



Understanding the Solution Report

Solution analysis provides valuable information on the quality of surface waters, groundwater and nutrient solutions used in crop, livestock and poultry production; aquaculture; and pond management. However, it cannot identify or measure microorganisms, potential pathogens, pesticides or other organic chemical contaminants. To test for these kinds of problems, contact your county health department or a commercial laboratory.

Sample Information This section contains sample information provided by the client, including sample identifier, description of intended use and solution use code.

Laboratory Results Concentrations of mineral elements include N (measured as $\text{NH}_4\text{-N}$, $\text{NO}_3\text{-N}$ and/or urea), P, K, Ca, Mg, S, Fe, Mn, Zn, Cu, B, Na and Cl, reported in parts per million (ppm). Concentrations of these elements can influence management practices in both plant and animal production.

EC is reported in units of $\text{Siemens} \times 10^{-5}$ per cm, which equals $\text{mho} \times 10^{-5}$ per cm. It measures salinity, which is a general measure of the total quantity of dissolved salts (ions) in solution.

pH is the level of acidity or basicity as measured by the amount of hydrogen ions (H^+) in solution. It ranges from 0 (acidic) to 14 (basic) on a logarithmic scale; 7 indicates neutrality. It can affect the availability of micronutrients and efficacy of pesticides.

SAR indicates the degree of balance among Ca, Mg & Na. It is useful in predicting the tendency of Na to accumulate in the substrate when the solution is routinely used for irrigation. Where overhead irrigation is used, toxic levels of Na can accumulate on the foliage. Since SAR is a ratio, it has no units.

Total alkalinity ($\text{CO}_3 + \text{HCO}_3$) is a measure of water's ability to neutralize acids or resist change in pH (pH buffering capacity), reported as ppm calcium carbonate (CaCO_3). It indicates the tendency of water to increase soil/media pH where irrigation is routinely used. In some plant production systems, alkalinity must be neutralized to avoid increasing substrate pH to levels that do not support plant growth.

Hardness indicates the amount of Ca and Mg in water, expressed as ppm calcium carbonate (CaCO_3). It is useful in evaluating water for potential to build up scale or for compatibility with animal medicines.

AR indicates the number of ounces of battery acid (35% sulfuric acid) to apply to each 100 gallons of water to lower alkalinity to a desirable level. The AR is calculated to neutralize 80% of the alkalinity.

Recommendations This section provides comments and suggestions for management, if necessary. Agronomists interpret test results and make recommendations based on the solution use code provided by the client.

Report Abbreviations

AR	Acid requirement
B	Boron
Ca	Calcium
Cl	Chloride
CO_3	Carbonate
Cu	Copper
EC	Electrical conductivity
Fe	Iron
HCO_3	Bicarbonate
K	Potassium
Mg	Magnesium
Mn	Manganese
N	Nitrogen
$\text{NH}_4\text{-N}$	Ammonium nitrogen
$\text{NO}_3\text{-N}$	Nitrate nitrogen
Na	Sodium
P	Phosphorus
pH	Scale of acidity/alkalinity
S	Sulfur
SAR	Sodium adsorption ratio
Zn	Zinc