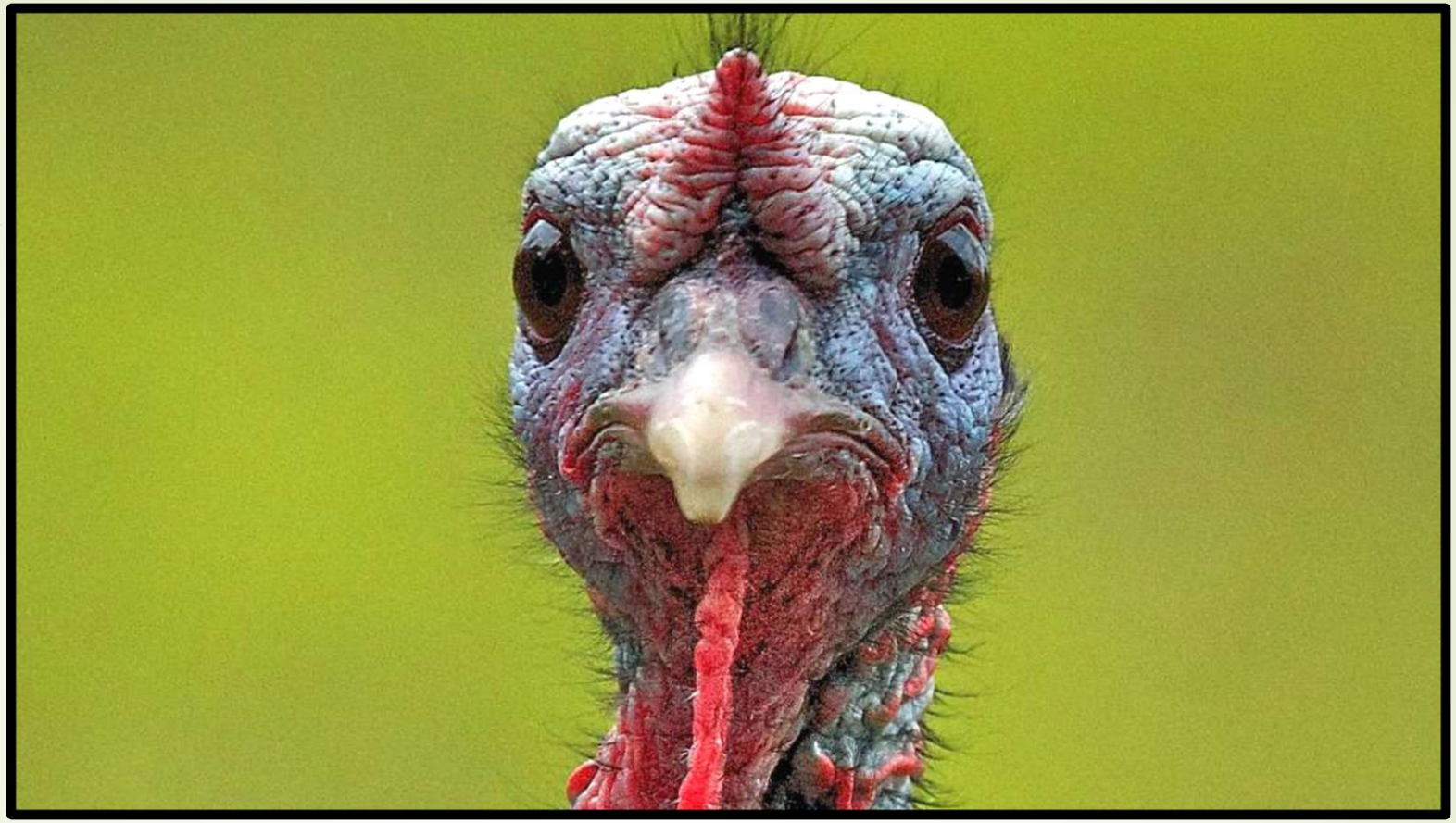


Welfare and turkey breeding

- Turkeys are the second largest domesticated birds after ostriches. They are mainly bred for meat, which has many positive qualities. Currently, turkeys are mostly raised commercially in large-scale farms. The eggs are hatched artificially and the young turkeys are fattened in halls on litter, similar to broiler chickens. Some breeders allow the turkeys to stay in outdoor enclosures, which has a positive effect on the quality of the meat. The fattening of males and females tends to be separate, as males are fattened for 2-3 months longer, reach twice the slaughter weight and have a better feed conversion than females. In addition to meat, turkeys also provide eggs, which can be used in the same way as chicken eggs. Eggs are significantly larger than those of hens, but the clutch is lower and reaches a maximum of 80 pieces per year. In small farms, turkeys are usually kept like chickens, in free-range chicken houses. Unlike hens, turkeys don't stay inside that much, they often spend the night in trees in the garden and lay eggs outside the stable. Because of their size, they suffer less from animal attacks than other types of poultry. Turkeys are referred to as grazing poultry, but they dig less than chickens, and in the garden, turkeys are also useful by collecting insects and snails. In the Czech Republic, mainly heavy types of white broad-breasted turkeys are used for fattening. Turkeys reach a slaughter weight of 18-20 kg in 20-22 weeks with a slaughter yield of 81%. Turkeys are fattened for a slightly shorter time, roughly 14-15 weeks to a weight of 8-9 kg.

Turkey breeding

- **Origin**: from a wild turkey from Central America They came to Europe after the discovery of America (1492)
- **The most common breeds** - white broad-breasted, less represented bronze turkey
- Breeding of 2 types - medium (turkey 6 - 9 kg, turkey 15-18 kg) - large (turkey 9-12 kg, turkey 15 kg and more)
- Bred in the USA from Standard Bronze turkeys
- High growth intensity of turkeys during the fattening period
- The highest slaughter yield of all livestock species. High nutritional value of meat.

Types of bred hybrids

- **Hybrid Heavy Medium** –for fattening to lower weights
- **BUT BIG – 9** – for medium fattening type
- **BUT BIG – 6** – for fattening up to high live weights

- **Hybrid Large White** – for fattening large type of turkeys, excellent reproductive abilities

Crossbreeding

- Paternal lines :
  - Health condition
  - High growth intensity
  - Live weight at 12 weeks of age
  - Breast meatiness
  - Strength of limbs
  - Semen quality
- Maternal line :
  - Health condition
  - Reproductive characteristics (number of eggs laid, egg weight, number of turkeys hatched,
  - viability of young
  - Live weight of turkeys

Breeding specifics

- **Humidity** 65-70%, min. 50% and max. 75%, always assess with temperature
  Ventilation - air flow 0.2-0.3 m/s, differences according to age categories
- Be careful with turkeys young (the high speed of the air flow has an adverse, stressful effect on them and can be the cause of cannibalism)
- **Air flow** speed in the animal zone - max. 1 m.s-1 at RH 65 - 75%
- **Lighting** in the fattening – the first days high demands on the intensity and length of lighting

First 36 hours – continuous lighting (100 lx) with 1 hour of darkness (after 24 hours of light)

in fattening - 14 hours of light (20 lx) - due to pecking

Breeding specifics

Rotation breeding - between individual rotations (min. 2 weeks break):

- Disinsection
- Litter removal
- Wash the hall
- Washing and disinfection of the feeding system
- Pest control
- Washing and disinfection of external surfaces
- Hygienic provision of entry to the building

Min. 24 hours before storage - the hall is heated to the required temperature.

Suitable litter - shavings from soft wood, with straw ensure dryness and no mold.

Breeding specifics

Feeding technology:

- Tube feeders
- Trough-type feeders

Water supply technology:

- Automatic hat drinkers - 1 drinker per 100 pcs
- Hand-filled small-capacity drinking fountains

Checking the water level (2-4 cm below the edge) - otherwise the turkeys drink poorly and take in little feed

The feeders must be evenly spread over the area of the hall and the height of the edge of the feeder must be adjusted weekly to the height of the backs of the growing turkeys.

Breeding specifics

Prevention against feather pecking and later cannibalism - cauterization of the upper beak - is carried out until the 6th-7th day of life (the 10th day is the limit).

Due to the high risk of cannibalism, turkeys already have their beaks shortened in the hatchery, at the latest by the age of 10 days according to EU regulations. The danger of cannibalism is too great, even at the youngest age.

Hens breeding

- During the laying season – windowless halls with deep bedding
- Perforated floors only above the drains at the water supply
- Light regime in laying - from the 29th week, the light day is extended from 6 hours to 14.5 - 17 hours, weekly by 15 - 30 minutes
- Lighting intensity 30 – 40 lx
- Animal concentration – 2 turkeys/m2 and 1 turkey/m2 on litter
- Space requirements: 8 – 15 cm/pc for the feeder and 2.5 cm/pc for the drinker
- Feed mixtures ad libitum
- Laying nest for 4 hens

Microclimate parameters

- **Optimum temperature**: 15 ^{0}C (5 – 25 ^{0}C)
- **Relative humidity**: 60-70%
- Ventilation, air exchange: in summer – 5 – 7 m^3/h/kg of live weight, in winter – 1 – 2 m^3/h/kg of live weight.

The turkey is the most sensitive type of poultry to the microclimate in particular at an early age!

Breeding of young turkeys (poults)

- Demanding on ambient temperature!
- From birth to 6 weeks of age, the temperature is 36 - 38^{0}C followed by a gradual decrease to 18 - 20^{0}C
- Space requirements for 1 m2:

Up to the 2nd week 20 pcs, up to the 8th week 12 pcs, over the 12th week 30 kg of live weight/m^2

In one circle of heating lamp (3.5 – 4.5 m) –

300 – 350 poults

Feeding area 3 – 10 cm depending on age

Water supply space 1.6 - 2 cm depending

on age

Light mode:

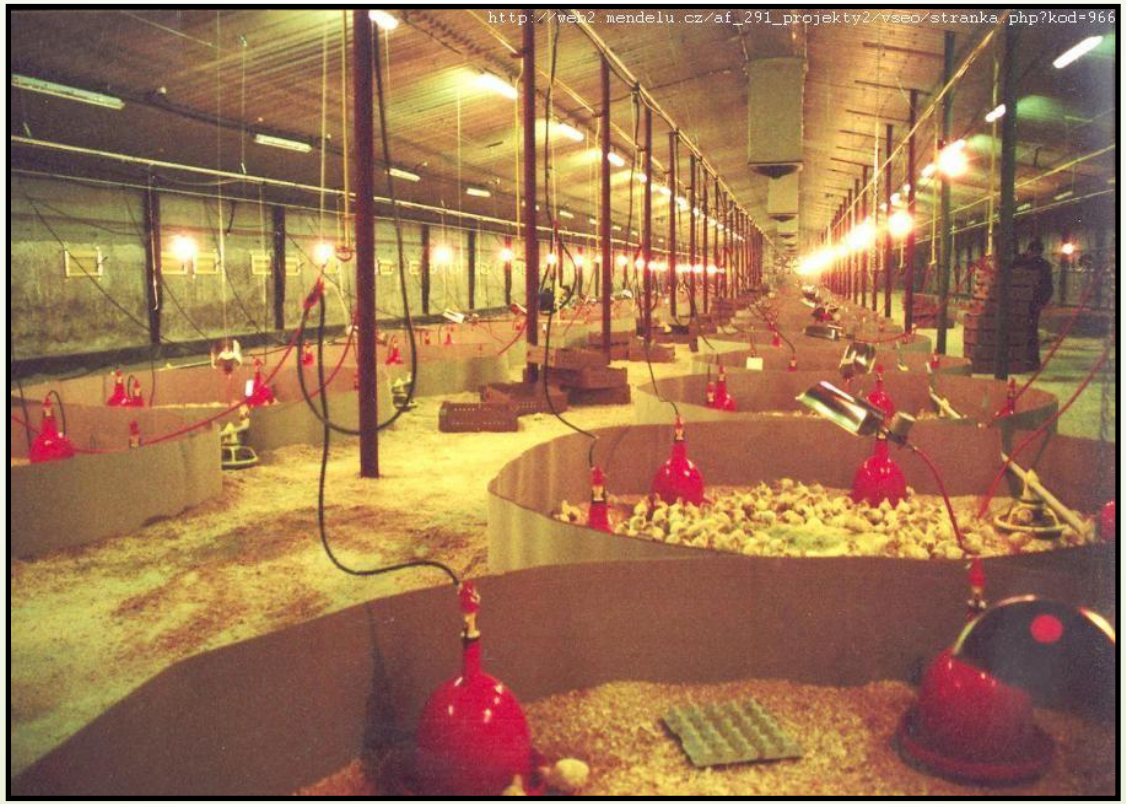
first week 23.5 hours of light

Weeks 2-20 are shortened to 12 hours

Hens 21 . – 27th week shortened to 6 hours

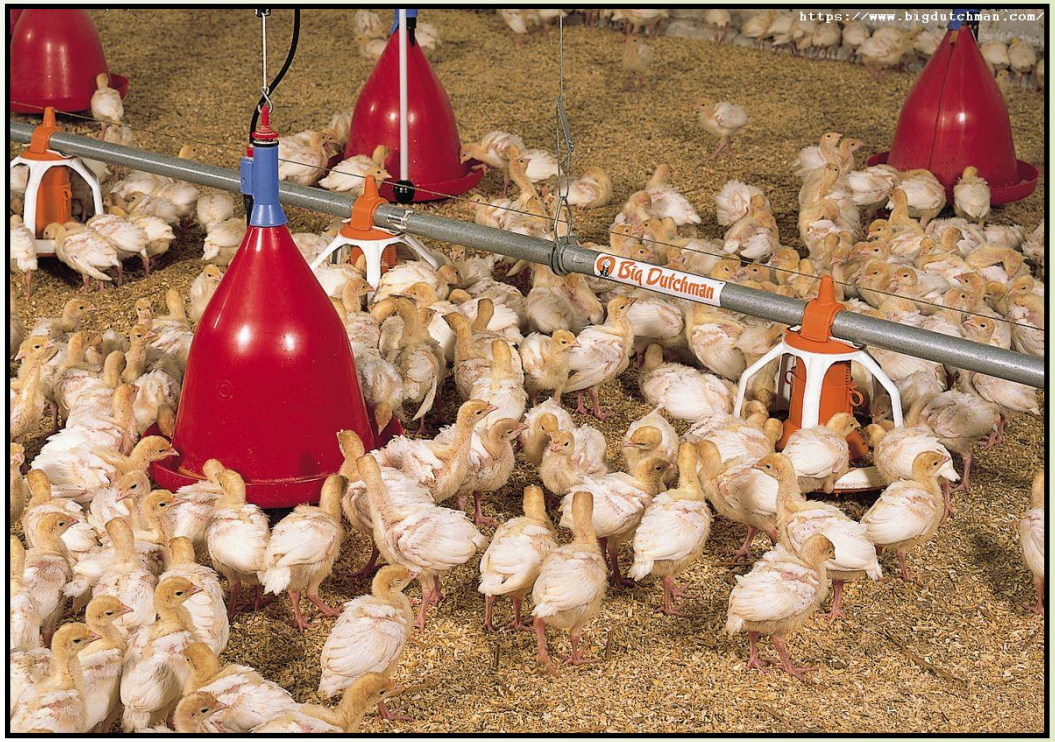
Gobblers from the 6th week 10 hours

- **Assessment of the optimal temperature** - control of the behavior and distribution of birds in thermal zones under the electric heating lamp.
- Poults learn to accept feed and water more difficult than chickens. It is not enough just to maintain the correct concentration of nutrients and energy in the mixture, it is also necessary to take care of its sufficient intake.



Hens fattening

- Bedding technology
- Similar procedures to raising poults with differences in nutrition and lighting
- **Light mode** – the first 2-3 days light day 23 h (min. 50 lx) and 1 h of darkness, then intermittent lighting with 16 h of light and 40 lx until the 2nd week of age, regulation of light intensity to maintain a high feed intake, but cannibalism was avoided
- **Feeding** – specialized according to the type of hybrid, granulated
- **Intensive** (halls) and **extensive** (halls + grazing) **fattening**
- Finishing fattening around 20-22 weeks of age, at a weight of 7-20 kg



Space requirements:

Within 6 weeks: 10-12 pcs/m^2

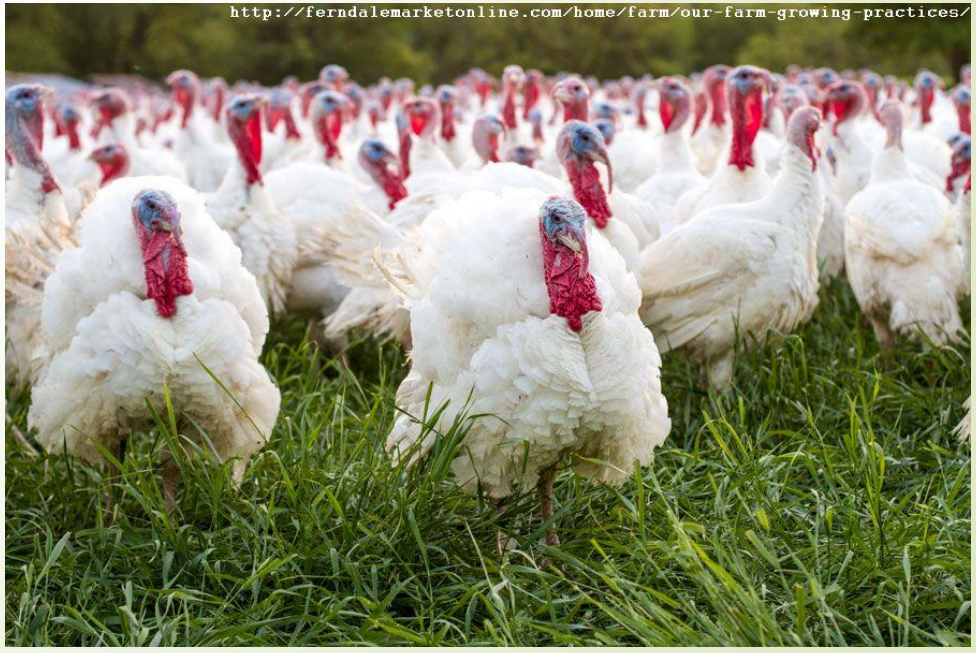
Up to 17 weeks: 5 pcs/ m^2 for turkeys

Up to 21 weeks: 1.5 pcs/m^2 for turkeys

Lighting: approx. 16 hours (10 lx) until the end of fattening

Extensive fattening of hens

- Breed used - bronze broad-breasted turkey hybrids
- Until the 6th-8th week in the halls
- Grazing - the ability of turkeys to take in a large volume of feed
- Shelter option for all turkeys
- Fattening here is finished around 20-22 weeks of age (gobblers 18-20 kg), hens - 14-15 weeks up to 9 kg.



Health - Diseases

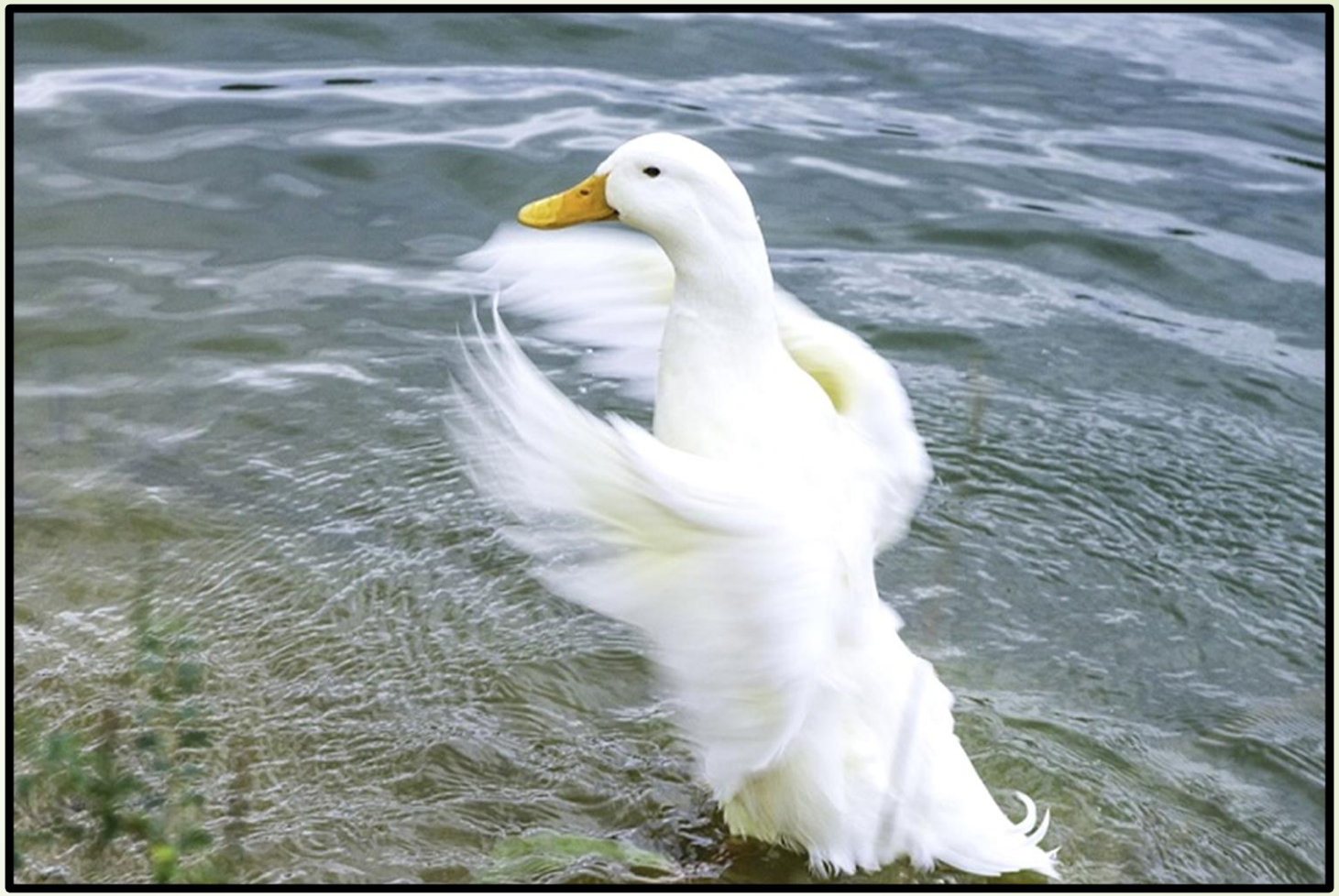
- **Arizonosis (Salmonella arizona)** - poults unthrifty and may develop eye opacity and blindness. Susceptible age 3-4 weeks
- **Blue comb disease** (Corona virus) - depression, loss of weight, frothy or watery droppings, darkening of head and skin.
- **Chronic respiratory disease** (*Mycoplasma gallisepticum*) - coughing, gurgling, sneezing, nasal exudates.
- **Erysipelas** (*Erysipelothrix rhusiopathidae*) - sudden losses, swollen snood, discoloration of parts of face, droppy.
- **Fowl cholera** (*Pasturella multocida*) - purplish head, greenish yellow droppings, sudden death.
- **Fowl pox** (*Pox virus*) - small yellow blisters on comb and wattles and scab formation.
- **Haemorrhagic enteritis, Infectious synovitis, Coccidiosis, Turkey venereal disease, New castle disease**…

Breeding problems

- In the past, problems with **natural breeding** - frequent injuries to turkeys during mating - currently artificial insemination is introduced
- **Weakness of the legs** - in heavy types of turkeys 4-13% of turkeys show symptoms of impaired gait in commercial farms
- **Sensitivity to environmental temperature** – thermoregulation develops later than in other types of poultry, sensors min. and max. temperatures in the hall

AWIN

Welfare Principles	Welfare Criteria	Welfare indicators
Good Feeding	Absence of prolonged hunger	Small size
	Absence of prolonged thirst	Small size
Good Housing	Comfort around resting	Dirtiness
	Thermal comfort	Featherless
	Ease of movement	Not available
Good Health	Absence of injuries	Head wounds Back wounds Tail wounds
	Absence of disease	Immobility Lameness Small size Sick Terminally ill Dead
	Absence of pain	Lameness
Appropriate Behaviour	Expression of social behaviour	Aggression towards mate Featherless Mating Head wounds Back wounds Tail wounds
	Expression other behaviours	Not available
	Good human-animal relationship	Not available
	Positive emotional state	Not available

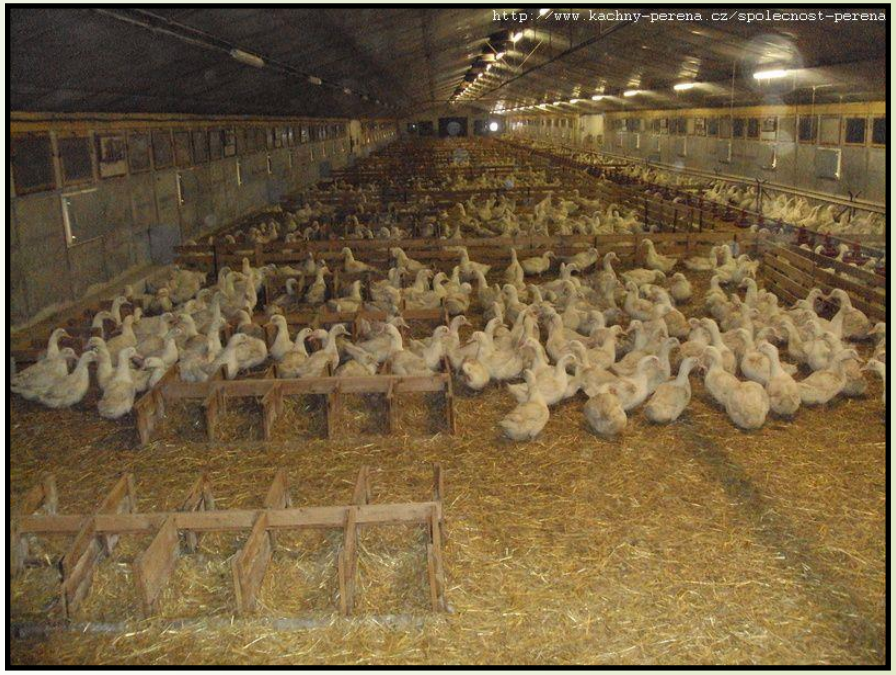


Breeding and welfare of waterfowl

Breeding ducks is quite simple, especially when choosing the right breed. It is an unpretentious water bird. Ducks are basically omnivores, so they will eat everything from grass, grain to insects or snails. For the garden, they are welcome exterminators of various insects and other pests. In our country, the most widespread are the Peking duck and the Muscovy duck. Ducks are social animals; you need to pay more attention to them at a young age. Ducks **do not tolerate windy weather**. They therefore need a leeward background with dry bedding. Mostly, these are various smaller houses or A-shaped structures. The duck house must have suitable bedding that will absorb duck droppings well. For example, straw, special litter or shavings are suitable. Sawdust is, as for most small animals, unsuitable. The duck house should also be well ventilated and closable, it is advisable to close it at night as a protection against unwelcome nocturnal predators. The enclosure should be large enough. Not only because of the possibility of movement, ducks usually turn wet ground into topsoil after the rain, if the enclosure is small, it quickly becomes one big mud puddle.

- Although the duck is in principle **omnivorous**, its basic feed is wheat bran, i.e. grain feed. It is usefull to supplement them with vitamins and minerals. A duck is a water bird, so water is essential for it, it is not just for drinking. Ducks soak all their food, so its consumption is significantly higher compared to other poultry. If there is no permanent source of running water in the enclosure, the ducks' water in the waterer needs to be changed at least twice a day. The water source should be located near the feed. There are breeds of ducks that do not directly require a water area for their life, many breeders keep ducks without water tanks, pools, but when they have access to water, they take good care of their feathers, regularly oil them, and they don't even mind rainy weather, then the rain will not penetrate the skin.

Duck breeding



- A sharp decrease in production at present.
- In the CR, exclusively for meat production .
- The most used breeds: **Peking duck and Muscovy duck**
- **Muscovy duck** - originates from the Greater Muscovy (tropical swampy areas of Central and South America) - intensively bred in the 1990s.
- For mating is used artificial insemination.
- Ducklings are hatched in 32 days.

Muscovy duck

- Some characteristics of the Peking duck and some geese.
- In the Czech Republic, it replaces the Czech goose.
- She has not lost the ability to hatch ducklings (even 3 times a year).
- She will raise the offspring herself.
- Moves nimbly in trees (long fingers and pointed claws!)
- Excellent taste properties of the meat .
- Feather quality comparable to goose.
- They receive a large proportion of green fodder, do not require a water area, grazing animal. An unfavorable characteristic is flying.

Breeding of ducks for the production of hatching eggs

- Groups of 300 – 600 individuals
- Breeding in halls with bedding and dry or water run
- Sex ratio 1:6
- Natural light mode (pre-laying exception)
- Ad libitum feeding throughout the laying period
- Space requirements: for 1 duck – 1.5 cm length of feeder and 1.5 cm waterer
- 3 pcs of ducks per 1 m^2 of hall,
- enclosure area: dry enclosure – 1-2 m^2/pc

  water enclosure - 0.5 m^2/pc

Laying nests around of the halls (1 nest/4 ducks)

Ducks are in reproduction max. 2 years

- We have a relatively high laying rate (laying period – January to August)
- Ensuring year-round laying - multiple flocks (mostly 3 breeding flocks)
- Between laying cycles, ducks change the feathers.

- <u>Breeding on bedding or slatted floors or a combination</u>
- The water enclosure is established in the fenced part of the pond or on the flow channel. At least 1 m^2 of water area is calculated per duck. The places where the ducks enter the water should have a slight slope and the banks should be paved or concrete so that the ducks do not get too muddy

Combined breeding of carps and ducks

- a semi-intensive way of rearing ducks in ponds where fish are normally kept
- Bacteriologically harmless water
- Flow ponds 1 m deep
- **Advantage of ducks:**

- hunts animals that feed on plankton
- they remove aquatic vegetation
- they hunt small sick fish
- they fertilize the pond with droppings and cause algae to multiply

- **Benefit of fish:**
  - They use duck food dropped from their beaks.

Max. 300 ducks per 1 ha of water surface

Breeding of duckling

- Before storage – halls thoroughly cleaned with wet disinfection + formaldehyde vapors (only after loading of bedding and installation of equipment)
- **Warm rearing:** 28 – 30^{0}C in the duckling zone (until the 21st day) on bedding or grids, 5 – 8 pcs/ m^2
- **Cold rearing:** light buildings with dry or water enclosure (lasts until the start of the egg laying)
- **Light regime:** until the 21st day, recommended light day 16 – 20 hours at a light intensity of 30 – 40 lx, then the transition to the natural length of the light day follows

The importance of light in ducks is shown by the fact that light is conducted via the optic nerve to the brain, where it stimulates the gonadotropic hormones of the pituitary gland. These hormones then act on the release of eggs from the ovary.

- **Relative air humidity**: 60-70%, always dry bedding!
- Granulated feed mixtures according to age, suitable for supplementing with chopped green feed

- **Space requirements**:
  - 50 mm drinkers/pc
  - 1 dropper drinker/ 6-8 ducklings
  - Min. 0.5 m^2 floor area/piece (2nd - 18th week of age) - then 0.55 m^2ve výběhu min. 0,3 m^2

Breeding of ducklings according to welfare

- Rearing the ducklings on a paved surface with a water run or bathing trough (bathing is a natural behavior) .
- The enclosure must have a shelter.
- Stocking density 2 ducks per 1 m^2 .
- Dry paddock - permeable, prevent mudslides. Grassy is best, preferably more paddocks with the possibility of rotation.
- Banks of ponds – reinforced, not muddy .
- There may not be drinking fountains in the water enclosure.

Duck fattening

- Peking and Muscovy ducks
- **Extensively** in climatically suitable periods x **intensively** in halls all year round (musky ducks only in halls).
- The degree of musculature (especially the chest part) depends on the length of fattening

Extensive fattening

- Up to the age of 14 – 21 days in so-called warm feedlots – halls with a controlled microclimate
- up to the age of 47 – 49 days in so-called cold feedlots – halls with paddocks Environmental conditions: the same as when rearing ducklings.
- Concentration of ducks in the hall on bedding: up to 4 week of age - 20 pcs/m^2 from the age of 4 weeks - 7 pcs/m^2
- Concentration of ducks in the water enclosure: 3.5 pcs/m^2 The water run must be fenced all the way to the bottom, water of satisfactory quality.

- A maximum of 500 ducks is recommended per 1 ha of water surface. In flow-through ponds with regulated flow, the capacity increases to 1,000 ducks per 1 ha.

Intensive fattening

- Halls with controlled environmental conditions.
- Similar to rearing ducklings up to 3 weeks of age, 4th – 7th week of age – 15 – 18^0C .
- The advantage over the extensive type of fattening is better feed conversion.
- The disadvantage is the poorer quality of skin and feathers, due to the absence of a water area.
- End of fattening around 47-49 days of age, weight 2.75 - 3.2 kg.

Fattening of musk ducks

- Only in halls .
- Space requirements: max. 300 pcs under the electric lamp .
- Towards the end of fattening: 5 ducks or 9 ducks/m^2 .
- Temperature requirements: in the 1st week of age 37^0C - gradual reduction down to 18 - 20^0C .
- Light mode: 1week - 23 hours of light, 2nd week - 18 hours, 3rd week and further 12 hours.
- Lighting intensity in the first days 18 – 20 lx, then a significant reduction to 6 – 7 lx
- Slaughter:
  - Hens - around 63 days of age, weight 2.4 - 2.7 kg
  - Drakes - min. 84 days of age, weight 4.5 kg

It is advisable to keep the ducklings separately according to sex, and it is also necessary to take into account the extension of fattening by 1 to 3 weeks compared to Peking ducks.

Geese breeding

- Domestic geese(Anser anser f. domesticus, Anser cygnoides f. domesticus) and their hybrids.
- considered to be the oldest domesticated type of poultry, but the influence of domestication is manifested in them to the smallest extent and they have retained many biological characteristics compared to other types of poultry.
- Their fattening is important in relation of

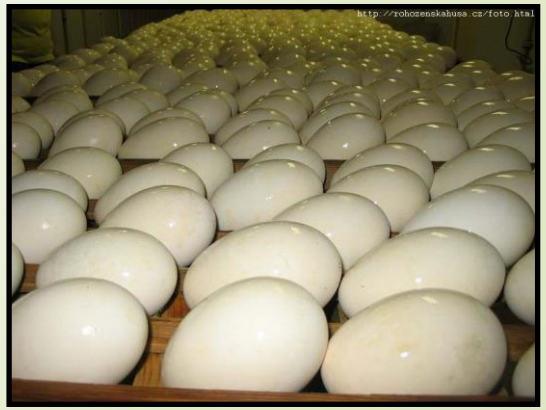
  feast of St. Martin in winter –

  peak sales of geese

The goose (both individual native breeds and commercial hybrids) is exclusively herbivorous. During traditional rearing and fattening, it is also advisable to supplement with green fodder. It thrives well on limited green pasture. In the final stage of fattening of geese, it is advisable to limit movement and feed only solid feed (feed mixture for the final stage of fattening).

Breeding of geese for the production of hatching eggs

- Groups of 400 – 600 pcs
- Halls with litter with dry or water run.
- Sex ratio 1: 3-4 .
- 3 weeks before the start of laying, it is consecrated in the morning and evening for 10-12 hours until the end of laying.
- Space requirements: feeding space 2 cm/piece and 2 cm/piece of space at the waterer
- 2 geese per 1 m^2 of hall area, minimum enclosure: 0.5 - 1 m^2/ piece of water run or 1 – 2 m^2/pc in dry run
- Grazing paddock: min. 5 m^2/ pc.
- Granulated feed with the addition of oats.
- Laying nest for 4 geese.
- Geese are in reproduction 5-6 years.



Breeding of goslings

- **Warm rearing on litter** (up to 3 weeks of age) – special electric lamps with a diameter of 3 m (250 goslings) maintain a temperature of 30 – 32^{0}C, gradual reduction to 15 – 18^{0}C
- **Cold breeding**
- Light mode: 1st - 4th day 23.5 hours of light, from the 4th day shortening to 14 – 16 hours and then a natural light day
- Granulated feed in combination with pasture
- Extensive goose breeding is carried out under a goose or artificially, without a goose.

Goose fattening

- Only marginal production, economically demanding and low biological performance of this species
- **3 types of fattening:**
  - broiler - intensive fattening in halls up to 9 weeks of age (slaughter maturity), weight 4.5 kg, EU country
  - liver fattening up to 16 weeks of age, weight 6 kg, liver weight 0.5 - 1 kg - violation of the Animal Protection Act - not carried out
  - in small farms for baking- warm and cold rearing, granulated feed ad libitum with the addition of pasture and cereals, slaughtered around 16 weeks of age, weight 5.5 - 6.2 kg

Foie gras

In the Czech Republic, according to the law, on protection of animals against cruelty, it is prohibited to overfeed or feed an animal in a violent manner, if it is an intervention necessary to save its life or preserve its health. France has an exception.

FIGURE 44. A manual screw dispenser for force-feeding (France)

FIGURE 45. Force-feeding geese with corn while they are in their pen (Hungary)

Common diseases of ducks

- **Duck Virus hepatitis** - a highly fatal contagious disease of young ducklings, sick ducklings develop spasmodic contractions of their legs and die within an hour in a typical "arched-backward" position.
- **Duck Plague (Duck Virus Enteritis)** - an acute, contagious, highly fatal disease of waterfowl caused by a herpes virus. Affected birds show sluggishness, ruffled feathers, greenish-yellow diarrhea that is sometime blood-stained.
- **Avian Cholera** - caused by the bacterium *Pasteurella multocida* is an important disease of domestic ducks, and is an especially troublesome disease of ducks in some parts of Asia. Symptoms include loss of appetite, mucous discharge from the mouth, diarrhea, and in breeder ducks, labored breathing.
- **Colibacillosis** -*Escherichia coli*, causes reduced hatchability, infection of the yolk sac (omphalitis), a septicemia (bacterial invasion of bloodstream) in ducks 2-8 weeks of age and salpingitis and peritonitis in breeder ducks.
- **Aspergillosis** - occurs when ducks inhale spores produced by the mold (fungi) Aspergillus (*Aspergillus fumigatus* is the common species) that grows on damp straw or feed. Common signs include gasping, listlessness and dehydration.
- **Aflatoxin poisoning, Botulism...**

Common diseases of geese

- **Aspergillosis** - occurs when ducks inhale spores produced by the mold (fungi) Aspergillus (*Aspergillus fumigatus* is the common species) that grows on damp straw or feed. Common signs include gasping, listlessness and dehydration.
- **Hemorrhagic Nephritis Enteritis Virus Infection of Geese** - is characterised by high morbidity and mortality rates in geese from three to 10 weeks of age.
- **Coccidiosis, botulism, Fowl cholera, Sinusitis, Avian adenovirus, Chlamydiosis, Derzys disease**…