

## ASPECTS REGARDING ORGANIC CATTLE BEEF TRANSPORTATION AND SLAUGHTERING

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### Abstract

*Many factors should be considered when selecting the mode of transport. Cost is always important, but must be measured against the quality of, and potential losses incurred in, transport. Quality assurance during transportation also plays a critical role in the health and welfare of beef cattle, as proper handling and transport of cattle can reduce sickness in calves, prevent bruises, and improve the quality of the meat from these animals. Provide transportation that avoids undue stress as appropriate to each species. Transportation, as a whole, is a stress factor that generates nervousness and anxiety. Any animal reacts with alarm before a new situation such as transportation and this is aggravated when the loading and unloading conditions are not the most favourable. We must always prevent the animal from suffering unnecessarily. Once some of the animals from the fattening lot have reached a considerable size and in line with market demand for this type of meat, slaughtering beings. They are slaughtered according to consumer or trade demand. Animal slaughtering consists of two phases: stunning and bleeding.*

Keywords: organic, cattle beef, transportation, slaughtering

### 1. INTRODUCTION

Transportation is another phase of organic meat production which has an important impact on the final quality of the product. Loading and unloading are the critical points of animal transportation.

The staff responsible for this phase must pay special attention to the type of floor of the ramps, to prevent the animals from slipping, to the inclination of the getting in and getting off ramps, which must not be excessive, to the efficient placing of lateral railings to prevent the animals from falling and, in particularly, no animal should board the truck tied up or dragged in, so as to minimized suffering to the maximum.

The loading and unloading of animals should be performed in a relaxed manner, paying attention to the surroundings and with due care to prevent the animals from suffering injuries, wounds or fractures [1].

It is convenient that the animals' path be clear so that they can see where they are stepping and where they are going. Straw can also be placed on the ramp to imitate their environment.

The use of electric devices to force the animals to get in and out of the truck is prohibited [5].

The following aspects of this regulation are highlighted [1]:

- Registration of all vehicles and authorization for vehicles carrying out long journeys (more than eight hours) will be necessary.
- Drivers of these vehicles must undergo appropriate compulsory training.
- A journey log must be drawn up detailing the exact breakdown of responsibilities and obligations of all the staff involved, from transporters to intermediaries, cattle farmers, vets, etc.
- All transport vehicles must be fitted with equipment of the highest quality. When the journey lasts for more than eight hours, the vehicles must be equipped with: good bedding for the animals' comfort and to allow for adequate absorption of urine and faeces; provision of sufficient forage and water; mechanical ventilation; separation between the animals; temperature adjustment; warning system fitted in the driver's cabin.
- A series of measures are established for loading and unloading the animals and the use of any type of abusive device, such as the electric prod, is strictly prohibited.
- Long transportation journeys of young animals with their umbilical cord still in the

process of healing, or less than two weeks old, is prohibited.

- A system of higher sanctions is established for those breaching the measures established in this legislation.



Figure 1. Transportation system

## 2. MATERIAL AND METHODS

The environmental factors during transportation are very important and can lead to the creation of stress situations:

- *Temperature.* Temperature control is a factor worth mentioning. On long journeys, particularly during periods of hot weather, animals should be transported at night or early in the morning. Abrupt temperature increases have serious consequences, such as putting the animal's life at risk (caused by 'heat strokes') and predisposing it to low quality meat.

Animals are warm-blooded, so we need to keep their constant body temperature and become hypothermic when their temperature decreases (Table 1).

Table 1. Normal body temperature in domestic animals

Species	Body temperature
Adult cattle	38,7
Young cattle	38,6-39,3
Pigs	39,2
Sheep	39,4

If body temperature increases by 5 degrees, the animals become hyperthermic this can be fatal in some cases.

- *Humidity.* Always linked to temperature. With low temperatures, excessive humidity increases heat loss.

- *Ventilation.* Ventilation problems are accentuated when the truck comes to a halt and an automatic ventilation system is not equipped. Ventilation provides oxygen to the animals, eliminates gases produced by them and helps balance excessive temperatures.

- *Load density.* The higher the load density, the lower the animal comfort, because it restricts their typical behavior (Table 2).

Introducing animals into a truck obviously generates stress for them and, although this stress cannot be avoided, it can be reduced as much as possible.

Table 2. Surface required during transport by truck

Category	Weight approximately (kg)	The surface m <sup>2</sup> /animal
Medium sized calves	50	0,30 – 0,40
Large calves	110	0,40 – 0,70
Very large calves	200	0,70 – 0,95
Medium sized cattle	325	0,95 – 1,30
Large cattle	550	1,30 – 1,60
Very large cattle	>700	>1,60

These figures may vary, depending not only on the weight and size animals, but their physical condition, weather conditions and of the journey.

To minimized stress when entering the truck, a series of guidelines should be followed:

- Make sure the getting in ramp is not slippery, straw or earth can be used to cover the ramp to prevent the animal from falling (Table 3).

Table 3. Ramps inclinations

Species	Inclinations
Pigs, cattle and horses	20% ie 36.4% compared to the horizontal plane
Adult sheep and cattle	26% ie 50% compared to the horizontal plane

- The noise produced when stepping on the metallic ramp is very alarming and frightens the animals, enough straw bedding or wooden slats can be used to cover the ramp so that less noise is produced.
  - The straw on the ramp is familiar to them and some animals begin to smell it and end up boarding the truck automatically.
  - It is convenient that they see light inside the truck, darkness discourages them.
  - Do not use prods or, in principle, sticks, so as not to make them nervous from the start.
  - Speak to the animals in a relaxed manner; shouting will only make them nervous.
- The use of chemical synthesis tranquilizers for animal transportation is prohibited, both prior to and during the journey.

### 3. RESULTS AND DISCUSSIONS

#### 3.1. Animal transportation

Animal transportation can be carried out for different reasons, either due to transfers between farms or even within the same one, or to the slaughterhouse [6]:

a) When animal transportation is carried out to another independent farm or to another area within the same farm, upon arrival, it is advisable to give each animal a general check up, keep them isolated from other animals (quarantine) and give them water and forage or high quality hay to help them adapt to their new environment, thus preventing the onset of diseases (Table 4).

**Table 4. Water required on species**

Species	Water necessary (l/day)
Adult cattle	40
Diary cows	100-180
Adult pigs	25
Adult sheep	20

b) In the case of transportation to the slaughterhouse, stress-creating situations must be reduced. DFD meats (dark, firm and dry), less valued on the market, are the direct result of intense stress before sacrificing. The work of many months can be wasted in a few hours. Therefore, the cattle farmer must ensure that

this function is carried out by responsible and qualified staff.

In addition, other consequences may be generated, such as:

- Weight loss, which will depend on category, age, sex, but essentially on the length of the journey (Table 5). With short journeys, less than four hours, weight loss will be due to perspiration, urine or faeces. If, upon arrival on the farm, the animals are given water, part of the weight loss will be replaced. With long journeys, more than four hours, carcass weight loss is already produced, leading to financial losses [2].

**Table 5. Weight loss (%) to different categories of cattle transported by train**

Cattle category	Transport time (in hours)			
	Up to 24 h.	Up to 48 h.	Up to 72 h.	Up to 96 h.
Calves 1-2 months	8	8-10	10-12	10-12
Semi fattened cattle	4-6	8-6	8-10	10-12
Fattened cattle	3-5	4-6	5-7	6-8

- Diseases such as Transport Tetany, which affects cows in the last stages of gestation or very young calves. They normally respond to the administration of calcium, but the carcass will be confiscated in the slaughterhouse.

- Fractures, strains, dislocations.

The transportation of animals, either to other farms or to the slaughter house, should be carried out by qualified staff who can guarantee proper animal care, without putting the animals' lives at risk and avoiding any unnecessary suffering.

The cattle farmer must ensure that this is done properly, to make sure that the time that he has spent rearing the animal can result in:

- Good quality meat, if the animal's destination is the slaughterhouse.
- A strong and healthy animal, if his destination is rearing or rearing on another farm.

#### 3.2. Slaughtering beef cattle

Once some of the animals from the fattening lot have reached a considerable size and in line

with market demand for this type of meat, slaughtering beings. They are slaughtered according to consumer or trade demand [3].

Animal slaughtering consists of two phases: stunning and bleeding.

All animals must be stunned before slaughtering. Stunning is any process which, when applied on the animal, provokes an immediate state of unconsciousness which lasts until the animal is slaughtered and dies.

The time that elapses between stunning and bleeding is important to obtaining a quality product. An excessive amount of time between when the stunning is actually produced to the time of slaughter, particularly if the stunning has not been totally successful, generates the onset of small hemorrhages in the carcass that make it unappetizing, reducing its quality.

For the slaughter of organic animals and their sale as such, the slaughterhouse must be authorized by each autonomous community's supervisory body or authority.

The ideal conditions would encompass slaughterhouses that only slaughter organic animals but, because the market is not very wide, specific days are scheduled for slaughtering this type of cattle.

Slaughterhouses should keep a logbook of slaughtered organic animals, containing the following information:

- Date of entry into the slaughterhouse.
- Cattle identification document (crotal).
- Operator number and animal owner's data.
- Slaughter date.
- Organic registration number.
- Organic quality seal number of every carcass.
- Destination of the carcass.

Organic production animals should be the first to be slaughtered in order to avoid possible contamination problems. Should they be last, cleaning and disinfection should be carried out throughout the chain before proceeding to the slaughter [4].

The carcasses should be identified with the organic quality seal and accompanied by the corresponding documentation containing the following data: owner, recipient, weight, cattle

identification document (crotal), organic quality seal and organic registration number.

#### 4. CONCLUSIONS

Meat is a very complex product which, as we have seen, is influenced by many factors that modify its quality and therefore can be considered as crucial control points.

These crucial control points should be analyzed given that they can result in a loss of meat quality and the possibility of confiscations at the slaughter house, generating financial losses. Among these factors, the following are worth highlighting:

- Environmental: Temperature, bedding, humidity, noise and animal sanitation as a whole, have a direct impact on animal comfort. Any animal disease can cause production problems and slaughterhouse confiscations.

- Transport and pre-slaughter: The load, length of the journey, transport conditions, unloading and waiting time prior to slaughter, increase animal stress, providing low quality meat which, on occasions, can be confiscated.

- Subject to the animal itself, such as the individual factor involving genetics, breed, sex and age.

- Animal development and growth until reaching their slaughtering weight are different for each type of breed. 'Early maturing breeds' tend to be of a small size and their development is faster. The so-called 'late maturing breeds' have a slower development and tend to be of a larger size. When comparing both these types of breeds, the following conclusions can be reached:

- Slaughtered animals of same age: Early maturing breeds will weigh less at slaughter time but will have more fat.

- Slaughtered animals of same weight: Early maturing breeds will be older than those maturing later but will have more fat.

- There are differences between the meat of males and females. Females tend to have streaky fat, which provides special meat juiciness, and they also tend to be tendered.

- Animal slaughtering: Handling, stunning, bleeding, preparing the carcass, hygiene. As

already mentioned, this is a key element to the quality of the carcasses. On occasions, the carcasses reach the cutting plant contaminated with bacteria and faecal content due to negligent manipulation.

- Production factors: Ration quantity, characteristics, quality and raw materials. This is a very important point to the quality of the carcass. These factors intervene directly and provide a different flavor to the meat.

All these factors intervene directly in the quality of the carcass and its subsequent economic viability.

Many of them can be tackled directly but, with others, it is up to the cattle farmer to ensure that his animals are adequately managed.

## 5. REFERENCES

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