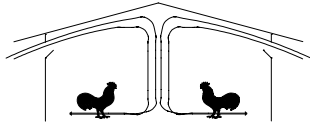




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Poultry Housing Tips

Are Your Water Supply Pipes Large Enough?

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Water usage on broiler farms has increased significantly over the last ten years. Though some of the increased water usage is due to faster growing and larger birds, it is changes in evaporative cooling systems that has had the largest effect. Ten years ago when a naturally-ventilated house with circulation fans was the norm the typical fogging system consisted of 50, one gal/hr nozzles, operating at 120 psi. This type of house required a well capacity of about one gallon per minute. Then came tunnel-ventilated houses with over 160 fogging nozzles operating at nearly 200 psi and evaporative cooling system water usage jumped to three to four gallons per minute. Now there are fogging pads and high efficiency recirculatory pad systems which can easily use up to eight gallons of water per minute, about four times what the birds are drinking. As a result, it is crucial that a modern broiler farm has a well capacity of approximately 10 gallons per minute per house to meet the demands of the birds as well as the evaporative cooling system.

To get this increased amount of water from the well to the broiler houses larger pipes are now required. For instance, years ago an 1 1/4" to 1 1/2" diameter PVC pipe was adequate to meet the demands of many four-house farms. Today such a farm will need a pipe that will supply 36 to 40 gallons per minute from the well to the houses. To accomplish this a 2-inch PVC pipe is required for most installations, but this can change depending on the pump design, length of pipe, elevation change between the well and the houses and the type of pipe used.

The chart on the next page shows "rule of thumb" values for good design of a PVC or plastic water distribution pipe. If your supply pipe is significantly smaller than the size suggested by the chart, you may not have enough water pressure or volume to operate your evaporative cooling system or to water your birds during periods of extreme heat. To use the chart, simply multiply your total number of houses by 10 (since each house requires 10 g.p.m of water) to get the total peak flow rate in g.p.m. Go down the left side of the chart to that number and across to the length of pipe. This will give you the recommended pipe size for the main supply line to your houses. You may be able to use smaller pipe to go between houses since they will not carry all of the water supplied by the main line.

This chart is based on a maximum allowable pressure loss of 5 psi. So if the pump is delivering water at 45 psi, you would still have at least 40 psi at the house when water is flowing at peak rates. It is desirable to maintain at least 40 psi at the house. So if your pump is only delivering 35 psi, you will need a larger pipe to prevent too much pressure loss. **If the houses are uphill from the pump, additional pressure losses will be incurred.** It is important that the pump be sized to deliver the needed flow of water **at the desired pressure.**

Using the chart, we see that eight houses, requiring a flow rate of about 80 g.p.m., would need a 3-inch main supply pipe up to a length of about 700 feet. Six houses would need a 2 1/2-inch pipe up to about 500 feet long.

It is important to realize that most well drillers and plumbers will know the proper pump, pipe and pressure tank sizes that are required for a farm, if they know what the maximum water flow rate will be. So make sure when building a

new farm or remodeling an older one that you inform them that the houses are capable of using 10 gallons a minute so they will know how to properly size your water distribution system.

FLOW RATE Gal./ Min.	LENGTH OF PIPE IN FEET (PLASTIC OR PVC)									
	50 or less	75	100	150	200	300	400	500	700	1000
10	1 Inch Pipe			1 1/4 Inch Pipe						1 1/2 In.
15	1 1/4 Inch Pipe					1 1/2 Inch Pipe		2 In.		
20	1 1/4 Inch Pipe				1 1/2 Inch Pipe		2 Inch Pipe		2 1/2 In.	
25	1 1/2 Inch Pipe			2 Inch Pipe		2 1/2 Inch Pipe			3 In.	
30	1 1/2 Inch Pipe			2 Inch Pipe		2 1/2 Inch Pipe			3 In.	
35	2 Inch Pipe			2 1/2 Inch Pipe		3 Inch Pipe			3 1/2 In.	
40	2 Inch Pipe			2 1/2 Inch Pipe		3 Inch Pipe			3 1/2 In.	
50	2 Inch Pipe			2 1/2 Inch Pipe		3 Inch Pipe			3 1/2 In.	
60	2 1/2 Inch Pipe			3 Inch Pipe		3 1/2 Inch Pipe			4 In.	
70	2 1/2 Inch Pipe			3 Inch Pipe		3 1/2 Inch Pipe			4 In.	
80	3 Inch Pipe			3 1/2 Inch Pipe		4 In.			4 1/2 In.	
90	3 Inch Pipe			3 1/2 Inch Pipe		4 In.			4 1/2 In.	
100	3 Inch Pipe			3 1/2 Inch Pipe		4 In.			4 1/2 In.	

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