

## Structure of the Poultry Industry

The poultry industries are a diverse mix of bird species farmed in countries throughout the world. Primarily raised for meat or eggs, the “domesticated” species can include but are not restricted to chickens, ducks, turkeys, geese, quail and guinea fowl.

		
Red Jungle Fowl	Free Range Broilers	ISA Brown Layer
		
Bronze Wing Turkey	Wild Turkey	Guinea Fowl
		
Muscovey Drake	Khaki Campbell	Pekin Drake
		
Indian Runner	Goose	Japanese Quail

## Life Cycle Facts

Incubation of the egg

<b>Domestic Fowl</b>	<b>21 days</b>
<b>Turkey</b>	<b>28 days</b>
<b>Duck</b>	<b>28 days</b>
<b>Muscovy</b>	<b>35-37 days</b>
<b>Guinea Fowl</b>	<b>26-28 days</b>
<b>Goose (light)</b>	<b>28 days</b>
<b>Goose (heavy)</b>	<b>35 days</b>
<b>Quail (vary with species)</b>	<b>17-24 days</b>

Egg spends 18 days in a setter during which temperature & humidity is controlled. The egg is rotated at regular intervals. Next 3 days, eggs are transferred to the hatchers in a different part of the hatchery. Once chicks have hatched, they will be sexed if part of the laying industry, with the male chicks destroyed. Vaccinations may occur at this stage. Birds will be dispatched in boxes of 100. Layers will travel to a pullet rearing facility. Broilers will be placed at a commercial grow out unit. Layers will be brooded to 6 weeks of age (supplementary heat provided), and reared to 16-18 weeks of age prior to the onset of lay. Pullets will be beak trimmed and vaccinated in the rearing/growing phase to avoid disruptions to lay. Dietary changes occur at each phase of development. Broilers are fed 3-4 diets to the time of slaughter which may only be 36 days depending upon the target market weight. Layers will commence egg laying at around 20-22 weeks and continue up to 78 weeks (depending upon market demands)

## The Domestic Chicken

<b>Kingdom</b>	Animal
<b>Phylum</b>	Vertebrae
<b>Branch</b>	Gnathostomata
<b>Class</b>	Aves
<b>Sub Class</b>	Neornithes
<b>Sub Division</b>	Carinatae
<b>Order</b>	Gallinae
<b>Genus</b>	Gallus
<b>Species</b>	Gallus domesticus

The origins of the domestic chicken, *Gallus domesticus* are believed to stem from the jungles of South East Asia. Four species of jungle fowl are still found in this region with the Red Jungle Fowl, *Gallus gallus* of Thailand, having the widest distribution of the wild species and via recent DNA based investigations, the apparent ancestor of the domestic chicken. Jungle Fowl are ground dwelling birds living in social groups typically consisting of a dominant male with up to four females and their offspring. Non alpha males are either solitary figures or they can form unisexual groups of two or three birds. Family groups spend most of their time foraging for food in a well-defined territory only

leaving the ground to roost or in response to danger. As is the case with the domestic fowl, Jungle Fowl routinely display classic chicken behaviours such as dust bathing and preening (grooming). Unlike their domestic cousins in temperate climates which have a breeding season regulated by day light length, Jungle Fowl in the tropical zones breed all year round. Approaching lay, Jungle fowl hens will construct a nest on the ground and lay a clutch of 5-8 eggs. After a 3 week incubation, the viable eggs will hatch and the hen will then care for her chicks until they reach 6-8 weeks of age. Observations of jungle fowl behaviour provide useful insights into better understanding the underlying behavioural drives of domestic chickens. By comparison, domestic chickens are less active, have fewer social interactions and are less aggressive to would-be predators than their wild ancestors. It would appear that domestication of the chicken took place at least 4000 years ago, providing meat, eggs, feathers, sport and medicines. In striving to produce food for an ever increasing human population, intensification of the domestic chicken really commenced in the 1950s. At the same time significant advances were made in breeding programs, nutrition, poultry & veterinary science. As a result specific industries developed for the production of eggs and meat with a majority of the advances made in the USA.

### **The Egg Laying Industry**

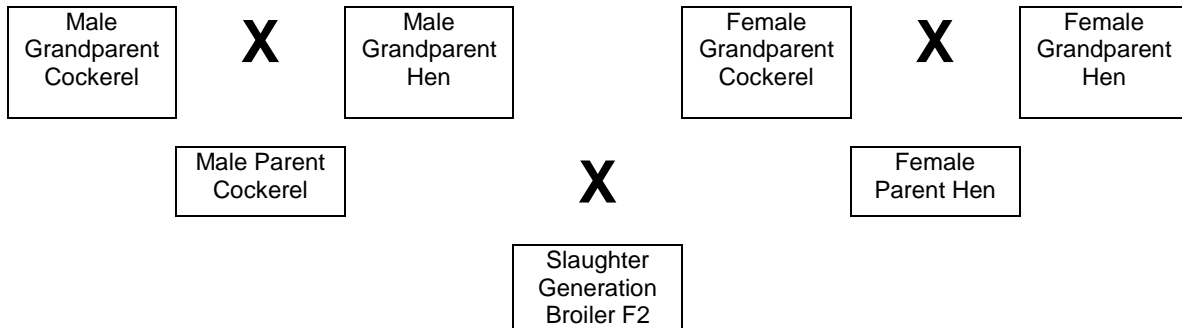
Until the 1950s, most egg production occurred in rural areas or on the outskirts of suburbia, in semi intensive production systems involving several hundred birds to several thousand. It wasn't until the advent of caged systems in the 1960s that intensification of the egg laying industry occurred. In recent times, welfare concerns driven by consumer expectations and attitudes have resulted in the development of alternative production systems for eggs including free range, organic and barn laid.

### **The Broiler Chicken Industry**

Before the development of modern meat breeds, broilers consisted mostly of young male chickens (cockerels) being a by product of the egg laying industry. Compared to today, this made chicken meat scarce and expensive compared to eggs, and chicken was a luxury meat. The development of specific broiler breeds decoupled the supply of broilers from the demand for eggs. This, along with advances in nutrition and incubation that allowed broilers to be raised year-round, allowed chicken to become a low-cost meat.

The original broiler chicken genetics were derived from a cross between a White Cornish male and a Barred Rock female. This hybrid became very dominant in the 1960s but because the original cross was plagued by problems of low fertility, slow growth, and disease susceptibility, it has been displaced by the development of the modern day genotype. Current day broilers are typically a third generation offspring (an F2 hybrid) with the broiler's four grandparents coming from four different strains, two of which produce the male parent line and two of which provide the female parent line, which are in turn mated to provide the broilers. The male lines and female lines have been selected for vastly different traits ie the female line needs to be able to lay as many eggs as possible, since the number of eggs laid per hen influences the cost of broiler eggs and

hence broiler chicks. Egg-laying ability is less important in the male line, but conversely rooster fertility is very important.



The broiler is raised in a highly controlled environment along with thousands of other broiler chicks. It is given unrestricted access to a special formulated, highly digestible diet of high protein delivered ad libitum via an automated feeding system. This is combined with artificial lighting conditions to stimulate growth and thus the desired body weight is achieved in 6 - 8 weeks, depending on the approximate body weight required by the processing plant.

### Structure of the Chicken Industry (Egg and Meat)

The structure of the chicken meat and egg industries is very similar. Grandparent flocks incorporate the latest genetic development/advances and produce parent birds. These flocks are located on dedicated farms and are managed on an all in all out basis. The breeder flocks are also run as all in all out farms again on separate dedicated farms. The slaughter generation birds in the case of broilers or the replacement pullets are then placed with contract growers or sold to commercial egg laying farms. Broiler farms are also run on an all in all out basis whereas a majority of the commercial egg layers are multiage production systems.

### Management

Veterinarians involved in the poultry industry must have a good working knowledge of the management practices involved with the species they are dealing with. Disease and production issues usually arise with a corresponding failure in flock management. This can include:-

- Temperature
- Humidity (linked to ventilation rates)
- Hygiene
- Nutrition (specifications, palatability, access)
- Lighting patterns

The genetic/breeding companies routinely provide management guides for their livestock to assist both the producer and the veterinarian extract the full genetic potential from these birds.