

Observational Metrics

Legume Nodulation

Ecological Process:	The Nutrient Cycle, Community Dynamics
Why Monitor This Metric?	Root nodulation in legumes indicates the strong establishment of the nitrogen-fixing relationship between the plant and the N-fixing bacteria. Root nodules should be numerous, relatively large and most importantly have a dark pink to red color that indicates they are actively producing nitrogen for use by the plant.
Tools Needed:	Camera, Shovel, Knife, Data Sheet/Paper, Pen/Pencil

The Process:

Note: Monitoring this metric is restricted to legumes only.

1. Enter the area in which you are assessing legume nodulation.
2. Choose a site where legumes are present.
3. Take a picture of the legume you are assessing with your camera or phone and identify the GPS coordinates. Record this on your data sheet or paper.
4. Use your shovel to dig up the roots (no wider than the width of the shovel).
5. Gently shake out the soil and look for nodules on the legume's roots.
6. If you observe nodulation, select the four largest nodules to cut and examine the colour inside.
 - a. Are they pink or red?
7. Make a note on your data sheet for how many nodules there are and where they are located on the roots.
8. Take a picture of the legume's roots for future reference.

Use Your Observations to Rate Legume Nodulation (adapted from ROC)

- Poor: few or no nodules.
- Fair: some small nodules high on the roots.
- Good: many nodules across the roots that are red and pink.