

Animals

Breeding and environment

How to breed animals

Have you ever wondered how is produced meat you can find well-packaged and neatly filed on shelves at the supermarket? If we retrace the production process we can discover lots of interesting information on how animals are raised and on the environmental damages resulting from the production of meat, eggs, milk and cheese that we eat every day. In the last decades, a method of breeding which is very far from traditional techniques employed in the past by mankind has got a foothold at a global scale. It's industrial breeding, an intensive method of production allowing to lower production costs and at the same time increase the quantity of produced meat: basically, this method allows to produce more economically and faster! This allows to sell meat, which has always been a luxury good that few people could afford to eat, at lower prices. We shouldn't be misled, though, the cost of meat, in fact, is low only for consumers but it isn't low for the environment nor for animals that pay a very high price: in breeding farms often the well-being of animals isn't respected and polluting substances for the environment are produced.

Feeding animals

Feeding animals to feed men is an expensive way to produce food. In the world about $\frac{1}{4}$ of arable lands are employed to produce fodder, soy and cereals and $\frac{1}{4}$ of these cereals are employed in industrial breeding farms to feed livestock: it's an expensive energy cost which adds to the economic cost, all the more so since the same lands could be used to produce food that the world's undernourished population needs. It's been estimated, in fact, that if all cereals produced every year were shared among the world population, each person would receive much more food than is necessary for survival: reality, though, is very different, in fact, on one side food consumption in developed countries is sometimes excessive, and on the other side, 2 billion people suffer chronic denutrition and 18 million people die for famine-related diseases. We feed and raise animals to eat them (mainly cattle, sheep, goats, pigs and poultry) as a balanced diet requires a certain amount of proteins and meat is one of its main sources together with other livestock products as milk, cheese and eggs. In developed countries is consumed a lot of meat both because population incomes have increased and allow to buy meat in great quantities and because meat costs less: as it's produced partially or totally with an industrial system this type of food has become a good available for many and isn't anymore a luxury good. In recent years, meat consumption is on the rise also in developing countries: in China, for example, more and more people start to earn enough to buy meat. This means that over time, as consumption increases, more and more lands and water will be required to enhance animal production.

Producing food

An intensive system of production capable of producing a lot of meat in small time has thus got hold to face growing consumers' demand of meat. Farmers turn a raw material as cereals, available in great amounts at a low price, in meat which we eat. It's an absolutely inefficient system as it uses much to produce little, in fact, about 7 k of cereals and about 15 thousand litres of water are required to produce 1 k of beef meat! Apart from the consequences related to the overexploitation of resources, breeding farms have a substantial impact on the environment also with regards to the waste substances introduced in soil, water and atmosphere. Knowing the mechanisms of the meat production chain is important to discover what lies behind a beef steak, a ham slice or a chicken breast.

Man and breeding

Today in the world almost two billion people depend on livestock to satisfy their basic daily needs. The connection between man and breeding is longstanding and has always represented a balanced relationship between man, environment and culture: in the past, in fact, cattle, apart from being employed for meat production, played and still plays a series of fundamental functions. Cattle, in fact, satisfies 30% of man's needs in terms of its nutrition – production of meat, milk and derivatives – as well as support to agricultural production as workforce. In the Mediterranean area, for example, donkey is used in agriculture for its work capacity under the typical climate conditions of this area and is still present in countries as Greece, Italy, Spain and Portugal, together with mule to farm the most steep and sloping lands. In the Tropics, instead, bovines contribute to the ploughing of about 60% of crops. Breeding farms, moreover, supply with their manure useful substances for soil fertilizing and in some countries manure is also used as domestic combustible. We shouldn't forget even the economic relevance of cattle production that is a source of income both for rural and urban populations.

Ancient balances

The relation between production and consumption of products of animal origin has changed over time. Historically, transport and communication were limited in comparison to the current globalization context and commercialization of fresh products, which thus perish quickly as meat, milk, and eggs was very difficult. For this reason the demand for this type of food was satisfied locally and cattle breeding, above all, depended on local availability of resources as fodder, pastures and water. The connection between agriculture and animal production, in fact, has always been very strong: bovines and ovines munched on fields which were turned into pastures during crop rotation, eating fodder and their natural manure was employed to fertilize lands. In recent years, instead, the intensity of animal production is no longer determined by local ecological limits but can theoretically grow permanently or at least until the environment is able to balance to some extent the damages caused by human activities.

In particular, in countries where intensive breeding has gained the upper hand, several consequences are taking place:

- fields which were left as "pastures" have been largely substituted by corn and soy crops: unlike fodder, this type of food makes animals grow much faster;
- cattle used as workforce in fields has been substituted by modern machinery that employs fuels and produces polluting substances;
- cattle has been gathered in enormous fenced areas in intensive breeding farms;
- the great amount of zootechnical manures that is accumulated in industrial breeding plants, must be disposed as waste: partly because today fields are fertilized with chemical fertilizers and also because manures are produced in such great quantities that all fields surrounding industrial breeding farms wouldn't be sufficient to absorb the amount of manure produced!
- the broken balance between agriculture and breeding has led, ultimately, to a greater use of resources and production of waste superior to the capacity of the environment to absorb it.

Environment and breeding

Cattle breeding products – eggs, meat, milk and derivatives – supply a third of global human protein intake. As consumption of this type of food isn't distributed evenly in the countries of the world, at the same time, it causes obesity in western countries (where consumption of this type of food is excessive) and is a potential undernourishment remedy in developing countries (DCs). But the cattle breeding is also one of the main accountable sectors for the many environmental changes registered in the last decades on a local and global scale. Demand for cattle breeding products is on the rise due to population growth and changes in food preferences: predictions, in fact, estimate meat and milk production will double between 2000 and 2050. This poses a risk for the health status of the environment as it implies a deterioration of the process of environmental degradation that is currently taking place. For a full-scale assessment of the impacts of cattle breeding on the environment, it's necessary to take into account both direct environmental aspects, which are closely related to the typical activities of animal production and indirect aspects, related for example to agriculture activities required to feed cattle. Polluting processes connected to animal production are complex and difficult to control because, on the one hand, industrial cattle breeding presents forms of "acute" pollution having point sources and easily identifiable, on the other hand, various activities related to animal production (agricultural production, chemical industry, waste production and disposal) are to some extent widespread sources of pollution causing a "chronic" impact that are thus identifiable on the long run. Substantial environmental impacts related to animal production concern soil degradation, climate change and atmospheric pollution, use of water resources and the process of their contamination and, more generally, loss of biodiversity. Let's have a closer look to the current situation and environmental impacts that should be reduced.

The transformation of the zootechnical sector

Growing demand of animal source foods has determined the need to have highly efficient breeding systems that are thus capable of producing much in little time and space. A tendency is in fact underway leading to intensive breeding and industrial cattle production although extensive pastures still cover wide areas of the planet. In this process, insufficient availability of lands has played a crucial role and has generated the need of developing zootechnical systems requiring less areas in comparison to animal production. This is why industrial breeding "without land" is instead increasing whereas extensive breeding of bovines, ovines, caprines and buffalos is decreasing. As pastures become less, even the sources of nutrition destined for cattle breeding change: about 80% of global cereal production, today, is employed as fodder in breeding farms. Cereals, in fact, allow animals to grow faster. Industrialized agriculture, responsible for the production of these cereals, has transformed lands altering the frail balance regulating different environmental compartments (soil, atmosphere, water, etc.). In this context of rapid increase of animal production, environmental impacts are amplified as the enhanced inputs within the zootechnical system generate a corresponding increase of waste, pollutant emissions in the atmosphere and exploitation of resources, causing numerous highly intensive sources of pollution.

Breeding and soil

The zootechnical sector is the main sector accountable for the use of soil and its progressive drying. Animal production occupies 30% of all lands existing on the planet plus pastures which cover 26% of lands. In particular, 33% of arable lands are destined for crops that produce food for breeding farms. Intensive breeding, for example, destroys soil because cereal cultivation to produce fodder requires many arable lands. Agriculture can contribute to desertification both, directly, through harmful agricultural practices as intensive farming and unrestrained water use and, indirectly, when land is deforested to create new farming areas to feed cattle. Land-use change, in fact, is another crucial element that alters

ecosystems: deforestation has transformed most of the Amazon forest of Latin America (an area twice the size of Portugal) in pastures and farmed fields to feed livestock. Between 1997 and 2003, the amount of bovine exportation from Brazil increased more than fivefold; 80% of this increase in production took place precisely in the Amazon forest. After a few years of intensive exploitation of pastures and newly created fields, deforested areas face an irreversible desertification process in which dried land doesn't produce as before. It's thus necessary to cut down a new portion of forest in a continuous cycle that degrades more and more the environment. Today, about 20% of all pastures existing on the planet register to some extent an impoverishment, especially, due to over-pasturing: this phenomenon consists in the compression and erosion of soil due to the trampling of hoofs of too many animals and activities of cattle herds. This takes place especially in pasture areas characterised by water scarcity which are equivalent to 73% of global pastures.

Climate and atmosphere

The greenhouse effect, the phenomenon that entails the overheating of the planet, is caused by the presence in the atmosphere of different substances, which are normally existing in nature in low concentrations but that are now produced in high quantities by human activities, especially in the last decades (combustion of fuels to move from one place to another, to make machinery work, fuels to produce electric energy, etc.). Among these substances, some have a stronger impact as methane (CH₄) and nitrous oxide (N₂O), others, as carbon dioxide (CO₂), affect less the greenhouse effect but are produced in great amount by humans. CO₂ is employed as benchmark to measure the extent of the impact of other molecules on global overheating (Global Warming Potential, GWP): it's like a bargaining counter where the effect of CO₂ on climate change counts as 1 and the effects of methane and nitrous oxide are its multiples. Animal production plays a crucial role in terms of climate change as it's accountable for 18% of global atmospheric GHG (Green House Gases) emissions produced on the whole by human activity. This share is even superior to GHG emissions generated by means of transport in the whole world!! In particular, cattle breeding produces 9% of global carbon dioxide emissions, especially as a consequence of land-use change as deforestation caused by the extension of pastures and farmed lands. The zootechnical sector, though, is accountable also for 37% of methane produced on the whole by human activities: this share is emitted mostly by ruminants and fermentation of cellulose that takes place in their stomach. We should take into account that methane is 23 times more powerful than carbon dioxide with regards to the overheating of Earth. Moreover, animal production contributes for 65% of nitrous oxide introduced on the whole by humans in the atmosphere (N₂O has a potential of overheating that is 296 times stronger than CO₂!) The greatest part of nitrous emitted by breeding farms comes from zootechnical waste, which is manure and slurry produced by livestock and fertilizers applied on farmed lands to feed raised animals: we could in fact state that zootechnology is accountable for 75-80% of agricultural emissions of N₂O. Breeding eventually produces about two thirds of anthropogenic ammonia (NH₃) existing in gaseous form in the atmosphere. The agricultural sector is accountable for 94% of ammonia emissions related to anthropic activities that cause acid rain and acidification of ecosystems. In zootechnology, the passing of ammonia in the atmosphere is especially caused by the application of manure on farmed fields.

Water employed for breeding

By 2025 more than 60% of the world population will live in water-stressed conditions. The zootechnical sector substantially contributes to water consumption and its pollution both directly and indirectly: 8% of world hydric consumption concerns the zootechnical sector that employs water mainly to irrigate farmed fields to produce fodder. Just think that 15 thousand litres of water are required to produce 1 k of beef! To produce 1 k of chicken we need 3,500 litres of water whereas the production of cereals requires less water, that is 3,400 litres for rice, 2 thousand for soy, 1,400 for wheat, 900 for corn and 500 for potatoes. Animal production represents, moreover, one of the major sources of pollution of waters that entails: eutrophication that alters the balance of aquatic ecosystems; pollution of aquifers by nitrogen and

phosphorus, organic and antibiotic micro-polluting agents with consequent risks for human and environmental health. Eutrophication is generated by zootechnical waste, chemical pollution of aquifers is caused by excessive use of fertilizers and pesticides in crops that produce fodder for livestock. Liquid and semi-liquid shedding of cattle contain levels of phosphorus and nitrogen above the average because animals can absorb only a small part of the amount of these substances contained in their fodder, the rest is released through their faeces. When animal manure filters in water flows, nitrogen and phosphorus contained in it in excess alter water quality and damage aquatic ecosystems in damp areas. Just think that up to 70-80% of nitrogen provided to bovines, pigs and laying hens through nutrition and 60% of nitrogen given to broilers is eliminated through faeces and urine and ends in water flows and underground aquifers. Think that an adult pig produces four times as many faeces as a human being and that in an industrial plant can live about 50 thousand pigs with a very high production of daily shedding! When agriculture and breeding are balanced (as occurred before intensive breeding and partly still takes place), a cycle is created in which agricultural production is limited by the amount of manure needed to fertilize fields and manure in turn depends on how much fodder is available to feed animals. The coming of chemical fertilizers has allowed to free agriculture from breeding and the rhythms of industrial production create so much manure that farmed fields aren't sufficient to absorb it all: for this reason, shedding in excess must be disposed as waste. Finally, we shouldn't forget that zootechnology prevents water from playing its crucial role of penetrating into land and reunite with underground waters (that are drawn by humans) as this activity compacts soil, reduces the infiltration capacity, dries damp areas and deforests to introduce crops.

Breeding and biodiversity

We live in a time of great threat to biodiversity, today in fact the loss of animal and plant species is hundreds of times faster than in the past centuries. Zootechnical activities causes substantial effects on aspects related to biodiversity and reduction of varieties of life forms as deforestation, soil impoverishment, pollution and climate change that, for that matter, breeding actively contributes, are causes determining a great loss of biodiversity. The impact is also due to the high number of heads of cattle currently raised that represent 20% of the biomass of all animals existing in the world and that occupy 30% of lands that were once inhabited by wild animals. Which are the aspects of breeding having the most negative impact on biodiversity? Breeding conditions based on pasture surely create conflicts with wild fauna (for example, as they're source of disturbance and menace to predators as wolves and foxes and for bordering protected areas) but the greatest damage is related to the increase of agricultural activity that, in developed countries and especially Europe, has modified soil use and has led to the abandonment of pastures.

The loss of meadows, which had allowed in the past centuries the development of so many different types of ecosystems, has determined the decline of many of these ecosystems. The numerous surveys undertaken in recent years to understand how to preserve biodiversity highlight that zootechnology has a substantial impact on the environment: WWF has identified breeding as a menace to almost 40% of the world's classified ecoregions, the Conservation International organization has registered that, on a total of 25 areas with high biodiversity (hotspots) in the world, up to 23 suffer negative effects due to the substantial existence of zootechnical activity. Finally, an analysis presented by the Red List of Threatened Species (drafted by the International Union for Conservation of Nature – IUCN) highlights that the greatest part of threatened species sees its habitats reducing to give way to activities related to breeding, especially cereal crops to produce fodder. Breeding, in particular intensive industrial breeding, thus pushes agriculture to incentivize monoculture of corn, wheat, sunflower and few other cereals that are indispensable to produce great amounts of fodder. As these are intensive crops, though, substantial amounts of herbicides, pesticides and fertilizers are required. The latter are often distributed in doses superior to those that crops can absorb and thus penetrate in the land polluting underground water later employed by humans to drink. Moreover, farmers once grew also for their own consumption many varieties of vegetables (that have now literally disappeared) and ensured rotation of farming lands – a technique allowing to prevent impoverishment conditions). Today, instead, fields are extended to the greatest possible extent, trees and shrubs are eliminated to allow big machinery to move easily but in this way there is no

more space for every form of animal and plant life: hedges, streams, plants and shrubs constitute in fact crucial habitats for many varieties of birds and small rodents that today don't find the conditions to live in corn crops or the opportunity to live or are rather substituted by alien species coming from other climates and other continents but that adapt better to new conditions. Monocultures therefore are indispensable for this type of farming that has as effect the reduction of biodiversity in addition to the alteration of landscape, enormous water consumption, the use of chemical products in amounts never seen before. In Italy this phenomenon is visible also in the landscape: in all the Po Valley starting from the first Alp slopes to the Adriatic sea, land is dominated by monocultures, especially corn, considered the king of cereals and grown in very few varieties, the most profitable.

Diseases and breeding

The production of animal food is undergoing a great transformation on a global scale that could entail an increase of the risk of transmitting diseases from animals to humans (zoonosis). Excessive concentration of heads of cattle in breeding factories should be avoided to limit this risk as well as improving the system for monitoring diseases and preserving public health. Cattle production and density have substantially increased, often in proximity to urban centres, especially with regards to industrial pigs and poultry breeding factories: in industrialized countries, the greatest part of chickens and turkeys is produced in plants that can contain from 15 thousand to 50 thousand animals. The tendency towards industrialization with regards to the zootechnical production can be observed also in developing countries where traditional systems have been substituted by intensive production units, especially in Asia, South America and in some parts of Africa. The concentration of thousands of animals in factories increases the chance of transmission of pathogens. Moreover, great amounts of sewage and manure that can contain a high number of pathogens accumulate in rooms for penned animals. Much of this waste is disposed on the soil with no further treatment exposing thus wild mammals and birds to the risk of infection. Among risk factors for the spreading of illness is the fact that pigs and poultry industrial production is based on an impressive movement of live animals. In 2005, for example, almost 25 million pigs (heads), more than two million per month, were commercialized at an international level. This also as a consequence of the drastic reduction of the number of slaughterhouses per unit area (multinational companies, in fact, have bought and merged small family-run slaughterhouses). This has increased the distance from breeding factories and the butchering location increasing the chance of epidemics of viral diseases among animals: cattle is transported to slaughterhouses in awful hygienic conditions and the fast pace of butchering make operators little concerned about operations that could pollute meat (for example, intestine cleansing). In these conditions highly pathogenic diseases develop as swine fever and avian flu (H5N1 virus) and other viruses common among commercial poultry and to a lesser extent among pigs with the risk that these might affect humans and spread rapidly. Meat producers are obliged to apply basic biosafety measures; production sites shouldn't be built close to human settlements or wild birds populations; factories should be clean and regularly disinfected and involved personnel must receive appropriate training on issues relevant to food safety. In addition to aspects connected to hygiene-sanitary conditions of raised animals it's crucial to know what they are fed. The so-called "mad cow" disease (BSE – bovine spongiform encephalopathy) has been caused exactly by uncontrolled nutrition and breeders that have repeatedly fed bovines with infected animal flours, transmitting disease also to animals ready for slaughter. As the disease becomes evident after several months of incubation, infected animals that had become numerous, were commercialized before symptoms were registered and disease spread to humans: infectious protein molecules can be found in bones and bone marrow and survive high cooking temperatures of meat. We shouldn't forget, with regards to biosafety, that breeders must often resort to intense use of antibiotics to contain the chance of infection in animals that are highly stressed by conditions of overcrowding in fenced areas (actually antibiotics in small doses also make animals gain weight and save on fodder costs). This entails an increase in the resistance to medicines by a group of bacterial strains present in the body of animals that, in turn, makes it more difficult to treat human nutrition diseases transmitted by cattle as antibiotics don't have effect on bacteria.

Many types of breeding

Factors as climate (for example tropical or desert), as the structure of lands (for example flat or mountainous), as the availability of resources (for example water) but also other elements as cultures and local economies make breeding systems acquire different forms in terms of its dimension as well as type of techniques used. In the world there are many types of breeding that are very different from one another; let's just think about how different is nomad horse and yak breeding in Mongolia from breeding of bovines in our farmsteads! The different existing breeding systems in the world can be classified, according to FAO, in two macro-types according to the main aim of their system. The first type regards all mixed systems of production where agriculture and breeding coexist: practically, breeding is both intensive and extensive and is practised along with farming of irrigated or non-irrigated soils (that are nourished by rainfall). Bovines, ovines, caprines, pigs, poultry and laying hens are raised. Agricultural enterprises structured in this way produce, besides food for their own consumption or for trade, also nourishment for animals (both in terms of fodder and agricultural waste). Raising animals provides meat, eggs and milk but in some parts of the world, as Asia for example, animals also offer an efficient help for work in the fields. These systems are widespread in some areas of Northern America, Europe, Southern Asia and Africa. An example are family-run agricultural enterprises in Europe as farmsteads in the Po Valley. The second type regards, instead, exclusive animal production systems that is all those system whose only aim is breeding. In particular, this system is characterised as follows:

Intensive breeding systems "without land".

These are intensive production systems that work as a real industrial factory: most of the eggs and meat we eat are produced in this way. Raised animals generally are pigs, chickens, laying hens and sometimes also bovines. These breeding farms "without land" are mainly widespread in Northeast America, Europe and Asia, more generally in rich and highly populated areas where the request for meat is very high.

Extensive "pasture" breeding systems

These are extensive production systems that, thanks to the presence of broad uncultivated lands, allow animals to pasture freely: with this system are raised mainly bovines to produce meat and milk, ovines and caprines. Extensive breeding is widespread mainly in Central and Southern America, in particular, Argentina, Brazil and Peru but also in Australia and Europe.

How do breeding farms work?

Animals can be raised in different ways as intensive breeding farms, industrial breeding farms and pasture breeding farms also called extensive. Let's have a closer look.

Extensive breeding farm or "pasture"

In this system animals can pasture freely and munch grass. If temperatures are very low animals have the chance to shelter in stables where they are fed by humans. It's an independent system that possesses lands for pasture and to produce nourishment for animals, either hay or cereals. Animal density, that is the relation between the number of animals and the portion of land where they are raised, is low; zootechnical waste is used as natural fertilizer (manure) on the fields of the agricultural enterprise with no need to dispose of it as waste. Even if it's responsible for only a small part of the global animal production, this system of production occupies up to 28% of the land surface free of ice, in fact, the low density of animals in relation to the occupied area (less than 10 animals per hectare) requires extended portions of soil. Pasture breeding should determine, therefore, a strong competition for land (in terms of availability and uses) and for other natural resources to satisfy the demand for meat and milk currently registered: hence, all existing lands wouldn't be enough, even if converted to pasture! Extensive breeding is widespread especially in Southern and Central Italy and in the islands where firms raising bovines are generally small or medium sized with an average number of bovines, for example, around 10-20 heads of cattle.

Intensive breeding farms

In intensive breeding farms, instead, animals are raised in contained space and the density of heads of cattle is quite high. With this intensive system are raised mainly bovines to produce meat and milk and suines. Animals raised with intensive methods can be raised with free stabling, that allows animals to move freely and develop their own muscle groups or fixed stabling, a system that is still widespread: basically, animals are tied to their placement and in this way they're not allowed complete freedom of movement. Sometimes animals can't behave naturally: veals, for example, are separated from their mother a few days after birth to be raised in individual placements closed by wooden fences and separated from other animals. To make meat more tender and white, as we consumers like it more, veals are fed only semi-liquid pudding, made with artificial milk and lacking iron, as this substance is usually responsible of the pink-red colour of meat. Typical nutrition of bovines, instead, is based on cereals, used because they make an animal's weight increase fast: thanks to a diet based on maize, corn and soy, infact, the weight of a veal increases 15-fold in only 14 months while in the past were required about 5 years!! To further accelerate the growth process in some non-EU countries fodder for animals contains animal-based protein rich flours derived from other animals. EU has banned the use of these animal-based flours (with the exception of those based on fish), considering the high probability that epidemics of diseases transmissible to humans might occur (when humans eat their meat): an example know to all is the BSE, also called "mad cow disease". Breeding factories that can reach big dimensions containing even up to 800/2000 heads of cattle per establishment, often need to buy cereals from other companies for animal nourishment and must dispose of their production waste, as zootechnical waste, somewhere else. This system, in Italy, is concentrated in the Po Basin between Lombardy, Piedmont, Veneto and Emilia Romagna where small-sized breeding factories are more numerous (41% of establishments count less than 10 heads of cattle). Here can be found between 60% and 80% of bovines, suines and poultry raised in the whole of Italy. In the Po Basin, in fact, is typical the production of corn, one of the main elements of the diet of animals raised intensively in this area.

Industrial breeding farms "without land"

Finally, there is the industrial breeding system, defined as a zootechnical system "without land", as it can be achieved completely independently from the geographical and climatic context where it's located; it's an intensive system, used mainly for the production of meat and eggs that allows to produce more in little time: in breeding factories without land are raised mainly pigs, chickens and laying hens. These animals are raised inside big barns that are illuminated and aired artificially and are fed with food imported from other places. Often their chance of movement is prevented by metal cages where they are placed: this occurs for pigs as well as laying hens and chickens. Unfortunately, these industrial breeding factories are also known for some operations that often don't respect the well-being of animals. In these breeding farms, for example, suines can count on a cage that is 60 cm wide and 2 metres long; they can't root nor turn around, they're raised on cement pavements and hence can't dig holes to cool inside mud, as would be typical of their behaviour: in these highly stressed condition (along with other operations that we're not going to report due to their bluntness) bring them to bite their tail – that is pre-emptively cut off – and interact aggressively. Also for hens and chickens that live in cage in a living space equivalent to an A4 paper, are undertaken operations that prevent aggressions and injures (for example, the beak is cut off to avoid hurting). Moreover, the concentration of animals in one location only forces breeders to use antibiotics to avoid sreading of diseases among them.