# 2017 Confinement Site Manure Applicator Certification Evaluation

## Iowa State University Extension and Outreach

Responses from Workshops: 912

<table>
<thead>
<tr>
<th>Section 1 - Please rate today's information</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>No Response</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rules Update</td>
<td>504</td>
<td>485</td>
<td>20</td>
<td>0</td>
<td>25</td>
<td>1,034</td>
</tr>
<tr>
<td>2. Land Application and Separation Distances</td>
<td>529</td>
<td>468</td>
<td>14</td>
<td>1</td>
<td>22</td>
<td>1,034</td>
</tr>
<tr>
<td>3. Nitrogen management</td>
<td>560</td>
<td>433</td>
<td>16</td>
<td>1</td>
<td>24</td>
<td>1,034</td>
</tr>
<tr>
<td>4. Manure Application Uniformity</td>
<td>622</td>
<td>375</td>
<td>14</td>
<td>3</td>
<td>20</td>
<td>1,034</td>
</tr>
<tr>
<td>5. Applying manure to Cover Crops</td>
<td>440</td>
<td>456</td>
<td>39</td>
<td>6</td>
<td>93</td>
<td>1,034</td>
</tr>
<tr>
<td>6. Equipment for Cover Crops</td>
<td>418</td>
<td>463</td>
<td>46</td>
<td>4</td>
<td>103</td>
<td>1,034</td>
</tr>
</tbody>
</table>

### Total Responses: 1,034

<table>
<thead>
<tr>
<th>Section 2 - Overall evaluation:</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Does Not Apply</th>
<th>No Response</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. The information presented today was useful for my farm operation?</td>
<td>951</td>
<td>56</td>
<td>4</td>
<td>10</td>
<td>13</td>
<td>1,034</td>
</tr>
<tr>
<td></td>
<td>92%</td>
<td>5%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
<td></td>
</tr>
</tbody>
</table>

### Total Responses: 1,034

<table>
<thead>
<tr>
<th>Section 3 - Safety</th>
<th>Manure Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Because of the hydrogen sulfide training last year, I am more aware of the dangers of hydrogen sulfide.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>824</td>
</tr>
<tr>
<td></td>
<td>80%</td>
</tr>
<tr>
<td>9. I have discussed this with employees.</td>
<td>560</td>
</tr>
<tr>
<td></td>
<td>54%</td>
</tr>
<tr>
<td>10. Because of the hydrogen sulfide training, we will likely use hydrogen sulfide monitors.</td>
<td>Very Likely</td>
</tr>
<tr>
<td></td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>4%</td>
</tr>
</tbody>
</table>

### Total Responses: 1,034

<table>
<thead>
<tr>
<th>Manure Management</th>
<th>Maximum Return to Nitrogen (MRTN vs Yield Goal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Which Nitrogen application rate do you use?</td>
<td>MRTN</td>
</tr>
<tr>
<td></td>
<td>211</td>
</tr>
<tr>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>12. Because of the training this year, how likely are you to switch how you base your nitrogen application?</td>
<td>Very Likely</td>
</tr>
<tr>
<td></td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>3%</td>
</tr>
<tr>
<td>13. Approximately what nitrogen application rate are you aiming for in your manure application?</td>
<td>&lt;100 lb N/acre</td>
</tr>
<tr>
<td></td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>5%</td>
</tr>
</tbody>
</table>

### Total Responses: 1,034

14. How did the manure distribution presentation change how you thought about manure application or nutrient management planning? See attached page

15. Is there a topic you would like to hear about during next year's training? See attached page
14 How did the manure distribution presentation change how you thought about manure application or nutrient management planning?

<table>
<thead>
<tr>
<th>14 How did the manure distribution presentation change how you thought about manure application or nutrient management planning?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>A lot</td>
</tr>
<tr>
<td>A lot of variation in different manifolds</td>
</tr>
<tr>
<td>A lot of variation in different manifolds</td>
</tr>
<tr>
<td>A ton, need to evaluate what equipment I have.</td>
</tr>
<tr>
<td>About what I expected.</td>
</tr>
<tr>
<td>Agree with the training.</td>
</tr>
<tr>
<td>All management practices add up to determine the bottom line.</td>
</tr>
<tr>
<td>Already adopted</td>
</tr>
<tr>
<td>Already adopted</td>
</tr>
<tr>
<td>Already concerned about it.</td>
</tr>
<tr>
<td>Already have the best manifold.</td>
</tr>
<tr>
<td>Applying as previewed in DVD</td>
</tr>
<tr>
<td>Appreciated the research put into manure distributors.</td>
</tr>
<tr>
<td>At the high end, not as much benefit.</td>
</tr>
<tr>
<td>Awareness</td>
</tr>
<tr>
<td>Be more careful</td>
</tr>
<tr>
<td>Be more cautious of manifold on spreader also nitrogen rates</td>
</tr>
<tr>
<td>Been using it</td>
</tr>
<tr>
<td>Better knowledge of diminishing return rates of application.</td>
</tr>
<tr>
<td>Broader my opinions</td>
</tr>
<tr>
<td>Certification does not mean less spills.</td>
</tr>
<tr>
<td>Change manifold</td>
</tr>
<tr>
<td>Change some of the hoses</td>
</tr>
<tr>
<td>Check accuracy often</td>
</tr>
<tr>
<td>Check application efficiency</td>
</tr>
<tr>
<td>Check distributor</td>
</tr>
<tr>
<td>Check equipment</td>
</tr>
<tr>
<td>Check equipment</td>
</tr>
<tr>
<td>Check flow</td>
</tr>
<tr>
<td>Check hose level</td>
</tr>
<tr>
<td>Check hoses for loops and clean vents out.</td>
</tr>
<tr>
<td>Check it out</td>
</tr>
<tr>
<td>Check lines, zone apply</td>
</tr>
<tr>
<td>Check manifold flows.</td>
</tr>
<tr>
<td>Check more frequently!</td>
</tr>
<tr>
<td>Check my tank/hose length/looping</td>
</tr>
<tr>
<td>Check out different manifold/systems.</td>
</tr>
<tr>
<td>Check pressure valves on tanks</td>
</tr>
<tr>
<td>Check the hoses</td>
</tr>
<tr>
<td>Check toolbar more often.</td>
</tr>
<tr>
<td>check valves</td>
</tr>
<tr>
<td>Check your applicator by testing with water before each season.</td>
</tr>
<tr>
<td>Check your distributor!</td>
</tr>
<tr>
<td>Checking check valves more often</td>
</tr>
<tr>
<td>Cleaning check valves</td>
</tr>
<tr>
<td>Contours, speed, rate</td>
</tr>
<tr>
<td>Correct amount manure/acre</td>
</tr>
<tr>
<td>Covered topics associated with cover crops that was informative.</td>
</tr>
<tr>
<td>Created more questions.</td>
</tr>
<tr>
<td>Did not change</td>
</tr>
<tr>
<td>Did not change</td>
</tr>
<tr>
<td>Did not change it, I have one of the better performing distributors.</td>
</tr>
<tr>
<td>Did not change my thoughts on it.</td>
</tr>
<tr>
<td>Did not.</td>
</tr>
<tr>
<td>Didn't</td>
</tr>
<tr>
<td>Didn't</td>
</tr>
<tr>
<td>Didn't</td>
</tr>
<tr>
<td>Didn't change</td>
</tr>
<tr>
<td>Didn't change we watched it closely already.</td>
</tr>
<tr>
<td>Didn't change, watches it closely</td>
</tr>
<tr>
<td>Didn't, we are doing it right.</td>
</tr>
<tr>
<td>Distributor fluctuations—larger than I thought</td>
</tr>
<tr>
<td>Don't count on for total N program</td>
</tr>
<tr>
<td>Don't over apply, use MRTN</td>
</tr>
<tr>
<td>Don't use</td>
</tr>
<tr>
<td>Don't want to apply low volume</td>
</tr>
</tbody>
</table>
Done use lower rates with bad tool bar.

Equipment checks

Evaluate your equipment

Even distribution of manure is cost effective saving time and money supplementing nitrogen.

Even though I work with just the cattle, I now know what I might need in the future.

to be much better.

Feel like doing a better job than thought before

Finally told me what I previously knew.

Flow rate

Found have the best available.

Get sags out of hoses and keep vents open.

Good

Good discussion on manure manifolds.

Good info bad info in over 10 years of coming to these meeting. See this needed to know how to fix it.

Good info if followed properly.

Good info on manifold differences & operation

good info—changed my thoughts on more Nitrogen makes more corn.

Good info.

Good information to know. Something to keep in mind when looking at equipment.

Good knowledge

Good review

Good thought was presented. Good suggestions.

Good to check for long hoses!

Good to know

good to look out

Good to see some real world (ish) testing of the equipment. Distribution is something I have looking into.

good update

good.

Greatly

Ground temp

Have more slope 10 -15 %

Have not had a problem.

Helpful in comparing my equipment... Help understand of cleaning unevenly properly and "streaky" fields.

How even is our applicator — got me wondering.

How the hoses are ran on the bar

I always wondered if there was a difference in distributors.

I am going to check my Honeywagon much closer.

I am sold. Influencing my dad is another thing. From him, change is scary.

I didn’t.

I had no previous training, so all the information is new to me.

I hope that the people that we hire to apply manure are using the best technology available to accurately apply our valuable resource.

I liked this area

I need to check mine.

I need to check my tank!

I really like the N-rate calculator. I believe these studies and calculator are the game changer.

I thought it would be less uniform but I need to fix the "loops" in my hoses.

I thought the presentation was excellent and will try to do the best job I can.

I use my own system and can visibly see the manure distribution. I could be improved.

I want more information on vertical manifold

I want to see a little better how good of job its doing and make sure no dip in hoses.

I was unaware of differences in distribution based on rate and slope.

I will check my distribution on my tank now to see how many it is.

I will continue to "top" apply fall and also spring.

I will help.

I will only buy Bazooka Farmstar, GEA, or Puck.

I’d like to run a test on our tank.

I’ll examine mine.

Ill check air vents on top

Ill reevaluate our toolbar.

Importance of the distribution is key.

Importance of verifying variation in application rate.

Interesting

Interesting

Interesting, will try to modify equipment

It did not, already was aware.

It didn’t

It Didn’t

It Didn’t.

Everything is the same

It helped me know the reliability of my applicator.
It helps to decide when to apply and how much to apply.
It made me aware of it.
It made me feel good about the equipment I am using.
It made me more aware of proper nitrogen rates per acre in hog manure.
It made me think more about side-hill contours, speed and rate for the manifold pressure.
It makes me want to test my manifold for better distribution of manure throughout the field.
It makes me wonder what my manure tank is sending out through the hoses, whether it's uniform or not? I will also check my vents into to see if they are plugged or not.
It was already done.
It was bad water is not manure so another waste of money on test. Should have used manure that what your applying not water so test results mean nothing.
It was good knowledge and stuff to think about on my operation.
It was to go over all the rules on manure on spreading distances as things like that.
It was good.
It was great info!!! Nice Work!!
It was nice to talk about something different for once.
It was very interesting. I run Houle spreader and learned it is one of the better manifolds.
It will remind me to check over my equipment.
It's a challenge to get the right flow.
It's definitely a crap shoot! I looks like I'm running one of the better manifolds.
It's very important to cover all the area and evenly.
Just noting that is needs to be checked.
Keep a better eye on it.
Keep equipment in good shape.
Keep hoses straight, drive faster, keep air inlets clean.
Keep our Houle wagon
Kinda
Learned a lot
Let's you know you can put on less and still get good yields.
Look at hoses
Look into it.
Looks like a good summer project to test the tanks
Looks like one we use is ok.
Lower rates were more inconsistent.
Made it something I would consider looking at
Made me aware of distribution variability.
Made me aware of problem and to keep watch out for future problems.
Made me aware of problems we could have without manifold and how slope and air vents affect how it is suppose to work with low application rates.
Made me feel more confident in my application method and equipment.
Made me happy I have a Houle.
Made me think about this aspect.
Made me think more
Made more aware of variability of application rate based on type of distributor.
make me realize don't need too much nitrogen to make an improve the yield.
Make me realize problem.
Make me think about it and question it.
Make sure equipment is working correctly.
Make sure I check things first.
Make sure it is working properly--maintenance.
Make sure of even distribution
Make sure things are properly working and properly applied.
Make sure vents are open and loses don't droop, bottom feeders are best.
Make sure we have enough manure for the amount of yield we want.
Makes me glad we have a hydraulic chopper in our distribution hub.
Makes me think more about what distribution unit I use
Makes me want to do same testing o of the applicator equipment and CV.
Makes me wonder if I'm doing it right.
Makes me think more difference than i imagined.
Manifold distribution
Manifold operating in liquid systems
manifold operations and the different types/brands
Manifold variability has been a concern in the past. We check regularly
Might need to run a little higher rate.
Mine probably has a problem.
Monitor coverage better
More aware of environmental factors.
More aware of equipment factors.
More aware, but we use the equipment we have.
More awareness
More complicated than i thought.
More thinking now
Most already apply
My applicator needs help
My manifold is not the best especially at lower rates.
NA
NA
NA
NA–Dry manure
Na, we spread dry cattle manure
Need a new manifold
Need to check
Need to check distributor every year—clean and working.
Need to check equipment’s more after
Need to check flow on our own equipment. Ask out custom operator how his equipment compares. I don’t believe in the 90 to 100%
1st year availability.
Need to check flow.
Need to check how equal each hose from distributor is applying.
Need to check manifolds
Need to check my air vents
Need to check my own equipment
Need to check our applicator
Need to check out how my toolbar is working
Need to inspect and test
Need to make sure all injectors are getting the same flow.
Need to put max GPM through manifold to keep distribution even
Need to take our own testing
Need to try to minimize variability
Need to verify consistency of applicator.
Needed done for years.
Needs to be checked daily.
Never thought about it before
New information for me.
No change
No change
No Change
No Change
No change = my unit had a 10% variation
No change.
No sag in lines, 90% available 1st year.
None
None, already had in use.
None.
None.
None.
Not a lot—using one of the better units.
Not a lot. It seemed to me that the type of distributor we use is pretty good.
Not a lot. We have dairy manure, so higher application rates.
Not at all
Not much
Not much
Not much
Not much
Not much different
Not much, although it makes you thinking about maximum amounts
not much, very important
Not my job to plan
Not real sure
Not really
Not really.
Not very much, we are doing a pretty good job.
Opened my eyes to the variability of different manifolds. Depending on manifolds, I will try to keep my rate at least 3,000 gal/acre.
Ours is pretty good.
Pay attention to details.
Pay attention to your spreader
Pay more attention to hose route
Pay more attention to how uniform we are applying.
Pay more attention to this as to how it is distributed.
Paying attention to amount applied.
Poor presentation—no changes.
Probably actually take time to ran water through all of the lines and see how uniform things really are.
Rate of manure
re-evaluating our manifolds
Reinforce the theory to keep air vents clean.
Safety
Same
Same as last year
Setting up and checking the toolbars
Shorten hoses
Should consider injection instead of incorporation.
Should test manure more often.
Showed how much difference in brands.
Showed that we have the right set-up
Some
Some
Some
Something good to think about.
Something that should be looked at
Something to look into
Somewhat
Somewhat.
Speed up
Staying with the Houle that we have.
Stays the same.
Take a second look.
Test it
Test rate flow
That different manifold perform differently.
The application equipment we use.
The caution of application and maintaining
The equipment we use performs well. We just have to keep it maintained.
The N-rate calculator looks helpful.
There is a lot of variability in distributors.
Think about even spread of manure.
Think about it?
Think about thanks
Think more
Think more about distribution styles when I trade tanks.
This presentation will make a difference on the equipment purchases.
This was good. I think it is good to push the industry to make improvements. Always felt accuracy was poor. We will check our hoses.
How much data is out there. Comparing application rates and yields. If swine manure is 60-30-40 for instance, what rate would maximize yield?
Thought provoking. good to consider.
To check hoses to make sure they don’t have too many loops. Very interesting!
To spread over more acres.
Tobe more aware of which manifold you are using.
Unplug vents
Use dry manure
Use less nitrogen
Use the right manifold which we are using the right one.
Varying about using less rates.
Verification of spread
Verified it.
Verify applicators rate and distribution
Very
Very good
Very good
Very good
Very good info. A lot of details to consider this research and info was excellent.
Very good on subject of manifolds.
Very Helpful
Very important to be calibrated correctly.
Very informative! We have a lot to think about with our current system.
Very informative.
Very interesting
Very interesting
Very interesting on how the distributors were ???
Very interesting, I didn’t realize there was that much variation.
Very interesting!!!
Very little
Very little
Very much. Will look at our system.
Very well done.
Was done with commercial fertilizer need more info on actual manure on manifold difference was interesting.
Was good information
Watch closer
Watch how much to put or closer to not waste it.
Watch low rates with certain distributors
Watch nitrogen rate not too much
We are currently using a manifold/rotating knives.
We broadcast or surface apply
We have Houle, so all was good.
We need to check out the manifold for every distribution for all 6 rows on our applicators.
We need to use the N value on our manure
We usually check manifold often to ensure good distribution.
We will be looking at our manifold
We will check our equipment before next fall.
Which manifolds to use.
Will ask my applicator some questions.
Will be checking manifolds and checking valves.
Will be more diligent with cleanliness.
Will check applicator over for even distribution.
Will check flow
Will check flow and evenness of manifold on manure tank.
Will check for even distribution
Will check it out.
Will check manifold and hose length and look of loops.
Will check out the MRTN
Will do a better job at checking each hose.
Will evaluate manifold
Will keep closer eye on equal distribution
Will look at it.
Will look at the distribution close to see how it works.
Will look at what our custom applicator uses.
Will make adjustments.
Will make sure no loops in hoses
Will question commercial applicator about that.
Will think about now and plan accordingly.
Work on flow control. What a difference in flow per yield gain.
Worth looking into.
Yes
Yes, pressure
Yes, want to check flow rates.
Zero
15. Is there a topic you would like to hear about during next year’s training?

1. What N does for soil biology (how N feeds soil microbes, OM, etc.  
2. Most economical use of manure, including the value of P, K, and N. (The value of N is oversold; value of P and K is underrated.)

Again testing distributors and making. Meaghan did nice job with cover crop but don't see an advantage for manure application. Planting into cover crop why?

Application rates

Are we going to loose our nitrogen content like we lost Phos. (phytaste)

Biocars

Cattie

Cereal rye and manure interactions.

Compaction

Compaction difference with tires

Compaction vs spring application, can we really do this?

Compaction with manure tank between triple axle and double.

Cover crops are nice, however, how can you afford the cost especially when there is very little profit if any in farming. Farming has become an expensive hobby. At times we have workforce for a loss or for retirement. Are we not entitled to have a profitable occupation or do we continue a cheap food attitude in this country.

Cover crops.

Dairy manure value towards yields.

Dairy, cover crops

Denitrification—not ill

Different injection methods—knives vs discs vs broadcast, deep till in, etc.

Different knife options for toolbars and any variations they cause.

Different pit additives in real action to N loss?

Disk covers vs spike/knife efficiency

Does chopper pump speed affect application uniformly.

Does the cover crop root system hold any N in the top soil?

Dragline vs tank on cost/coverage

Dry lot manure spreading.

Dry lot manure spreading.

Dry Manure spreader applications

Enjoyed Cover Crops to help stop washing of soil.

Equipment

Feed ingredients influencing fertilizer values in manure.

Foam management

Foam Prevention

Foaming pits

Gas monitoring for confinements in everyday breathing.

Grain marketing

Great Presentations.

Higher commodity prices

How pig diets affect manure analysis.

How speed affect distribution of manure and effect on covering/incorporating manure. How field conditions affect coverage.

How to cut all the rules?

Hydrogen Sulfide

I can't wait!

I enjoy your topics each year. Keep up good work.

I think these classes should be held every 2 years.

I would like to hear more about the punishments that happen if you don't comply to all the manure requirements.

I would like to see coefficient of variation tested with manure and not water. I feel as if your test was inconclusive and a waste of your time and mine.

If there is a hot topic statewide at the time.

Impact of compaction due to spreader/tanks in the fall.

Incorporation equipment options.

Latest rules.

Manifold testing

Manifold tests, cover crops

Manure additives

Manure additives

Manure distribution was very interesting.

Manure Pit Treatments—Do any manure pit treatment work? Some say they give you 10 more bu/acre, but do they?

Manure spills
Micronutrients in manure and how much.
More about equipment and less about nitrogen. Our help doesn't care about what the crop farmer needs to know. And less about manifolds.
More about the manifold distribution and uniformity of manure application. I really thought that was very interesting.
More about cover crops or manure and how to use it and reduce nitrate loss.
More applying manure into cover crops.
More on Cover Crops
More on Cover Crops
More on equipment and distribution methods. Good to see it every year to compare evenness of spread.
More on Irrigation
More on MRTN with soil types and tillage/notill etc
More on N loss
More solid manure research.
More studies on manure.
N Loss of fall application above 50 F
N Stabilizer
Nitrogen inhibitors
Nitrogen Stabilizers
Nitrogen Stabilizers
Nitrogen stabilizers such as instinct research.
no
no
NO
NO
No
No
no
No
No
no
No
no
No
No
no
No
No
no
No, all values are on N, what about value of P and K?
No, all was good.
No.
No.
No.
None
None that I can think of.
none that I can think of.
None
nope
Not as of today.
Not especially. Greg will keep it interesting.
Not in general
Not really
Not really
Not sure.
Nutrient variability in deep pit from fall to empty.
odor tolerances. Do we need to worry?
Pit agitation—effect on pigs in the building.
Pit foam correlation to feed ration
Printed slides for students.
Printed slides for students.
Profit
 Proper ventilation during pumping
 Pros & cons of the amount per acre manure applicating.
 Remote sensing/predicting nitrogen needs.
 Safety of manure pumping/stabilizing manure.
 Same on distribution and vertical applicators
 Seeing cover crops different way
 Something about dry beef manure values and application. Not so much hog manure application.
 Something about the safety of some neglected county roads and bridges.
 Spills
 Spreading dry cattle manure without incorporation-best way to do the practice.
 Spring vs fall application.
 Stuff like manure application uniformity. Very, very valuable information on application uniformity!!!
 Subsurface drainage affecting manure running through the tile??? Through leaching.
 Suicide prevention
 The nitrogen loss compared to spring and fall application.
 The year was covered good.
 This was the BEST meeting EVER! Thanks!
 To be able to do what we need to do by interment
 Treating hog barn deep pits.
 Value on dairy manure, Cost of applying manure.
 Variable rates
 Wet feeders or wet/dry feeder change of nitrogen values?
 What are the conditions of 20-25 yr old swine finishing facilities, concerning slats and beams?
 Which brand of manure equipment is better.
 Word on fall manure application and how the spring before planting rate final soil test come back. (If what you think you have is really there.)

You guys will come up with something interesting.