Please provide a 1-3 sentence description of your organization.

The **Midwest Forage Association (MFA)** represents forage producers/users, educators and industry in the Midwest. MFA is dedicated to creating, promoting and supporting value to the forage industry through leadership, research, and education to improve profitability for users and producers of forage crops emphasizing environmentally sound systems.
MFA offers its members a wide range of forage related research and information, while heightening the visibility of the forage industry at the regional and national levels.

Relative to bioenergy, what are your top problems and which research products (or researchable questions to which you need answers) would help you solve these problems?

Major Problem : The lack of research on alfalfa as a candidate crop in the production of cellulosic ethanol.
Needed Research:

- Feasibility of ethanol production using alfalfa. What method is the most efficient method of conversion? Gasification, cellulosic, etc.
- Mechanical and biological techniques (inoculants) need to be explored.
- How does ensiling affect use as a biofuel feedstock?
- Smaller scale production systems for cellulosic ethanol production. Size, based on geography, that is needed to support ethanol plant.
- Carbon credits for alfalfa, what is the value?
- How compatible is a biomass use with a haylage harvest system?
- New uses for alfalfa leaf fraction. Stems used for ethanol production, leaves used for other high value purposes. What are they? High protein feed source, consumer products, nutracueticals, lutein or carotenoids extraction? What is potential for co- or by-products?
- Densification techniques need to be explored to make transportation costs more feasible.
- Variety development – higher yield, increased biomass, improved tolerance to abiotic stress, improved protein quality & leaf composition.

What do you think ARS's top bioenergy research priorities should be (no more than five, please)?

- How to improve feasibility of cellulosic ethanol production, end-user price must be comparable to gasoline to be competitive.
- Need further genetic research into alfalfa to address cell wall issues.
- Need research into a diversity of feedstocks including crops we already know how to grow.
- Need value added co- or by-products research of those crops identified as good candidates for cellulosic ethanol production.
- More emphasis on pyrolysis (similar to gasification) would make biomass production more feasible since end product could be used not just for energy production but for other value-added products as well.

Additional customer service questions:

What might ARS do to serve its customers/stakeholders better?

In terms of forage crops and alfalfa, make sure enough resources and personnel are devoted to its research, specifically providing additional researchers and replacing those who retire, resign or move to different disciplines or crops.

What, in particular, about ARS would lead you to recommend ARS to someone else looking for similar research products?

Efforts to ascertain and refine customer needs and subsequently respond to them.
Willingness to bring together many stakeholders to develop and focus its mission.