



Assessment of good practices

Animal handling, stunning and killing

Dr. Antoni Dalmau

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AGROALIMENTÀRIES





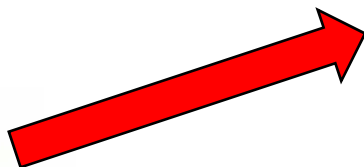
Handling

- It depends of the system used for killing...
- However, general rules:
 - It is important to have a plan... Which method and why? Try to minimising handling and movement of animals... Young animals and infected animals first...
 - Who will do what...
 - Breaks to rest an to re-evaluate the situation must be done...
 - People with experience or trained people...
 - Calm, calm and calm...

Stun & Killing

- Reversible or irreversible

Causes death on the animals or not?



Death



Up to 3 weeks

Death



Later NO



Mechanical systems

- Free bullet (handguns, rifles and shotguns)
- Penetrating captive bolt
- Percussive blow to the head
- Cervical dislocation
- Decapitation
- Maceration



Free bullet

- Animals don't need to be restrained (limited availability of competent personnel)

BIOSECURITY ?

What to monitor?

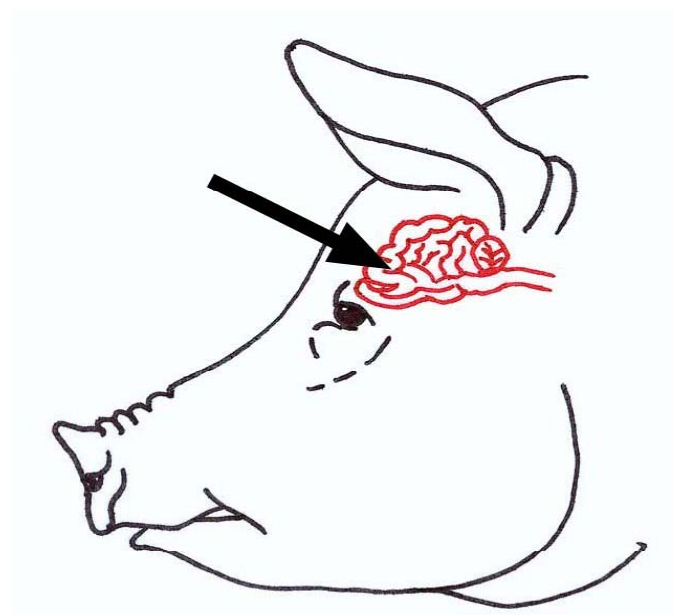
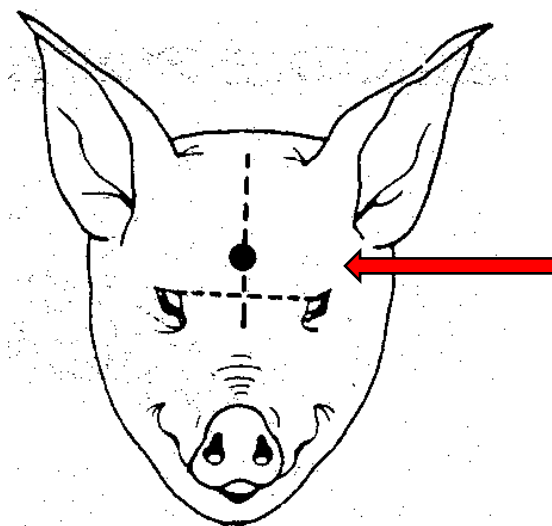
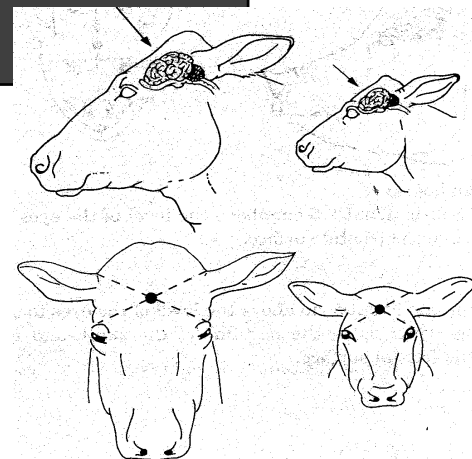
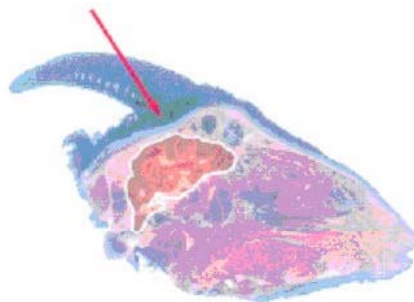
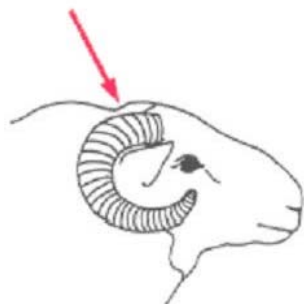
- At what distance we are shooting?
 - Handguns (ideally, less than 10 cm)
 - Shotguns at a distance between 5 and 50 cm (no contact with the head of the animal)
 - Rifles (few meters)
 - Rifles with telescopic devices several meters

Free bullet

- We are shooting in the correct point?
 - Different points in different animals
 - Missed bullets may cause injury, pain and distress...
 - Shot animals should be checked to ensure the absence of brain stem reflexes



Avoid flight reaction. Must be use outdoors and on soft ground





- [REDACTED]
- Death must be confirmed in each animal
 - Animal collapses immediately after the shot and stops breathing.
 - Carcass can be “tonic” or relaxed.
 - Eyes have a fixed and glazed expression.
 - No corneal reflex. No response to painful stimulus.
 - Convulsions may occur after a lapse of up to 1 min.
 - Pigs go very fast (< 5 sec) into severe clonic convulsions with uncoordinated kicking and padding movements of the legs.

Penetrating captive bolt

- Some restraining of the animals is needed

What to monitor?

The zone is the adequate?

The angle and distance to the head is adequate?

Appropriate velocity, diameter and shape of bolt...



BIOSECURITY ?



Avoid over-heating by using more than 1 gun



- Death must be confirmed in each animal





- Death must be confirmed in each animal



Percussive blow to the head + (non penetrative captive bolt)

- Not applicable to large animals
- Only poultry, rabbits, hares, lambs, piglets
(up to 5 kg body weight) to induce death

BIOSECURITY ?



- Strength of the cartridge
- Presence of fractures on the head
(then, a back-up system is needed)



Avoid over-heating by using more than 1 gun



Other mechanical methods

- Cervical dislocation
 - Owing to the animal welfare concerns, the procedure should not be used. But if it is decided for practical uses, should be limited to small batches of poultry < 3.0 kg
- Decapitation **BIOSECURITY ?**
 - There are no welfare advantages (brain response 30 sec after decapitation).
- Maceration
 - Only for chicks up to 72h old and embryonated eggs.
 - The equipment must not be overloaded...



Electrical systems



BIOSECURITY ?





What to monitor?

$$\text{Intensity (A)} = \frac{\text{Voltage (V)}}{\text{Impedance } (\Omega)}$$

→ It depends of the animal

Animal	Minimum voltage (V)	Minimum current (A)
Cattle	220	1.5
Sheep	220	1.0
Lamb/kid	220	1.0
Pigs > 6 weeks	220	1.3
Pigs < 6 weeks	125	0.5

The current must be applied at least 10 sec on the head and 45 sec on the heart in order to ensure death



Single application of sufficient electrical current to the head and back (above or behind the heart), (30-60 Hz, minimum 250 v, minimum 3 sec)

Water bath (shackled poultry)

Double application (first head, then heart)

What to monitor?

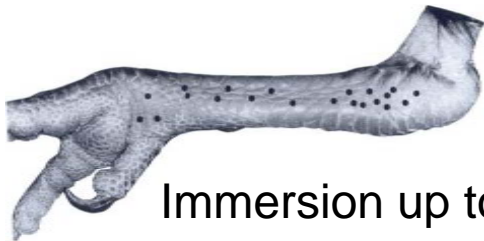
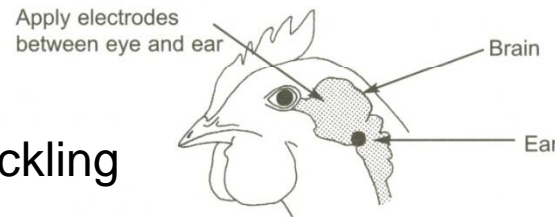
- Correct situation and order of the electrodes (first head, then chest)
- Electrodes must be clean and in good state
- Water or saline to improve electrical contact with sheep
- Prevention of electrical shocks before stunning



- Immediate collapse
- Immediate onset of tonic seizure (tetanus) followed by clonic seizure (un-coordinated kicking or paddling leg movements).
Minimised when the heart is stopped.
- Head-only electrical stunning of poultry leads to clonic-tonic convulsions.
- Absence of breathing
- Upward rotation of eyes (except for poultry)
- Dilated pupils
- Absence of response to nose prick with a needle
- Complete relaxation of carcass without a pulse



Minimising pain at shackling



Immersion up to the base of the wings



Unconsciousness and cardiac arrest can be achieved by supplying a 50 Hz sine wave AC to the waterbath. The required minimum current is 250 mA per turkey, 160 mA per chicken, 100 mA per quails and 200 ma per ducks applied for 10 seconds.





Gas systems

BIOSECURITY ?

- Carbon dioxide
- Other gas mixtures
- Carbon monoxide (for animals, poultry and piglets)

Loss of consciousness occurs without pain and minimal discomfort and death is rapid (4% of CO; but it is hazardous for operators). Monitor the temperature of the gas.

- Hydrogen cyanide

It is not acceptable for euthanasia of any animal





What to monitor?

- If animals must be moved to a chamber containing gas mixtures, ensure that sufficient time is provided between batches.
- All animals must be subjected at least 10 minutes to the maximum concentration of the gas (90% CO₂ or any mixture with less than 2% of Oxygen).
- Gas concentration must be continuously monitored.
- Measures are needed to avoid animals climbing on top of each other while entering the chamber.
- Prevent freezing (sometimes by means of vaporisation)



Air or gas filled foam

What to monitor?

BIOSECURITY ?

- Density of the foam → A dense foam blocks the airways resulting in death by suffocation (not acceptable).
- Large bubble sizes allow animals to remain breathing the air that is trapped in the foam.
- With a 100% nitrogen animals die very quickly, but 0% oxygen must be ensured (as more movement, more difficult).
- With 100% carbon dioxide is easier (strong foam with a large bubble size)... Poultry show convulsions and the foam can be broken, but O₂ doesn't substitute CO₂ because the last is heavier.



Lethal injection

BIOSECURITY ?

- Barbiturates
 - In cattle, sheep, pigs and horses intravenously (so restrained)
- T-61
 - Paravenous injection or too fast intravenous injection causes pain
- Chloral hydrate (not recommended in conscious animals)
- Ketamine (with Xylazine and in large volumes)
- Magnesium sulphate (only in unconscious animals)
- Potassium chloride (only in unconscious animals).



Fishes

- Percussive stunning
 - Fishes from 200 g to 5 kg (small number of animals)
- Overdose of anaesthetic (Benzocaine, Metomidate, MS222)
 - Oxygen or air should be administered to the water to prevent fish dying from hypoxia
 - Fish should lose motor function and consciousness in 2 to 4 min.
 - Death is confirmed by absence of breathing or vestibulo-ocular reflex.
- Carbon dioxide narcosis (take longer than before, 4-6 min in salmonids and longer in other fishes).



Trained personnel

- Knowledge – awareness or familiarity gained by experience
- Abilities – the capacity to do something
- Skills – the ability to do something well
- Behaviour – the way in which ones acts or conducts oneself
- Improve – to make or become better
- Procedure – actions taken to achieve a particular outcome
- Sustainable – ability to maintain a certain rate or level

A scenic landscape photograph showing a village nestled at the foot of a forested hill. In the foreground, there is a large, green field with some brown patches, possibly a sports field or agricultural land. Behind the field, a cluster of buildings is visible, including a prominent red brick building with a white roof section. A parking lot with several cars is situated in front of the buildings. The background is dominated by a dense forest of trees, with some bare trees visible, suggesting a cooler season. The sky is overcast.

Thank you for your attention

Antoni.Dalmau@irta.es