

Protecting the welfare of chickens farmed for meat – an African view

The welfare, especially of farmed animals, is fast emerging as an important concept that allows African society to express its ethical concerns regarding inhumane treatment of animals. The World Animal Health Organization defines animal welfare as 'how an animal is coping with the conditions in which it lives' (OIE, 2011).

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An animal is said to be in a good state of welfare if it is healthy, comfortable, well nourished, safe, able to express innate behaviour and if it is not suffering from unpleasant states such as pain, fear and distress.

Good animal welfare therefore requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing.

Animal welfare significantly contributes to the animal's health and ultimately its productivity. This is mainly because research has determined that animals are generally more sensitive and vulnerable to stress and suffering which predisposes them to diseases.

A farm animal is constantly challenged by an array of factors that

may evoke stress responses. Over-crowding, extreme temperatures, social disruption, unfamiliar sounds, unfamiliar or uncaring handlers, feed and water restriction, immunisation and disease are common environmental factors that may lead to stressed animals.

Broiler chickens are specialised chickens reared for their meat. Sixty billion chickens are reared annually for their meat compared to 1.5 billion pigs, half a billion sheep and 300 million cattle.

The global chicken meat production was estimated at 96.3 million tonnes with Africa contributing around 4.8 million tonnes (FAO, 2016). Between 2000 and 2011, chicken meat production in Africa increased by almost 5% per year to 4.62 million tonnes, while the global growth average during the same period has been slightly below 4%, hence Africa has increased her total global contribution from 4.7 to 5.1% (Table 1).

The demand for chicken meat has risen steadily over the past decade due to an increase in the human population and a decline of the available arable land due to rapid urbanisation and impact of climate change especially in Africa.

For instance, the global population rose by 12.6% from 6.12 billion to 6.90 billion between 2000 and 2010 and is expected to reach 8.0 billion by 2025, while the African population grew by 26.0% from 811.1 million to 1,022.2 million and is expected to reach 1.3 billion by 2025 (Table 2).

Table 1. Indigenous chicken meat production (million tonnes). Meat from the slaughter of birds originating in a particular country, plus the meat equivalent of any such birds exported live (Adapted from T. Evans, 2013a).

Region	2000	2006	2007	2008	2009	2010	2011
Africa	2.8	3.4	3.7	4.0	4.2	4.5	4.6
Americas	27.1	33.7	35.0	37.4	36.7	38.6	39.9
Asia	18.6	23.5	25.0	26.2	28.0	29.1	29.8
Europe	9.3	10.8	11.6	12.1	13.3	13.9	14.6
Oceania	0.7	1.0	1.0	1.0	1.0	1.1	1.2
World	58.5	72.3	76.2	80.6	83.3	87.2	90.0

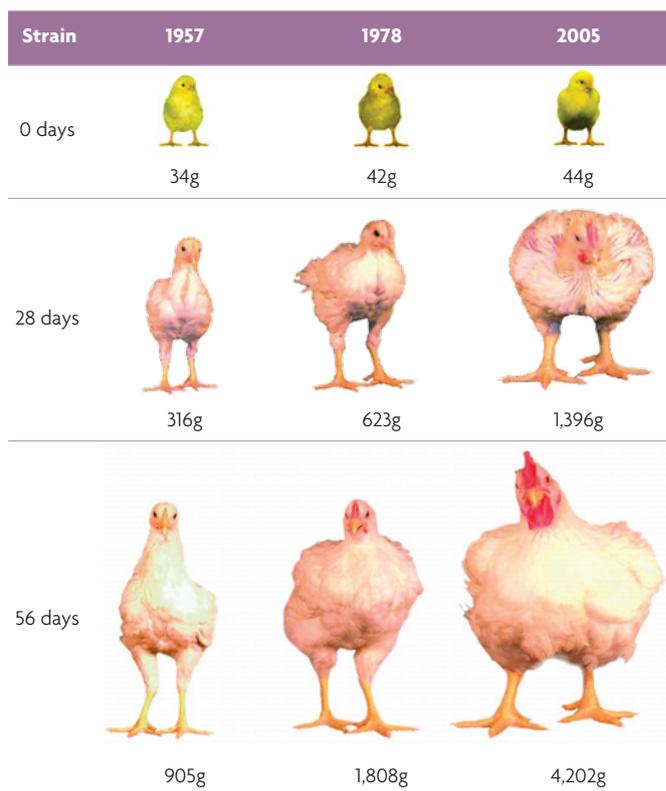


Fig. 1. Age-related changes in the size of University of Alberta meat control strains unselected since 1957 and 1978, and Ross 308 broilers (2005). Within each strain images are of the same bird at 0, 28 and 56 days of age (Adapted from M. J. Zuidhof et al, 2014).

The consumption of chicken meat is greatly influenced by the human population growth rate and an increase in the availability of chicken. Hence while the global

average chicken meat uptake per person rose by 2.5kg or 23% from 11.1 to 13.6kg between 2000 and 2009, the total volume consumed rose by

Table 2. Global human population (millions). E = Estimate (Adapted from T. Evans, 2013b).

Region	2000	2010	2015	2020E	2030E
Africa	811.1	1,022.2	1,145.3	1,278.2	1,562.1
Americas	834.7	934.6	982.1	1,026.6	1,103.3
Asia	3,719.0	4,164.3	4,375.5	4,565.5	4,867.7
Europe	726.8	738.2	742.1	744.2	741.2
Oceania	31.1	36.6	39.4	42.5	47.1
World	6,122.8	6,895.9	7,284.3	7,656.5	8,321.4

26.5 million tonnes (39%) from 68.6 million to 95.1 million tonnes. However, the greatest consumption rate was observed in Sub Saharan Africa and Asia as shown in Table 3.

This demand has led to intensification of chicken farming systems globally, a trend that is currently establishing in Africa. Intensification of the production systems can improve the welfare of the chickens, due to improved housing, nutrition and health leading to a significant improvement in the chicken's productivity. As the farming systems have changed the chickens have also been forced to change.

International breeders through genetic selection have produced chickens capable of reaching their slaughter weights in under six weeks compared to a slower-growing chicken which would reach its slaughter weight in 8-12 weeks under similar conditions. This extreme growth rate is appreciated when comparing the appearance of chicken over time as shown in Fig. 1.

The intensification of the chicken farming system and changes in the chicken itself has led to various concerns on the welfare of the chicken.

Growth rate concerns

Broiler chickens are slaughtered for meat typically at around six weeks of age but even before then they suffer from high rates of painful lameness and heart disease. This is mainly because they are selectively bred to grow so fast that their legs cannot support their rapidly increasing body size due to abnormal skeletal development.

Similarly, their hearts and lungs cannot keep up with their bodies' fast growth rate leading to frequent heart failure and ascites. It is estimated that a lame broiler will spend up to 80% of their time lying down and hence may not reach the feeders and drinkers leading to malnutrition which depresses their productivity.

Acute heart failure (Sudden Death Syndrome) kills up to 3% of broilers, while chronic heart failure (ascites,



waterbelly) affects nearly 5% of broilers worldwide.

Beyond genetic selection it is important to understand that genetic selection accounts for 85-90% of the progress in growth rate with improvements in diets accounting for the remaining 10-15%.

In Africa there are serious challenges with the quality of feeds available for utilisation by intensively farmed chickens which at certain instances leads to decreased productivity.

Environmental concerns

Most intensive farming systems are barren environments which prevent chickens from behaving naturally as they provide few opportunities for the chickens to perch, forage, explore or dustbathe. With these natural activities denied, chickens suffer from stress due to inactivity. This means chickens spend most of their time lying down leading to physical problems like lesions on their skin like breast blisters.

The lives of intensively farmed chickens are made worse by the quality of the litter covering the floors of the sheds. In most African farms the amount of litter placed in the shed is usually inadequate and within a short time (by week three) becomes wet, caked and dirty with ammonia-rich chicken droppings. This prevents the chickens from being able to scratch or dustbathe while causing painful lesions on the chicken's feet, legs and breasts. The situation is further compounded by

the harsh ammonia fumes causing lung and eye problems in sheds with poor ventilation.

The light intensity in the house is also critical as bright and natural light is important for the visual acuity of birds leading to increased activity and ground pecking.

A substantial period of darkness is also required for proper sleep which aids in physiological recuperation in terms of energy conservation, tissue regeneration and growth.

Stocking density concerns

Another critical welfare concern in broiler production is the high stocking density in broiler units. A typical shed in intensive farming systems can host thousands of chickens. Crowded broiler units lead to wet litter, increased air pollution from ammonia and dust particles and poor temperature and humidity control, all of which damage the broilers' health.

This leads to increased lameness, breast blisters, foot-pad dermatitis, hock burns and infections that leads to low productivity and poor returns as the affected carcasses are down-graded or rejected at the processing plant.

Transportation concerns

Finally, catching of the birds when they are being removed from the shed for slaughter can result in unacceptably high levels of bruises, fractures and other traumatic injury, while poor transportation conditions can lead to 'dead on arrival' at the slaughterhouse due to thermal stress or suffocation as a result of crowding on the transporter.

Slaughter concerns

The slaughter process, when the conscious broilers are hung upside down in 'shackles' and stunned by dipping in electrified water baths, is also cause for concern. Broilers often experience pain and struggle while hung in shackles, and they may suffer during the slaughter pro-

cess. It is essential that sufficient stunning current is used and that both carotid arteries are cut to reduce the risk of birds regaining consciousness during bleed-out.

Key requirements

The welfare concerns described above are unacceptable and unnecessary, particularly when higher-welfare indoor systems are already available. These higher-welfare systems let chickens behave like chickens. They provide a good balance of animal welfare benefits and commercial viability. The key welfare requirements that the industry needs to institute include:

- **Slow growth:** Chickens farmed on high-welfare indoor farms are allowed to grow at a slower, more natural rate. This reduces the strain on their hearts, lungs and legs. It means they can move around more easily and this reduces lameness and heart failure.

- **Enriched environments:** High-welfare farms provide the chicken with deep, dry, good quality litter which allows chickens to rest in comfort and perform natural behaviour such as scratching, pecking and dustbathing.

To maintain good litter quality, it is important to have lower stocking densities and appropriate management. Good litter helps to reduce the occurrence of painful skin lesions on chickens' feet, legs and breasts and reduces respiratory and eye problems. High-welfare farms also include various forms of enrichment for the chickens. These are simple additions, such as hay-bales and perches, which encourage movement and natural behaviour such as perching. Natural lighting is also critical for high-welfare indoor farms as it not only encourages the chickens to move around but the dark periods allow them to rest. Chickens which behave more naturally suffer less stress and have fewer physical problems such as lameness and skin lesions.

- **Reduced stocking density:** Chickens kept in higher-welfare indoor systems have more space. This increases their comfort, reduces their stress and encourages them to move, scratch, peck and dustbathe. It is clear from chicken behaviour and leg disorder studies that stocking density must be 25kg/m² or lower for major welfare problems to be largely avoided and that above 30kg/m², even with very good environmental control systems, there is a steep rise in the frequency of serious problems. ■

References are available from the author on request

Table 3. Changes in global chicken consumption from 1996-2016 (Adapted from OECD FAO (2016)).

Region	Increase in chicken consumption per person	Amount (kg)
Europe	+38%	From 16.9 to 23.3
Sub Saharan Africa	+85%	From 1.3 to 2.4
China	+89%	From 6.2 to 11.7
India	+183%	From 0.6 to 1.7