



NECi: The Nitrate Elimination Company, Inc.

334 Hecla Street, Lake Linden, MI 49945 USA

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NECi Cat. S-NTK-100 Series

Soil Nitrate Test Kit Instructions [S-NTK-100]

Tips & Notes

Store in a cool place (below 75°F/25°C), away from direct sunlight. Refrigerate if possible. The kit can withstand hot summer temperatures for 5 days. *Do not open the sealed packets or mix tube contents until ready to use.*

Soil sampling can be a complex issue. For best results, follow the directions of a Certified Crop Advisor for advice on soil sampling. Recommended soil sampling rate is one sample per acre in each field.

Mix soil sample till uniform before filling the scoop. Scoop holds ~1 g.

Don't forget to record where you took your samples. Label your samples & tubes!

If your sample stays very cloudy (clay soils), filter using UniPrep filter vials (NECi #Uni-45)

Kit Contents (per 4 samples):

- 4 clear tubes with white screw caps containing 5 ml water
- 1 white measuring spoon
- 4 clear *twist off* squeeze bulbs (buffer)
- 1 clear *snip off* squeeze bulb containing nitrate standard
- 5 snap cap tubes in sealed foil pouch (this is the enzyme)
- 4 plastic droppers
- 5 foil-sealed square tubes of color reagent powder, plus caps
- 1 cardboard test tube holder

You'll need:

- Marker for labeling tubes and samples
- Scissors to open squeeze bulbs
- Pen for recording data on data sheet!

Introduction: This kit contains everything you need to test soil samples. We also provide *snip off* squeeze bulbs with **nitrate standard** at 25 ppm nitrate-N to help evaluate your results, and so you know the kit is working. This format can be used to run multiples of 4 samples and 1 standard at a time. Collect your soil samples, and then run the tests and at least one standard all at once. Repeat each step for each set of samples you test.

What to Expect: The nitrate value you get will tell you the nitrate content of your soil sample. We can't guarantee the accuracy you would expect from a soil testing lab. But you *will* get a number you can use for making decisions about soil fertility - without waiting weeks for lab results.

Note: 25 ppm nitrate-N equals 225 lb Nitrogen per acre

Step 1: Get your samples Use white spoon to measure one level scoop of soil. Add scoopful to one of the clear tubes of distilled water (white cap). Recap the tube. Be sure to **label the tube** and record the sample location on the data sheet. Repeat for each soil sample.



Step 2: Sample prep Shake each tube for approximately 1 minute. Set the tube upright and allow the soil to settle undisturbed for at least 10 minutes.

For improved data quality, dry samples to constant weight before adding scoopful of soil to tubes. Ask NECi for instructions.



Step 3: Prepare your Snap cap tubes.

Remove the 5 snap cap tubes from the foil pouch. Place them in a cardboard test tube holder. Tap tubes to settle contents. Keep **upright** when open so as not to lose contents. Set the tube with the **blue dot** apart from the others. *Snip off* the end of the standard squeeze bulb (above, left) and empty entire contents into the tube with the **blue dot**: this is the **nitrate standard**. Empty entire contents of one *twist off* squeeze bulb (above, right) into each of the other 4 snap cap tubes. These will be your soil sample results. Label the tubes now! Cap all the tubes and shake gently.





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Notes

Be sure you have labeled the snap cap tubes in Step 3 to match the soil extract drop you are adding here in Step 4.

Add only one drop!

You can let this Step 4 go as long as you want to, but be sure to **wait at least 10 minutes** before going on to Step 5.

The Color is stable for a few days. You can keep the tubes to look at later.

This kit has been designed with non-hazardous reagents. It is safe to dispose of the liquids down the drain or on the ground. Spills can be wiped up with water and will not harm the skin. As with any household product, keep the Nitrate Test Kits out of the reach of children

Step 4: Add samples from Step 2 to the snap cap tubes in the holder.

Take one of the droppers. Without agitating the settled soil, use the dropper to take some liquid from near the surface of the clear tube. Add **one drop** (50 μ l) of this liquid to one of the **snap cap tubes**. Make sure not to touch the sides or surface of the liquid with dropper. **Repeat** for all **4** samples, using a different dropper for each. Recap snap cap tubes and mix by inversion 3 times. **Incubate snap cap tubes** for **at least 10 minutes**, exact timing not important, mixing occasionally by inverting the tubes.



Step 5: Color development

After at least 10 minutes, pour the contents of the snap cap tube with the **blue dot** into the **square foil covered tube** with the **blue dot (nitrate standard)**. Pour the contents of each of the other **4** tubes into appropriately labeled square tube. Try to get most of the liquid transferred. Firmly seal with a square cap and shake rapidly until all or most of solid dissolves. Let these tubes stand for ~5 minutes, then shake each to get a uniform color solution.

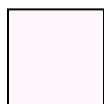


Evaluating your results:

The **nitrate standard** should have a clear pink color. Your sample results may be slightly cloudy, but you will see the pink color if enough nitrate is present. The nitrate standard is set at 25 parts per million nitrate-N (25 ppm nitrate-N). This is the optimal soil nitrate level for maximum corn yield.

Compare your results to standard by holding one sample & nitrate standard against a white background. Determine whether your samples are: **less than; nearly the same; or greater**, than the **nitrate standard** color. Use this information to decide if your field needs more nitrogen fertilizer – see chart below.

→→ Color Chart for comparison to **Nitrate Standard** and Samples.



Nitrate-N (ppm)

0

10

25

50

Nitrate (ppm)

0

60

150

300

N (pounds per acre)

0

90

225

450

Soil Fertility

Low

OK

Perfect

High







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DATA SHEET FOR AG WATER, SOIL & PLANT NTK'S

When you are finished with the test, the nitrate standard should have clear pink color. Your sample results may be slightly cloudy, but you will still be able to see pink color if enough nitrate is present.

Compare your results to the standard by holding your samples and standard against a white background for best results. You can use the back of these instructions. Determine whether your samples are less than, nearly the same, or greater than the nitrate standard color.

Use this Color Chart here to help with your comparisons.
 Note that the colors are the same for all the kits, but the nitrate concentrations are different!

				
Scale for Water Test Kits:				
0 ppm	2.0 ppm	5.0 ppm	10.0 ppm	Nitrate-N (NO ₃ N, nitrate-nitrogen)
0 ppm	9.0 ppm	22 ppm	44 ppm	Nitrate (NO ₃)
0 μM	145 μM	350 μM	725 μM	Molar concentration of nitrate
Scale for Soil Test Kits:				
0	10	25	50	Nitrate-N (ppm)
0	60	150	300	Nitrate (ppm)
0	90	225	450	N (pounds per acre)
Scale for Plant Test Kits:				
0 ppm	200 ppm	500 ppm	1000 ppm	Nitrate content as ppm nitrate-N

<u>Sample Number</u>	<u>Sample Description</u>	<u>ppm Nitrate</u>
	Example: northwest corner, collected 8/25/03	Close to, but less than 40ppm
1		
2		
3		
4		

Problems or Questions??? Call NECi – 1-888-NITRATE

Thank You for using NECi Ag-NTK!