Understanding the Waste Report

Waste products can provide essential plant nutrients to growing crops as well as improve soil physical properties, such as water drainage, infiltration and holding capacity. Waste products must be applied at agronomic rates and in ways that protect the environment.

Sample Information This section contains the sample identifier, waste code and description as supplied by the grower on the Waste Sample Information form.

Nutrient and Other Measurements / Other Elements Waste analysis assesses the value of the tested material as a substitute for commercial fertilizer. It always measures concentrations (ppm) of 11 essential plant nutrients (N, P, K, Ca, Mg, S, Fe, Mn, Zn, Cu, B). Na concentration is also provided since it can accumulate in waste materials to levels that are detrimental to soil physical properties and plant production.

\[ \text{pH} \] (provided for all liquid samples) should be 7.0–8.0 for optimum digestion of organic material by bacteria in anaerobic lagoons.

\[ \text{DM}\% \] (provided for all solid waste samples) is needed to convert the concentrations in ppm (on a dry basis) back to the wet basis (or moisture consistency) at which the material was received since solid waste samples are dried before processing.

\[ C, C:N, \text{pH and EC} \] (provided for all waste samples coded as compost or noncomposted materials) are valuable indicators of the material's suitability for the composting process or for use as a plant growth substrate amendment. The ideal C:N ratio for composting is 20–30. The optimal pH range for plant growth is 5.5–6.5. The EC value (expressed in units of 10\(^{-5}\) Siemens/cm) is an indicator of nutrient availability.

\[ \text{CCE}\% \text{ and ALE} \] (provided by request only) indicate the waste's value as a substitute for agricultural lime.

\[ \text{Cd, Ni and Ph} \] (heavy metals analyzed by request only) may indicate an environmental hazard. The N.C. Department of Environment and Natural Resources Division of Water Quality has established maximum cumulative pollutant loading rates and ceiling concentrations for these elements to protect environmental quality. Other elements that may indicate an environmental hazard (Al, As, Cl, Co, Cr, Li, Mo & Se) are analyzed by special agreement only.

\[ \text{NO}_3^-\text{N and NH}_4^-\text{N} \] (provided by request only) indicate N that is immediately available for plant uptake.

Recommendations Predictions of nutrients available for the first crop are based on the type of waste applied and its intended method of application.

Approximately 40–80% of nutrients become available within the first year of application. Applying wastes near planting time is recommended to maximize uptake and reduce environmental impact. Remaining nutrients either become available gradually or combine with soil constituents and become unavailable. Mineralization to available forms may occur over many years. Nutrients like Zn and Cu can accumulate in the soil in significant quantities. If waste is routinely applied, monitor nutrient accumulations with soil tests at least once every two years. Some cropping systems and metal levels may necessitate annual soil sampling.