Water is essential for life and is the nutrient needed by all mammals in the largest quantity. Water is important for various body functions, in temperature control, and in the production of milk. Milk contains 87% water. Limitations in availability of clean, fresh, and high-quality water can limit milk production quicker than a deficiency in any other nutrient. Water intake also regulates feed intake. Thus, understanding the importance of water and how to effectively manage your dairy feeding system to provide adequate water intake is very important. Important management concepts to achieve this objective include the following.

- Milking dairy cows consume 4 to 5 pounds (about a ½ gallon) of water per pound of milk they produce. Of this amount, drinking water provides 80 to 90% of these needs with the remainder coming from moisture found in feeds. For example, a Holstein cow producing 60 lbs of milk would drink approximately 25 to 30 gallons of water daily. Dry dairy cows will consume 10 to 15 gallons of water daily.

- Temperature and humidity dramatically increase water needs. Cattle under heat stress (temperatures above 70 F- higher humidity could lower this temperature) require 1.2 to 2 times more water than cattle housed under thermal neutral temperatures and humidity.

- Water troughs should be fitted with non-backsiphoning valves and an outlet (which is not accessible by cattle) for easy removal of water and sediment in the tank.

- Waterers should be emptied and cleaned (scrubbed) with a weak chlorine solution (1 cup of household bleach per 5 gallons of water) at least weekly to improve water quality and animal acceptance. This solution should be removed from the waterer and replaced with clean water.

- Waterers should be sized to accommodate multiple animals. Midwest Plan Service recommends one waterer or 2 ft of water trough perimeter space per 15 to 20 cows in the barns.

- Milking cows consume water alternately with feed and shortly after being milked. Thus, waterers should be located within 50 ft of the feedbunk and in return alleys or areas where cows are housed directly after milking. Waterers should be located close to cows housed in freestalls, composed bedded pack barns, loose housing or on pasture.

- Waterers should be located in areas immediately accessible upon return from the milking facilities. Waterers should be sized to accommodate the number of cows released from the milking parlor at one time. Dairy cows drink 50 to 60% of their water needs immediately after milking. Thus, a recommendation that cows have access to 1 to 2 ft of linear trough space per cow in return alleys from the milking facility. On some farms, water
is available during milking (if milking facilities are designed to allow access).

- Cattle spend approximately 6 hours per day eating but only about 20 minutes daily drinking water. Thus, the flow rate of water into the waterer is very important in providing adequate water intake. Cattle should be able to drink water without gulping air. The potential problem of stray voltage should be investigated if cattle lap water from the waterer.

- The depth of water within the trough should be such that cows can submerge their muzzles 1 to 2 inches into the water and drink without gulping air. Thus, the recommendation that water depth be a minimum of 3 inches with shallow water depths of 3 to 8 inches being preferred.

- The water surface of water troughs should be 2 to 4 inches below the top edge with the height of the trough being 24 to 32 inches for Holstein cows (2-3 inches lower for Jerseys).

References:
- D. McFarland- Penn State University NRAES-129