

## MySoil - Soil Test Kit



### Customer Experience

The MySoil Test Kit is a soil and plant health optimization brand that couples predictive soil testing technologies with intuitive software, providing start-to-finish solutions for DIY and professional communities. Results easily guide prescriptive nutrient/soil amendment applications and timing. The MySoil personalized dashboard stores all your soil test results and product recommendations with real-time access season after season.


### Methodology

This soil test kit uses a specialized blend of encapsulated Ion-Exchange Resins that only adsorb nutrients from soil if they are in forms and amounts available for plant uptake. This technology and analytical method was developed by Dr. Earl Skogley at Montana State University in the 90's. Since that time the method of analysis has changed slightly depending on the lab or University running the analysis, most specifically the extractant used to strip the nutrients off the resin and the analytical equipment for  $\text{NH}_4^+$ -N and  $\text{NO}_3^-$ -N analysis. Some labs/universities use KCL extractant we use HCL.

A customer's soil is added to a specific portion of deionized water and the Ion-Exchange Resin Capsule. The resin capsule then absorbs AVAILABLE nutrients from the soil for 5-days (while the sample is in the mail). Once the resins have adsorbed nutrient from the soil/soil-solution for 5-days, the resin capsules are cleaned with deionized water to remove all the soil particles (this does not remove the nutrients adsorbed by the individual resin beads). Once cleaned, the capsules are then extracted/leached by slowly dripping 2N HCL through the capsule to strip all the nutrients adsorbed and collects them in a total of 50mL of the HCL. Once the capsule has been leached, the analyte containing the available nutrients is analyzed for  $\text{NO}_3^-$ -N and  $\text{NH}_4^+$ -N via ammonia gas diffusion and nitrate determination by cadmium reduction. The analyte is then analyzed on an ICP for P, K, Ca, Mg, Na, S, Fe, Mn, Cu, B and Zn.

### Method Advantages

- One of the many advantages of the Ion-Exchange Resin Method is that we **don't have to guess which extraction/analysis method is the best** for your specific soil. Conventional methods widely vary based on the area of the country you are located, what type of soil you may have, or your soil pH. The resins will only adsorb nutrient if they are in forms and amounts available for plant/root-uptake. "Simply", the resins are accounting for the pH of your soil as well as all other components effecting nutrient availability and release. *One method regardless of soil type!*
- **We use field-moist soils to perform the analysis.** We do not dry and grind the soil because it changes the physical and chemical characteristics of a soil. Measuring nutrient release and availability of a customer's soil in its natural state (BIOAVAILABILITY) offers huge advantages. Drying and grinding often opens clay layers and releases nutrients like potassium when chemical extractions are used. These nutrients may not be available to the plant this growing season or maybe in the next 5.

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- **This method is a great way to evaluate base saturation.** The proportion of nutrients adsorbed by the resin is a direct indicator/measure of the nutrient balance on soil exchange sites and will be clear in the results if these are not balanced correctly.
  - **Why a 5-day adsorption time?** This is a critical advantage of this analytical method. We use published data to determine the Lbs/Ac/Day uptake requirements for specific crops at specific growth stages. This is the only method that can measure Lbs/Ac/Day release from your soil and build your soil to match these plant uptake demands during the time they are growing. *It's not the total amount of nutrient in a given soil, but can that soil release those nutrients in forms and amounts to match plant uptake demands during the time they are growing".* A corn plant can require 15lbs K<sub>2</sub>O/Ac/Day at peak uptake. Very few growers are accomplishing this, simply because they haven't had the tools to measure and match this. Visit [www.mysoiltesting.com/technology](http://www.mysoiltesting.com/technology) For more information.
  - **Nutrient Ranges in the report** are also established from the published Lbs/Ac/Day data for specific crops. For high quality turfgrass, we fine-tune the uptake demands required for grasses grown for forage and seed, to grow the healthiest turf possible. These ranges promote optimal color, stress resistance, disease resistance and managed growth patterns for consistency. Similarly, for vegetable gardens we use Lbs/Ac/Day ranges for tomatoes which also covers a large number of nutrient demands for garden crops. These ranges are used to promote yield, quality and nutrient density in crops.
  - **How is this different than Paste Extraction?** The Ion-Exchange Resin Method will first adsorb available nutrients from solution phase similar to what a paste extraction will measure, but goes beyond this by providing critical information about the soils ability to continue to release nutrients once they have been adsorbed/removed from the solution phase.
  - **We still promote conventional soil analysis practices every couple years** to monitor larger trends over time, such as CEC, %OM or physical soil analysis. Some reflection of these levels are still apparent in the resin analysis by the rate and quantities of nutrients adsorbed.
  - **The volume of soil used for this test**, although it seems small compared to what you must supply to a conventional lab, is actually very similar to the total amount of soil used by the lab from what you send in. We promote the correct number, size and depth of soil cores collected to ensure that the sample size is proportionate to a quality composite sample for accurate results.
  - **This testing method provides PREDICTIVE insights** about soil nutrient availability and release, guiding customers to build and adjust soil fertility before plants experience negative impacts of nutrient deficiencies.
  - **Evaluate the products you are applying** by sampling before and after applications to show how these products/products-chemistries perform in your specific soil. You can even evaluate the effects of non-nutrient products like humic acids and biologicals and how they affect nutrient availability. This test is sensitive enough to monitor these changes.
  - **Test/evaluate composts and mulches to properly balance nutrient** levels and release. Often, we have no idea what we are getting in our composts and mulches. Too many times these amendments have toxic levels of some nutrients and are drastically un-balanced. This soil test will help build these amendments for success!