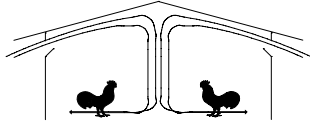




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College of Agricultural and Environmental Science/Athens, Georgia 30602-4356



Poultry Housing Tips

Broiler Farm Water Usage and Pipe Sizing Rules of Thumb

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The following charts can be used to help quickly estimate the maximum total potential water usage (gals/min) for a broiler farm:

Total Tunnel Fan Air Moving Capacity (ft ³ /min)	Pad System Maximum Water Usage (gals/min)	
	6" Pad	2" Fogging Pad
160,000	7.6	5
180,000	8.5	5.6
200,000	9.5	6.3
220,000	10.4	6.9
240,000	11.3	7.5
260,000	12.3	8.1
280,000	13.2	8.8
300,000	14.2	9.4
320,000	15.1	10

Interior Fogging Nozzles(1.5 gal/hr) Maximum Water Usage (gals/min)	
# Nozzles	Water Usage
50	1.3
100	2.5
150	3.8
200	5

Bird Age (Days)	Peak Water Usage (Gals/min per 1,000)
35	0.08
42	0.095
49	0.1
56	0.1

PUTTING KNOWLEDGE TO WORK

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES, COLLEGE OF FAMILY AND CONSUMER SCIENCES
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Total peak house water usage can be determined by adding together the maximum potential water usage of the pad system, interior fogging nozzles and the birds.

$$\text{Total Peak House Water Usage} = \text{Pads} + \text{Fogging Nozzles} + \text{Birds}$$

Total farm peak water usage can then be determined by simply adding together the total peak house water usage of all the houses on the farm.

$$\text{Total Peak Farm Water Usage} = \text{Total Peak House Water Usage} \times \text{Number of Houses}$$

Example:

*Four house broiler farm - 40 X 500' houses with 6" pads (200,000 cfm of tunnel fan capacity)
100 interior fogging nozzles, 20,000 birds grown to 56 days*

$$\begin{aligned} \text{Total Peak House Water Usage} &= 9.5 \text{ (pads)} + 2.5 \text{ (interior fogging nozzles)} + 0.10 \times 20 \text{ (birds)} \\ &= 14 \text{ gals/min} \end{aligned}$$

$$\begin{aligned} \text{Total Peak Farm Water Usage} &= 14 \text{ gals/min} \times 4 \text{ houses} \\ &= 56 \text{ gals/min} \end{aligned}$$

This particular farm needs to have a well/city water supply capable of supplying at least 56 gals/min. Ideally, there would be a second water supply of equal capacity in case of problems with the primary supply.

Distribution pipes must be sized properly to avoid an excessive drop in pressure between the water supply and the houses, which would lead to reduced water flow to the houses. Pipes must be sized at the maximum potential flow rates.

General Pipe Sizing Guidelines	
Flow Rate	Pipe Size
5 gals/min or less	3/4"
10 gals/min or less	1"
20 gals/min or less	1 1/2"
40 gals/min or less	2"
60 gals/min or less	2 1/2"
80 gals/min or less	3"

For the above example the pipe size required from well/street to houses should be at least 2 1/2" in diameter. Smaller pipe sizes could be used between the houses on the farm depending on the amount of flow through each section of pipe.

The above charts are intended to provide a general guide on broiler farm water usage and pipe sizing. Water system components such as city water meters, water filters, pressure regulators, etc. can affect water pressure and therefore water flow rates, to a house. To avoid potentially costly problems it is best to work with a plumbing professional when designing a water supply/distribution system for a broiler farm.



Michael Czarick
Extension Engineer
mczarick@engr.uga.edu
www.poultryventilation.com