Mehlich 3 soil test extractant

The Mehlich-3 extraction method is a widely used soil test procedure for assessing the availability of essential nutrients in soils, particularly for plant growth. It is an aqueous extraction method that uses a mixture of acids and salts to extract soluble nutrients from the soil. The primary objective is to determine the nutrient availability in a soil sample, which helps guide fertilizer recommendations for agricultural practices.

Key Features of the Mehlich-3 Extraction Method:
Extracting Nutrients: The Mehlich-3 solution typically consists of a combination of ammonium fluoride (NH_4F), acetic acid (CH_3COOH), ammonium nitrate (NH_4NO_3), and disodium ethylenediaminetetraacetic acid (Na_2EDTA). This mixture is designed to extract nutrients such as phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), sulfur (S), zinc (Zn), manganese (Mn), copper (Cu), and iron (Fe) from the soil.

Procedure: The soil sample is mixed with the Mehlich-3 extraction solution, then shaken and filtered to separate the liquid extract, which is analyzed for nutrient content using various laboratory techniques like inductively coupled plasma (ICP) or colorimetric methods.

Advantages:
The Mehlich-3 method is considered to be relatively fast, efficient, and effective for a wide range of soil types and agricultural conditions. It provides an estimate of nutrient availability that correlates well with plant uptake and growth.

Comparison to Other Methods: Mehlich-3 is considered a more versatile method compared to other extraction techniques, such as the Olsen or Bray P methods, especially for assessing phosphorus and micronutrients. It is particularly useful in soils that are acidic to neutral.

Source:
Mehlich, A. (1984). "Mehlich-3 Soil Test Extractant: A Modification of Mehlich-2 Extractant." Communications in Soil Science and Plant Analysis, 15(12), 1409–1416. DOI: 10.1080/00103628409367568.

This paper by Mehlich (1984) outlines the development of the Mehlich-3 extraction method and provides details on its application in soil nutrient testing.