



## POULTRY HOUSING

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Modern poultry operators tend to specialize in one type of production (Table 1). Poultry housing must be geared toward each individual operation.

*Table 1 Poultry Production Cycles*

Type of Poultry	Cycle Duration
Pullets (commercial layer or broiler breeder)	18 - 20 weeks
Breeder hens (broilers or layers)	40 - 46 weeks (laying period)
Cornish chickens	3 1/2 - 4 weeks
Broiler chickens	5 1/2 - 6 weeks
Roaster chickens	8 - 9 weeks
Layer hens	50 - 54 weeks (laying period)
Broiler turkeys	11 - 12 weeks
Heavy female turkeys	14 - 15 weeks
Heavy male turkeys	16 - 17 weeks

Houses for these various production enterprises may differ greatly in size, appearance, and arrangement of facilities. However, they also have some similar requirements. A good location, with a good water source and a well-insulated building, equipped with a proper ventilation, heating, lighting, feeding and watering system are important in all types of poultry housing.

### Location

Poultry facilities, as with any intensive livestock development, must meet a number of siting requirements. Most rural municipalities or provincial governments have guidelines for separation distances to neighbouring land uses, as well as guidelines for manure management. These approvals need to be obtained before construction begins.

As far as the physical site is concerned, it must be well drained and large enough to accommodate any future expansion. The site should also be large enough to provide adequate building separation to prevent fires from spreading and to allow the wind to ventilate the surrounding space.

### Water

An adequate supply of good quality water is critical for any poultry operation.

For example, the water source should be able to provide up to 20 litres per day per 100 layer pullets, or up to 180 litres per day per 100 heavy male turkeys under hot weather conditions. In general, the water quality needs to



be relatively low in total solids (below 1500 parts per million (ppm) especially for turkey poult); low in sulphates, chlorides and sodium; and have a pH of 6.0 to 8.0. Water quantity and quality guidelines for all classes of poultry are found in the CPS leaflet "Water Requirements for Poultry".

### **Building Options**

Most poultry barns are single storey, stud wall structures with clear span truss rafter roof systems. Some broiler barns are two or three storeys and a few laying barns are two storey buildings with the lower storey being used for manure storage. Wooden pole-frame and rigid-frame structures can also be used. Building widths vary depending on their use. For example, a two-row cage laying barn might be as narrow as 18', while a broiler barn might be 40' to 70' wide. Building lengths are based on the numbers of birds housed and barn equipment (feeder chains, cage rows, etc.). Barns need to be well insulated to minimize heat loss in the winter and heat gain in the summer. Foundations should be insulated to RSI 1.4 (R8), while walls are insulated to RSI 3.5 (R20) and ceilings to RSI 5.3 (R30).

### **Ventilation Options**

Most poultry barns use an exhaust or negative pressure ventilation system. This system utilizes numerous, automatically controlled exhaust fans that create a partial vacuum inside the building which causes fresh air to be "sucked" into the barn through controllable inlet baffles.

Another option is a positive pressure system which blows fresh air into the barn using a controlled mixing chamber. Stale air is forced out through dampened openings, located in either the ceiling or the walls. A third option, for more moderate climates, is a naturally ventilated barn that employs large side-wall openings with controllable "shutters" and ridge chimneys for the escape of stale air.

### **Heating System Options**

Various heating systems are being utilized in poultry barns. Gas, propane or electric fired hot water systems with 2" diameter black-iron pipes suspended on either the barn walls or ceiling are a common system in Western Canada for all types of poultry housing. Hot water floor heat has also been tried in some broiler barns. Flue-less gas or propane fired space heaters are a common source of heat in some newer barns. Other sources of heat for some specialized applications include electric space heaters, gas fired hooded brooders, and gas or propane fired infrared heaters.

### **Lighting System Options**

Most poultry facilities use automatically timed light circuits. These are generally on a dimmer switch as well so that the light intensity can be adjusted. Most systems use incandescent light fixtures, although dimmable, vapour-proof fluorescent fixtures are used in some barns.

Light levels and photo period lengths are very important aspects of poultry production. Varying light intensities are used to moderate aggression and feed intake, while photo period is used to promote natural egg production and bone strength. In order to accurately control light, the barn's air inlet and exhaust fans must have light traps installed. These minimize outside light while still allowing for fresh air flow. More detailed information can be found in the CPS leaflet "Lighting for Poultry Housing".

### **Feeding and Watering Systems**

Feeding systems are typically fully automatic trough or pan systems sized on a recommended length of feeding space for each type of poultry being fed. For example, this might typically be 2" of trough feeder per bird for broilers, but 3" of trough feeder for roasters or breeders. Similarly, a single 13" diameter pan feeder might be adequate for 55 broilers, but only 35 roasters or breeders.

Watering systems range from bell waterers and lines of nipple drinkers for floor birds to nipple or cup drinkers for caged birds.

### **Manure System Options**

Most broiler, broiler breeder, and turkey operations are floor systems using litter of either straw, shavings or shredded paper. These systems are referred to as a solid manure system. The manure typically has a moisture content of less than 35%. The newer cage laying systems with manure belts allows for some drying on the belt, resulting in moisture contents of about 35% to 60%. Laying and pullet cage facilities (without belts), produce manure with a moisture content of up to 90% and are considered to be a semi-solid or liquid system. Water often has to be added to make it a "flowable" product.

Solid manure barns are usually tractor-cleaned after every flock. The manure is either land spread at the time of clean-out, or stockpiled over the winter and land spread in the spring. Other options being looked at for handling solid manure include composting or drying and bagging. The manure is then sold for reclamation or horticultural purposes.

Liquid manure barns are scraped into short-term concrete storage pits, or long-term concrete or earthen pits. These pits are pumped out into liquid manure tank trucks or wagons and the manure land spread.