

Manure Irrigation Workgroup Meeting – December 13, 2013

DRAFT notes.

Original Agenda

December 13, 2013, 9:00am - 2:00pm

Dane County Cooperative Extension

First Floor Meeting Room

5201 Fen Oak Ct, Madison, WI 53718

Meeting Overview

This meeting will include discussions of organic standards, regulatory issues in Wisconsin and elsewhere, and a focus on comparing manure irrigation to other conventional practices for manure application. The workgroup will also revisit the risk tables and consider the 2014 timeline. Background information is available at the workgroup document site and also at the project website (fyi.uwex.edu/manureirrigation).

Agenda

- 8:30am **Room available** – coffee
- 9:00 Welcome, introductions, agenda review and repair
- 9:10 Review of meeting notes from last meeting – November 22
- 9:20 Updates and announcements
- 9:30 Discussion: drift issues associated with organic certification, direct-market, and related operations – Lynn Utesch
- 10:15 Discussion: Revisiting the regulatory framework for manure irrigation – WI and beyond – Andrew Craig and Dave Panofsky (DNR Air engineer)
- Break as needed**
- 11:15 Discussion/Exercise: Manure irrigation scenarios – what does application look like in comparison to other practices in various settings? – All
- 11:45 **Working Lunch** – pause for box lunches (provided) then continue scenarios discussion
- 1:00pm Discussion: risk tables – updates and next steps
- 1:30 2014 planning for Manure Irrigation Workgroup activities:
- Workgroup products (summary information, tools, recommendations?)
 - January 31, 2014 meeting, location, and objectives
 - Timeline for additional meetings?
 - Sub-group meetings/calls? (e.g., potential discussion with Johns Hopkins researchers)
- 2:00pm **Adjourn**

NOTES from December 13, 2013 Meeting

1. Attending:

Workgroup members attending: Mark Borchardt, Andrew Craig, Becky Larson, Pat Murphy, Rob Thiboldeaux, Suzanne Gibbons-Burgener, Todd Boehne, Kenn Buelow, Jeff Sommers, Shelly Mayer, Dana Cook, Lynn Utesch, Gloria Smedema, Ken Genskow.

Workgroup members not attending: Carrie Laboski, Sarah Grosshuesch, Jim VandenBrook.

Others attending: David Nelson (UW-Madison), David Panofsky (DNR), Joe Greening (public), Eric Cooley (UW Discovery Farms), Gary Barsen (WFF)

2. Review of Discussion Notes from November 22:

See Notes from November 22

3. Updates and Announcements:

- Adams County ordinance regarding a moratorium for MI practice (discussed at Nov 22 meeting) passed and is in place.
- DNR has not yet made a final decision regarding the Ebert Enterprises application to include manure irrigation as part of their CAFO permit. DNR is working to structure requirements to address concerns of all parties.
- DNR is discussing participation in the drift research study with another CAFO operation in NE Wisconsin. Andrew Craig will provide an update when more is known.
- Videos of presentations from the November 16th Rural Health Forum are completed and will be available in the near future. Lynn will update when available.

4. Presentation/discussion: drift issues associated with organic certification, direct-market, and related operations.

Lynn Utesch presented “Organic and Sustainable Farming” (see attached slides) as an overview of organic farming and concerns about drift from manure irrigation.

Summary points from the presentation:

- Organic operations are innovating and expanding
- Organic is proactive, not just about what is not used
- Wisconsin has second highest number of organic farms, highest number of organic dairy farms
- Organic certification is a minimum standard. It sets a floor not a ceiling for practice.

Why concerned about spray irrigation: If spray drifts onto property, the crop is no longer organic.

- Overspray can lead to decertification
- Some products (e.g., grapes, organic or otherwise) are very susceptible to herbicides
- For direct marketing, integrity is everything

Lynn noted that organic and other natural or direct market growers are concerned about any manure from larger operations generally, and especially when there is a risk of overspray. As discussed at previous meetings, manure in large storage pits includes other chemicals and products from the dairy operation, and may also include industrial waste, such as from food processors. Application of any industrial wastes are municipal sludge to adjacent fields heighten growers’ concerns.

Among the main concerns, is that some of the chemicals in applied manure product can affect the bugs, worms, and microorganisms normally present in and essential for organic farming. Growers rely on those organisms for healthy and productive soils. For example, on Lynn’s farm, these

organisms have converted red clay soil to a rich, dark brown loam. They are a critical part of natural farming systems, and organic farms rely on them for maintaining organic status.

Customer perception is important for direct market, CSA, and organic products, and businesses are concerned about both actual drift/overspray and also customer perception of the potential for drift/overspray. The awareness of manure irrigation in adjacent fields could harm marketability.

Discussion focused on specific issues faced by organic operations. For example, regarding maximum size of an organic dairy (is it possible to have an organic CAFO), and how do Wisconsin livestock farmers meet pasture requirements in colder months. Discussion also raised questions about setback requirements associated with organic certification and who is responsible for maintaining and controlling the setback/buffer. Organic farms must maintain a 25 foot buffer on farm, assuming that neighboring farms keep their material within their own properties. Organic and related growers seek to put distance between their operations and non-organic operations and are concerned generally with increasing densities of CAFOs near their operations.

5. Discussion: Revisiting the regulatory framework for manure irrigation – WI and other states.

5a. Overview of manure irrigation regulations in other states – Andrew Craig (DNR)

Andrew Craig provided a summary of regulations and practice in EPA Region 5 states. Andrew stated that most states do not get complaints about the practice, other than about odor. Iowa does have some specific requirements regarding manure irrigation timing and rates; different pressures require different setback distances. The focus for most states is on nutrient management issues and keeping nutrients on fields; drift is generally not addressed. Andrew handed out a document summarizing requirements in other USEPA Region 5 state (attached and also workgroup reference materials). Additional information about three states is included below:

North Carolina: Primarily a swine livestock state with widespread antibiotic use. They strive to control drift and microbial load. However, a grandfather clause protects existing operations. Changes in operations may increase regulatory obligations. Traveling gun irrigation systems are prevalent. (A summary of NC requirements is attached, along with information about other states).

Washington has used similar irrigation systems, but are now trying to reduce odor and drift into waterways for nutrient management purposes. Irrigation guns are moved to limit drift into waterways. Injection systems are frequently used to control odor.

Idaho: Has done quantitative microbial risk assessment (QRMA) associated with municipal waste applications. A follow up call with Idaho researchers and the Wisconsin drift research team will be scheduled soon.

Generally, where states have addressed the risk, they have taken steps consistent with Rob Thiboldeaux's 2011 memorandum (available at the Manure Irrigation Workgroup website).

5b. Wisconsin's Air Management Program Perspective presentation -- David Panofsky (DNR Air Engineer)

David Panofsky works with air issues related to animal agriculture, and he provided a presentation on DNR's Air Management Program's perspective on manure irrigation air quality issues (attached) and led a discussion with workgroup members.

Summary Points

- Pathogens are not considered a hazardous air pollutant under federal law (not in the Clean Air Act)
- 2011 WI Act 22 exempts state hazardous air contaminants associated with ag waste from Ch. NR 445. This was because there were low thresholds for ammonia and hydrogen sulfide, substances produced in large amounts through agriculture
- In addition to ammonia and hydrogen sulfide, potential air quality concerns from livestock operations include odors, particulate matter (PM), and volatile organic compounds (VOCs). Emissions from animal operations are difficult to estimate due to many highly variable factors.
- In 2010, Air Management program introduced BMPs reducing air emission of ammonia and hydrogen sulfide from livestock operations; center pivot and other MI were not identified as beneficial practices
- It is unclear how volatilization from manure irrigation over a longer period of time would compare to more intensive manure applications in spring and fall.

6. Manure irrigation scenarios: Current Methods of Application presentation by Kenn Buelow

Kenn Buelow and Jeff Sommers contributed to a presentation and discussion of current methods of application that highlighted the benefits of manure irrigation compared to alternatives. Kenn's Holsum Dairy operation uses manure irrigation along with other practices, has received a national sustainability award, works in partnership with nearby organic and grass-fed beef operations, and takes wastewater from restaurants, schools and other food based sources (including industrial food processing waste). The maximum solid content of effluent used on farm is 10%. Injection is used only when there is no crop present. Truck application on fields is problematic as it compacts the soil and increases cost.

Highlighted positive aspects of manure irrigation:

- Storage tanks less likely to overflow when summer application is option
- Reduced spring/fall application need
- Increased crop yields/reduced economic risk
- Reduced environmental impact on surface & ground water
- Precise application of manure
- Center pivot allows irrigation of taller crops

When using nutrient recovery systems, the end result is concentrated and may be more cost efficient. Fewer truck loads are moved due to this concentration. They would like to see additional flexibility to apply manure irrigation into grass waterways during dry periods to allow for nutrient uptake.

Jeff Sommers highlighted several points related to manure management at Wysocki Produce Farms, noting that benefits from manure irrigation include: minimization of synthetic fertilizer, improved biological activity of soil, internal cycling of nutrients, and lower fuel consumption. Wysocki has refined their application over time, learning more about how to use the right amount at the right time; cover crops are used as much as possible. Manure Irrigation is valuable in part because it allows them more flexibility in when to apply manure. They can: synchronize crop needs with the nutrient release of manure, minimize nutrient loss to environment (time application); apply manure for shorter durations (days vs. weeks); and reduce road miles.

They use several on farm spill safeguards: backflow prevention; vacuum tankers; pumps at pit within containment facility; pressure regulation with auto shut down; and computer panels with continuous monitoring capabilities. They have had one event in six years and that involved no manure loss to the environment.

A table comparing manure irrigation to other practices was distributed to attending workgroup members. The table helped focus discussion and could serve as a reference for developing manure irrigation “scenarios.” Points from discussion:

- Traffic differences with irrigation: During normal business operation, there are 6-8 semi trucks a day coming in and out of an operation the size of Holsum Dairy. During manure hauling periods, that shifts to a steady and constant flow of truck traffic. Manure irrigation greatly reduces the need for hauling by truck during spring and fall.
- Manure distribution through piping: There is no regulation preventing installation of pipes that convey liquid manure to irrigation systems through road right of ways. Issues/questions raised included: what are the costs? who bears the costs? what are the legal and liability issues and for whom? How do those pipes fit with manure irrigation, drag hose, tanker trucks, etc.?

Future scenario development: Ken G suggested using the Holsum Dairy tables and the Risk Tables (next agenda item) as a basis for developing scenarios that could help people visualize and understand the trade-offs and issues involved in manure irrigation versus other alternatives. They would be more helpful if they included illustrations that would map out an entire operation with details such as: fields receiving MI; not receiving, roads used if MI not used, etc.

7. Risk Tables – updates and next steps.

Becky Larson shared updates to the risk tables completed since the November 22 meeting and received feedback on form and level of detail. For example, several of the variables identified at the previous discussion (included in November 22 notes) could be combined for some issues and separated for others. The goal is to prepare a set of tables that will allow an abbreviated summary of key information related to issues of concern. Highlights from discussion:

Spray Drift Table:

- Separating pressure from nozzle type and angle is difficult
- Nozzle size and geometry of spray plate surface affect droplet size more. It may be best to describe optimal droplet size and system iterations which provide that size
- There is an increased risk of runoff when droplet size gets too big
- Height of applicator and crop is also important
- The trend across studies suggest that wind speeds below 9 mph minimizes drift
- Travelling guns have high pressure, but also feature larger droplet sizes
- Height, droplet size and end gun use appear to be crucial aspects
- 100 ft of buffer appears to be a good initial setback for most situations (500 near populated).
- Odor is subjective. Injection is best. BMP: drop nozzles below crop level.

The tables will be discussed at future meetings.

8. Planning for 2014 Manure Irrigation Workgroup activities.

Ken Genskow led an abbreviated discussion of issues for 2014. In addition to a scheduled meeting on January 31, 2014 [subsequently cancelled], additional meetings would be scheduled for February and March. The group expressed a desire to issue a preliminary report of some sort in Spring 2014 and to reassess interest/availability in scheduling additional meetings. As currently envisioned, a report would consist of a narrative summary of findings and any recommendations emerging from the workgroup, the risk tables, and scenarios comparing use/non use in different settings.

9. Actions for next meeting.

- QMRA team discuss with Idaho and provide update at next meeting
- Becky Larson will continue to refine the risk tables
- Ken Genskow will develop an outline for a report and for scenarios
- Ken Genskow will contact Cheryl Skjolaas regarding potential worker safety issues and potentially instruments of animal husbandry study.

Attachments:

- Lynn Utesch presentation from 12/13/13
- Regulation summary from other USEPA Region 5 states
- Regulation summary for other non-Region 5 states (NC, NE, and link to national report)
- David Panofsky presentation from 12/13/13