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# DAIRY NEWS

## WATER ANALYSIS IN DAIRY FARMS

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Water is the most important nutrient for dairy cattle. Too many dairy farms do not have an analysis performed on the well water. Should the water on our dairy farms be tested? The answer is clearly yes. There are at least three main reasons: 1) To avoid possible human health problems. The owner and employees and their families can drink or cook with this water. 2) To be prepared for some possible future problems, like soil contamination and 3) to include the minerals of the water in the animal's diet balances.

With regards to human health problems and well water, it is very important to ask your employees if they or their families are drinking or using well water for cooking. Nitrates, total soluble salt, and other possible contaminants in well water might affect human health. For example, nitrate in drinking water is a relatively non-toxic substance, but when intestinal bacteria convert nitrate to nitrite, this can produce a disorder called Methemoglobinemia. This is a blood disorder caused when nitrite interacts with the hemoglobin in red blood cells, and the blood cannot carry sufficient oxygen to the body's cells and tissues. This is an acute disease. The symptoms can develop rapidly in infants and is called Blue Baby Syndrome. In most cases, health deteriorates over a period of days.

From the animal nutrition point of view, all the minerals dissolved in the water need to be accounted for as available for the cows. The aim is to include these minerals in the animals' diet to improve mineral balance and animal performance. Moreover, almost all the minerals in excess of dietary requirements are going to be excreted in the feces and urine. Whether in dry manure or in lagoon water, some of these minerals will be applied to the soil. For instance, some preliminary results of a recent survey in Merced County related to nutrient balance at the farm level indicates that some minerals coming from drinking water can participate in an important proportion of the animals' daily intake. Twelve minerals were analyzed in the water trough of 18 dairies distributed in Merced County. According to this study, chloride, sodium, manganese and iron, might be in excess on many dairies. Cattle consuming water exceeding the limits of these minerals may reduce performance due to either taste, odor, appearance or just simply mineral availability. The following table shows the results obtained regarding the mentioned minerals:

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		Range of Dairies Tested			Upper Level(*)
		Average (18 dairies)	Minimum Values	Maximum Values	High Risk
Chloride	mg/L	161	11	820	300
Sodium	mg/L	152	30	500	300
Manganese	mg/L	0.22	0.01	1	0.5
Iron	mg/L	0.3	0.01	3.5	0.4

(\*) Cattle consuming water exceeding these levels might reduce performance.

These minerals could be in excess in most of the water troughs. Therefore, it is necessary to analyze the water in water troughs on every dairy to balance the animals' daily intake of minerals and, in some cases improve animal performance.

Some recommendations:

- Take at least two water samples per year (dry and rainy seasons) in sterilized bottles and have them analyzed, not only for minerals, but also for some possible contaminants (bacteria, sulfates, nitrates, etc).
- Instruct your employees to not drink or cook with well water before knowing the results of a complete analysis of the water.
- Use the minerals from the water to balance the diets. Talk to your nutritionist to estimate and buy the right amount of the needed minerals. Remember that all the minerals in excess of animals' requirements go to your pond, and some of them could probably increase (overload) the amount of minerals in your soils.