Impact of Water Quality on Livestock

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Technical information supplied by Mark Towner Consulting

Livestock ingest water from two sources, digestion of feed and drinking water. The intake of water varies considerably and may differ between species, breed, age, stage of lactation, diet, and the environment in which the animal lives.

We all know water is important but have probably not thought of why. Its key roles are for normal metabolic function, blood circulation, digestion, temperature regulation, excretion and elimination, protein and energy metabolism and lactation. These are all essential to not only sustaining life but being productive and therefore profitable.

Good quality water is clean, clear, odourless, palatable, free from toxins and has a low mineral content. An indication of poor quality water includes; high levels of soluble salt, algae, bacterial contamination, or is turbid which has resulted from clay suspension. Pollution in water which includes chemicals, dead animals, bird droppings and debris can also cause problems.

Producers can visually analyse stock water for colour, haziness, bubbling properties and smell water for odours. However, to truly determine water quality and understand its impacts, a water analysis is required.

Salinity is a growing issue and has a profound impact on palatability, livestock performance and animal health. Salinity refers to the total concentration of a range of dissolved salts which can include magnesium, potassium, bicarbonate, calcium and sulphates. Salinity naturally occurs when groundwater collects salts from the local geology but is increased due to a variety of reasons. One of the key issues is the rising water tables due to land clearing and over use of water. Salts present in fertiliser, herbicides and pesticides can also contribute to salinity levels.

Young, pregnant, lactating, aged, or weak animals from poor nutrition or disease are most susceptible to salinity levels in water. Refer to the table on the facing page.

Knowing the mineral content of the water is also very important, as those minerals are making a contribution to the overall mineral intake of the animal. Certain minerals supplied at high levels can impact livestock health, act as antagonists to other minerals and in some cases result in toxicity issues.

The acidity or alkalinity of water is measured using pH and is on a scale from 1 (Acid) to 14 (Alkaline). Neutral water has a pH of 7. A pH level below 6.5 (acid) and above 8.5 (alkaline) can cause significant impacts on livestock health and production.

Bacterial load is normally measured by extrapolating E. coli and indicates the faecal contamination of water from a variety of species. Faecal contamination may lead to serious human and animal health risks from bacteria such as *Vibrio cholera* and *Salmonella*, viruses such as *Hepatitis A,* and parasites such as *Giardia* and *Cryptosporidium.*

Algae can cause blockages in pipes and taint the water causing palatability issues. Several species of algae are toxic and can cause stock deaths. When toxic algae die they release toxins that are slow to break down and stock will need to be removed from the water source for a minimum of 3 weeks. To help prevent algal blooms; minimize the nutrient inflow, cover tanks to minimise sunlight, prevent contamination of water with bird faeces, reduce fertiliser runoff into creeks and dams. Keep areas surrounding dams and water courses well vegetated to minimise nutrients entering water supplies from wind and water runoff.

Some blue green algae species are very toxic and will kill livestock and poses a serious health risk to humans. It is important that if a blue green algae outbreak is suspected no animal or person should come into contact with the water. Dry green blue algae material surrounding contaminated water is also highly toxic.

The temperature of the water is important to livestock. Optimal water consumption which results in optimal health and productivity is achieved when water is below or at body temperature.

Good quality water is essential for animal welfare and profitability in any sheep or cattle enterprise.

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RIGHT:
Mark Towner presenting a Livestock Water Quality Workshop in Tintinara

TOLERANCE OF LIVESTOCK TO SALT IN DRINKING WATER				
STOCK	PRODUCTION CAN BEGIN TO DECLINE		MAXIMUM Level	
	EC	ppm	EC	ppm
Beef cattle	6,200	3968	15,600	9984
Dairy Cattle (lactating)	4,600	2944	9,200	5888
Horses	6,200	3968	10,800	6912
Lactating ewes, weaners	6,000	3840	10,000	6400
Sheep, dry feed	9,200	5888	21,800	13,952