How to Read the Spectrum Analytic Soil Test Results

Standard Agricultural Report

This report lists up to 20 results on a single page with no graph. The analytical results are reported in million (or pounds per acre (lbs/ac) upon request) for the major nutrients while sulfur (S) and the other nutrients are expressed in parts per million (ppm). This report includes a status assignment for each of the nutrients (Medium, Good, High, Very High). This status assignment is unique for various soil conditions and crops grown. The recommendations are listed on a separate page with up to three crops and are made in pounds per acre.

Special Agricultural Report

This report lists one sample result per page, but it includes a large bar graph representing the quality of the nutrients (Low, Medium, Good, High, Very High). This status assignment is unique for various crops and the crop to be grown. The analytical results for the major and secondary nutrients are reported in pounds per acre (lbs/ac), while sulfur, boron, iron, copper, manganese and zinc are only reported in million. This report also includes the optimal or desired range for each test result. The recommendations for this report are made in pounds per acre.

Turf and Ornamental Report

This report lists one sample result per page, but it includes a large bar graph representing the quality of the nutrients (Low, Medium, Good, High, Very High). This status assignment is unique for various crops and the turf or ornamental to be grown. The analytical results for all the nutrients are reported in ppm also includes the optimal or desired range for each test result. The recommendations for this report are made per 1000 square feet.

Each of these reports is divided into a few major groupings of information. The first or top sections include information that identifies the sample(s). This information includes:

- The name and address of the grower or homeowner
- The name and address of the person/company that sent the sample
- The sample identification assigned by the sender and the lab number of the sample assigned by Spectrum Analytic.
- The dates that the sample was received and analyzed by Spectrum Analytic.

The large central section of each report contains the analytical results. As mentioned previously, this section is different for each report.

The last section of each report includes recommendations for fertilizer and other materials as requested. Please note that to receive recommendations you must request them on the soil test sheet which is located in the boxes at the bottom of the sheet. Many customers prefer to m
recommendations or obtain them in other ways. If recommendations made by Spectrum Analytic the Sample Information Forms sent with the sample must include the appropriate inform intended crop or plant to be grown and yield goals.

**CEC**

CEC stands for Cation (pronounced “cat-ion”) Exchange Capacity. Cations are elements with a positiv as K⁺, Ca++, Mg++, Cu++, Fe++, Mn++, Zn++, Al+++; Na⁺, NH₄⁺, H⁺, and others. CEC is an indicativ ability to attract, hold, and supply cations to plants. Large CEC values indicate that a soil has a greate strength to hold cations. Therefore, it will be more resistant to a change in the soil test, or pH level. test level is good, it offers a large nutrient reserve. A high CEC soil also requires a higher soil cation le adequate crop nutrition. Low CEC soils hold less nutrients, and will likely be subject to leaching of m such as nitrate nitrogen (NO₃-N), sulfur (S), boron (B) and molybdenum (Mo). These soils may ber applications of several nutrients. The particular CEC of a soil is neither good nor bad, but knowing it management tool. See the article “Cation Exchange Capacity” for more information on CEC.

**pH**

pH is an indication of the relative acidity or alkalinity of the soil. It is based on a logarithmic scale from 7 being neutral. Being a logarithmic scale each change of 1.0 unit is a 10x unit change. For example a is 10 times more acid that a pH of 7.0. A soil pH of 5.0 is 100 times (10×10) as acid as a pH of 7. perform best and a wider range of nutrients are adequately available with a soil pH between 6.0 and some plants require more acid soils. Few, if any do better with soil pH higher than 7.0. See the ar Buffer pH” for more information.

**Buffer pH**

This is a test that is conducted to determine the amount of lime to apply in order to reach the desi does not represent the intended or target pH for that crop or plant. This test is required due to the ef CEC. See the article “Soil and Buffer pH” for more information.

**Nutrients**

All are reported with a status assignment (Low, Medium, Good, High, and Very High). The standa report has the first letter of each status printed with the result, while the other reports use the indicate the status.

**Phosphorous (P)**

Reported in pounds per acre or parts per million (ppm x 2 = lb./A), depending on the report. These may be unique for specific crops or plants.

**Potassium (K), Magnesium (Mg), Calcium (Ca)**

These are the three major cation elements and are reported in the same format. The amount co sample is reported in either pounds per acre or parts per million (ppm), depending on the report status ranges may be unique for specific crops or plants. Additional information is reported as the perc of each element. Percent saturation is best described as the percent of the CEC that is occupied by the desirability of a particular percent saturation for each of these nutrients is sometimes affected
conditions and the plant species to be grown. For more information on calcium and magnesium individual element. Normally as long as the soil pH is within the optimum range, most plants will receive a sufficient amount of calcium. However in the case of acid loving plants such as blueberries, some conifers, etc., calcium recommendation listed in the comments section of the report.

**Sulfur (S), Boron (B), Zinc (Zn), Manganese (Mn), (Cu), and Iron (Fe)**

Each element is reported in parts per million (ppm). The reported Cu and Mn recommendations are proprietary formula that calculates the effects other soil factors on the availability of Cu and Mn information on sulfur, boron, zinc, manganese, copper and iron click on the individual element.

**P2 Phosphorous**

This is the Bray P2 phosphorus test. It is a test developed many years ago to monitor the effects of large applications of rock phosphate fertilizer, which is very slowly soluble. It is sometimes used as an indicator of the “reserve” phosphorus supplying power of the soil. This is a controversial practice and Spectrum Analytic does not use this value in evaluating soils or making recommendations.

**Sodium (Na)**

Sodium is reported both as parts per million (Na ppm) and percent saturation (Na Sat %). Sodium is not a nutrient, and it is typically a major component of the soluble salts value (see the following section on soluble salts). This information has several applications, but is probably used most frequently to identify drainage characteristics of the soil.

**Soluble Salts (Salts)**

Soluble salts are reported as a measurement of electrical conductance of the soil in millihms/centimeter (mmhos/cm). This value increases as the salt content of the soil increases. Soluble salts are generally damaging to plant growth. However, plant tolerance of soluble salts is between species.

**Nitrate-N (NO₃⁻-N)**

Nitrate-N is the predominant form of N used by most plants. It is also the form most easily lost through environmental and soil conditions. The level of nitrate reported is NOT used in the nitrogen recommendation due to the many variables that can affect ultimate plant availability.

**Texture**

Soil texture refers to the percent sand, silt, and clay contained in the soil. The proportions of these determine the name assigned to the soil (sandy loam, silty clay, etc.) as shown in the USDA textural name of the texture is reported in one column, with the percentages of sand, silt, and clay in the columns. This information has several applications, but is probably used most frequently to identify characteristics of the soil.
Recommendations

Nutrient recommendations are made in pounds per acre or pounds per 1000 square feet of the element or oxide listed. Lime is recommended in pounds per acre of 100% calcium carbonate equivalent (CCE) material. The agricultural crops and reports have an assumed sampling depth of 7 inches, while turf samples and reports have an assumed sampling depth of 4 inches. Corrections should be made for actual purity of lime, fineness depth of sample. The philosophy behind fertilizer recommendations at Spectrum Analytic is to: 1) recommend enough nutrients to produce the listed yield goal, and 2) when the soil test level of a nutrient is less (Good), recommend additional nutrients to correct the soil test over a 3 to 5 year period. All recommendations are assumed to be as a broadcast application, unless otherwise noted. Rates should be adjusted for the method used, and the actual land area that is fertilized.

Comments

This section will contain appropriate comments related to crops or plants and results indicated in the report. You will also find recommendations for calcium in this area as needed.