

Alfalfa in our landscape benefits our livestock, soil health, and rural beauty



ALFALFA GROWERS

-We need your help!

TO QUANTIFY AND COMMUNICATE THE
PRODUCTION POTENTIAL AND
ENVIRONMENTAL BENEFITS OF ALFALFA

- Participate in a brief (~15 min) management practices survey
- Help us identify fields to take soil samples

YOU WILL RECEIVE

- 1) A soil health report on the fields surveyed
- 2) A \$100 gift card as thanks for your time

Please contact Soledad Orcasberro (608) 335-2313
orcasberro@wisc.edu to participate

A project by

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MORE INFORMATION ABOUT THE PROJECT

MOTIVATION

- Yields of alfalfa varieties at experimental stations over time have increased; however, alfalfa yields on the average alfalfa-producing farm in the Midwest remain on average between 30% and 50% below modern varieties' yield potential, highlighting the persistent yield gap experienced by many farmers.
- Identification of this yield gap presents an opportunity to identify management factors that could lead to substantial near-term yield improvements across alfalfa production operations, reversing recent declining trends of alfalfa production and reinvigorating the perception of alfalfa as a highly productive and efficient crop.
- There is also a need to quantify and communicate the *soil health benefits* of alfalfa, which have gone understudied and underappreciated compared to other cash crops.

OBJECTIVES

1. Identify management practices on-farm that lead to high yields in alfalfa, using management history, alfalfa yield, and alfalfa quality data shared by collaborating alfalfa growers.
2. Collect soil samples in fields identified by collaborating growers to measure soil fertility and soil health indicators.
3. Construct statistical models to identify relationships between soil fertility and health indicators, management practices, and alfalfa productivity indicators.
4. Communicate results describing how soil fertility and health indicators and management practices impact alfalfa forage yields and quality, and how better soil management can close alfalfa yield gaps, through i) soil health reports issued to collaborating growers, with descriptions tailored to their farms, ii) presentation of results at grower and industry conferences, and iii) Extension materials, including fact sheets, blog posts, newsletters, and articles.

METHODS

In spring 2022, farmers will be contacted to arrange for a visit to their farms to perform the survey and soil sampling. In relevant fields, soil will be collected from ten randomly chosen locations, directly adjacent to alfalfa crowns, to a depth of 1 foot. Soil will be brought to the laboratory, and will be subjected to analysis of key soil health indicators, including soil fertility and chemical indicators (P, K, S, Ca, Mg, Fe, Mn, Zn, pH, total C/soil organic matter, permanganate-oxidizable C/POX-C), physical parameters (bulk density, aggregation, and aggregate stability), and biological factors (microbial community structure and diversity, respiration). The additional physical measurement of surface hardness will be conducted in the field with a soil penetrometer. Frozen soil will be subjected to phospholipid fatty acid (PLFA) analysis, which provides a "fingerprint" of the soil microbial community, as well as abundance data of high-scale member groups of the community; e.g., mycorrhizal fungi, saprophytes, gram negative and positive bacteria, etc.

The farmers, in collaboration with industry and Extension partners, will measure and monitor alfalfa yields using yield technology currently available on-farm or digital technology from the chopper. Participating growers will also provide forage samples for feed analysis/forage quality testing, which will be analyzed in the UW Madison Forage lab in the Agronomy Dept. Participating growers will get a comprehensive report of the results from their farm's analysis within a year of sample collection.

Grower participants will remain anonymous throughout the project's life span and in all communications, unless they consent to share specific information about their farm. It is important to state that all yield and quality data will remain anonymous throughout the life of the project, and beyond, to assure growers' and farms' information is protected.

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