4R Nutrient Stewardship Certification Standards Manual

Requirements for Certification
Of Nutrient Service Providers in Florida

Version 3.0 January 2020

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VERSION 3.0 January 2020

Introduction

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 crop nutrient source and application rate, timing and placement method will support agricultural productivity while also helping to improve water quality throughout the state of Florida.

4R Nutrient Stewardship and Florida Department of Agriculture and Consumer Services (FDACS) Best Management practices (BMP's) must be customized to fit each unique climatic soil, cropping and operational conditions. This is achieved, as needed, with professional input from recognized and qualified specialist such as Certified Crop Advisors (CCAs), Consultants, and Extension to name a few who work with farmers/growers to assess their situation and develop management plans.

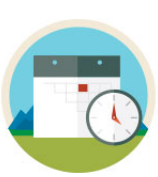
Continuous improvement can be achieved by employing science that optimizes the economic, social and environmental performance of BMP's utilized in implementing the voluntary 4R Nutrient Certification Program in Florida.

The 4R Certification Standard was created under the auspices of the 4R Advisory Committee, members of which are based in the State of Florida. The 4R Advisory Committee members represent a diversity of stakeholders from the business, government, university, and non-governmental sectors with the common goal of maintaining agricultural productivity while also improving the water quality in the State of Florida.

The 4Rs of nutrient stewardship refer to using the Right Source of nutrients at the Right Rate and Right Time in the Right Place (TFI, 2013). 4R Nutrient Stewardship provides a science-based framework for plant nutrition management while also considering site-specific needs of a particular farm (IPNI, 2012).

The **Right Source** means ensuring a balanced supply of essential plant nutrients including granular fertilizers, liquid fertilizers and/or manures.

The **Right Rate** is applying just enough fertilizer to meet the needs of the plant while accounting for the nutrients already in the soil.



The **Right Time** means applying fertilizer when the plant will get the most benefit and avoiding times when fertilizer can be lost to the environment.

The **Right Place** is where the plants can easily use fertilizer and where it is less likely to be lost to the water or air.

In creating a 4R Certification Program, the 4R Advisory Committee has sought to provide guidance and direction for a consistent, recognized program for agricultural retailers, agricultural service providers, and certified professionals to help ensure that 4R nutrient management goals are adopted, implemented and that in turn lead to long term positive impacts on water quality throughout the State of Florida. While this Standard does not apply to individual growers, on-farm adoption of the recommendations made by Nutrient Service Providers that become certified under this standard is critical to meeting the goal of improved water quality.

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 in Florida and its tributaries, including references to regional soil fertility recommendations. The Standard also follows guidelines put forth in the Conservation Practice Standard for Nutrient Management (NRCS, 2012) where appropriate.

This Standard is intended to support the adoption of 4R Nutrient Stewardship by specifying best practices for nutrient recommendations and nutrient application. 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 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 Florida, including agricultural retailers, agricultural service provides, and certified professionals. Grower customers of the Nutrient Service Providers are **not** included under the scope of the Standard.

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).

C Goals

The 4R Nutrient Stewardship Certification Standard was drafted as part of an initiative to improve the water quality of each state, with the long-term goal of developing and implementing 4R certification in agricultural areas of the United States. 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, including the reduction of eutrophication and incidence of harmful algal blooms**,** and helping to meet water quality standards
- encourage sharing of the most up-to-date information about responsible nutrient stewardship with Nutrient Service Providers and growers
- help the agricultural sector adapt to new research and technology in the area of nutrient stewardship
- annual review of 4R Certification Program

D Structure and Implementation

The Standard is divided into three main Sections:

1. Initial Training and Ongoing Education
2. Monitoring of 4R Implementation
3. Nutrient Recommendations and Application

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

Within each Section, requirements are subdivided into groups based on related subject matter. Each group consists of auditable evaluation criteria, which form the basis of the standards. There is a total of 30 auditable evaluation criteria. Of that total: 7 address training and education, 12 address nutrient recommendations, 5 address nutrient application and 6 address maintenance of proper documentation

In most cases, a Nutrient Service Provider will offer nutrient recommendations or nutrient application services or both to multiple farms. Unless otherwise specified, 100% of grower customers of the Nutrient Service Provider must meet the requirements specified by the auditable evaluation criteria during every audit year to achieve conformance with the Standard. Other auditable evaluation criteria have specific percent acreage requirements which indicate the percent of total farms acres treated by the Nutrient Service Provider.

Using the Standard as the normative reference, audits will be conducted by third-party 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, or Not Applicable.

The certification program will be on yearly cycle. For a Nutrient Service Provider new to the program, an onsite audit of the Nutrient Service Provider will be conducted on the first and second years of the audit cycle. If the Nutrient Service Provider performs well during the second year of the audit cycle, it may be possible to submit an annual desk audit progress report in lieu of an onsite audit, with an onsite audit within 24 months.

Further information about the audit and certification process is presented in 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).

E Public Comment Period

Recognizing that the success of the Florida 4R Certification Program and the long-term quality of water in Florida, is of interest to a variety of stakeholders, the Florida 4R Certification Board hosted two stakeholder public meetings and released the proposed standards twice, once in north Florida and once in south central Florida to the public for a 45-day comment period.

All comments received were reviewed and incorporated as appropriate. The Florida 4R Certification Board made the greatest effort to address concerns and adjust the standards where possible.

We would like to thank stakeholders: environmental groups, fertilizer dealers, government agencies and the public who provided feedback during the development of these documents. The finalized standards will require alterations to current practices and member feedback allowed us to ensure these changes are not only feasible but mutually beneficial to optimizing nutrient availability and reducing nutrient loss.

In order to balance program adoption with credibility, the Florida 4R Certification Board has proposed yearly review of all documents because of improved practices and technology based on scientific research to help improve and protect water quality.

F Contact

Questions about the 4R Nutrient Stewardship Certification Program or this document should be directed to the Florida4RCertification@gmail.com , local program administrator, or go online to www.4Rcertified.org

Proposed 4R Certification Guidance Documentation Required For Florida

FL 4R Nutrient Stewardship Certification Standard Version 1.0

The standards are divided into four sections: T = Training; R = Recommendation; A = Application; and D = Documentation

Note - Training and Recommendations apply to all types of Nutrient Service Providers pursuing certification in the program. Parts of Section 3 may not be applicable for those Nutrient Service Providers that either only make recommendations for nutrient use or only carry out nutrient application.

Each group consists of auditable evaluation criteria, which form the basis of the standards. There is a total of 30 auditable evaluation criteria. Of that total: 7 address training and education, 12 address nutrient recommendations, 5 address nutrient application and 6 address maintenance of proper documentation.

Using the standards as the normative reference, audits will be conducted by third-party auditors to determine whether a specified agricultural retailer, agricultural service provider, or Certified Crop Advisor (CCA), acting as a Nutrient Service Provider, has met the requirements of the standards. The degree of conformance to the standards will be assessed by the auditor, who will evaluate each auditable evaluation criterion, as: Comply, Not Comply, or Not Applicable.

There will be a three (3) year record retention requirement.

F = Full-Service Provider; R = Recommendation only Provider; A = Application only Provider

***** Florida will have an audit the first and second year to be certified, then self-audits will take place annually with an on-site audit within 24-month period.

Req. No.	Requirement	Audit Year	Grower Customer Category	Evidence	Comments/Feedback
T1	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.	1	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.	
T2	Certified professionals must have current certification in good standing.	1	FR	Print-off 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.	
T3	Nutrient service providers, or any staff providing nutrient recommendations, attend a training, at least once every two (2) years on the practices and principles of 4R Nutrient Stewardship, soil sampling and testing techniques, and/or nutrient water interaction. This is demonstrated through a minimum of 5 (five) approved CEUs of relevant training.	1	FR	If the staff person is a CCA, then proof of active status is sufficient. If not a CCA, but still a certified professional, print off classes taken is needed. If not explicit, include agendas of meetings attended.	
T4	Nutrient service providers, sales, and application staff attend a training at least once every two (2) years on 4R Nutrient Stewardship. This is demonstrated through a minimum of two (2) hours of relevant training approved by the Florida 4R Retailer Certification program administrator.	1	FRA	Program Administrator must review training offered, it may be through the agri-business itself or through a third party. Agenda and attendance are required.	
T5	Nutrient service provider has conveyed informational materials on 4R Nutrient Stewardship to all grower customers.	1	FRA	Signature by grower, OR proof of attendance at a 4R Nutrient Stewardship educational event, OR proof of distribution of materials via mailing list	Informational material can be provided by IPNI, TFI, or Program Administrator.
T6	Nutrient service provider has sponsored or directly provided a training session on 4R Nutrient Stewardship that is	1	FRA	Agenda of the sponsored educational event shows training on 4R Nutrient Stewardship approved by the Program Administrator.	

	available for all grower customers.				
T7	Three-year Record Retention	1	FRA	Must retain records for three years (electronic or paper)	
R1	Soil (analysis) tests for pH and phosphorus are performed either using methods accepted by UF - IFAS Extension Soil Testing Laboratory, alternative test methods that have a calibrated crop response, or an alternative test method as described in the requisite FDACS BMP manual under which the operation is enrolled.	1	FR	Review of soil testing records on file, can be hard copy or electronic. All three (3) items must be indicated on the records.	
R2	Soil tests for nutrients are conducted preferably a month prior to new crop to be grown	1	FR	Review of records on file, can be hard copy or electronic. No soil test result may be older than two (2) years old.	
R3	PH test should be taken at least six months prior to crop planting	1	FR	Review lime/PH recommendations at least every three years to adjust PH in soil	
R4	Soil tests are taken from relatively uniform areas based on field size but also soil types. (use good judgement to get sample)	1	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).	
R5	Limit phosphorous applications based on the soil test results and crop requirements. Uf-IFAS application rates, or alternative recommendations as described in the relevant BMP Manual under which the operation is enrolled, will be reviewed and followed or adjusted as	1	FR	Review of records on file, can be hard copy or electronic. Records will be compared to the UF-IFAS fertilizer recommendation rates. If these rates are exceeded, data from adaptive management research must be presented justifying the different recommendations and will include documentation used to calculate applications. Soil test results must be equal to or less than two (2) years old. If it is a new field, county	

	necessary for site specific conditions. Nitrogen recommendations will be based on crop nutrient requirements. The relevant UF-IFAS application rates will be reviewed and followed. Nitrogen fertilization rates may be adjusted based on tissue testing results. All nutrient recommendations should take into consideration field history of soil type and yield goals.			averages, drainage, and soil type should be taken into consideration. Retailer should review past soil tests with producer. See 6 for yield goals documentation	
R6	Crop yield goals are discussed with the grower and are based on previous crop yield history, and soil potential.	1	FR	Review of records on file, can be hard copy or electronic.	
R7	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.	1	FR	Nutrient recommendations indicate all sources of nutrients in the recommendation records. Refer to N rate calculator.	
R8	If manure is applied, manure analysis must follow UF-IFAS guidance regarding required analyses and/or include, at minimum: total nitrogen (N), ammonium N, total phosphorous (P) or P2O5, total potassium (K) or K2O, and percent solids. The manure nutrient data used in the recommendations may be rolling average of manure nutrient analyses,	1	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 UF-IFAS average recommendations https://edis.ifas.ufl.edu/ss506	

	where such analyses are performed at least once calendar year.				
R9	Nutrient recommendations and/or applications adhere to minimum setbacks from all sensitive areas, such as wetlands, ditches and water bodies as specified in the relevant FDACS BMP Manual.	1	FRA	Records of application recommendations and actual applied maps or spreading tickets.	
R10	For all nutrient recommendations and/or application, the inclusion of a minimum setback distance near known sensitive areas, such as wetlands and water bodies are documented and discussed with the grower customer or applicator.	1	FRA	Setbacks discussed in meetings in year one (1); in subsequent years signatures of grower customers will be on file or included on customer's application/recommendation cover sheet or maps.	
R11	Discussion with grower customers on nutrients management include options of split application, inhibitors, slow release technologies, timing, placement, rates, and sources.	1	FRA	Signatures of grower customers on file.	
R12	Recommended nutrient application levels are to suggested/recommended limits specified by nutrient application recommendations by UF-IFAS, 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.	1	FR	Records will be compared to UF-IFAS Fertilizer Recommendations first. If these rates are exceeded, data from adaptive management research must be presented justifying the different recommendations and will include documentation used to calculate applications. Field averages will be used to evaluate this criteria.	
A1	Application records shall not exceed documented	1	FA	Review of records on file for Fertilizer recommendations and	

	recommendations from Service Provider for custom applied acres. Records of nutrient application include at minimum: * method of application; * date of application; * rate and formula (N,P,K) of application.			applied scale ticket or as applied map can be hard copy or electronic.	
A2	Nutrients are applied according to a written nutrient recommendation by Service Provider that has been prepared for each crop.	1	FA	Records of application will be compared to the recommendations on file. Only applicable to the full-service providers.	
A3	Nutrients applied should not exceed FDACS BMP Manuals requirement for commodity specific.	1	FRA	Discuss with farmer/grower the BMP's that refer to the crop you are working with.	
A4	All nutrient application equipment must be calibrated at each crop application.	1	FA	Calibration (i.e., maintenance) records indicating equipment service date and any maintenance/service required. Follow manufacturer's guidelines.	
A5	If Variable Rate Technology is used to apply nutrients, then records need to be reviewed.	1	FA	Review of records on file, can be hard copy or electronic.	
D1	Records related to grower customers are kept confidential by the nutrient service provider and are made available for review ((during an audit.	1	FRA	Confidentiality statement with Nutrient Service Provider (NSP) and auditor signatures.	
D2	Nutrient Service Providers (NSP) will record number of acres serviced in the following categories: full service, recommendation only, application only.	1	FRA	Review of records on file, can be hard copy or electronic.	
D3	Nutrient service provider maintains records related to all growers' nutrient	1	FRA	Review of records on file, can be hard copy or electronic. Fertilizer recommendations such as applied	

	recommendations/applications for 3 years.			scale ticket, commodity specific FDACS BMP manuals or as-applied map.	
D4	Nutrient recommendations have been reviewed and acknowledged in writing by the grower/customer.	1	FR	Signatures of grower customers on file or electronic signatures.	
D5	Nutrient recommendations as defined by 4R's for each grower have been approved and signed by a Certified Professional.	1	FR	Signatures of Certified Professional (defined in T2) for each grower customer is on file, certifying that they approve the nutrient recommendation.	
D6	Field records related to monitoring of 4R implementation must include the watershed or watersheds where the farms are located.	1	FRA	Identify by Florida Department of Environmental Protection (FDEP) Basin Management Action Plan (BMAP) if applicable	

4R Nutrient Stewardship Certification Program Decertification Guidelines

Certification may be revoked or suspended* if a Nutrient Service Provider (NSP) or Independent Crop Consultant (NSPs):

A. Is found to provide false information to the auditor or Certification Sub-Committee
B. Egregiously violates a standard(s) or Law
C. Does not become compliant with Corrective Action Plan as proposed after the audit that gained or maintained its certification
D. Does not pay annual application or auditor fees
E. NSP changes ownership and new ownership does not wish to comply or participate in the program

**only by majority vote of the Nutrient Stewardship Council (NSC) will a certification be revoked or suspended*

If the NSP is found to have violated any of the items A through D, the following steps may apply.

1. Progress Report: The NSC needs assurance that the institution is carrying out the Correction Action Plan that submitted or was being implemented at the time of the audit.

2. Warning**: The NSC acts to warn the NSP that its certification status may be in jeopardy when the NSP is found to have not been in compliance with the 4R Nutrient Stewardship Certification Program's Standard requirements. A monitoring report is required from the NSP to demonstrate that the NSP has made appropriate improvements to bring itself into compliance of the Standard of the program.

   ***a warning indicates that the NSC believes that, although the NSP is out of compliance, the NSP has the capacity to make appropriate improvements within a reasonable period of time to comply with the standard.*

3. Probation: The NSC places a NSP on probation when, in the NSC's judgement, the NSP is not in compliance with one or more of the Standards and that non-compliance is sufficiently serious or extensive that raises concern of the NSP's ability to make appropriate improvements in a timely manner. In probation: the NSP must prove in a form as requested by the NSC that it will make the necessary changes to gain compliance or certification will be revoked.

4. Revoke Certification: The NSC revokes the certification from the NSP as a result of determination that the NSP has not, cannot, or will not conform to the 4R Nutrient Stewardship Certification Program Standards. *If the Certification is revoked, the NSC will notify the NSP and request the certification sign be removed from the property and any promotional items with the certified logo be destroyed as well.

The NSC reserves the right to alter the order of disciplinary action described above, eliminate disciplinary steps, or to implement new disciplinary measures with a majority vote. The Certification Sub-Committee will review and report to the NSC the information necessary for voting decisions.

Complaint Procedure:

Any complaint received should be directed to the Executive Director of the NSC.

1. Complaint should be in writing and signed
2. The Executive Director will contact the auditor (who performed the audit if possible), Board Chair, and Certification Sub-Committee Members. The auditor will be asked to follow up into the complaint and to report back to the certification sub-committee the findings.
3. The certification sub-committee will report to the NSC the findings and any disciplinary actions will be determined.

4R Program Education guidelines to meet Requirements

1 - Nutrient Service Providers sales, and application staff attend a training at least once every 2 years on 4R Nutrient Stewardship. This is demonstrated through a minimum of 2 hours of relevant training approved by the program administrator.

Evidence:

An educational session attended with a focus on pre-approved topic(s). Pre-approved topics are listed below. If a company has a topic that does not directly fit into a topic area below, please contact the Program Administrator Florida4RCertification@gmail.com keep a record of the correspondence on file.

Agenda and/or certificate of attendance of the educational event proving training on 4R Nutrient Stewardship (approved by the Program Administrator or meeting a topic(s) below) for at least 2 Continuing Education Credit or 120 minutes.

2. - Nutrient Service Provider has sponsored or directly provided a training session on 4R Nutrient Stewardship that is available for all grower customers.

Evidence:

An educational session held as a part of a company's hosted event or sponsorship of an educational program held in the branch location's market area. The program should be advertised to all grower customer clients of the branch location, making it widely available. Pre-approved topics are listed below. If a company has a topic that does not directly fit into a topic area below, please contact the Program Administrator, Florida4RCertification@gmail.com and keep a record of the correspondence on file.

Agenda of the company-sponsored educational event proving training on 4R Nutrient Stewardship (approved by the Program Administrator or meeting a topic(s) below) for at least 0.5 Continuing Education Credit or 30 minutes.

4R NUTRIENT STEWARDSHIP PRE-APPROVED EDUCATIONAL TOPICS UNDER THE 4R NUTRIENT STEWARDSHIP CERTIFICATION PROGRAM:

1. Overview of Sustainable Practices and Principles
    a. Definition of sustainable = economics, environment, society
    b. Sustainable and Risk dynamics in Florida waters and especially BMAP area's
    c. Florida BMP's and IFAS Recommendations
    d. Adaptive management

4R NUTRIENT STEWARDSHIP PRE-APPROVED EDUCATIONAL TOPICS UNDER THE 4R NUTRIENT STEWARDSHIP CERTIFICATION PROGRAM

2. 4R Practices and Principles
    a. Right Source
        i. Commercial
            1. Dry
            2. Liquid
            3. Additives and Stabilizers
        ii. Biosolids and Animal and Green Manures
    b. Right Rate
        i. Plant Nutrient Demand
        ii. Soil Nutrient Supply
        iii. Fertilizer Efficiency
        iv. Economic Returns
    c. Right Time
        i. Crop Uptake
        ii. Soil Nutrient Supply
        iii. Soil Nutrient Loss
            1. Rainfall
            2. Temperatures
    d. Right Place
        i. Root Uptake
        ii. Broadcast Application
        iii. Banding Application
        iv. Foliar Application
        v. Variable Rate Technology

3. Soil Testing Procedures
    a. Timing
    b. Tillage Type
    c. Management Zone or Grid
    d. Understanding soil test methods and results

4. Other 4R Supporting Practices and Programs
    a. Development and implementation of Nutrient Management Plans
    b. Soil and Water Conservation Practices that help reduce nutrient runoff
    c. Cost sharing assistance available for implementing nutrient management plans and conservation practices.

5. All inquiries email: Florida4RCertification@gmail.com

Standard Requirements - 1: Initial Training and Ongoing Education

1 Initial Training and Ongoing Education

a) Initial Training of Nutrient Service Providers, Sales, and Application Staff

Staff servicing grower customers can demonstrate knowledge of 4R nutrient stewardship. Such staff roles could include fertilizer sales, agronomic recommendations and fertilizer application.

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

Training helps ensure that the latest technology, products, and research is shared. 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.

c) Education and Training of Grower Customers

It is equally important that the grower customers know what 4R Nutrient Stewardship means. 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: Monitoring of 4R Implementation

2 Monitoring of 4R Implementation

a) Monitoring of 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. Field, watershed and customer requirements should be outlined.

Standard Requirements - 3: Nutrient Recommendations & Application

3 Nutrient Recommendations and Application

a) 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, soil types, nutrient recommendations, fertilizer source, rate, timing, and placement

of application and crop yield goals. Ensuring that recommendations match application is important to keep the credibility of the Program. Grower customer records must be kept confidential and made available during an audit.

b) 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., water areas, 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.

c) 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. The information gathered (e.g., OM, P, K, pH, CEC), frequency (annually for the crop) and scope (uniformity of sample) of soil tests needs to be outlined. With grid and zone sampling being more robust and accurate, these technology questions should be considered when developing the criteria.

d) 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.

e) 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
- Leaf tissue sampling
- 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 like growing crops, no-till, 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

f) 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. These locations should be identified on the maps as indicated above.

g) 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.

h) 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. Outline the frequency of calibration. New technologies can assist in applying fertilizer at variable rates, just where the soil needs the fertilizer. Outline any new technology goals, keeping in mind this program should be brand/product neutral.

Terms and Definitions

4R: 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.

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.

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.

BMP's: Florida Department of Agriculture Best Management Practices

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 50 minutes 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").

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.

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.

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 Application (VRA): Application of nutrient according to site-specific rate requirements, as opposed to uniformly throughout a field.

References

Certification Program References

4R Nutrient Stewardship Certification Manual, Version 1.0

Auditor Manual for 4R Nutrient Stewardship Certification, Version 1.0

Primary External References

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

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*. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046433.pdf January 2012.

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

http://edis.ifas.ufl.edu/results.html?cx=002853179957713987929%3A1vvizhi8cls&filter=0&client=google-csbe&output=xml_no_dtd&q=Fertilizer+Recomendations&x=9&y=10#gsc.tab=0&gsc.q=Fertilizer%20Recomendations&gsc.page=1

UF/IFAS Standardized Fertilization Recommendations for Agronomic Crops [1]
http://edis.ifas.ufl.edu/ss163

Principles of Sound Fertilizer Recommendations
http://edis.ifas.ufl.edu/ss527

UF/IFAS Standardized Nutrient Recommendations for Vegetable Crop Production in Florida
http://edis.ifas.ufl.edu/cv002

Florida Best Management Practices
https://www.freshfromflorida.com/Business-Services/Water/Agricultural-Best-Management-Practices