
3rd Bulletin of the Minnesota Agriculture Water Quality Certification Program and Assessment Tool

July 2014

What's in this bulletin:

- Irrigation revisited
- Carrier nitrogen and soybeans
- Tracking, reporting and field visits



**Minnesota Pollution
Control Agency**



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Preface

The information provided in these Bulletins is intended to be complementary to the handouts and Technical Guides, the first of which was published September 2013. If major modifications are made to the Assessment Tool, a new Technical Guide will be published at that time and the previous version retired. Bulletins, however, are cumulative and can be used as references going forward.

As this is a pilot program, procedural and technical positions presented in this bulletin are adapting to the findings of the program. New participants and certifiers using the MAWQCP Assessment Tool are encouraged to consult the Bulletins and latest version of Technical Guides.

1 Technical Positions

How do I account for incidental N applied during a soybean year as part of phosphate fertilizer or herbicide tank mix?

University of Minnesota research has not demonstrated a significant yield response to the application of nitrogen to soybeans in corn/soybean rotations. Therefore, guidelines do not recommend applying nitrogen to soybeans, except under certain conditions in the Red River Valley. However, the application of phosphate, such as diammonium phosphate (DAP) or monoammonium phosphate (MAP), contains a small amount of nitrogen.

Depending upon the soil test phosphorus levels and expected soybeans yields, anywhere from 3 to 16 lbs acre⁻¹ of N could be applied during the soybean year.

Similarly, in some herbicide tank mixes ammonium sulfate (AMS) is applied to facilitate plant uptake. Be sure to account for these sources during nitrogen calculations along with other legume, manure and commercial fertilizer nitrogen sources.

For the purposes of this program and scoring nitrogen application rate during the soybean year, nitrogen rates below 10 lbs acre⁻¹ on soybeans will be considered incidental and should be scored “legume” during the soybean year.

How should I score the irrigation portion if there is a traveling gun that has a similar well capacity to a center pivot?

In the second Bulletin several assumptions were made regarding typical scenarios regarding the use of center pivots and traveling guns. These assumptions need updating and clarification.

In instances where traveling guns and center pivots have similar well capacities, a field can be brought to field capacity, thus making it more susceptible to a runoff event, in an equal amount of time. Under this scenario, it is inaccurate that one irrigation system should score differently than the other. The capacity of the system is a better indicator of its potential risk to water quality.

For these reasons and others, during the pilot phase it is proposed that the current ‘center pivot (-10% adjustment)’ and traveling gun (-5% adjustment)’ be renamed higher impact irrigation (-10% adjustment) and lower impact irrigation (-5%) irrigation, respectively. As before, if an irrigation water management system is employed, such as Conservation Practice 449 or similar, the field is eligible for the lower score adjustment of -1.5%.

During this pilot phase, 200 gallons per minute is proposed as one metric for differentiating between higher impact irrigation (-10%) and lower impact irrigation (-5%). When it makes sense, consider the gallon per minute irrigation capacity.

There are some other considerations that certifiers should consider when scoring the irrigation section. Firstly, droplet size is a factor to consider especially before canopy closure. Soil impact and sealing can occur on fine textured soils when sprinkler guns, such as those found on center pivots or traveling guns, are employed.

Secondly, consider the size of the field in relation to the capacity of the irrigation system. A high field size to irrigation capacity ratio makes in more difficult to use all aspects of irrigation water management. For example, a producer may be more likely to leave an irrigation system running if they are uncertain about an upcoming rainfall event if they have a lower capacity irrigation system serving a large field. If the predicted rain does not occur, there could

be soil water deficit and their irrigation system unable to quickly respond on large field.

Irrigation induced runoff is also a factor of slope. While the assessment tool takes into consideration slope, it may be helpful in determining between irrigation scoring options to consider the Mid Elevation Spray Application (MESA) standard. The NRCS uses this standard for some conservation practices. MESA states that the slope shall not exceed 3% over 50% of the acres with fine textured soils, and 5% slope on coarse textured soils. If a producer is irrigating on steeper slopes, this could also be taken into consideration in your scoring consideration.

How do I determine and score nitrogen use when only volumetric data is available for liquid fertilizer usage?

In situations where a coop or crop advisor is not available to interpret, the following table may be helpful. These are approximations and provided by the Fluid Fertilizer Foundation.

Product	lb gal-1
28-0-0	10.67
32-0-0	11.06
10-34-0	11.65
12-0-0-26S	11.04
10-0-0-10Zn	10.4
7-21-7	11.2
4-10-10	10.3
8-21-4-3S-.5Zn	11.3
9-18-4-6S-.5Zn	11.3
9-20-2-7S-.5Zn	11.4
18-13-0-7S	11.3
10-30-0-3S	11.7

2 Procedural Positions

What does MDA need for tracking and reporting regarding practices?

MDA now has a laptop provided by NRCS to be able to track practice planning and implementation. Of course this only works if a practice is planned in NRCS' Customer Service Toolkit. We would ask that whenever a practice is planned, a Conservation Plan be developed in Toolkit and that the certifying agent inform MDA on the Certification Records the FSA tract number and in the comments section inform us what practices are planned. Also, if producers make changes in their managements due to participating in the program, please let us know what those changes are and how many acres are affected. For instance, if a producer commits to a change from applying nitrogen at 10% over the BMP rate to following the recommended rate, denote that in the comments section or on a tracking spreadsheet .

What should certifiers look for when conducting field visits?

As the program wraps up the first half of its field season, the importance of thorough and accurate field visits continues to be evident. In many cases, the field visit provided an opportunity to address a resource concern or discuss water quality solutions that were not necessarily obvious through the other program steps.

On large operations, prioritize areas to visit in advance using various GIS resources. Fields with steep slopes, highly erodible soils and/or adjacent to waterbodies are prime candidates. Talk with the producers to identify critical areas on the operation, such as pour points and tile inlets. Remember this is the opportunity to discuss the operation solely under the lenses of water quality and provide locally-based solutions.