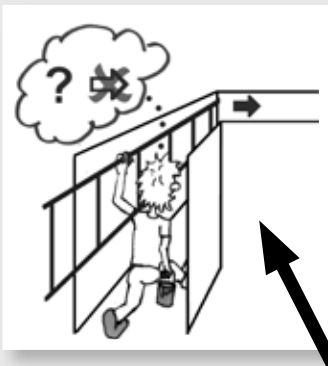


NOISE - People should **avoid making loud noises** when moving animals. Whistling and shouting can cause animals to become excited. The very best handlers are completely silent. Equipment should be designed to reduce noise. Clanging and banging metal parts should be silenced with rubber pads. Equipment operated with hydraulics should be engineered to minimize noise. Some types of hydraulic pumps make more noise than others. Air hissing is very distressful to livestock. Air operated equipment should be equipped with mufflers to reduce noise. Hissing air may cause animals to stop and refuse to walk through a facility.



SHAPE: RIGHT ANGLES

Sharp angles in a raceway are bad for two reasons. 1. the animals physically have difficulty bending their solid bodies and 2. the animals think it is a dead-end and refuse to go forward.

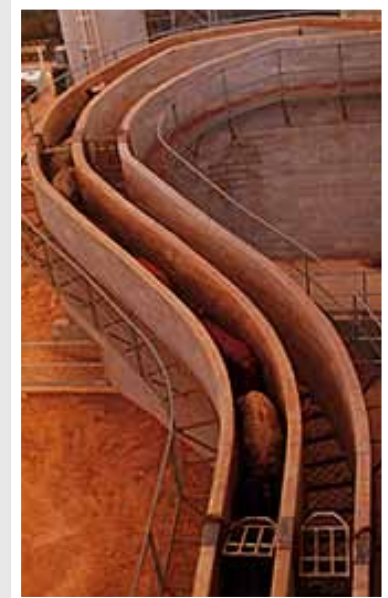


Walk through your facility with a **2 metre ladder** to understand what it is like for the cattle.

SHAPE: GENTLE CURVES



Make the raceway have gentle curves in it that animals can easily manoeuvre.



5. RESTRAINT AND SLAUGHTER



BEST OPTION: UPRIGHT RESTRAINT WITH STUNNING

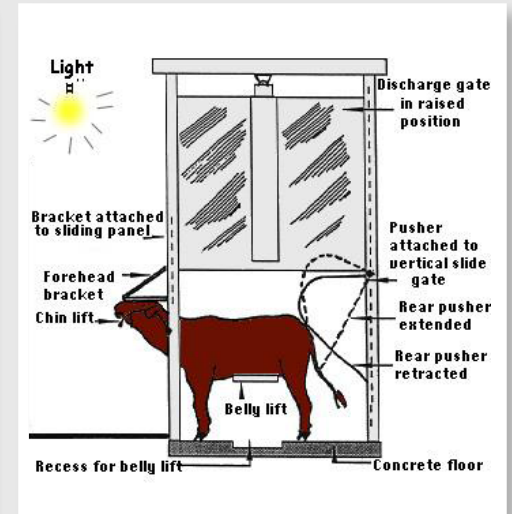
Eyes on Animals and Animal Welfare Foundation recommend upright restraint with stunning performed by a skilled professional as the best choice for optimum animal-welfare and meat quality. The animal is not forced to experience uncomfortable restraint or the killing process while conscious. Thus stress does not play a role on the animals' welfare or carcass quality.



Stunning the animal first does not kill the animal. The heart is still beating and thus the animal is considered Halal by many Muslim religious authorities. For religious authorities that still do not accept captive bolt stunning, proper electrical stunning options for large cattle may be available in the near future. Contact us for an update: info@eyesonanimals.com

SECOND BEST OPTION: UPRIGHT RESTRAINT WITH BELLY LIFT

*If your plant is not allowed to stun cattle
this is the second best upright option.*



The belly lift supports the body of the animal to avoid any risk of animals collapsing with open wound touching the head-yoke.



Be aware of companies selling cheap restraint boxes. These often cause more stress and take more time to use than the expensive sturdier versions. Invest in a good restraint box. The returns from easier movement into the box and better quality meat will quickly pay off!

THIRD BEST OPTION: RESTRAINT IN ROTATIONAL BOX WITHOUT STUNNING

If your plant is not allowed to stun cattle and does not yet have an upright restraint box, this is the third best option.



Cut the animals' throat while upright and only then rotate the box. DO NOT ROTATE FIRST. Prey animals, like sheep and bovine, find it very stressful to be placed on their backs as this is a vulnerable position.



DON'T RELEASE ANIMAL FROM BOX UNTIL ALL SIGNS OF CONSCIOUSNESS HAVE DISAPPEARED

Releasing an animal right after cutting its throat causes excruciating pain and can ruin meat quality. It leads to ineffective bleeding because the wound closes after the release and the bleeding is impeded. The meat contains more blood and therefore has a lower quality. For fast and effective blood loss it is important that the cut stays open and the body fixated until the fast bleed-out phase is finished.

It can take several minutes for cattle to become fully unconscious after their throat is cut. To speed up the process, one can apply post stunning. Then the animal can be released and hoisted right away as it is unconscious.



NEVER HOIST ANIMALS ALIVE!

Old methods of restraint unfortunately still used, such as hoisting live cattle and sheep by a chain placed around their leg, are completely unacceptable and against International OIE standards.

TRIP-FLOOR RESTRAINT BOX

If your plant still has a trip-floor restraint box you should **replace it as soon as possible** with an upright restraint box. Trip-floor boxes are unacceptable as they require live hoisting which causes serious suffering and injury. They are illegal in the EU and forbidden by the OIE (World Organization for Animal Health) of which Turkey is a member.

Until your new restraint box has arrived, you should take certain immediate measures with your trip-floor box to reduce suffering and carcass degradation.



NEVER LEAVE ANIMAL WAITING IN RESTRAINT BOX

Keep time in the restraint box always to a minimum.



NEVER TILT FLOOR WHEN SLAUGHTER MAN IS NOT READY

Leaving animals in this uncomfortable position releases stress hormones which decreases meat quality.



DANGER: LEG TRAPPED UNDER TILT FLOOR



When floor of trip-floor restraint box is tilted before the animal is fully inside the box, the risk is high that the animals' leg gets trapped underneath the floor, crushing it. Do NOT tilt the floor until the animal is in the box with all 4 legs!





NEVER HOIST ANIMALS COMPLETELY OFF THE FLOOR

The animal hangs with all its weight by one leg, causing enormous pain and ruining meat quality.



IMMEDIATE IMPROVEMENT: LEAVE PART OF BODY ON THE FLOOR



Leave the head, shoulders and part of the body of the animal on the ground.



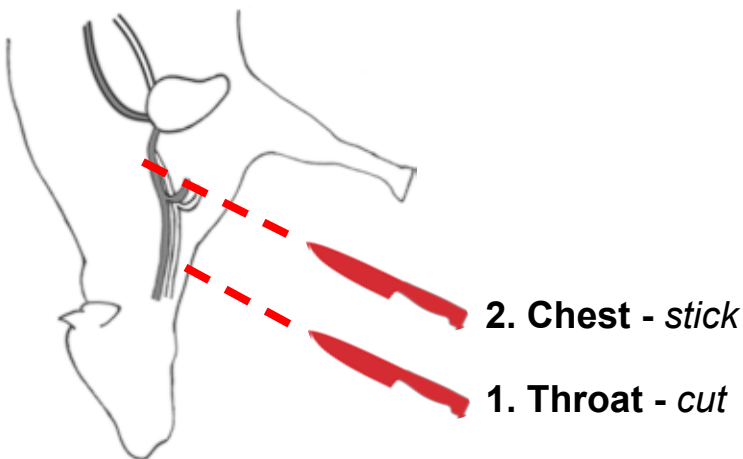
6. CUTTING

CUTTING WITHOUT PRE-STUNNING

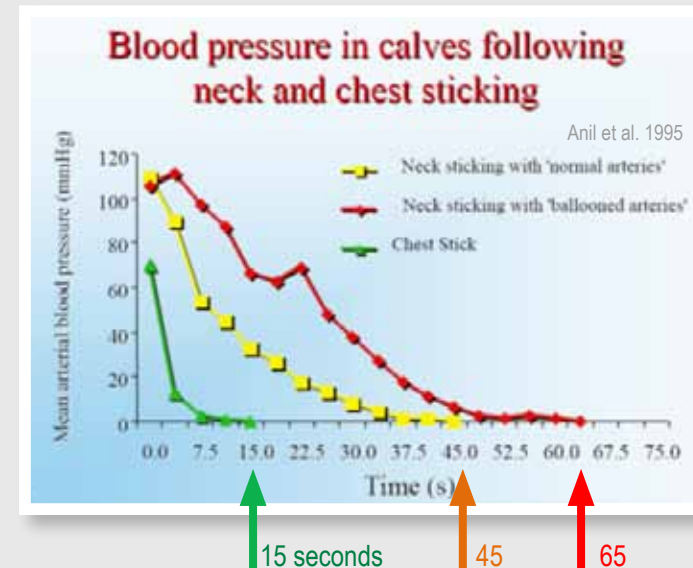
If cattle are being slaughtered without being stunned first, it is important to guarantee a fast loss of blood so that the animal loses consciousness quickly. The longer the animal remains conscious, the longer the animal suffers.

Cattle have an intervertebral artery as well as carotid arteries. This means that even after the carotid arteries are cut during ritual non-stunning slaughter, oxygen is still supplied to the brain of the bovine via the intervertebral artery and the bovine remains sentient for a longer time.

It is therefore recommended to make a stick also into the chest cavity to release a high volume of blood in a short time and stop the flow of blood to the brain. The chest stick should be done as fast as possible after the throat cut. In the diagram below you can see the intervertebral artery and where the chest-stick should be made.



INCREASE LOSS OF BLOOD QUICKLY TO SPEED UP TIME TO UNCONSCIOUSNESS



This graph shows how performing a quick and correct chest-stick can significantly speed up time to reach unconsciousness (from 65-45 seconds down to 15 seconds).

THE KNIFE:

The knife should be twice as long as the width of the neck of the animals. The knife must be extremely sharp and without any nicks. Sharpen and clean it regular in between animals. Replace knives that develop nicks.



7. THE ECONOMICAL CONSEQUENCES OF POOR ANIMAL-WELFARE

Hitting, rushing and causing fright and pain to animals before slaughter causes carcass downgrading. This costs the meat industry significant economic losses every year. It is important that the handling and design of the facility is such that you limit stress and injury, in order to better guarantee good meat quality.

REDUCED CARCASS VALUE: TRIMMING

Bruising and fractures in animals damage the meat in that area of injury. After slaughter, the damaged meat needs to be trimmed off of the carcass and thrown away leading to reduced carcass size. Every slice of carcass that cannot be used is a loss of revenue.

Damaged meat from bruising and fractures are caused by:

1. Fighting animals and cattle mounting each other



2. Inappropriate construction of lairage, unloading ramp and live-hoisting causing injury



3. Rough handling (hitting, prodding, live-hoisting, pulling sheep by their wool)




REDUCED CARCASS VALUE: SHRINKAGE

The carcass can also physically shrink in size due to poor welfare before slaughter. Carcass shrinkage is caused by the following:

1. Long periods of food and water deprivation during transport and waiting in lairage of slaughterhouse



 Water should always be made available in the lairage and during longer journeys to slaughter or during short journeys in hot weather. Food should be available if the animals wait longer than 8 hours.

Shrinkage loss due to different handling conditions

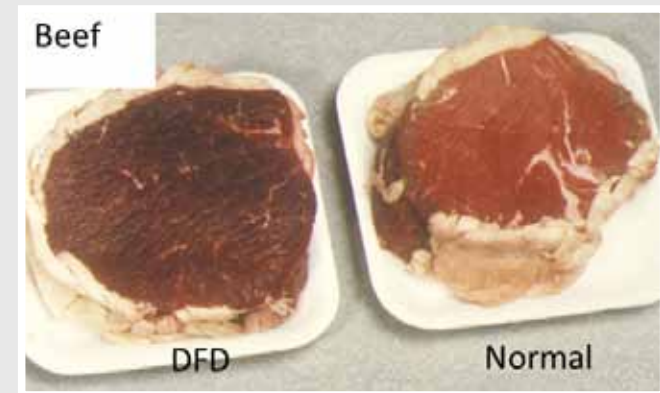
Conditions	Percent Shrink
8-hour dry lot stand	3,3%
16-hour dry lot stand	6,2%
24-hour dry lot stand	6,6%
8 hours in moving truck	5,5%
16 hours in moving truck	7,9%
24 hours in moving truck	8,9%

Source: Alabama Beef Cattle Pocket Guide

2. Water withdrawal can also slow down the de-hiding process, which means loss of efficiency

REDUCED CARCASS VALUE: DARK, FIRM and DRY meat (DFD)

DFD can affect all species. It is caused by a reduced level of glycogen at time of death and ultimately a high pH level in the carcass. DFD meat has an unattractive colour and poor flavour when cooked. Additionally, it has a shorter shelf-life because it spoils faster.



DFD is caused by chronic stress:

1. Long periods without food or water
2. Mounting and bullying while waiting in the slaughterhouse lairage or transport vehicle
3. Fighting between unfamiliar animals
4. Transport fatigue (vibrations, noise, stocking density)
5. Low environmental temperatures

Scientific literature also suggests that there is a toughening of the meat of ruminants also after acute stress (for example, electric prodding 15 minutes before slaughter).

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ABATTOIR ENGINEERS
www.vcons.be

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*Eyes on Animals would like to thank **Sinan Ogun** (Sustainable Livestock Production Specialist) and **Dr. Ellen Eser** (Humane Slaughter Specialist) for assisting with the creation of this brochure.*

Would you like individual advice about your plant? Order an audit of your plant or a training course for your personnel. During an audit the equipment in your slaughterhouse will be checked and feedback will be given on what can be altered in order to reduce animal stress and improve meat quality. A training course for your personnel will help them understand farm animal behaviour and correct methods of animal-handling, as well as how to perform slaughter properly.

Contact info@eyesonanimals.com to inquire further. We will be glad to facilitate an audit and training for your plant.