Minnesota 4R Nutrient Stewardship

Requirements for Certification of Nutrient Service Providers in Minnesota

Version 1.1
December 2020

Minnesota Crop Production Retailers

NUTRIENT STEWARDSHIP CERTIFICATION

Standard Requirements

Req. No.	Requirement	Grower Customer Category	Evidence
1	Nutrient Service Providers, sales, and application staff have undergone an initial training and staff are able to demonstrate knowledge about 4R Nutrient Stewardship and the 4R Certification Program.	FRA	**Meeting agendas, education log, or materials indicating 4R concepts and topics** (Right Rate, Time, Place and Source) were covered, roster of those in attendance. **Can be an interview with various staff.** Educational information and sample presentations available at 4rcertified.org/resources. Other MN based training programs must be approved by Program Administrator.
2	Nutrient service providers, or any staff providing nutrient recommendations, attend a training, at least once every three (3) years on the practices and principles of 4R Nutrient Stewardship, soil sampling and testing techniques, and/or nutrient water interaction.	FR	**If the staff person is a CCA, then proof of active status is sufficient. If not a CCA, evidence of attendance at educational based training programs listed on page 1 will be required.**
3	Certified professionals must have current certification in good standing.	FR	**Review digital or hard copies of current credentials and/or certification**. Credentials should include one or more of the following: Certified Crop Adviser (CCA), CCA 4R Specialty, USDA-NRCS Comprehensive Nutrient Management Plan (CNMP) Specialist (or TSP), Certified Professional Agronomist (CPAg), or other relevant accreditation from the American Society of Agronomy or National Alliance of Independent Crop Consultants.

4	Nutrient Service Provider keeps onsite list and/or copies (either electronic or hard-copy) of relevant national, state, or local laws related to nutrient recommendations and application.	FRA	**Review of records on file, can be hard copy or electronic** and should be updated when needed. Program administrator will provide a list of current laws and regulations. • Fertilizer Laws see MDA website • Watershed plans here • Minn. R. 7020 MPCA Feedlot and Manure laws here
5	Nutrient Service Providers will record a list of grower customers and number of acres in the following categories: full service, recommendation only, and application only.	FRA	**Review of records on file, can be hard copy or electronic.** The NSP will record and submit a list of grower customers and acres per each that fall into these categories: full service, recommendation only, and application only.
6	Soil tests are conducted at least once every four (4) years.	FR	**Review of records on file, can be hard copy or electronic**. No soil test result may be older than four (4) years old. **Compliance: 75%**

7	Soil tests are taken from relatively uniform areas: • On large uniform fields, one or more composite samples shall be taken per 20 acres, or per 40 acres if previous sampling showed little in-field variability • On smaller fields or hilly/rolling ground, one or more composite samples shall be taken per 5 acres, or per 20 acres if previous sampling showed little in-field variability	FR	**Review of records on file, can be hard copy or electronic.** Maps indicating acres represented in sample must be provided. (See NRCS 590 criteria). Soil maps and sensitive soil features can be found on USDA-NRCS Soil Web Survey, here.
8	All personnel taking soil samples must undergo initial training to provide consistent procedures of taking representative and accurate soil samples.	FR	An initial training for all staff taking soil samples, this includes any seasonal staff taking soil samples. Training records and training process documentation on file. Participation in University of Minnesota Field School is acceptable evidence of training. **Educational awareness in Year 1** **Compliance 100% in Year 3**
9	Soil (analysis) tests are conducted by a Minnesota Department of Agriculture certified lab which include, at minimum: Phosphorus (use U of MN recommendations on analysis Bray, Olsen, and M3), Potassium, pH, and soil organic matter.	FR	**Review of soil testing records on file, can be hard copy or electronic.** All four items must be indicated on the records. Certified soil labs are found on MDA website.

10	Crop yield goals are discussed with the grower and are based on previous crop yield history, which include one or more of the following: farmer relayed information, yields maps, soil potential, plot data, county averages, Farm Service Agency, crop insurance, etc.	FR	**Review of records on file, can be hard copy or electronic.** Proof of level of crop management may be previous yield history (as provided by the grower), which include: farmer relayed information, yields maps, crop yield by soil potential, plot data, county averages, Farm Service Agency records, crop insurance records, plot yield data, or local adaptive management research. Documentation or records of process used to establish yield goals must be provided.
11	Records of individual fields include, and are reviewed with grower customer, at a minimum include the following: • Field boundary, • Current soil test results, • Crop yield goals, • Nutrient recommendations, • Rates of all nutrient sources applied to field, • Billing for the field and/or as applied maps	FRA	**Review of records on file, can be hard copy or electronic**. Billing statement reviewed with the customer.
12	Application rates shall not exceed recommendations for custom applied acres.	FA	**Review of records on file, can be hard copy or electronic.** Fertilizer recommendations and applied scale ticket or as applied map.

13	Nutrient recommendations are based on region specific BMPs, where appropriate, uses soil test history of the field, nutrient crediting, yield goals (P), and MRTN (for nitrogen in corn production).	FR	**Review of records on file, can be hard copy or electronic.** Soil test results must be equal to or less than four (4) years old. If it is a new field without a current soil test, recommendations for P and K are limited to crop removal rates until a soil test is taken. County average yields or previous year actual yields may be used for yield goals.
14	All sources of nutrients are accounted for in the nutrient management recommendation, including but not limited to commercial fertilizers, starter fertilizer, manure/litter, biosolids, cover crops, and the previous crop.	FR	**Nutrient recommendations indicate all sources of nutrients in the recommendation records and if available, as-applied records**
15	If manure is applied, manure analysis must follow University of Minnesota guidance regarding required analysis and/or include, at minimum: total nitrogen (N), total phosphorus (P) or P2O5, total potassium (K) or K2O, and percent solids. Tests are conducted by a Minnesota Department of Agriculture certified lab.	FRA	**Manure nutrient analysis records (hard copy or electronic) will be reviewed if manure is applied on fields where recommendations are made, or fertilizer applied.** If an analysis is not available, book values from the MN Department of Agriculture or NRCS will be accepted. Refer to MPCA feedlot rules and regulations. Recommended: If manure is applied from more than one source, a sample shall be taken from each. At least one test shall be a laboratory analysis; the others may be on-farm tests using a hydrometer or nitrogen meter. Testing for Ca, S and Mg is recommended, but not required. It is suggested that manure be tested at or prior to application.

16	Nutrients are applied according to a written nutrient recommendation that has been prepared within the prior two (2) years.	FA	**Records of application will be compared to the recommendations on file.** Only applicable to full service providers.
17	Phosphorus is neither applied nor recommended to be applied at rates that exceed University of Minnesota fertilizer recommendations for corn, soybeans, alfalfa and wheat and specialty crops and the total application does not exceed the quantity needed for the next two (2) years of planned crops. A bordering state land grant university fertilizer recommendations may also be used.	FRA	**Records will be compared to University of Minnesota fertilizer recommendations, or a bordering State land grant university.** Field averages will be used to evaluate these criteria. Records of individual soil test will be compared to land grant recommendations or equivalent tool. **Variable rate application recommendations should be validated that the software is following the land grant guidelines or results of adaptive management.**
18	Recommended fertilizer and manure application levels of N and P fall within suggested/recommended limits specified by nutrient application recommendations recognized by a land-grant university in MN or surrounding State, allowing for adaptive management based on documented on-farm data showing reasonable expectation of improved crop yield without increased risk of harm to water quality.	FR	**Records will be compared to University of Minnesota Fertilizer Recommendations or bordering Land Grant University Fertilizer Guidelines or equivalent tool.** If above these levels, data from adaptive management research must be presented justifying the different recommendation. Field averages will be used to evaluate these criteria. Software tools for variable rate application recommendations should validate that the software is following the University of Minnesota Guidelines or results of adaptive management. Following a drought year for corn on corn, credit should be given to residual nitrate in nutrient recommendation: soil nitrate-N is best measured in the spring before planting from a two-foot sampling depth.

19	For spring-planted crops, right time for nitrogen to be applied is normally before, at or after planting. When fall applications of nitrogen [including phosphate sources containing nitrogen] are made or recommended, growers are informed about the risk, amount, and fate of nitrogen losses associated with the application. For-spring planted crops in areas determined by the Minnesota Department of Agriculture to have groundwater vulnerable to nitrate contamination, fall application of ammoniated phosphate or micronutrient formulations containing nitrogen should not exceed an average of 40 lb. nitrogen per acre in a field. Fields where soil samples have shown low or very low phosphorus levels are not subject to the 40 lb. nitrogen/acre limit.	FA	**Signatures of grower customers on file.** Rate is based on typical rates as applied with fall application of typical nitrogen and phosphate sources; research will be reviewed and conducted to determine if this amount needs to be revised. Records of application will be compared to the recommendations on file. Only applicable to the full-service customers. Please review and follow Minnesota's Ground Water Protection rule related to application of nitrogen fertilizers and BMPs, information can be found here. Please review and follow Minnesota's fall/winter manure application restrictions and/or special conditions with MPCA permits. Add link.
20	Recommend best practices on Urea, UAN, and Anhydrous Ammonia applications including: • Delay fall application of urea and AA until soil temp at 6 in < 50 F (NW and SW-WC BMP regions). • Incorporate urea and UAN within 3 days according to University of MN BMP recommendations	FRA	**Recommendation records indicate the preferred timing and placement. Statement on nitrogen timing and placement given/mailed to grower customers or grower customer signature indicating understanding.** **Refer to Nitrogen BMP Manuals and technologies in Standard #29**

21	Phosphorus injection, subsurface banding, or broadcasting with immediate incorporation are the recommended placement methods. Where incorporation of phosphorus was not the preferred method, discussion on risk of phosphorus losses was demonstrated.	FRA	**Recommendation records indicate the preferred placement. Statement on phosphorus placement given/mailed to grower customers or grower customer signature indicating understanding.** The MN Runoff Risk Advisory Forecast Tool is an educational tool to use with growers.
22	Phosphorus and nitrogen fertilizer applications are neither made nor recommended to be made on frozen or snow-covered ground.	FRA	**Recommendation records indicate the preferred timing**. Application records indicate there is no frozen ground or snow present. Frozen ground is defined: soil frozen to a depth that does not allow for the proper placement and incorporation of fertilizer. Proper placement means that a responsible party is able to incorporate granular products within three (3) days of application at a minimum depth of three (3) inches below the surface of the soil. Snow covered ground is defined: when soil cannot be seen because of snow cover.
23	Nutrient recommendations have been reviewed and acknowledged in writing by the grower/customer.	FR	**Signatures of grower customers on file either on a signature sheet, nutrient management plan or equivalent document.**

24	Nutrient recommendations for each grower have been approved and signed by a Certified Professional.	FR	**Signatures of Certified Professional** (defined in standard 3) **for each grower customer is on file**, certifying that they approve the nutrient recommendation.
25	All nutrient application equipment must be calibrated, at least annually.	FA	**Calibration (i.e., maintenance) records indicating equipment service date and any maintenance/service required.** Follow manufacturer's guidelines and signed off by cooperative nutrient management specialist.
26	Nutrient service provider has sponsored or directly provided a training session on 4R Nutrient Stewardship that is available for all grower customers and has conveyed by mail or electronic distribution information on 4R Nutrient Stewardship annually to all customers.	FRA	**Agenda of the company-sponsored educational event shows training on 4R Nutrient Stewardship approved by the Program Administrator for at least half hour agenda item.**

27	Records of nutrient application include at minimum: • Rate of application • method of application; • time of application; • field map showing locations of application	FA	**Review of records on file, can be hard copy or electronic**.
28	Environmentally sensitive areas (such as drainage inlets, areas around well heads, areas of concentrated flow, gullies, sinkholes, vulnerable groundwater areas, and where nutrient applications occur near water bodies and public waters) are documented and discussed with the grower customer.	FRA	**Convey the process conducted to identify sensitive areas, show examples on field maps of identified sensitive areas. NSP must follow all laws related to setbacks for manure (Minnesota Pollution Control Agency) and application restrictions within drinking water supply management areas (Minnesota's Groundwater Protection Rule)** **Year 1 Compliance 50%** **Year 3 Compliance 100%**
29	Discussion with grower customers on nitrogen Best Management Practices include options of split application, nitrification and urease inhibitors, slow/controlled release technologies, timing, placement, rates, and sources.	FRA	**Signatures of grower customers on file or direct education mailings to all customers**. Credit will be given to growers that attend: nitrogen SMART meeting, MN Nitrogen Conference, and/or MN Nutrient Management Conference every two years. A grower who is certified under the MN Agricultural Water Quality Certification Program meets this requirement. Slow release technologies: • Polymer coated urea (PCU) List of proven active ingredients for nitrification and urease inhibitors are: • Nitrapyrin • Dicyandiamide (DCD) • N-(n-butyl) thiophosphoric acid triamide (NBPT)

			• N-(n-butyl) thiophosphoric acid triamide (NBPT) and dicyandiamide (DCD) See Minnesota Agronomy Technical Note 32 for nutrient loss assessments, here.
30	Discussion with grower customers on phosphorus Best Management Practices include VRT technology, timing, placement, rates, and sources.	FRA	**Signatures of grower customers on file**. Credit will be given to growers that attend: MN Nutrient Management Conference or other educational event every two years. A grower who is certified under the MN Agricultural Water Quality Certification Program meets this requirement. See Minnesota Agronomy Technical Note 32 for nutrient loss assessments, here.
31	Nutrient service provider maintains records for all growers related to soil tests, nutrient recommendations, and applications for a minimum of 4 years.	FRA	**Review of records on file, can be hard copy or electronic.** Fertilizer recommendations and billing or as-applied map.

32	Digital field map data layers must be able to be generated that can be combined in an analysis to better target nutrients in the fields. Possible data layers may include: sensitive areas (e.g. surface water, inlets, wells, areas of concentrated flow, etc.), yield data, soil test data, soil type, HUC watershed codes, tile or topographic maps, digital/sensor imagery, EC data, N modelling, etc.	FRA	**Review of records on file, can be hard copy or electronic.** This information can be in any useable/readable electronic format. Maps may be provided. This data may be in digital format and generated on site at time of audit. If yield data is not available, county yield averages must be incorporated into data layers. As applied maps must show sensitive areas that were protected during application. Refer to sensitive area definition in the NRCS 590 standard. **Year 1 Compliance 50%** **Year 3 Compliance 100%**

5 References

4R Program Documents

Certification Program References

4R Nutrient Stewardship Certification Manual, Version 1.0

Auditor Manual for 4R Nutrient Stewardship Certification, Version 1.0

Primary External References

International Plant Nutrition Institute (IPNI). *4R Plant Nutrition: A Manual for Improving the Management of Plant Nutrition*. North American Version. Norcross, GA, 2012.

International Plant Nutrition Institute (IPNI). *4R Nutrient Stewardship Portal*. http://www.ipni.net/4R Accessed February 2013.

Minnesota Department of Agriculture Fertilizer guidance and information.

Minnesota Pollution Control Agency Manure guidelines and setbacks

National Oceanic and Atmospheric Administration (NOAA). *National Weather Service*. http://www.weather.gov/. Accessed April 2013.

Natural Resources Conservation Service (NRCS). *Conservation Practice Standard. Nutrient Management (Ac.) Code 590*. https://www.nrcs.usda.gov/wps/portal/nrcs/mn/technical/ecoscience/nutrient+management/nutrient+management+%28code+590%29/

Natural Resources Conservation Service (NRCS). *Field Office Technical Guide*

The Fertilizer Institute (TFI). *Nutrient Stewardship | The Right Time for Nutrient Stewardship Is Right Now*. http://www.nutrientstewardship.com Accessed February 2013.

University of Minnesota Guidelines: University of Minnesota Nitrogen Best Management Practices; Minnesota Phosphorus Index; and University of Minnesota Fertilizer Guide.

USDA-NRCS Minnesota guidance on minimum setbacks

Educational based training programs (included but not limited to): MCPR Short Course, MAWRC 4R field day, Climate Smart N, Nitrogen Conference, Nutrient Management Conference, BMP training, MN Agricultural Water Quality Certification Program, online modules (CCA) and other states programs that border MN.

CONTACT/QUESTIONS

Questions about the 4R Nutrient Stewardship Certification Program or this document should be directed to the 4R Program Administrator:

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