



**NECi**

**NECi: The Nitrate Elimination Company, Inc.**

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NECi Cat. DF-NTK-100 Series

# Dry Forage Nitrate Test Kit Instructions

## Tips & Notes

**Store** in a cool place (below 72°F/22°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.*

**Plant sampling** can be a complex issue by itself. For best results, follow the directions of a Certified Crop Advisor for advice on plant sampling.

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

### **Kit Contents (per 4 samples):**

- 4 clear tubes with white screw caps containing 4.5 ml water
- 1 clear 50 ml tube
- 1 plastic pan
- 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 small plastic droppers
- 4 large 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
- Kitchen blender
- Scissors to *snip off* end of 1 squeeze bulb with standard
- Distilled water
- Teaspoon to measure sample
- Pen for recording data on data sheet!

**Introduction:** This kit contains everything you need to test dry forage samples. We also provide *snip off* squeeze bulbs with nitrate standard at 1000 ppm nitrate-N ( or 4500 ppm nitrate) 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 plant 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 plant sample. We can't guarantee the accuracy you would expect from a testing lab. But you *will* get a number you can use for making on-site decisions about plant nitrate content.

**Step 1: Get your samples** Cut or break your sample to fit into a kitchen blender. Grind a handful of sample until pieces are uniformly ¼" or less. Add distilled water to the black mark on the tube (blue cap). Using the plastic pan, add 1 slightly rounded teaspoon of sample to the large tube. Shake for 1 minute, then let stand for 5 minutes. Empty large tube and rinse with distilled water for subsequent samples.



**Step 2: Sample prep** Using a large dropper, add 0.5 ml (marked on dropper in photo) of extract from step 1 to one of the clear tubes of distilled water (white cap). Recap the tube and shake well. Be sure to **label the tube** and record the sample name on the data sheet. Repeat for each plant sample. Use a clean dropper for each.



### **Step 3: Prepare your Snap cap tubes.**

Remove the 5 snap cap tubes from the foil pouch. Place them in the cardboard test tube holder. Tap the tubes to settle contents. Keep tubes **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 plant sample results. Label the tubes now! Cap all the tubes and shake gently. **Step 4 must follow within 5 minutes.**



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**Notes**

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

**Add only one drop!**

Step 4 must follow within 5 minutes of Step 3. You can let this step go as long as you want to, but **wait at least 10 minutes**, with shaking, 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 nonhazardous 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, we do recommend you keep our Nitrate Test Kits out of the reach of children.

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

Use a small dropper to take some liquid from near the surface of the clear tube.

Add **one drop** (50 µl) of this liquid to one of the **snap cap tubes**. Make sure not to touch the sides or surface of the liquid with the dropper. **Repeat** for all **4** samples,

using a different dropper for each sample. Recap the snap cap tubes and shake gently. Let all the **snap cap tubes** set for **at least 10 minutes**, shaking gently every few minutes.



**Step 5: Color development**

After at least **10 minutes**, pour the contents of the snap cap tube with the **blue dot** into one of the **square foil covered tubes** with the **blue dot** (the nitrate standard). Pour the contents of each of the other **4** tubes into the appropriately labeled square tube. Try to get most of the liquid transferred. Firmly seal with a square cap and shake rapidly. Let this tube develop for about 5 minutes, shaking it several times to try to dissolve most of the powder.



**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 1000 parts per million **nitrate-N** (1000 ppm nitrate-N), or 4500 parts per million **nitrate** (4500 ppm nitrate). Compare your results to the standard by holding your samples and the standard against a white background. Determine whether your samples are less than, nearly the same, or greater than the nitrate standard color.

	<b>Form of Nitrate Reported</b>		<b>Recommendation For Feeding</b>
<b>Color ppm NO<sub>3</sub>-N</b>	<b>NO<sub>3</sub>-N (Nitrate-nitrogen) ppm</b>	<b>NO<sub>3</sub> (Nitrate) ppm</b>	Notes: ppm = parts per million Conversion factors 1 ppm nitrate-N = 4.4 ppm Nitrate = 0.61 ppm KNO <sub>3</sub>
0 ppm	<b>&lt; 350</b>	<b>&lt; 1500</b>	Generally considered safe for all livestock
400 ppm	<b>350 - 1000</b>	<b>1500 – 5000</b>	Limit to 50% feed for calves, pregnant or lactating animals
1000 ppm	<b>1000 - 2500</b>	<b>5000 – 10,000</b>	Limit to 25 – 50 % feed. <b>Do not feed to pregnant animals.</b>
2000 ppm	<b>&gt; 2500</b>	<b>&gt; 10,000</b>	<b>Caution!</b> Potentially deadly! Do not feed without mixing with low nitrate sources!