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Consumption and Quality of Water

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Water is considered as the most critical nutrient and yet its availability to all birds and its quality are commonly ignored. This chapter describes the needs for water, factors affecting its use, water quality, and the effects of water deprivation.

22-A. NEEDS FOR WATER

In general, the poultry farm must be concerned with the amount of water available, the reliability of the source, and the quality of the water as determined by contaminants.

Water requirements for a commercial poultry farm are large and must be carefully considered when new facilities are being planned. Water is needed on the poultry farm for the following purposes:

1. Daily requirements of the flock
2. Cooling of the flock (evaporative pads or foggers)
3. Sanitation programs
4. On-site egg processing
5. Fire protection

The general needs of the flock can be fairly well estimated by the fact that chickens of all ages generally consume about twice as much water by weight as they eat feed. Under normal conditions, the ratio of water to feed intake will range from about 1.5–2.5 to 1, and at extremely high temperatures, an even higher ratio may be seen. Interestingly, both meat- and egg-type chickens have similar water to feed ratios.
For planning purposes, a layer facility needs to allow at least 0.5 pounds (0.23 kilos) of water per day per hen. This is equivalent to 60 gallons per 1,000 hens per day. A broiler farm would require about the same for six-week-old birds and more if birds were kept to older ages. These requirements do not allow for abnormal wastage of water.

In hot regions, a large reliable supply of water is also required to cool the flock with sprinklers, misters (foggers) or pad and fan cooling. A typical large layer house (100,000 hens) with foggers may use more than 1,000 gallons of water per hour during the hot period of the day for fogging alone. If cooling is needed for six hours a day, this would total 6,000 gallons per day—an amount equal to that required for drinking purposes.

Water requirements for cleaning and disinfection of houses are difficult to estimate and vary with the individual cleaning program. In many cases, mobile washer-sprayers are used requiring relatively small amounts of water. Egg processing plants use water for washing eggs and for plant cleanup. Because a recycling system is used for wash water, the total amount of water usage is minimal (2,500 to 3,000 gallons per day) for a plant processing eggs from one million layers—an amount equal to about 0.02 pounds per hen per day. This would be equivalent to 2.5–3.0 gallons per 1,000 layers per day.

On-site water storage may be recommended in some regions to insure a continuous supply in case of water delivery problems. Most large farms try to have at least a two-day supply on hand at all times. This would also provide adequate reserves for fire protection. To provide the needs listed above, a one million hen-laying farm should have storage for at least 250,000 gallons of water. Standby generation for emergency power and spare pump parts are also necessities for any poultry farm.

22-B. FACTORS AFFECTING WATER CONSUMPTION

The daily water intake of a flock is useful information for the flock manager in helping to diagnose flock performance and wet litter problems. Meters are excellent tools to detect leaking waterers and/or breaks in the water lines. In addition, water consumption data is necessary to predict per bird intake of medications when added to the drinking water.

How Much Water Will a Broiler Flock Consume?

Water consumption is highly correlated to the amount of feed a flock consumes which, in turn, is associated with the age of the flock, body weight, environmental temperature, and the energy content of the feed. Water consumption also varies with the type of watering system.