



4R Nutrient Stewardship Certification Standard

*Requirements for Certification
of Nutrient Service Providers in Missouri*

*Administered in the state of Missouri
by the Missouri Fertilizer Control Board*



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Introduction

The 4R Nutrient Stewardship Certification Program was created to encourage agricultural retailers and independent crop consultants, “nutrient service providers”, to work with farmers to adopt proven best management practices using an approach providing a science-based framework for plant nutrition management and sustained crop production, while considering specific individual farms’ needs. The Certification Program is voluntary and provides a consistent, recognized, and auditable standard for nutrient service providers within an identified geographic region. This approach provides a science-based framework for plant nutrition management and sustained crop production, while considering specific individual farms’ needs.

A. Background

The fertilizer industry has established the 4R Nutrient Stewardship framework in cooperation with government, researchers, customers, farm organizations, conservation groups, and the public. Adjustments in the crop nutrient source and application rate, timing, and placement method will support agricultural productivity while also helping to improve water quality.

4R Nutrient Stewardship best management practices (BMPs) must be customized to fit each farm’s unique climatic, soil, cropping, and operational conditions. This is achieved, as needed, with professional input from recognized and qualified specialists such as Certified Crop Advisors (CCAs) who work with farmers to assess their situations and develop management plans.

Continuous improvement can be achieved by employing science optimizing the economic, social, and environmental performance of BMPs utilized in implementing the voluntary 4R Nutrient Stewardship Certification program in Missouri.

The Missouri Fertilizer Control Board is established in Missouri state law and is a state regulatory agency. The Board has the responsibility and the authority to administer the Missouri 4R Nutrient Stewardship Certification Program and approve 4R Certification Standards. The functions attributed to a 4R Certification Council is provided by the Board. The Missouri 4R Advisory Committee advises and makes recommendations to the Board. This 4R Certification Standard was created under the auspices of the Missouri 4R Advisory Committee and approved by the Board. The 4R Advisory Committee members represent a diversity of stakeholders from the business, government, university, and non-governmental sectors with the common goal of improving agricultural productivity and soil health while also improving the water quality of Missouri and its contributing watersheds.

In addition to general principles of 4R Nutrient Stewardship (IPNI, 2012), the Standard has incorporated specific criteria for the purpose of addressing regional priorities for water quality including references to regional soil fertility recommendations. The standard also follows guidelines put forth in the Conservation Practice Standard for Nutrient Management where appropriate and takes into account the goals presented in the [Missouri Nutrient Loss Reduction Strategy](#).

The 4R Nutrient Stewardship Certification Standard is intended to support the adoption of 4R Nutrient Stewardship by specifying best practices for nutrient recommendations and nutrient application, specifically those addressing and optimizing soil health. The Standard also includes an education

component to ensure that new practices related to nutrient stewardship are adopted by the Nutrient Service Providers and shared with their grower customers.

The 4R Advisory Committee members will continue to engage the research community to help identify the most effective conservation and nutrient management practices and anticipate that revisions to the Standard may be necessary on a regular basis to take advantage of the most current research available.

B. Goals

The 4R Nutrient Stewardship Certification Standard was drafted as part of an initiative to improve the watershed conditions of Missouri. We support the use of 4R concepts both locally and nationally. The Standard was created to address the following goals:

- maximize crop uptake of nutrients and minimize nutrient losses
- create long-term positive impacts on water bodies associated with agricultural production areas through encouragement of soil health practices, including the reduction of eutrophication and incidence of harmful algal blooms, and to help meet water quality standards
- encourage sharing of the most up-to-date information about responsible nutrient stewardship with Nutrient Service Providers and growers
- assist and compliment the agricultural sector adapt to new research and technology in the area of nutrient stewardship.

C. Scope

The 4R Nutrient Stewardship Program, of which this Standard is a central component, is designed to recognize Nutrient Service Providers who have adopted the principles and practices of 4R Nutrient Stewardship (IPNI, 2012). This Standard translates 4R Nutrient Stewardship into a set of auditable criteria.

The 4R Nutrient Stewardship Program is voluntary and applies to Nutrient Service Providers working in Missouri, including agricultural retailers, agricultural service providers, and certified professionals. Grower customers of the Nutrient Service Providers are not included under the scope of the Standard. 4R Certified participants must abide by all local, state, and federal regulations.

Further information about the scope and certification procedure are provided in the companion documents to the Standard, which include the Auditor Manual for 4R Nutrient Stewardship Certification, Version 1.0 (for auditors) and the 4R Nutrient Stewardship Certification Manual, Version 1.0 (for Nutrient Service Providers who wish to be certified under the program).

D. Structure and Implementation

The standard is divided into the following main sections:

1. Training and education
2. Recommendations
3. Application
4. Documentation

Sections 1 and 2 apply to all types of Nutrient Service Providers pursuing certification in the program. Section 3 may not be applicable for those Nutrient Service Providers that either only make recommendations for nutrient use or only carry out nutrient management application.

Each section consists of auditable criteria which form the basis of the standards. There are a total of 15 auditable evaluation criteria. Of that total 15, three address training and education, six address proper documentation, four address nutrient recommendations, and two address nutrient application.

In most cases, a Nutrient Service Provider will offer nutrient recommendations or nutrient application services or both to multiple farms. Please see the Standard Requirements section of this document for specific compliance required for certification in the first cycle of implementation.

Using the Standard as the normative reference, audits will be conducted by the Missouri Fertilizer Control Board auditors to determine whether a specified agricultural retailer, agricultural service provider, or crop adviser, acting as a Nutrient Service Provider, has met the requirements of the Standard. The degree of conformance to the Standard will be assessed by the auditor, who will evaluate each auditable evaluation criterion, as: Comply, Not Comply, In Review, or Not Applicable.

E. Contact

Questions about the 4R Nutrient Stewardship Certification Program or this document should be directed to the Missouri 4R Coordinator, Andrea Rice, 660-414-5482, arice@mofcb.com.

Terms and Definitions

4R Nutrient Stewardship: An approach for best nutrient management practices developed globally by the fertilizer industry (IPNI, 2012). “4R” refers to the “Right source, applied at the Right rate, at the Right time in the Right place.” The philosophy of the 4R approach is to base nutrient recommendations and application on scientific principles, including site-specific considerations and adaptive management, with the goal of improved sustainability.

4R Nutrient Management Plan: A plan detailing a set of practices designed to maximize nutrient use efficiency and minimize nutrient losses. 4R nutrient management plans are documents of record establishing how nutrients will be managed for plant production while addressing identified resource concerns including the offsite movement of nutrients.

Adaptive Management: An ongoing process of developing improved practices for efficient production and resource conservation by use of participatory learning through continuous, systematic assessment. For the purposes of the Standard, the demonstration of adaptive management includes documented on-farm data showing reasonable expectation of improved crop yield without increased risk of harm to water quality and soil health.

Agricultural Retailer: An entity that sells agricultural services or inputs.

Agricultural Service Provider: An entity that provides agronomic services related to agricultural production.

Audit Report: The report that is prepared by a third-party auditor in years during which there is an onsite audit (*see also* “Progress Report”).

Auditable Evaluation Criteria: Normative statements that are used by auditors to evaluate compliance to a standard.

Certification: The process by which an accredited or authorized person or organization (often a third party) will follow established procedures to assess the conformity against an applicable performance standard. When adequate conformity to the standard has been verified, the accredited or authorized person or organization will attest in writing that a product, process or service conforms to specified requirements.

Certification Body: An independent, third-party organization that will follow established procedures for assessing conformity against an applicable standard to determine certification status of a product, process, or service (*see also* “Certification”).

Certified Professional: An individual that has the designation of at least one of the following: Certified Crop Adviser (CCA), USDA-NRCS Comprehensive Nutrient Management Plan (CNMP) Specialist, Certified Professional Agronomist (CPAg), or other relevant accreditation from the American Society of Agronomy or National Alliance of Independent Crop Consultants.

Cover Crop: A crop grown for the protection and enrichment of the soil, which is usually established between periods of regular crop production (e.g., grasses, legumes, clover).

Continuing Education Unit (CEU): One (1) CEU is defined as one (1) hour of quality contact time in training or other qualifying activity addressing the continuing education criterion. For the purposes of the Standard, a qualifying CEU must have been approved by a Certified Crop Adviser (CCA) state board.

Crop Adviser: An individual who provides advice to grower customers about crop management and inputs.

Desk Audit: Assessing conformance to a standard through off-site review of documents and records. A desk audit is usually conducted at the location of the auditor, as opposed to the location of the auditee (*see also* “Field Audit,” “Office Audit”).

Eutrophication: The enrichment of water bodies with nutrients that stimulates proliferation of aquatic plant life.

Field Audit: The process of assessing conformance to a standard through an onsite visit to place of agricultural production of the auditee (*see also* “Field Audit,” “Office Audit”).

Frozen Ground: For the purposes of this Standard, frozen ground is when soil conditions are such that tillage or nutrient incorporation and/or injection after application are not possible at the time of nutrient application, and will not be possible within the next 48 hours as a result of frozen conditions.

Grower Customer: Individual growers or farmers who are clients of the Nutrient Service Provider and receive either a nutrient recommendation from the Nutrient Service Provider, or have nutrients applied by the Nutrient Service Provider.

Maintenance Limit: The upper limit of the maintenance range, a range of soil test levels within which the recommended rate aims to replenish crop removal. Soil test levels above the maintenance limit receive progressively lower rate recommendations, usually declining to zero at a level 10 to 20 ppm above the maintenance limit (*for example, see* University of Missouri et al., 2004 or Vitosh et al., 2012).

Nutrient Management Plan: A plan detailing a set of practices designed to maximize nutrient use efficiency and minimize nutrient losses. The criteria for nutrient management plans vary according to state (*see* NRCS, 2013)

Nutrient Stewardship: Planning and implementation of practices designed to manage crop nutrition for improved efficiency of crop production systems and optimization of nutrient use (*see* “4R”).

Nutrient Service Provider: General term that refers to entities covered under the scope of the 4R Nutrient Stewardship Standard, including agricultural retailers, agricultural service providers, and certified professionals. For the purposes of the Standard, the relevant functions of Nutrient Service Providers are to provide nutrient recommendations and/or apply nutrients for grower customers.

Office Audit: Assessing conformance to a standard through review of documents and records without direct field observations. An office audit is typically conducted at the site of the program participant and entails both document review and interview (*see also* “Field Audit,” “Office Audit”).

Progress Report: The report that is required from the Nutrient Service Provider in years during which there is no onsite audit (*also see* “Audit Report”). A progress report will be evaluated through a desk audit.

Setback: The spatial zone established between the edge of a crop to an identifiable feature such as a water body for the purpose of protecting the feature from adverse impacts.

Snow-covered: For the purposes of this Standard, snow-covered ground is when soil cannot be seen because of snow cover.

Standard: In general, the normative reference by which a decision to award certification is made. For the purposes of this document, when capitalized, “Standard” refers to the specific guidelines and references established in the 4R Nutrient Stewardship Program.

Variable Rate Technology (VRT): Application of nutrients according to site-specific rate requirements, as opposed to uniformly throughout a field.

References

Certification Program References

4R Nutrient Stewardship Certification Manual

Auditor Manual for 4R Nutrient Stewardship Certification

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.

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National Oceanic and Atmospheric Administration (NOAA). *National Weather Service*. <http://weather.gov> Accessed November 2019.

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The Fertilizer Institute (TFI). *Nutrient Stewardship | The Right Time for Nutrient Stewardship Is Right Now*. <http://www.nutrientstewardship.com> Accessed November 2019.

University of Missouri College of Agriculture, Food, and Natural Resources. *Soil Test Interpretations and Recommendations Handbook*. <http://aes.missouri.edu/pfcs/soiltest.pdf> Accessed November 2019.

Vitosh, ML, Johnson, JW, Mengel, DB, eds. *Tri-State Fertilizer Recommendations for Corn, Soybeans, Wheat and Alfalfa*. <https://agcrops.osu.edu/sites/agcrops/files/publication-files/Tri-State.pdf> Accessed November 2019.

Standard Requirements - 1: Training and Education

Unless otherwise specified, 100% of the Nutrient Service Provider's grower customers participating in Missouri 4R cost-share programs must meet the requirements specified by the auditable evaluation criteria during every audit year in order to achieve conformance with the Certification Standard.

1 Training and Education

Overview: Nutrient Service Providers and their grower customers must be educated and trained on the principles of 4R Nutrient Stewardship. Additionally, the requirement for education and training on 4R Nutrient Stewardship is to support the adoption of new research and technologies for nutrient management.

T1 Initial Training of Nutrient Service Providers, Sales, and Application Staff

Nutrient Service Providers' sales, and application staff have undergone 4R training and staff are able to demonstrate knowledge about 4R Nutrient Stewardship and the 4R Certification Program.

T2 Ongoing Education and Training of Nutrient Service Providers, Sales, and Application Staff

Ongoing training helps ensure that the latest technology, products, and research is shared. A Certified Professional (Certified Crop Adviser (CCA), USDA-NRCS Comprehensive Nutrient Management Plan (CNMP), Certified Professional Agronomist (CPAg), or other relevant accreditation from the American Society of Agronomy or National Alliance of Independent Crop Consultants) must be on staff or contracted to review nutrient recommendations. The criteria should include training for various roles (sales, recommendations, application), specific topics, frequency or timeframe, number of trainings or CEUs achieved, and done by an accredited body, such as ASA, extension/university or NRCS.

T3 Education and Training of Grower Customers

It is equally important that the grower customers know the practices of 4R Nutrient Stewardship. This understanding can help them manage their nutrients more efficiently, value the efforts you as a nutrient service provider are taking to become 4R Certified, and value the advice, research, and services provided.

Standard Requirements - 2: Documenting 4R Implementation

Unless otherwise specified, 100% of the Nutrient Service Provider's grower customers participating in Missouri 4R cost-share programs must meet the requirements specified by the auditable evaluation criteria during every audit year in order to achieve conformance with the Certification Standard.

2 Documenting 4R Implementation

Overview: The implementation of 4R principles and practices are recorded and monitored, including annual summary total of fertilizer products applied. Records of implementation are checked by the Nutrient Service Provider to evaluate progress of the implementation of 4R principles and practices over time.

D1 Documenting 4R Implementation

For an audit to take place, an anonymous grower customer list is needed to outline those acres which are fully serviced and those that receive recommendations or custom application. What recordkeeping is necessary to ensure resource goals are met? Field, watershed, and customer requirements should be outlined as well as which professional staff (i.e. CCA) is assigned to the customer, if the customer falls into any other categories that are relevant to the geography, i.e. customers utilizing manure-based nutrients.

D2 Maps for Recommendations and/or Application

Field maps are used not only in sharing recommendations with the grower customer, but also in tracking fertilizer application. To be useful when thinking about resource concerns and goals of the Program, the information on the map can offer a wealth of data quickly. Mapping records could include information such as yield goals, sensitive areas (e.g., surface water inlets, wells, ditches, wetlands, areas of concentrated flow, grass waterways), soil type delineation, setbacks, and soil test results. Sensitive areas can more directly transport fertilizer to subsurface drainage and water supplies and to nearby surface waters. When digital or paper maps already have these sensitive areas highlighted it can eliminate fertilizer application on them.

D3 Applicable Laws Kept on Hand

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. Information about the laws should be made available to all Nutrient Service Provider staff and visited during in-house trainings.

D4 Review of Recommendations

Nutrient recommendations should be reviewed by a certified professional that has achieved the training as outlined in Section 1. These recommendations should be discussed with the grower customer so that he/she understands what is occurring on their farm.

Standard Requirements – 3: Nutrient Recommendations & Application

Unless otherwise specified, 100% of the Nutrient Service Provider's grower customers participating in Missouri 4R cost-share programs must meet the requirements specified by the auditable evaluation criteria during every audit year in order to achieve conformance with the Certification Standard.

3 Nutrient Recommendations and Application

Overview: Nutrient recommendations and application are made with the goal of maximizing crop uptake and minimizing nutrient losses to the environment. Records are maintained on grower customers' nutrient recommendations and nutrient application. Soil testing plays an important role in the development of well-founded nutrient recommendations and such testing must be based on appropriate sampling frequency and intensity. Goals for crop yields must be calculated and included in the recommendation. Nutrient recommendations and application conducted by the nutrient service provider must be consistent with or supported by land-grant universities such as the Tri-State Fertilizer Recommendations (Vitosh et al., 2012) or the University of Missouri Soil Test Recommendations and Interpretations (University of Missouri et al., 2004), allowing for adaptive management based on documents on-farm data showing reasonable expectation of improved crop yield without increased risk of harm to water quality. Nutrient recommendations and application conducted by the nutrient service provider must observe setbacks to water bodies and other features. Nitrogen and phosphorus must not be applied or recommended for application on frozen ground or prior to rainfall. All sources of nutrients must be accounted for in the recommendation, and the recommendation must be reviewed by a certified professional. Variable Rate Technology should be used when available. Nutrients are not applied at more than a two-year application rate.

R1 Soil Tests for Recommendations and/or Application

Current soil tests help gauge what the soil can already supply the crop and is basis for making accurate fertilizer recommendations. Soil tests should be completed by a Missouri State Approved Soil Testing Lab. A minimum of information gathered to complete the nutrient management plan must be included (minimum of OM, P, K, pH, and CEC), frequency of tests (minimum of every 4 years), and scope (uniformity of sample on 25 acres or less) of soil tests with grid and zone sampling being more robust and accurate, and therefore preferred.

R2, A1, & A3 Records for Recommendations and/or Application

Proof of recommendations and application can be achieved many ways and have various levels of detail. The details of records could include, but should not be limited to field boundaries, soil test results, nutrient recommendations, fertilizer source, rate, timing, and placement of application, crop yield goals, P-index, and weather at time of application and forecasted in next 12 hours. Ensuring that recommendations match application is important to keep the credibility of the Program. Grower customer records should be kept confidential and made available during an audit.

R2, A2 Nutrient Recommendations and/or Application made by the NSP (General)

Over application of fertilizer not only is an unnecessary expense to the farmer, but also could lead to an excess of nutrients in the environment. Nutrient recommendations should be made considering at least the following:

- Recent soil tests
- Land-grant university recommendations
- All nutrient sources including manure, biosolids, cover crops, and previous crop
- Manure nutrient values
- Application (Incorporation, banding, and broadcasting) recommendations under specific cropping conditions such as growing crops, no-till, and low P risk index scores
- Application placement considers rainfall forecasts and amount of rain that initiates surface runoff
- Application timing considers frozen and snow-covered ground
- Application rate for both N and P considers land-grant university guidelines
- Length of time since the nutrient recommendation
- Split application of nitrogen, including soil temperatures
- Use of inhibitors and stabilizers and slow release technologies

A4 Crop Yield Determination and Monitoring

Crop yield goals help make more accurate 4R recommendations. It is important to get accurate yield goals for each field based on grower customer goals, yield history, and soil potential.

A5 Setbacks for Recommendations and/or Application

It is important to follow applicable national, state and local laws when applying fertilizer. Sensitive areas and setbacks should be discussed with the grower customers regardless of applicable application laws. These locations should be identified on field maps.

A6 Application Equipment and Technology

To ensure the proper rate of fertilizer is applied, it is important to have application equipment calibrated on a regular basis with annual calibration being the minimum. New technologies can assist in applying fertilizer at variable rates, where the soil needs the fertilizer.

Guidance Documentation Required for 4R Certification Missouri 4R Nutrient Stewardship Certification Standard

Requirement Number Designation:

T = Training; D = Documentation; R = Nutrient Recommendations; A = Application

Grower Customer Categories:

C = Cost Share; F = Full Service Provider Designation; R = Recommendation Only Provider;

A = Application Only Provider; O = Other

Req. No.	Requirement	Grower Customer Category	Evidence	Purpose
T1	Nutrient Service Providers' sales and application staff have undergone 4R training and staff are able to demonstrate knowledge about 4R Nutrient Stewardship and the 4R Certification Program.	C F R A	Meeting agendas, education log, or materials indication 4R concepts and topics (Right Rate, Time, Place, and Source) were covered with a roster of those in attendance. Can also be an interview with various staff.	Training helps ensure understanding of 4R concepts and the latest technology, best management practices, and research is understood.
T2a	Ongoing education and training of Nutrient Service Providers, sales, and application staff.	C F R A	Evidence of training sessions attended, training materials covered indicating 4R concepts, and verification of attendance. Criteria should include training for various roles (sales, recommendations, application), specific topics, frequency or timeframe, number of trainings or CEUs achieved, and administered by an accredited body, such as ASA, Extension/University, or NRCS.	Training helps ensure understanding of 4R concepts and the latest technology, best management practices, and research is understood.
T2b	Certified professionals must have current certification in good standing. A certified professional must be	C F R A	Print-off of current credentials and/or certification which include: Certified Crop Adviser (CCA), USDA-NRCS Comprehensive Nutrient Management Plan	Show importance of industry professionals and standards for nutrient recommendations and crop plans.

	on staff or contracted to review nutrient recommendations.		(CNMP), Certified Professional Agronomist (CPAg), or other relevant accreditation from the American Society of Agronomy or National Alliance of Independent Crop Consultants.	
T3	4R education and training of grower customers.	C F R A	Proof of distribution of 4R materials to customers via post mail, email, meeting description, or forum on an annual basis.	It is equally important that the grower customers know what 4R Nutrient Stewardship means. This understanding can help customers manage their nutrients more efficiently, value the advice, research, and services of Nutrient Service Provider – customer relationship, and understand why the Nutrient Service Provider is dedicated to earning 4R Certification
D1	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. The list should include columns designating the CCA assigned to the customer and a designation if the customer utilizes manure-based nutrients, if applicable.	C F R A	The NSP will record and submit a list as noted- this is the auditor’s population for sample selections. This list can be coded (i.e. Customer A, B, C, etc.). For the pilots the customer list will only include those involved with the cost share practice.	An accurate list of grower customers will provide a representative sample of customers who fall into the full-service, recommendation only, or application only categories.
D2	Field map records include information such as yield goals, sensitive areas, soil	C F R	Review of records on file, can be hard copy or electronic. Multiple data	Field maps are used to share recommendations with the grower customer and track nutrient

	type delineation, setbacks, soil test results, watershed location and nutrient recommendations.		layers or maps/documents are acceptable.	application. Information on the map can offer a wealth of data quickly and remind us of resource concerns and 4R Program goals.
D3	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.	C F R	Review of applicable laws, can be kept in hard copy or electronic format by Nutrient Service Provider.	It is important to have applicable laws readily available to all staff and it is a good practice to have these laws conveyed/distributed internally to all staff and grower customers on a regular basis.
D4	Nutrient recommendations are reviewed by the certified professional and with the grower customer.	C F R	Customer service agreement to show growers services and recommendations included with planning process. <i>To be tested during pilot phase. Could be the cost share agreement document.</i>	Shows the importance of industry professionals and the relationships between the Nutrient Service Provider and grower customers.
R1a	Soil tests must be completed by a Missouri State Approved Soil Testing Lab and completed a minimum of every 4 years. Samples should be uniform on 25 acres or less. With grid/zone sampling being more robust and accurate, these technologies should be considered.	C F R	Current soil test records on file.	Current soil tests help gauge what the soil can already supply the crop and is basis for making accurate nutrient recommendations.
R2b	Soil tests must include minimum results of OM, P, K, pH, CEC, and scope of sample on 25 acres or less.	C F R	Current soil test records on file.	Current soil tests help gauge what the soil can already supply the crop and is basis for making accurate nutrient recommendations.
R2a	Nutrient recommendations	C F R	Nutrient recommendations based on the University of	Over application of nutrients is an

	consider at least the following: land-grant university recommendations and soil tests taken within the last 4 years. Nutrients are applied according to a written Nutrient Recommendation that has been prepared within the prior 4 years.		Missouri guidelines, Tri-State Fertilizer Recommendations, or other Midwest Land Grant University recommendations, notation of soil conditions at time of application, and copy of soil tests. These guidelines allow for adaptive management based on documented on-farm data showing reasonable expectation of improved crop yield without increased risk of harm to water quality.	unnecessary expense to the grower customer and could lead to an excess of nutrients in the environment.
R2b	Nutrient recommendations consider at least the following: all nutrient sources (including manure), yield potential/history, split N application, and N inhibitors/stabilizers.	C F R	All sources of nutrients are included in the recommendation records. Credits are given to all nutrient sources applied (e.g., manure); commercial nutrient is adjusted accordingly.	Over application of nutrients is an unnecessary expense to the grower customer and could lead to an excess of nutrients in the environment.
R2c	Potential soil conditions and soil management are documented before making nutrient recommendations – frozen or snow covered ground, tillage practices (no-till, reduced tillage, or other), soil temperature, method of application, P-Index.	C F R	Notation in Nutrient Plan of date of planned application, notation in plan of tillage practices and timing of tillage relative to nutrient applications, resource documented for observing soil temperature for N applications	Over application of nutrients is an unnecessary expense to the grower customer and could lead to an excess of nutrients in the environment.
A1	Application records must not exceed nutrient recommendations for customer applied	C F	Hard copy or electronic records on file indicating nutrient recommendation and applied scale ticket or as-applied map. Records of application will be	Provide proof of consistency throughout the full-service process and reduce over application of nutrients.

	acres, within a 10% margin of error.		compared to the nutrient recommendations on file. Only applicable to the full-service customers.	
A2	Nutrient placement considers tillage, growing crops, injecting/knifing/y-drops/banding, and broadcasting.	C F A	Nutrient plan includes evaluation of proper application process.	Considering Right Place and best management practices help reduce the chance of nutrient loss and proper crop uptake.
A3	Weather or forecast use around nutrient applications.	C F R A	Demonstrate weather forecasting tools used by the retail location.	Considering Right Place, Right Time, and best management practices, chances are reduced for nutrient loss and increased for proper crop uptake.
A4	Crop yield goals are discussed with the grower and are based on previous crop history.	C F R	Review of records on file (hard copy or electronic). Proof of level of crop management may be records of previous yield history.	Crop yield goals help make more accurate 4R recommendations. It is important to get accurate yield goals for each field based upon grower customer goals, yield history, and soil potential.
A5	Environmentally sensitive areas (such as tile inlets, well heads, areas of concentrated flow, gullies, and water bodies where nutrient application may occur) are documents and discussed with the grower customer.	C F R A	Identify sensitive areas and/or show examples on field maps.	It is important to follow applicable national, state, and local laws when applying fertilizer. Sensitive areas and setbacks should be discussed with the grower customers. These locations should be identified on the maps as indicated in the A5 requirement.
A6	Regular equipment calibration frequency (annual calibration minimum).	C F A	Calibration (i.e. maintenance) records indicating equipment service date and any maintenance/service required. Nutrient Service Providers should outline any new technology goals.	To ensure the proper application rate of nutrient, it is important to have application equipment calibrated on a regular basis. New technologies can assist in applying nutrient at variable rates.