Animal Welfare- Changes in livestock behaviour in different housing systems

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- **Animal welfare** is the viewpoint that animals, especially those under human care, should not suffer unnecessarily, including where the animals are used for food, work, companionship or research.
- This position usually focuses on the morality of human action (or inaction), as opposed to making deeper political or philosophical claims about the status of animals, as is the case for an animal rights viewpoint.
- For this reason animal welfare organizations may use the word *humane* in their title or position statements.

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The term "welfare" refers to the state of an individual in relation to its environment, and this can be measured.

Difficulty in coping are indicators of poor welfare.

Suffering and poor welfare often occur together, but welfare can be poor without suffering and welfare should not be defined solely in terms of subjective experiences.

The indicators of poor welfare include the following:

reduced life expectancy,
impaired growth,
adrenal activity,
impaired reproduction,
body damage,
immunosuppression, diseases,
behavior anomalies (stereotypies),
self-narcotization.

The welfare of an animal includes its physical and mental state and we consider that good animal welfare implies both fitness and a sense of well-being.’

The Five Freedoms of Animal Welfare (Farm Animal Welfare Council)

1. Freedom from hunger and thirst: by ready access to fresh water and a diet to maintain full health and vigour.
2. Freedom from discomfort: by providing an appropriate environment including shelter and a comfortable resting area .

3. Freedom from pain, injury and disease: by prevention or rapid diagnosis and treatment.
4. Freedom to express normal behaviour: by providing sufficient space, proper facilities and company of the animal's own kind .
5. Freedom from fear and distress: by ensuring conditions and treatment which avoid mental suffering.

www.fawc.org.uk

The analysis of animal welfare level

- **The characteristic of the main parameters of animal welfare**
- **Physiological (pulse or respiratory rate)**
- **Behavioural (normal and abnormal behaviour, stereotypies)**

The analysis of animal welfare level

- **Health (morbidity, mortality)**
- **Production**
- **Supplemental (kind of materials used in construction of buildings)**

The Analysis of animal welfare index

- **Estimation of housing system .**
- **Characterisation of social relations.**
- **Classification of floor quality.**
- **Estimation of basic parameters of microclimate.**
- **Estimation of health condition, production and outlook of animals.**

The methods of animal welfare cotrol

Objective criteria:

- **Clinical and laboratory diagnostic.**
- **Statistical analysis.**
- **Ethological analysis.**

Subjective criteria:

- **Personal feelings of environment and housing system conditions.**
- **Observation of animal behaviour.**

Understanding of natural behaviour in animals

- Ethology is a scientific study of acts of behaviour in single individuals or specific social groups (from Greek *Ethos* - habit, character, *logos* - word, thought).
- Determining and the examination of regularities in the sphere of complex forms of organism reactions to environmental stimuli are, among others, in ethology's capacity.

- The observed acts of animal behaviour are caused either by unconditional reflexes

(swallowing, copulation, nest building, hatching eggs, defecation)

or by conditional reflexes acquired during beyond - foetus life, as a result of experience training or learning

(looking for food, coming back from pasture at the fixed time, posting oneself in stock rooms or in the line to be milked).

The behaviour forms in animals

Depends on:

Their species,

Sex,

Age,

Temperament.

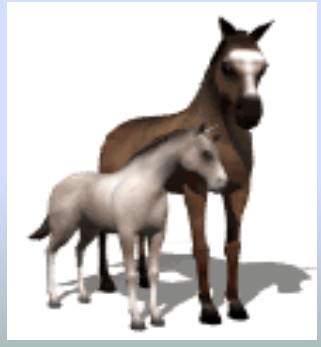
Hafez (1969) distinguished 9 basic animal behaviour forms

- Ingestive behaviour - characteristic of specific animal species (kind of food,getting food).

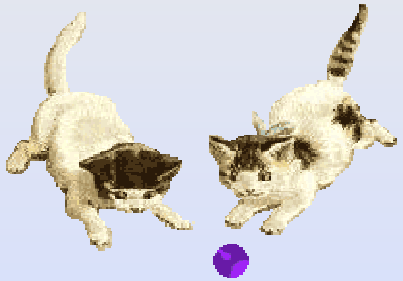
- Eliminate behaviour - concerns e.g. frequency and the amount of urine and faeces excreted by an animal.

- Sexual behaviour - is observed in all species and is manifested in different ways.

- Care - giving behaviour - defined also as the so - called maternal behaviour or maternal instinct.



- Care soliciting behaviour allows to introduce the hierarchy and concerns species of animals which live in herds.

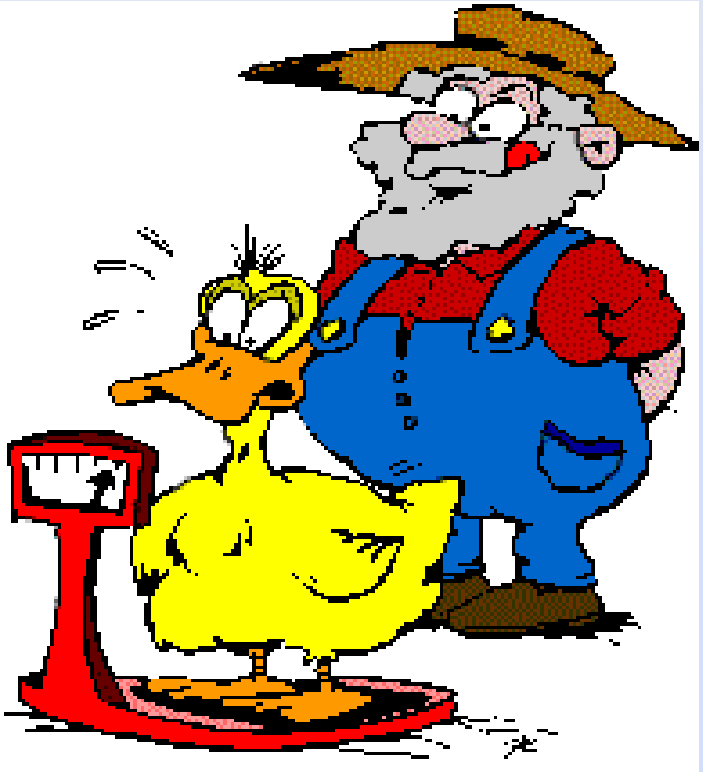


- Agonistic behaviour is often evaluated as the behaviour resulting from hierarchical attitudes.

9 basic animal behaviour forms, Hafez (1969)

- Allomimetic behaviour involves handing down the behaviour from adult animals to their young.
- Shelter - seeking behaviour - active defence against the enemy attack or escape in the case of a situation when protection ability of an individual is too low.
- Investigatory behaviour its characteristic feature is approaching unknown objects, careful behaviour at new places, distrustfulness towards new situations.

What we should to know about animals?



General Characteristics Related to Establishment of Dominance among Animals

❖Males are usually dominant to females and both are dominant to juveniles

Older animals are usually dominant over younger until age impairs physical capability

Larry Katz

General Characteristics Related to Establishment of Dominance among Animals

❖Larger animals are generally dominant; however, if the animals learns to be subordinate to a larger individual this position may continue even though relative size is reversed due to growth

Larry Katz

General Characteristics Related to Establishment of Dominance among Animals

❖Animals with specific display features, such as horns, are dominant

 An animal in familiar surroundings or among familiar animals tends to be dominant over new arrivals

Larry Katz

General Characteristics Related to Establishment of Dominance among Animals

- Certain strains/breeds of animals may tend to dominate others

- ❖Injection of androgens may increase the status of an animal, especially castrated males

- ➢Animals with a history of winning tend to be dominant

Larry Katz

Hearing in cattle

- Cattle are more sensitive to high frequency noises than humans
- Loud noises may distress cattle
- Pigs are the most sensitive on environmental stress (microclimate, transport, noiseS).

The housing production systems of animals do not allow

- Readily accessible food and water to maintain health and vigour,
- Freedom of movement to stand, stretch and lie down,
- Light during the daylight hours,
- Visual and social contact with other animals,

The housing production systems of animals do not allow

- Accommodation which provides protection from the weather and which neither harms nor causes distress,
- Ability to natural behaviour exhibition,
- Rapid identification and treatment of vice injury and disease.

Social Organization

- Current production practices often group animals into large herds or flocks that are uniform, consisting of similar sized animals in same-sex groups.
  - This reduces sexual activity and allows animals to be more competitive in attaining food.
  - However, groupings of large size may increase aggressive interactions because it is more difficult for the animals to establish a stable dominance hierarchy.

Social Organization

- Farm animal species tend to be social, forming herds, flocks or bands.
  - When space is available the animals will often form sub-groupings, each having an established social order.
  - High population density results in frequent space violation of animals, and dominant-subordinate interactions help to lend stability to the group.
    - For this to occur, animals must recognize individuals and recall social position.

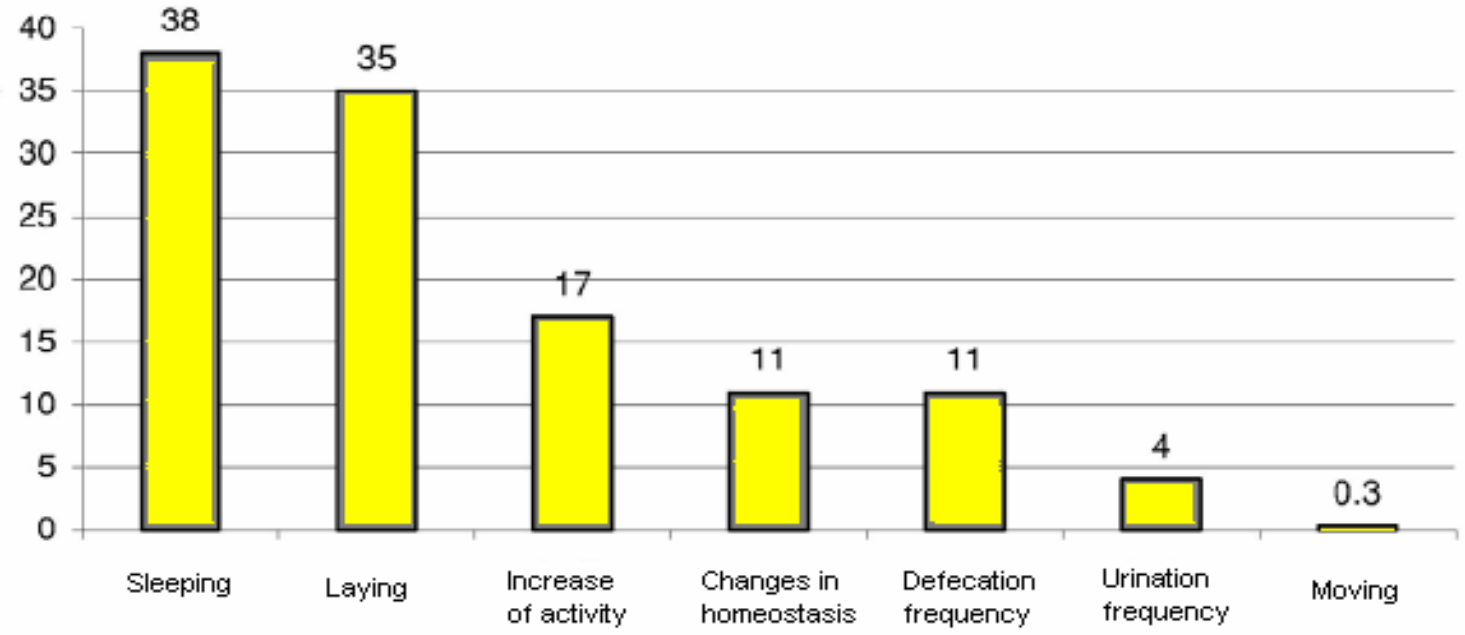
Social Organization

- Social dominance can produce management problems, especially in high-density systems in which a few dominant individuals may control the feed, water and available space.
- Mixing of unfamiliar animals always results in the reestablishment of the dominance order with the associated agonistic interactions.
  - Frequent agonism will result in negative effects on performance.

Changes in livestock behaviour during transport

- Stop moving forward, freze, back off, run away,
- Vocalize.
- Lie down.
- Fighting.

Changes in calves behaviour after the transportation



Van der Water i wsp. 2003

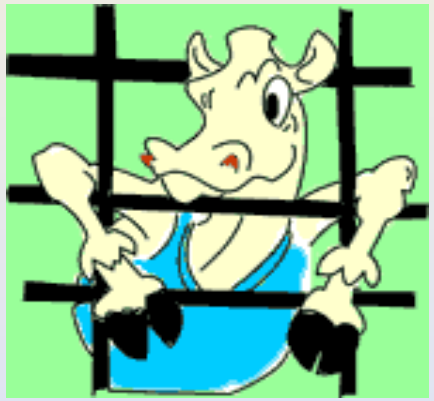
Behavioural forms in calves observed after feeding by Bokkers and Koene (2001)

Table 1
Ethogram used for time budget measurements and behaviour after feeding (based on de Wilt (1985))[a]

Behaviour	Description	Category
Standing	Standing without doing anything else	Standing
Lying	Lying without doing anything else	Lying
Manipulating object	Biting, sucking, licking at objects in its surrounding	Oral behaviour
Manipulating calf	Biting, sucking, licking at other calves excluding preputium	Oral behaviour
Manipulating preputium	Biting, sucking, licking at preputium of other calves or of its own	Oral behaviour
Sham chewing/ruminating	Irregular, repetitive biting without having food in the mouth	Oral behaviour
Tongue playing	Rolling movements with tongue which is inside or outside the mouth	Oral behaviour
Self licking	Movements with tongue over body surface	Self-grooming behaviour
Scratching	Scratching itself by its leg	Self-grooming behaviour
Rubbing	Moving body against walls or partitions	Self-grooming behaviour
Other	All other behaviours	Rest

[a] Behavioural elements are grouped in five categories.

Human as the creator of breeding environment should respect of animal welfare



Response to separation

Separation of bonded individuals → reinstatement behavior = locomotion, vocal signaling, depression

= altered feeding and sleep patterns, suspension of play, elevated corticosteroid levels, changes in heart rate and body temperature

Mother-offspring bonds in farm animals

Most farm animals have precocial young that are mobile soon after birth $\rightarrow$ mothers are solely responsible for offspring care

Dairy cows: calves are removed within 24 h

Dairy mothers respond less to separation than beef mothers

Litter size affects bond: larger litters is less bonding

Natural conditions:

Weaning occurs gradually at variable ages

Pigs: at 2 to 4 months = suckling frequently gradually declines until offspring no longer seek to suckle

May be accelerated by aggression directed by the mother, walking away when young attempt to suckle, ignoring begging calls

Cattle = 0.5 to 1 year

Under farm conditions: humans choose time of separation

Sudden, early weaning prior to ‘natural’ time =

- abrupt separation from mother
- abrupt change in diet
- deprivation of suckling behavior

Continued motivation of suckling:

Piglets = belly nosing, ear and tail chewing

Little investigation on effect on mothers

Normal Pig Behavior

- Understand normal behavior (pigs not in pain)
  - Interest in surroundings
  - Willingness to move around
  - Exploring, rooting, & chewing behaviors
  - Tail wagging
  - Reaction to handling
  - Vocalization when presented with feed and willingness to eat

Swine Training Module, Released 2002

Signs of Pain and Distress in Pigs

- Lethargy, restlessness
- Lack of appetite
- Increased vocalization, especially when palpating a painful area (pigs may vocalize at other times, when not in pain)
- Increased aggression
- Guarded posture
- Self mutilation
- Intense rubbing or scratching of skin
- Increased or shallow breathing
- Abnormal appearance or behavior

FILM !!!!

Painful Experiences

- Lameness, swollen joints, broken bones, or hoof pad damage
- Bitten tail, ear, or vulva or prolapsed rectum
- Physical injuries
- Infectious diseases
- Rough handling
- Certain research procedures
- Standard Agricultural Practices (tail docking, castration, teeth clipping, tattooing, or ear notching)

Swine Training Module, Released 2002

The negative consequences of low animal welfare in breedeing systems of livestock

- Technopathies.
- Abnormal behaviour (stereotypies).

Chosen technopathies and their main causes in intensive production systems.

- Limbs and wings injuries

- Litterless floors, restriction or lack of hoofs,

- Damages, wounds, impressions, abscesses of body surface, udders and teats.

-Bitings, tethers, high density, hen–coops with no ergonomy.

Chosen technopathies and their main causes in intensive production systems

- Disturbances in reproduction.

-Lack of movement, light, thermal stress, feeding errors.

- Vagina, uterus and anus falling out.

-Tethering breeding systems, high stand inclination,

- Fattening, multiple difficult parturitions,

Chosen technopathies and their main causes in intensive production systems

- Difficult/ or prolongated parturitions, Retained placenta, Metritis.

- Lack of movement during pregnancy,

- Multiple pregnances, numerous, high lactation,

- Insufficient sanitary care.

Chosen technopathies and their main causes in intensive production systems.

- Metabolic disturbances:
- Investigation of feed, acidosis and alcalosis, fat cow syndrome, ketosis.

-Wrong feeding, too high exploatation.

Chosen technopathies and their main causes in intensive production systems

- Mastitis.

- Numerous lactations, wrong milking,

- Lameness

-Metabolic disfunctions (acidosis),

- Litterless floors, restriction, lack of hoofs correction.

Chosen technopathies and their main causes in intensive production systems

- Deficiency diseases: Hypocalcemia, hypomagnesemia

-Feeding errors, intensive exploatation.

- Stereotypies.

-Wrong breeding environment, low welfare level, stress.

The influence of housing production system on changes in behaviour of animals.

Behavior Classification

- 1- Docile – Gentle; handles quietly; slightly elevated respiration
- 2- Restless- More Active; elevated respirations but settles after joining group
- 3- Nervous- Constant movement bumps fences and gates occasionally
- 4- Flighty- Agitated by handlers; bumps fence and gates; watches handlers

- 5- Aggressive – willing to challenge handlers; attempts to jump fence
- 6- Very Aggressive – jumps and bellows; aggressive to handlers; frantically exits chute and still aggressive

The different reactions of livestock on intensive breeding systems

- **Sensations and emotions**
- **Pain**
- **Fear and anxiety**
- **Stress**
- **Frustration**
- **Stereotypies**
- **Pleasure and play**

Sensations and emotions

Pleasant and unpleasant feelings are part of
the experience of an individual as it attempts to cope
with its environment.
The sensations and emotions that animals and
humans feel include pleasure, pain, heat, cold,
hunger, thirst, fear, anger, liking and disliking.

Sensations and emotions

- An animal that hardly reacts may be feeling much more pain and fear than is obvious from its behaviour.
- On the other hand, the fact that an animal responds to what scientists called ‘stimuli’ (such as injury or threat) does not necessary mean that it has a subjective experience of pain or fear.
- But in spite of these difficulties of assessment, in the case of farm animals there is abundant evidence that they experience pain, discomfort, fear and other emotions.

Pain

- The pain is usually defined as both a sensation and an emotion - “an unpleasant sensory and emotional experience”.
- The pain sensation is transmitted by a part of the nervous system referred to as the ‘nociceptive system’.

Do animals feel pain in the same way that humans do?

- As far as vertebrates are concerned, most features of the physiology and anatomy involved in reception, transmission and central processing of information from 'painful' stimuli are found in all of them.
- This applies also to birds and fish. Birds have nervous systems of similar complexity to mammals and fish have pain receptors and 'similar physiological responses to painful stimulation to those shown by man.'

That conditions that humans find painful will also be painful to animals!!!!!

How we know farm animals feel pain?

- When male piglets are castrated (without anaesthetic) the shrillness of their squeals and their behaviour, compared to piglets that are not castrated, suggests they are experiencing‘considerable pain’ .
- When lambs are tail-docked or castrated without anaesthetic, there is a marked increase in the level of cortisol (a stress hormone) in their blood – an increase of 60% after tail-docking and an increase of 97% after castration.
- Changes in cortisol concentration are considered to be ‘an index of acute distress’ .

How we know farm animals feel pain?

- Bulls that are lame because of damaged hooves avoid mounting cows. Mounting would involve them taking all their weight on their painful back feet .
- Lame meat chickens that have difficulty walking choose to eat feed that is laced with carprofen (a pain-killing drug) .
- Lame chickens choose food laced with a painkiller. Lame chickens given carprofen can walk almost twice as fast as before the treatment .

How we know farm animals feel pain?

- Dairy calves that de-horned without any pain relief behave abnormally for at least 6 hours after the operation;
- they lie down,
- stop grazing and ruminating
- shake their tails more.

Fear and anxiety

- Farm animals feel the emotions of fear and anxiety, which can cause stress and suffering.
- This is response that animals need for survival, to avoid and escape from dangerous situations.
- The degree of fear that an animal experiences can be difficult to know with certainty.

Fear and anxiety

- Fear-inducing factors have been categorised as: unfamiliar objects or animals or unexpected events;

  innate fear, such as fear of isolation;

  learned fears, such as the expectation of attack or pain;

  and signs of fear in others.
- Fear, as well as pain, can lead to damaging stress

How we know farm animals feel fear and anxiety?

- Young piglets separated from their mother give distinctive and frequent squeals to call her, sometimes try to jump out of their pen and in some cases appear to ‘give up on life’.
- The heart rate of sheep increases by 20 beats per minute when they are unable to see the rest of their flock and increases by 84 bp/m when a man with a dog approaches.

How we know farm animals feel fear and anxiety?

- Pigs, calves and cows try to keep away from humans after they have experience of stockmen who hit, kick, prod, shock or threaten them .
- Pigs can be severely stressed by anxiety and fear caused by being put with unfamiliar pigs and by human handling.
- They can collapse and even die as a result.

Stress

- Stress is associated with unpleasant sensations and emotions, such as pain, distress, fear, frustration, hunger or thirst, excessive heat or cold.
- Animal welfare scientists define stress as “an environmental effect on an individual which over-taxes its control systems and reduces its fitness”.
- Continous or frequent stress can cause illness.
- (Pleasant events can also cause some of the same physiological effects as stress but, since these are not damaging, we will not consider them here as ‘stress’.)

Stress

- From the physiological point of view, stress can be seen as an animal's response to a hazard in order to mobilise the body's reserves for action (so-called 'fight or flight' response).
- This involves increased heart rate and blood pressure, and activation of the adrenal gland.
- Rapid, short-term response is made by the sympathetic nervous system to release catecholamines (adrenaline (epinephrine) and noradrenaline (norepinephrine)) from the adrenal medulla.

Stress

- These hormones increase blood pressure and heart-rate.
- Longer-term response involves secretion of steroid hormones, such as cortisol and corticosteron by the adrenal cortex.
- This secretion in turn is stimulated by the adrenocorticotrophic hormone (ACTH) released by the pituitary gland.
- The hormones increase the amount of glucose in the animal's blood and its metabolic rate.
- This type of response is caused, for example, by fear.

Stress

- If the stress response is prolonged or frequent there can be serious effects on the animal's health.
- reduces fertility and increases death-rates.
- reduction in white blood cells (necessary for immune response),
- Immunesupression and infections increase.
- stomach ulceration, and heart disease.

Stress

Sheep transported long-distance to slaughter can collapse from:

- heat stress stressor brain pituitary gland
- adrenal cortex
- adrenal medulla
- glucose in blood metabolism

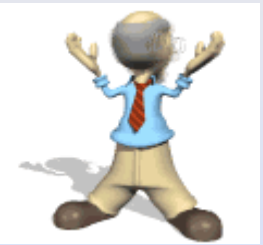
The results of these groups of stressors is stress reaction which is be observed

- changes in behaviour (balking, reversal, abundant defecation and urination, increase of aggression),
- increase of physiological stress and physical activity (increase muscle glycogen, pH, plasma cortisol, heart rate, rectal temperature),
- increased morbidity and mortality,

Frustration

- Farm animals feel emotionally frustrated when they are prevented from carrying out natural behaviour or feeding.

How we know animals feel frustration?



according to researchers at the Agricultural University of Norway:

their frustration by rolling their tongues,

shaking their heads and opening their eyes

abnormally wide

How we know animals feel frustration?

- Hens have a particular ‘frustration’ call (the gakel call) when they have problem in getting to food, water, a dustbath or a nestbox.
- When hens were trained to expect food in a particular situation and then the food was withheld, the hens with the highest expectations showed most frustration .

How we know animals feel frustration?

- The breeding birds used to produce meat chicks are kept on a very restricted diet as they grow up and only spend a few minutes a day eating their ration.
- They show frustration by hyperactivity, aggression, stereotyped pacing before feeding times, and pecking at non-food objects.

How we know animals feel frustration?

- Boars were deliberately sexually frustrated, after they had been trained to mount an artificial sow.
- A sow confined to a farrowing crate feels frustrated by being unable to build a nest .
- Female pigs confined in farrowing crates (for giving birth to their piglets) have higher levels of stress hormones compared to sows that have enough space for nestbuilding activity .

Stereotypies

- When frustration and the accompanying stress become long-term, animals that are kept in confinement often start to carry out repetitive, apparently purposeless actions known as stereotyped behaviours (‘stereotypies’).
- They seem to be a response to frustration when the animal is prevented from moving freely, from interacting with other animals, from foraging for food or eating, and from exploring.
- Some scientists believe stereotypies may be a coping mechanism to enable the animal to survive boredom or frustration.

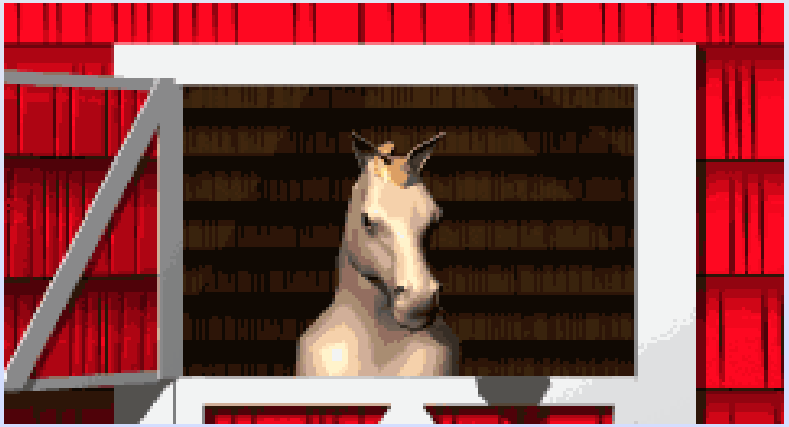
Stereotypies

- These animals may be in a similar state to a human being suffering from a prolonged anxiety attack or psychological disorder.
- The authors suggest that abnormal animal behaviour (stereotypies) form as if an element of animal dependence on endorphins, opioides, produced by organism during such behaviour cases.

Stereotypies

- Kinds of stereotypies also depend on the animal species and age.

Horses



Weaving (vertical,horizontal)

Stereotypies in horses

- In horses most frequent stereotypy is wind suckling- a habit not entirely explained and involving biting the edge of the crib or some other object and swallowing the air.
- Other not typical behaviour is crib-biting, weaving rhythmical oscillatory head movements, and also bolting- that is the lack of reactions to signals ordering stopping.
- Another abnormality are sexual deviations(masturbation or homosexualism).

Swine

- In piglets are observed a few different forms of cannibalism: animals bite off their tails, ear tops or even genitals.
- Among sows kept in one coop intense aggression can be observed which eventually causes the appearance of stress reaction symptoms.

Swine-oral stereotypies

- In sows in most cases oral stereotypies are observed:

tongue rolling,

wall licking,

vacuum suckling,

bar biting, floor licking,

vacuum chewing (in 80% of cases).

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Cattle-stereotypies

- Calves taken from their mothers too early lick one another`s auricles, scrotums or foreskin (bulls),walking round and also the so-called simulated life.
- In adult cows a frequently observed stereotypies is mutual suckling of teats
- Bulls have the tendency towards deviations connected with sexual behaviour (homosexualism, masturbations).

Poultry’s stereotypies

- Untypical behaviour observed in poultry was most clearly described in hens which peck feathers to one another starting with a tail and then from the whole body.
- Another example is pecking wattles and comb (caruncle in turkeys), and also eating their own eggs. This is the sign of one of the cannibalism forms and is usually the proof for certain shortages in fodder`s composition.

Pleasure and play

- Farm animals feel pleasure when playing or carrying out natural behaviour.
- If farm animals suffer from negative emotions, they must also enjoy positive emotions from the pleasure of eating, interacting with others in the social group, and expression of natural behaviour such as foraging and exercising.

Pleasure and play

- Farm animals need in their adults lives are partly learned by play activities as young animals - these include moving or manipulating objects, chasing, fighting without causing injury, advancing and retreating and acrobatics. Foals devote 75% of their activity to play.
- Even isolated calves find inanimate objects (or a human or other animal) to head-butt in play.
- The play of calves (and sometimes of adult cattle) includes prancing, kicking, pawing, snorting, running, and mounting others.

Pleasure and play

- It may start with two calves and a whole group will then join in.
- After one month of age, lambs start to spend a lot of time with other lambs, and their play includes leaps, ‘dances’, and group chasing, involving at least 3 lambs.
- From 2 weeks on, play is an important part of piglets’ activity, often in the form of play fights at first, and later involving mostly chasing, gambolling and exploration of the environment.

Examples: Pleasure and play

Examples: Pleasure and play

- Young pigs who are given roomy pens with peat flooring and straw are more active and playful, including frisking, scampering and rolling in the litter material, compared to pigs kept in barren pens.
- Young meat chickens (broilers) become more active if they are given straw bales that they can investigate and climb on .
- Dairy calves enjoy being able to solve a problem. They showed excited behaviour and their heart rates increased when they succeeded in learning how to open a gate to get to food .
- Lambs can be seen chasing and gambolling together in the fields in spring animals.

Examples: Pleasure and play

- Animals play more when they have enriched environments, better weather, better food, when they meet other young animals and when they are let out of confinement.
- Play has some special characteristics, common to sentient animals. It respects rules;
- the animal must want to play;
- play is started by some signal meaning “this is play”;
- it avoids injuring play partners;
- the “playing mood” is transmitted to other animals;
- the activity seems to be pleasurable to those taking part;
- play actions are exaggerated, repetitive and there is a rapid change of roles (e.g. chaser and chased); the “playing” emotion does not include real anger or fear.

Examples: Pleasure and play

- None of these characteristics corresponds to serious activities such as self-defence, flight, searching for food or predation.
- The fact that animals clearly enjoy playing is a hallmark of their complex mental life, and involves the ability to understand another's mood, to cooperate and to 'pretend'. Scientists believe that play 'develops cognitive skills necessary for behavioural adaptability, flexibility, inventiveness, or versatility'.
- Play may also enable animals to 'develop flexible… emotional responses to unexpected events…and to cope emotionally with unexpectedly stressful situations'.
- It has been suggested that play involves an emotional state known as "having fun" and that 'the ability to experience the complex feeling of "having fun" may require a richly developed cognitive system'.

Legislation of Animal Welfare

Legislation of Animal Welfare

- The Universal Declaration of Animal Rights was solemnly proclaimed on October 15, 1978, at UNESCO House in Paris.

  The declaration constitutes a philosophical stance on the relationship that must now be established between the human species and other species.

Preamble: Considering that Life is one, all living beings having a common origin and having diversified in the course of the evolution of the species, - Considering that all living beings possess natural rights, and that any animal with a nervous system has specific rights,

- European Conventions
- EU Directives
- Commission Directives
- Legislation in particular countries…

Thank You Very Much For Your Attention