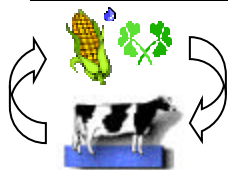
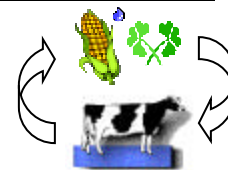

Newsletter for the BIFS Forage Production & Dairy Manure Management Project



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Hoping to increase their forage harvest in the early spring, two BIFS participants have overseeded berseem clover on older alfalfa stands. Annual ryegrass has also been planted at one site, with the hope being that it will utilize much of the nitrogen (N) and other nutrients applied in manure water this winter.

Each site has been set up with replicated treatments. The effect of manure water application will be looked at by comparing soil characteristics and plant nutrient uptake. Differences between plant growth and nutrient uptake in overseeded and non-overseeded treatments will also be examined, and ryegrass compared to berseem clover at the one site. The fate of applied manure nutrients will be assessed using a nutrient balance. Soil and manure water sampling has begun on each site.

It should be interesting to see the effectiveness of both overseeding species in using manure water nutrients, and to compare total forage production with the non-overseeded treatments. Dan Putnam, Forage Specialist at UC Davis, believes that berseem, an annual clover with forage quality comparable to alfalfa, is a good candidate for overseeding because the “[winter and early spring]

growth typically exceeds that of alfalfa by 20-40%”. This gives the potential to increase yield by 1-2 tons in the last year of a declining alfalfa stand.

If the timing is right and there is something to see, the regional lunch meetings for participants in February or March will be held at the overseeding locations.

Other BIFS Accomplishments so far:

- ❑ The BIFS Dairy participants from both the south and north San Joaquin Valley have met together over lunch to get to know each other, discuss nutrient uptake in silage corn and winter forage, and to share ideas for the BIFS project.
- ❑ Field sites have been identified on 8 of the 11 BIFS sites, with data collection started at six of these. Data collection has included soil and plant samples, as well as manure water analysis for nutrient content. At one site corn nutrient uptake and application of N in manure water was measured in the summer of 1999.
- ❑ Meetings have been held with all the grower participants to examine the current state of affairs at each dairy, and to determine what improved management practices may be useful on these dairies.

Alfalfa and Manure Applications

“Alfalfa is an excellent crop for manure applications.” This was the position of Michael Russelle, soil scientist at the USDA-ARS Dairy Forage Research Center in Minnesota during his presentation at the California Alfalfa Symposium in Fresno on December 9.

The year-round, perennial growth habit of alfalfa results in greater uptake of water and nutrients than annual, shorter season crops. And, even though alfalfa can generally fix the N it needs from the air, it will absorb nitrate from the soil if it is available. If N is absorbed from the soil solution, the alfalfa plant fixes less N from the air, ending up

with a similar total amount of N in the plant at the end of the season. A number of researchers have found that nitrate pollution in the groundwater under alfalfa is much lower than under corn or soybean crops.

The perennial nature of alfalfa also contributes to very deep roots, 4 to 6 feet per year. This means that alfalfa can access nitrate from lower depths than can other shallower rooted crops.

Issues that need to be addressed when irrigating alfalfa with dairy lagoon water are the solids content and biological oxygen demand (BOD). The solids in manure water tend to clog up

soil pores, allowing less aeration in the alfalfa root zone. This is a problem because alfalfa is quite sensitive to flooding and lack of oxygen.

Other components of the manure water also need to be considered before application to alfalfa. Potassium levels in forage can become too high

when manure application results in high levels of soil potassium. Also, although researchers are working on developing alfalfa varieties with more resistance to salinity, salts in the manure water can impact alfalfa growth.

Ask The Experts – Salts and Field Application of Manure

Q—Do I need to worry about anything else if I monitor nitrogen content of my manure applications?

A—Yes. It is a given that if manure is applied at rates to meet the nitrogen needs of the crop phosphorus and potassium will be over-applied. Additionally, salts will be over-applied.

Q—Should I be concerned about over-application of salts?

A—Yes. Sodium, chloride, potassium, calcium, and magnesium can build up in soil and interfere with soil function and plant growth.

Q—Where does excess salt go in the soil?

A—Historically, irrigation management practices have suggested that excessive amount of water be applied to fields to leach salts from the root zone. The leached salts can contaminate the water table in

areas where the soils are coarse and the water table is shallow.

Q—What else can I do to reduce salt loading on the soil?

A—The best place to start is to evaluate the salt intake in the animal's diet. Feed salts in the diet and not free choice. Be sure that additional salt is not added to diets just for ease of formulating.

Q—Are my cows deficient in salt because they use the salt licks?

A—No. Animals do a poor job at consuming minerals free choice to meet their dietary needs. Most likely, the animals like the taste or the texture of the salt lick, or are just bored.

Deanne Meyer, Dairy Waste Management Specialist, UC Davis.

Calendar of Events

February 10 (Five Points, CA) or 11 (Davis, CA), 2000.—Conservation Tillage Conference Featuring recent research information, practical applications, innovative ideas and equipment related to reduced tillage production systems and interactions between tillage, soil organic matter and soil quality. For more information, contact Jeff Mitchell, phone: (559) 646-6565 or email: mitchell@uckac.edu.

March 7&8, 2000—Western SARE Conference “Farming and Ranching for Profit, Stewardship, and Community. USDA SARE (Sustainable Agriculture Research and Education) sponsored projects will be highlighted, including the UC BIFS projects. For more information, contact Alison Eagle, phone: (559) 646-6589 or email: ajeagle@uckac.edu

TBA, Feb/Mar, 2000—Lunch Meetings with BIFS participants in north valley and south valley. Likely to be held at participating BIFS dairies. For more information, contact Alison Eagle, phone: (559) 646-6589 or email: ajeagle@uckac.edu

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