FNE02-412: Horticultural Weed Barrier Mats from Dairy Manure
1 August 2003

The goal of this project is developing environmentally responsible, biodegradable, manure fiber based paper products that will substitute for polyethylene groundcover.

Freund's Farm, Inc. is a 230 cow rotationally grazed dairy with 650 acres of crops and pastures and a managed 200 acre woodlot. The dairy operates under the guidance of a Comprehensive Nutrient Management Plan. All manure is processed through a methane digester and separated. The liquid is stored in a lined lagoon while the solids are further processed though an in vessel composter. The solids are used for bedding or sold off farm. Liquids are draglined onto appropriate fields twice a year.

The project leader was Matthew Freund. Perry Gardner served as the local engineer. North Carolina State University was hired to refine and process the manure. USDA at Beltsville, Maryland volunteered research space to test the paper. University of Connecticut has collaborated with USDA and also set up some of its own tests.

The project began with a search of possible partners to manufacture the paper. We selected North Carolina State University to try to produce a single sheet of paper. Upon this success we contracted with NCSU to run a one thousand foot roll of paper 1 foot wide. Meanwhile we contacted UCONN and USDA to find interest in carrying the project to the next meaningful testing stage. We received enthusiastic support. Matthew Freund and Perry Gardner traveled to Beltsville to assemble the paper with Dr. Tom Morris and a graduate student (from UCONN on their own funds) into 4 by 20 foot sheets.

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On the economic findings we can report that UCONN and USDA are both excited about the potential to replace plastic with manure on a huge potential base (73 million acres). The costs to start up a paper operation are substantial but both groups are already talking about finding more funds to continue this project on a larger scale. NCSU needs at least 25,000 dollars to consider a run on their 4 foot machine.

The project fell into the next step by contacting the best people to carry out the research end. Everyone sees good potential and the process has already begun to keep the ball rolling.

We will certainly stay involved in the project. If we meet with more success we may have to hand it off to interested parties that can become more fully involved. We will likely try to retain some interest in the production.

The outreach program has been directed mostly to institutions that could move the project. Our success here is beyond what we expected with our foot in the door at Beltsville and UCONN. Otherwise we have entertained the State FSA committee with a presentation. Also the Canaan Valley Agricultural Cooperative stays intimately informed of all progress. Matthew is speaking on a panel at Empire Farm Days and will discuss the success of this grant. Our trade organizations remain fascinated whenever we attend meetings and we give frequent updates. As research trials show positive results we expect that publication in research journals will follow. The multiplier effect of this grant has really impressed us.

Thank you,

Freund's Farm, Inc.
Benjamin Freund and Matthew Freund
1 August 2003

USDA inspecting paper.

Matthew Freund gluing sheets for trial.

Comments on the initial stages of the research trial from USDA project leader:

The mulch and planting went along just fine. Only a couple of minor tears which were easily 'repaired' with the glue and extra strips on hand. It rained lightly a couple of times the first few days after we got the plants out. This week we've have a couple of heavy downpours and its holding up fine.

The biggest problem we're having the past couple days is deer. They are nibbling the tops of the tomatoes and prancing on all the mulch. We put out some emergency bars of 'Zest' and other highly fragrant soap and will install an electric fence this week. We just don't want to have to replant and get more holes in all the mulches. We can repair the few, so all is well for the moment.

I'll try to get time on Thurs. to download and email you some of the photos we took of the planted plots.

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