15N PLANT TISSUE ANALYSIS

Midwest Laboratories is excited to add another service offering for plant tissue analysis. The 15N analysis has become the gold standard of Nitrogen Fixation Tracing.

	Required Sample Size	Turnaround Time	Price
δ15N PLANT ANALYSIS	*Call for sample size*	12 – 15 BD	**$40.00**

WHAT IS 15N TESTING?

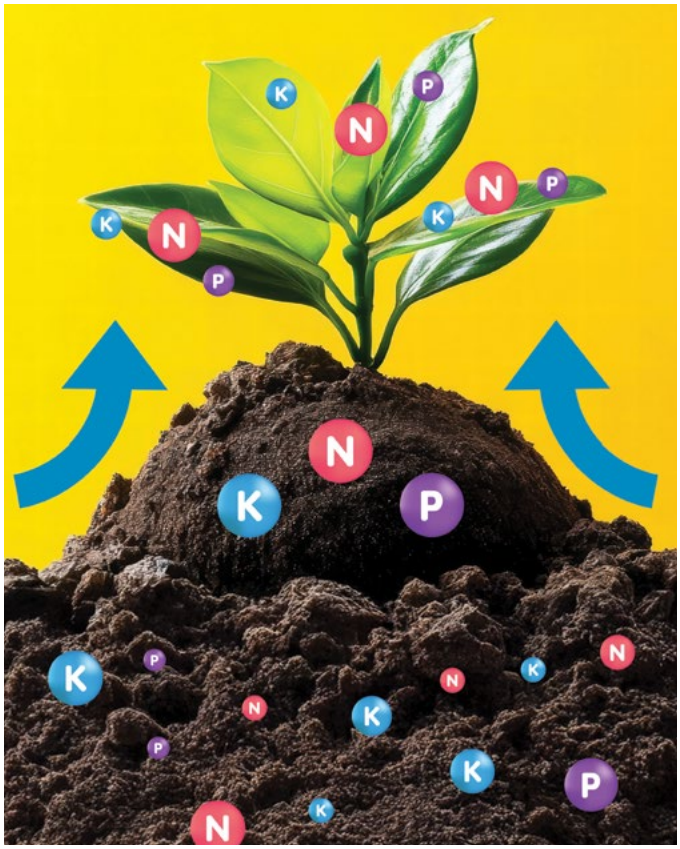
Midwest Laboratories has become the exclusive laboratory for 15N testing in the United States. 15N is a stable isotope that can be found in various plant tissue samples. Measuring 15N using IRMS can quantify the contribution of biological nitrogen fixation to a plants nitrogen supply. Use 15N to better understand where nitrogen is at in your plant tissue samples.

IRMS can track the 15N Nitrogen isotope and determine how effectively the crops are taking up fertilizer. This analysis helps in evaluating the efficiency of different fertilizer formulation and application methods.

Want to make sure your crops are efficient when it comes to Nitrogen? Utilize 15N analysis today!

BENEFITS OF THE 15N ANALYSIS:

- Gain insights into N2 fixation, uptake, and overall nutrient dynamics within crops
- Improve efficiency in fertilizer application
- Identify and develop crop varieties with superior N2 use efficiency for higher yields with reduced inputs.
- Understand crops amended with organic or inorganic fertilizers.



IMPORTANT CONSIDERATIONS:

- **Plant tissue type:** The 15N signature can vary depending on which plant tissue is analyzed (leaves, stems, roots).
- **Environmental factors:** Soil nitrogen availability, climate, and plant species can all influence the 15N value.
- **Reference samples:** To accurately interpret results, it's crucial to compare plant samples to a reference standard or a control group grown under similar conditions.

For questions on this service or other agriculture testing, please contact our Agronomy Team at:

AgronomyTeam@midwestlabs.com

(402) 334-7770 ext 222

COLLECTION & PREPARATION OF THE SAMPLE

1. When gathering the tissue sample in the field, be sure to use a clean container. A plastic pail or a paper bag work best. Never use a metal container to gather the sample as the metal may contaminate the sample.

2. To ensure proper sample amount on young plants, collect approximately one pint of lightly packed material.

3. If the plant samples have soil, fertilizer, dust, or spray residues on them, they will need to be cleaned. A dry brush works well. For stubborn residues, wipe the samples with a damp cloth or wash the samples with distilled or deionized water. However, do not prolong the washing.

4. Air-dry the samples and place inside a clean paper bag or envelop to avoid contamination when mailing the samples to the laboratory. **Never place fresh samples in a plastic bag or include roots with samples submitted for nutrient analysis.** Midwest Laboratories will provide sample bags suitable for plant tissue samples

5. Fill out a Plant Sample Submittal Form, either through our MyLab Portal or by downloading from our website. Submittal forms must be included in every box of samples. Ship the samples directly to Midwest Laboratories, 13611 B Street. Omaha, NE 68144.

SAMPLING TIPS FOR COMMON CROP TYPES

CROP	WHEN TO SAMPLE	PART OF PLANT TO SAMPLE	PLANTS PER SAMPLE
Alfalfa	At 1/10 bloom stage or before	Mature leaf blades about 1/3 of the way down the plant.	45-55
Corn	Seeding stage or prior to tasseling or from tasseling to silking	All the above-ground portion. The first fully developed leaves from the top. The leaves below and opposite the ear.	25-30 15-20 15-20
Soybeans	Seeding stage or Prior to or during initial flowering	All the above-ground portion. The first fully developed leaves from the top.	20-30 20-30
Sugar Beets	Mid-season	Fully mature leaves midway between the younger center leaves and the oldest leaf whorl on the outside.	30-35

For a complete list, reference the Plant Tissue Handbook at midwestlabs.com/resources

INTERPRETATION OF 15N VALUES

The analysis measures the ratio of 15N to the more common nitrogen isotope, 14N, expressed as a delta value 15N in per mil (‰). Results can range -15 to 20, with a typical value between -10 to 10.

- **Low 15N Values (Below 0)**: Indicates a greater reliance on atmospheric nitrogen fixation (e.g., legumes with nitrogen-fixing bacteria) as the plant is sourcing Nitrogen from synthetic fertilizer.

- **Middle 15N Values (Around 0 to 2.5)**: Indicates more synthetic source of Nitrogen than organic.

- **High 15N Values (Around 5 and above)**: Indicates the plant is getting its Nitrogen from organic (non-fertilizer) sources naturally occurring in the soil. The higher the value the more organic sources.