ORGANIC FARMING RESEARCH FOUNDATION

August 11, 2009
FINAL DRAFT

RE: RIN-AA48

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Norman Widman, National Agronomist
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Natural Resources Conservation Service
1400 Independence Avenue, SW, Room 5234
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Dear Mr. Widman,

The Organic Farming Research Foundation (OFRF) is a grower-directed, charitable organization dedicated to the improvement and widespread adoption of organic farming systems. Pursuant to the USDA's Natural Resources Conservation Service (NRCS) request for public comment on how to improve the conservation practice standards published in the Federal Register on June 12, 2009 (74 FR 27995), OFRF submits the following comments for consideration.

OFRF and the undersigned groups appreciate the opportunity to comment on NRCS' review and preliminary findings regarding the agency's conservation practice standards, pursuant to the statutory requirements of PL 110-246, the Food, Conservation, and Energy Act of 2008 (FCEA).[1] These are our first comments related to this review process. Neither OFRF nor any of the undersigned groups were notified of or invited to participate in the December 2008 meeting referenced in the June 12, 2009, Federal Register notice. We commend NRCS for its timely inception of the review. OFRF looks forward to working cooperatively with NRCS on the continuing review and improvement of practice standards so that they are complete, relevant, and accessible to address the resource conservation concerns of organic farmers.

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[1] FCEA, Sec. 2706.

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(Provisionally) Signed:

Beyond Pesticides
California Certified Organic Farmers
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Northeast Organic Dairy Producers Alliance
Northeast Organic Farmers Association – Interstate Council
Organic Center, Chuck Benbrook, Chief Scientist
Organic Farming Research Foundation
Organic Trade Association
Organic Valley/CROPP
Rural Advancement Foundation International
University of Minnesota, Jim Riddle, Organic Outreach Coordinator

1. INTRODUCTION

There is significant and growing scientific evidence that successful organic agriculture operations are model conservation systems because they address multiple resources of concern and provide several environmental services.[2,3] Policymakers have started to recognize these benefits, and in the Food, Conservation and Energy Act of 2008 (FCEA), Congress provided for increased participation by organic farmers in NRCS conservation programs. Congress made specific provisions for integration of organic agriculture in the Conservation Stewardship Program and the Environmental Quality Incentives Program (EQIP). Specific to conservation practice standards, FCEA mandated that "conservation practices related to organic production" be a new purpose of EQIP.[4]

Across the United States, certified organic farmers are recognized as for their conservation contributions. For example, the majority of the USDA-SARE (Sustainable Agriculture Research and Education) awardees for "SARE Farmer of the Year" have been organic farmers in recent years. Many county and state conservation awards are given to organic producers in their regions. Organic farmers are a minority in the United States, but they are frequently recognized as exemplars of both viable farming enterprises and environmental stewardship.

Organic producers have demonstrated the various benefits of their farming and ranching systems, from increased soil biological activity, to consistent crop yields despite weather and climatic challenges, to cleaner water in local wells, streams, lakes, rivers, and beyond. Organic farms provide nontoxic food and habitat for a wide range of threatened and endangered species, from insects to birds, reptiles, and mammals. By definition and design, the organic ideal *is* management for conservation of healthy ecosystems in service of agricultural production.

However, there is a wide spectrum of achievement with respect to the organic conservation ideal. Research, education, and development to achieve self-regulating, non-toxic farming systems are still only a small part of the national research portfolio, lagging nearly 20 years behind the growth of organic demand and marketing. [5] As a result, a number of organic farms remain in "arrested transition," relying on adaptation of conventional practices but substituting natural for synthetic inputs. The full resource-enhancing potential of organic agriculture is far from realized.

NRCS has an important opportunity to advance its own mission, the goals of organic agriculture, and those of USDA's National Organic Program (NOP). That opportunity is to develop and support farm designs, specifications, and standards of organic systems. The integration of organic principles into NCRS technical manuals and programs will achieve greater efficiency for USDA's conservation dollars and enhance the general ecological intensification of U.S.

[2] See "Previous Stakeholder Comments" below, "Citations for the Organic Agriculture Environmental Impacts."
[3] Greene, C., C. Dimitri, B.-H. Lin, W. McBride, L. Oberholtzer, and T. Smith. 2009. *Emerging Issues in the U.S. Organic Industry*, Economic Research Service, USDA, EIB-55, June.
[4] FCEA, Sec. 2501(a)(4).
[5] Notably, FCEA significantly increases funding for organic research and education. Congress also explicitly directed USDA to apply some of these funds to investigation of the conservation effects of organic farming. NRCS should not miss the opportunity to cooperate with the USDA National Institute for Food and Agriculture for the most effective approach to such research activity.

conservation efforts. Equally important, integration into NRCS policies and programs will provide increased efficacy of the organic certification process. If pursued effectively, NRCS development of organic conservation practices will greatly help to fulfill the ideals embodied in the Organic Foods Production Act (OFPA): conservation of multiple resources and highly effective ecosystem services as the basis for meeting consumer and social demands upon agriculture, with profitable returns to farms and healthy communities.

As currently written, the NRCS conservation practice standards are not complete, relevant, or readily accessible to organic farmers and farmers transitioning to organic production, despite the established conservation benefits of organic management and the changes enacted in FCEA.

Detailed below, OFRF's comments enumerate the deficiencies within the current NRCS conservation practice standards and make recommendations for how to address the deficiencies.

2. Overview of Comments and Recommendations

OFRF and co-signers[6] provide comments and recommendations on four overarching areas:

- The process and preliminary findings of the NRCS review of the conservation practice standards (Section 5);
- The relevance, completeness, and flexibility of the entirety of NRCS conservation practice standards (Section 6);
- The relevance, completeness, and flexibility of specific NRCS conservation practice standards (existing and proposed) with respect to organic farming systems (Section 7); and
- Proposed new NRCS practice standards specific to organic management and the transition to organic management (Section 8).

While our comments focus on organic systems, we believe that many of our comments are also relevant to pollinator conservation, environmental performance of specialty crops, water quality protection, and other resource conservation concerns.[7]

2.1. Overview of Comments on the Federal Register Notice, Process, and Preliminary Findings of NRCS Review (Section 5, Page XX)

OFRF's comments on NRCS' review of the conservation practice standards focus on the need for a more effective and transparent review, as well as recommending that a more extensive review be conducted with the involvement of stakeholders and experts. Detailed below, our comments include the following recommendations:

[6] Hereafter, "OFRF comments" is meant to include co-signers.

[7] The special importance to pollinators of organic conservation systems should not be overlooked by NRCS. Fully non-toxic and biodiversity-enhancing organic farming operations should be obviously crucial to NRCS' efforts to protect pollinator populations from further catastrophic declines.

- NRCS should consult with farmers, professionals, and nongovernmental organizations with expertise in organic agriculture when conducting its review of conservation practice standards;
- NRCS should publish for public comment the methodology, evaluation criteria applied, and substantive contents of its 2008 internal review. The request for comments and subsequent analysis should specifically include information on implementation of NRCS practice standards for organic producers and landowners at the local district level;
- In order to conduct a thorough evaluation of the practice standards for their suitability to organic production, NRCS should systematically review the implementation of the 2009 Environmental Quality Incentives Program (EQIP) Organic Initiative and, specifically, the applicability, relevance, and completeness of the practice standards for organic agriculture;
- Ensure that practice standards include eligibility for organic farmers, and that specific activities are explicitly provided for in all practice standards, wherever and whenever offered. Rewrite to systematically include in all relevant practice standards specific sections describing the application of the standard in the context of certified organic production;
- Explore/consider "Organic Management Practice Standards" based on resource management requirements of the USDA National Organic Program regulation, with associated worksheets and payment schedules payments specific to organic operations and conservation activities;
- Modify NRCS conservation practice standards to be more relevant to organic production systems;
- NRCS should utilize and improve on existing training materials on organic production systems that have been developed for NRCS personnel. NRCS should seek avenues to provide such training on a comprehensive basis for NRCS staff nationwide; and
- NRCS should provide a transparent process specific to the issue of developing payment schedules for practices and conservation activities pertinent to the resource management concerns, goals, and activities of organic and transitional producers.

2.2. Overview of Comments on the Entirety of NRCS Conservation Practice Standards (Section 6, Page XX)

OFRF's comments on the whole body of NRCS conservation practice standards focus on the need to make them more relevant, complete, and accessible for organic farmers and farmers transitioning to organic production. We uphold that as a whole, NRCS conservation practice standards do not currently leverage the conservation benefits of organic systems or serve the needs of organic farmers. Detailed below, our comments make the following recommendations:

- Update and amend NRCS conservation practice standards to be accessible, relevant, and complete for organic farmers and ranchers;
- NRCS should review and update each of the practice standards with the assistance of people who have expertise in organic systems to determine the relevance and applicability of existing practice standards to organic systems;

- NRCS staff must familiarize themselves with organic systems and the correlations between organic systems and practices and NRCS practice standards;
- NRCS conservation practice standards must be updated in a timely fashion to fulfill new programmatic changes;
- NRCS conservation practice standards must be clear enough to be implemented correctly at the state and field office levels;
- NRCS conservation practice standards must have as their objective the protection and enhancement of natural resources rather than requiring existing bad management as a prerequisite for improvement;
- NRCS must acquire and integrate the most current research and analysis about the conservation performance of organic farming systems and practices. NRCS must include this information in modeling and measurement tools, and in the analysis of costs of practices and income foregone;
- NRCS should create and maintain payment schedules that reflect the costs incurred and the income foregone on organic and transitional systems; BS
- Each relevant conservation practice standard must have an "organic addendum" with specifications and considerations for organic systems. These organic addendums should include both the basic requirements of the National Organic Program as well as allowances for advanced or experimental practices that could also be used to achieve the goal of the specific practice standard

2.3. Overview of Comments on Specific NRCS Conservation Practice Standards (Section 7, Page XX)

OFRF's includes comments on specific NRCS conservation practice standards from individuals with expertise in organic agriculture. We make specific recommendations on the following practice standards:

- Nutrient Management (590)
- Pest Management (595)
- Cover Crop (340)
- Conservation Crop Rotation (328)
- Residue and Tillage Management (329, 345, 346)
- Composting Facility (317)
- Prescribed Grazing (528)

2.4. Overview of Recommendations on the Creation of New Practice Standards (Section 8, Page XX)

OFRF makes the following recommendations on the creation of new conservation practice standards:

- Adopt a national "Transition to Organic Production" practice standard, successfully implemented as an interim practice standard in several states;
- Create a new practice standard, "Residue and Tillage Management: Reduced Tillage for Organic Production Systems"; and

- Consider developing a set of "Organic Management Practice Standards" based on NOP resource management requirements.

3. Previous Stakeholder Input (included for the record)

The Organic Farming Research Foundation and a number of other organizations submitted a joint letter to NRCS on August 11, 2008. The letter provided detailed recommendations regarding implementation of the 2008 FCEA Conservation Title provisions as they relate to organic agriculture. Included were recommendations and information specific to practice standards. That entire package is hereby submitted by reference for the record and should continue to be taken into consideration as USDA moves forward with updating and improving its practice standards.

1. "Considerations and Recommendations for Conservation Program Rulemaking and Implementation as it Relates to Organic Agriculture, August 11, 2008": http://ofrf.org/policy/federal_legislation/080811_farm_bill_nrcs_implementation_comments.pdf
2. "Correlation of NRCS Conservation Practices and NOP Requirements": http://ofrf.org/policy/federal_legislation/080811_NCAT_NRCS-NOP_Correlation_Chart.pdf
3. "Citations for Organic Agriculture Environmental Impacts": http://ofrf.org/policy/federal_legislation/080811_Organic_bibliography.pdf
4. "Organizations with Organic Technical Assistance Expertise": http://ofrf.org/policy/federal_legislation/080811_Organic%20TA%20Provider%20list.pdf

4. Background on Organic Conservation Systems and National Organic Program

The National Organic Program federal regulation – the regulation that governs organic agriculture – defines Organic Production as a "production system that is managed … to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity."[8] By definition, organic agriculture is an ecologically-based production system. To this end, certified organic farmers must implement practice standards that "maintain or improve the natural resources of the operation, including soil and water quality."[9]

Requirements under the National Organic Program federal regulations include:

- Soil fertility and crop nutrient management practice standard (§ 205.203);
- Seeds and planting stock practice standard (§ 205.204);
- Crop rotation practice standard (§ 205.205);
- Crop pest, week, and disease management practice standard (§ 205.206);
- Wild-crop harvesting practice standard (§ 205.207)

[8] U.S. Dept. of Agriculture, Agricultural Marketing Service. 2000. "National Organic Program; Final Rule, 7CFR Part 205," Federal Register. www.ams.usda.gov/nop.
[9] Ibid.

Each of the organic practice standards has specific activities associated with it that farmers must follow. For example, under the "Soil fertility and crop nutrient management practice standard"[10] farmers *must*:

- "Select and implement tillage and cultivation practices that maintain or improve the physical, chemical, and biological condition of soil and minimize soil erosion"[11];
- "Manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials"[12];
- "Manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water…."[13]

Listed in other practice standards for organic production are practices such as the development of beneficial habitat, the establishment of a crop rotation, and the prevention of soil erosion. The NOP regulation emphasizes *management first, inputs last*. [14] Even where exceptions are made for the use of simple synthetic materials, these exemptions are disallowed if they contribute to contamination of crops, soil, or water.[15]

The goal of these practices is to establish an agro-ecological *system* that prioritizes conservation and environmental services. It is this emphasis on the establishment of a conservation system in organic agriculture that places organic farming in the unique position of inherently addressing multiple resources of concern and providing environmental – and sometimes ecological restoration and rehabilitation – services.

In order to become certified organic, farmers must detail how they are going to implement these practices and techniques in an Organic Systems Plan (OSP) that must be approved by a USDA-accredited certifier. We are not going to discuss the details of an OSP here, but for the purposes of these comments it is important for NRCS to recognize that organic farmers have comprehensive plans that detail management practices, including conservation-related practices. In addition, the successful implementation of the OSP is reviewed and approved each year after the annual on-site inspection. In the structure of the National Organic Program, the organic premium in the marketplace is linked to the farm's adherence to the organic standards, including the conservation mandates described previously.

There is significant overlap between the mission of NRCS and the goals of organic agriculture with respect to conservation and environmental benefits. NRCS should become familiar with and acknowledge these benefits by integrating organic agricultural systems into its conservation practice standards. In doing so, NRCS can contribute more rigor and consistency to the achievement of conservation outcomes by organic producers.

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[10] Ibid, § 205.203.
[11] Ibid, § 205.203(a).
[12] Ibid, § 205.203(b).
[13] Ibid, § 205.203(c).
[14] Ibid. § 205.206 (a), (e), for examples.
[15] Ibid. §205.601.

5. COMMENTS AND RECOMMENDATIONS ON THE FEDERAL REGISTER NOTICE, PROCESS, AND PRELIMINARY FINDINGS OF NRCS REVIEW

OFRF commends the agency for its timely inception of the review required by FCEA Sec. 2706. We look forward to a constructive dialogue as the review and modification process continues. We have the following comments on the review process and the agency's preliminary determinations as described in the Federal Register (FR) notice of June 12, 2009.[16]

5.1. Stakeholder Participation

The June 12, 2009, FR notice refers to a meeting held in December 2008 (page 27996, column 1) with "several different groups" including those "representing organic agriculture." OFRF was not notified of or represented at the meeting at which NRCS discussed the practice standards review and preliminary determinations. We have been unable to identify anyone attending the meeting who represented organic producers, and apparently no record exists of the attendees. We are concerned that effective representation of organic producers was not included at this stage. We trust that more effective solicitation of organic stakeholders will take place in the future in order to comply with the requirement of FCEA stating that, "*In conducting the review under paragraph (1), the Secretary shall consult with eligible participants, crop consultants, cooperative extension and land grant universities, nongovernmental organizations, and other qualified entities*."[17]

> **Recommendation**: NRCS should consult with farmers, professionals, and nongovernmental organizations with expertise in organic agriculture when conducting its review of conservation practice standards.

5.2. Transparency of Review Methods

The FR notice does not include any information about the substantive method(s) by which "…the technical discipline leaders evaluated the applicability of the practice standards to organic farming, specialty crops, [etc]." There is no indication from the FR notice that the process was data-driven or employed any systematic criteria. This lack of information and transparency concerning the methodology for the evaluation makes it very difficult for stakeholders to engage the findings themselves, or to present data that would be pertinent.

> **Recommendation**: NRCS should publish for public comment the methodology, evaluation criteria applied, and substantive contents of its 2008 internal review. The request for comments and subsequent analysis should specifically include information on implementation of NRCS practice standards for organic producers and landowners at the local district level.

5.3. Data from EQIP Organic Initiative

[16] Federal Register, Vol. 74 No. 112, pgs. 27995-27996.
[17] FCEA, Section 1242 as amended by Section 2706.

Given the scant history of NRCS engagement with organic producers, we are concerned that the NRCS evaluation lacked sufficient objective data with respect to the completeness and relevance of the NRCS practice standards for organic agriculture. The EQIP Organic Initiative brought thousands of organic producers into NRCS offices for the first time, and their experiences in terms of relevance and completeness of conservation practice standards to organic agriculture should be a source of primary data for this review.

> **Recommendation**: In order to conduct a thorough evaluation of the practice standards for their suitability to organic production, NRCS should systematically review the implementation of the 2009 Environmental Quality Incentives Program (EQIP) Organic Initiative and, specifically, the applicability, relevance, and completeness of the practice standards for organic agriculture.

5.4. Preliminary Determination – Flexibility

The FR notice states the agency's "preliminary determination" that the practice standards "have the *flexibility* to address the resource needs on all types of farming operations" (emphasis added). We would agree generally that the practice standards tend to be open to a relatively wide range of interpretations and applications. However, this openness to interpretation is not always a virtue for the new entry of non-traditional farming operations to NRCS programs. To the extent that the applicability of a given practice standard is dependent on the interpretations of State and District Conservationists, the "flexibility" of the practice standards can enable the exclusion of organic producers rather than inclusion.

In the course of implementing the recent EQIP Organic Initiative, OFRF and other non-governmental groups who work with organic producers nationwide received numerous communications requesting help or expressing frustration with their local NRCS offices. Some were problems that could be solved, such as NRCS personnel not being aware the "core practices" were available to producers nationwide as well as that this was a separate signup from the regular EQIP program.

Other problems that will need structural improvements were tied to the practice standards themselves, especially the interpretation that a producer needed to have been using significant amounts of toxic substances or causing serious soil erosion in order to be eligible for any EQIP Organic Initiative dollars, rather than being eligible when improving or enhancing their organic system through use of a new practice. A common report from the field was the reluctant provision of application materials by NRCS staff with the comment, "go ahead and fill out the paperwork if you want, but we don't know what you'll be able to get paid for." <u>While increased training for NRCS personnel will remedy some of these problems, we believe that there is an underlying obstacle in the practice standards themselves. Revision of the practice standards is necessary to account for the activities required by organic agricultural management, and to provide full access to NRCS programs for organic producers and landowners.</u>

With due respect to the NRCS technical staff who conducted the internal review of the practice standards, we have to question the finding that systemic revision of the practice standards is not necessary. We do not believe that this assessment could have included the perspective of many organic producers and landowners trying to access NRCS programs, or that of organic advocates and technical experts with NRCS experience.

We believe that NRCS must make an expedited effort to amend or supplement the body of conservation practice standards for relevance and completeness with respect to organic agriculture. Beyond this short-term change, NRCS should explore new practice standards specific to management of organic agricultural systems.

Short-Term Recommendation: Ensure that practice standards include eligibility for organic farmers, and that specific activities are explicitly provided for in all practice standards, wherever and whenever offered. Rewrite to systematically include in all relevant practice standards specific sections describing the application of the standard in the context of certified organic production. (We provide specific examples and recommendations further below in these comments.)

Long-term Recommendation: Explore/consider "Organic Management Practice Standards" based on resource management requirements of the USDA National Organic Program regulation, with associated worksheets and payment schedules payments specific to organic operations and conservation activities.

5.5. Preliminary Determination – Relevance

The description of preliminary findings states that, "NRCS will modify selected practices to better clarify their relevance to…resource needs, including specialty crops, native and managed pollinators, and bioenergy production." We appreciate the expectation that the practices will be modified for greater relevance. We strongly believe that the practices should be modified in this way for relevance to organic production and for operations transitioning from conventional to organic production.

Recommendation: Modify NRCS conservation practice standards to be more relevant to organic production systems. (We provide specific examples and recommendations further below in these comments.)

5.6. Preliminary Determination – Training

The FR notice states that another preliminary finding is that "NRCS field staff would benefit from additional training to better apply our current practices on non-traditional farming operations." We agree with this finding. A number of training programs and curricula have been developed to train NRCS personnel for better understanding of organic agriculture systems. These include projects funded by the USDA Sustainable Agriculture Research and Education (SARE) program, as well as a project currently funded by our organization, the Organic Farming

Research Foundation. The organic marketplace continues to expand, along with the desire of many farmers and ranchers to convert their farms to organic. NRCS personnel want to address the needs of these farmers and should be provided with training and information they need to discuss and encourage both National Organic Program requirements as well as NRCS conservation standards. Providing on-going training and continuing education credits to NRCS personnel will bring more organic producers into NRCS programs, resulting in conservation benefits nationwide.

Recommendation: NRCS should utilize and improve on existing training materials on organic production systems that have been developed for NRCS personnel.[18] NRCS should seek avenues to provide such training on a comprehensive basis for NRCS staff nationwide.

5.7. Preliminary Determination – Payment Schedules

The FR notice reports a preliminary determination that "NRCS needs to recognize the special needs of the non-traditional farming operations when payment schedules are developed." We agree with this finding. Organic and transitioning farmers experience different incurred costs and amounts of income foregone than do conventional farmers, and NRCS payment schedules should reflect these differences.

Foregone income is a crucial issue for organic transition. Implementation of a functioning organic system takes time, both for the soil and livestock to respond to these improved biologically-based practices as well as for the farmer to learn new skills and approaches to basic farming activities such as pest and weed control. During the three-year transition to organic timeframe, new practices must be installed and there may be loss of yields. In addition, organic farmers incorporate small grains and forages into their rotation, as well as pasture for ruminants. These "sod crop" beneficial land uses do not have the same dollar yields of the higher value, continual row crop rotations that many transitioning farmers are changing when they move to organic production. Until organic certification is attained, a producer does not have access to market premiums associated with the USDA organic seal.

There should be monetary payment based on income forgone for both transitioning to organic and existing organic farmers when they improve their crop rotations with forages and small grains as well as continual improvement of pastures and outdoor access areas for livestock. Specialty crops such as tree fruits and vegetables have similar systems changes when transitioning to organic, experiencing lower yields during their transition to organic as well as when enhancing their organic system with natural methods of soil fertility improvement, pest and weed management.

Recommendation: NRCS should provide a transparent process specific to the issue of developing payment schedules for practices and conservation activities pertinent

[18] While a number of such projects have been funded by USDA-SARE, OFRF and others, to our knowledge a complete inventory of them has not been compiled. NRCS should compile such and inventory. OFRF will assist this effort if requested to do so.

to the resource management concerns, goals, and activities of organic and transitional producers.

6. Comments and Recommendations on the Entirety of NRCS Conservation Practice Standards

The experience with the recent EQIP Organic Initiative provides an excellent barometer for measuring to what degree the NRCS conservation practice standards are complete and relevant with respect to organic agriculture and how flexible the practices are to address the resource needs of organic and transitional producers. The Organic Initiative made a pool of separate funds available to existing certified organic farmers as well as farmers transitioning to organic production for the first time, in order to comply with the mandates of the FCEA. While organic farmers have not been explicitly excluded from applying to NRCS conservation programs, their participation has been historically low for a variety of reasons and the Organic Initiative was a good beginning to turn around this low participation. Through the Organic Initiative, over 3,700 organic and transitioning farmers applied to an NRCS conservation program, a high percentage of which did so for the first time.

6.1. Relevance and Completeness of Practice Standards

Drawing from the experience of the Organic Initiative, OFRF upholds that NRCS conservation practice standards are not yet complete or entirely relevant to organic agriculture systems. Additionally, while the practice standards may have the flexibility to address some of the resource needs of organic farmers, that flexibility is not currently well-defined and leads to poor interpretation and implementation of practice standards at the state and field levels, often resulting in exclusion of organic farmers from NRCS programs.

Without significant changes to NRCS' conservation practice standards to incorporate organic agriculture systems, NRCS is undermining its ability to properly fulfill the mandates of FCEA. NRCS is also missing the opportunity to invest in and support the establishment of agricultural systems that can provide significant long-term conservation benefits.

Recommendation: Update and amend NRCS conservation practice standards to be accessible, relevant, and complete for organic farmers and ranchers. Incorporation and recognition of organic systems and National Organic Program requirements within NRCS conservation practice standards will reward those farmers and ranchers whose farms and practices are ecologically beneficial.

6.2. Conservation Practice Standard Review

While OFRF commends NRCS for conducting this review, the scope of the task of reviewing and updating each standard is significant, especially with regards to incorporating considerations for organic agricultural systems. We strongly believe that a more thorough review must occur, and we highly recommend that NRCS work with experts in organic agriculture to conduct this review.

Recommendation: NRCS should review and update each of the practice standards with the assistance of people who have expertise in organic systems to determine the relevance and applicability of existing practice standards to organic systems.

6.3. Organic Expertise and NRCS

The recent roll-out of the EQIP Organic Initiative displayed that there was confusion within NRCS regarding what organic systems are and the conservation benefits that these systems provide.

Recommendation: NRCS staff must familiarize themselves with organic systems and the correlations between organic systems and practices and NRCS practice standards. There are many materials, workshops, and trainings that NRCS should consult or attend to learn about organic agriculture and how it overlaps with NRCS programs and objectives. As an example of relevant material, we are including in the "Previous Stakeholder Input" above a chart that the National Center for Appropriate Technology and University of Minnesota assembled that details the overlaps in missions and practice standards of NRCS and organic agriculture.

6.4. NRCS Programmatic Changes and Conservation Practice Standards

FCEA made significant changes to EQIP and CSP, creating new opportunities for organic farmers to participate in conservation programs. As core functions of NRCS, conservation practice standards must be updated to fulfill new programmatic changes in order for the programs to deliver the highest environmental and resource-conserving performance. These changes should occur on a time-line that matches that of program development and roll-out in addition to occurring on the regular schedule for practice standard review.

Recommendation: NRCS conservation practice standards must be updated in a timely fashion to fulfill new programmatic changes.

6.5. Clarity and Conservation Practice Standards

One of the defining characteristics of NRCS is its decentralized structure that allows for considerations of local and site-specific conditions. While a net strength, this overall structure creates significant opportunity for inconsistency and misinterpretation of implementation goals. This occurred during the Organic Initiative, and caused confusion and inconsistency at the state and field office levels.

Recommendation: NRCS conservation practice standards must be clear enough to be implemented correctly at the state and field levels.

6.6. Objectives of Conservation Practice Standards

In the recent EQIP Organic Initiative roll-out and sign-up, there were organic farmers and ranchers that were not eligible for the Pest Management practice standard because to be eligible, a farmer had to be using pesticides prior to the implementation of the practice. Organic farmers do not use synthetic pesticides but rather rely on a diverse suite of pest management practices for pest management. Despite not using synthetic pesticides, organic farmers seek to improve and enhance pest management through other ways. Exclusion of organic farmers from the Pest Management conservation practice standard because of their higher level of environmental management misses the opportunity to improve pest management on these farms. We recommend that practices seek to improve and enhance natural resources, regardless of the practices occurring at the time of application.

Recommendation: NRCS conservation practice standards must have as their objective the protection and enhancement of natural resources rather than requiring existing bad management as a prerequisite for improvement.

6.7. NRCS Modeling and Measurement Tools

NRCS relies upon models and measurement tools for estimation of certain resources of concern, including the Soil Conditioning Index and the Revised Universal Soil Loss Equation, version 2 model. The measurement tools are used both to measure a resource concern and estimate the contribution of a practice to address the resource concern. Our concerns are twofold. First, we are concerned that NRCS, through use of these tools, promotes a type of agriculture that does not take into considerations the complexities of organic agriculture. Second, we are concerned that organic cultivation implements and techniques may not be included in these models, particularly RUSLE2. If there is a lack of or inaccurate organic practice information in the models that calculate soil and/or organic matter loss related to tillage and cultivation, site specific evaluations will not identify a positive improvement trend when organic soil-building practices are used.

Specifically, there is strong evidence that organic farming systems that markedly increase organic matter content and the cycling of biological materials in the soil can increase the stability of soil aggregates to the degree that modification in "K" factor values within the RUSLE2 would be appropriate. Concern has existed for decades over the impact of additional passes with tillage equipment for weed management, but many researchers – and farmers – are not observing much of an increase in erosion losses from properly conducted passes with cultivators. The likely reason is the heightened stability of soil aggregates under long-term organic management. NRCS needs to conduct the research needed to determine when, how, and by how much "K" factor values should be adjusted in estimating the impacts of organic management on erosion potential.

Additionally, not all tillage is alike; new cultivation technologies exist that are gentler on the soil structure and leave aggregates more intact than a rototiller or disk.

Recommendation: NRCS must acquire and integrate the most current research and analysis about the conservation performance of organic farming systems and

practices. NRCS must include this information in modeling and measurement tools, and in the analysis of costs of practices and income foregone.

6.8. NRCS Payment Schedules

Organic management practices incur different costs and result in different amounts of income foregone than conventional agricultural practices. For example, it is more expensive and labor intensive to use tillage, crop rotation, and management practices for weed control than to use herbicides. Likewise, establishment of habitat for beneficial organisms is more expensive and labor intensive than using insecticides for pest control. Such organic management systems enhance biodiversity and protect natural resources, including soil and water quality. In addition, farmers often suffer income foregone during the transition to organic production, when they are implementing a new system of production, while selling their crops and products at conventional prices. These and other issues related to income foregone need to be researched and accurately quantified as payment rates are refined for organic and transitional producers.

Recommendation: NRCS should create and maintain payment schedules that reflect the costs incurred and the income foregone on organic and transitional systems.

6.9. Organic Addendum to Conservation Practice Standards

During the EQIP Organic Initiative roll-out, NRCS created an information sheet entitled, "Core Six (6) Organic Initiative Practices: Considerations to Apply Conservation Practices on Organic Farming Systems" (Appendix I). The information sheet included some considerations specific to organic systems for each of the Core 6 practices. While that document was not complete, we recommend that NRCS incorporate these types of considerations into the practice standards by adding an "organic addendum" with specifications and considerations for organic systems to each conservation practice standard through a participatory update and review process discussed above. In order to do this effectively, NRCS must work with organic experts who are intimately familiar with the National Organic Program rules and organic systems. A comprehensive review of the various applications submitted for the 2009 Organic Initiative is a good starting point to assess how organic farmers and ranchers were able to use NRCS conservation practice standards and if there were any aspects in specific state applications that could be encouraged to increase participation nationwide.

Recommendation: Each relevant conservation practice standard must have an "organic addendum" with specifications and considerations for organic systems. These organic addendums should include both the basic requirements of the National Organic Program as well as allowances for advanced or experimental practices that could also be used to achieve the goal of the specific practice standard.

7. COMMENTS AND RECOMMENDATIONS ON SPECIFIC NRCS CONSERVATION PRACTICE STANDARDS

We are including in this section comments from individuals with expertise in organic agriculture to illustrate some of the concerns and suggestions with respect to specific practice standards. These comments should be taken as a first step in a process to seek and incorporate input from organic agriculture experts through a transparent stakeholder process with the objective of improving the conservation practice standards. Again, we look forward to working with NRCS on improving the practice standards.

7.1. Nutrient Management - code 590[19]

Proposed added language in CONSIDERATIONS section:

Considerations to Enhance Nutrient Management in Organic Production Systems

Organic production systems aim to provide nitrogen, phosphorus, and other nutrients required for crop production primarily through mineralization of nutrients from organic matter by soil organisms, rather than through direct application of plant-available nutrients. Certified organic growers utilize organic and natural mineral amendments allowed under the National Organic Program (NOP) to build up and maintain high levels of soil organic matter and biological activity, while providing optimal and balanced soil nutrient and pH levels for crop production. NOP-allowed practices and inputs include cover crops and green manures, organic mulches, other plant residues, compost, and (within NOP-specified restrictions) livestock and poultry manures. Bio-solids (sewage sludge) are not allowed. Burning is not allowed as a means to dispose of crop residues. Once optimal soil nutrient levels are attained, additional inputs are calibrated to balance nutrient inputs with nutrient exports through harvest, while maintaining optimal levels of organic matter and soil biological activity. This approach can have the added benefits of improving soil physical, chemical, and biological condition; reducing soil erosion and compaction; optimizing soil moisture uptake and storage; and protecting water quality.

During conversion from conventional to organic production, and during the early stages of restoring soil life through organic management, nutrient mineralization from soil organic matter and biological activity may not provide sufficient nutrients, especially nitrogen, for satisfactory crop production. In addition, rates of nitrogen uptake by certain cool-season, heavy-feeding crops (e.g. broccoli, spinach, corn) may exceed nitrogen mineralization rates of many soils. In these circumstances, organic producers utilize faster-release NOP-allowed nitrogen sources to meet crop needs. Types of amendment, rates, and timing should be calibrated to meet but not exceed crop requirements, and to minimize the chance of nutrient leaching or volatilization.

Cover crops, especially legumes or legume-grass mixtures, are important nutrient management tools in organic production, as they replenish soil organic carbon and nitrogen without adding excessive amounts of other nutrients. Soil organic matter and nitrogen must be replenished annually, whereas soil phosphorus, potassium and most minor nutrients can accumulate year to year if inputs exceed removal through harvest. Reliance on manure, compost or organic-approved fertilizers to provide all of the nitrogen needed for organic crop production commonly

[19] Comments on this practice standard provided by Mark Schonbeck.

leads to increasing soil phosphorus levels, and sometimes increasing potassium, copper, zinc, or calcium levels as well. When soil phosphorus levels warrant a reduction in manure, compost, or approved fertilizer applications to phosphorus-based rates (as detailed on page 4 of this Practice Standard), legume or legume-grass cover crops can provide the balance of crop nitrogen requirements and help maintain desired soil organic matter levels. Cover crops are also recommended for maintaining crop nutritional balance when high soil potassium or other nutrient levels merit a reduction in compost, manure or other approved inputs from off-field sources.

When the carbon to nitrogen (C:N) ratio of cover crop residues and other decomposable organic inputs to the soil is about 25:1-30:1 (often found in a legume-grass cover crop mixture), soil organisms effectively store nitrogen in active humus, from which it is slowly released to growing crops. At lower C:N ratios, as may be found in fresh manure, or in a succulent, all-legume green manure, soil organisms may release nitrogen too rapidly, resulting in leaching or volatilization losses, and thus adverse impacts on water or air quality. Materials with C:N ratio above 35:1 may tie up nitrogen and adversely affect crop production.

The National Organic Program prohibits the application of uncomposted manure within 120 days of harvest of a food crop to be marketed as organic. Planting an effective nitrogen-scavenging cover crop such as winter rye, sorghum-sudangrass, or forage or oilseed radishes after land application of manure, or spreading manure when such a cover crop has been established and is entering its rapid growth phase, can help stabilize nutrients and prevent nitrogen leaching or volatilization, while meeting NOP requirements.

The diverse crop rotations commonly utilized on organic farms provide opportunities to optimize nutrient management and protect water and other resources. At the same time, crop diversity, as well as the lesser precision with which nutrient release from organic sources (compared to soluble fertilizers) can be predicted, can complicate nutrient budgeting. Thus, periodic soil testing of each field (every 2-5 years) to monitor trends in nutrient, pH and organic matter levels, is an important component in organic nutrient management.

Conversion from conventional to organic production systems provides an opportunity to enhance nutrient management and substantially mitigate resource concerns associated with application of conventional fertilizers and manure, including water quality, air quality, and soil quality. In addition, adoption of good organic soil management practices can reduce soil erosion, as biologically active soils with enhanced organic matter levels usually exhibit better structure, better drainage, less runoff, and hence less erodibility under a given cropping and tillage regimen.

7.2. Pest Management - Code 595[20]

Under General Criteria Applicable to All Purposes, consider adding the following language (*italics)* at the end of the fourth paragraph:

[20] Comments on this practice standard provided by Mark Schonbeck and Harriet Behar.

… Mitigation techniques include practices like a Filter Strip or Conservation Crop Rotation, and management techniques like application method or timing, *or the utilization of organic or other Integrated Pest Management (IPM) strategies that focus on prevention and eliminate or greatly reduce the use of pesticides, herbicides, and fungicides that can adversely affect soil, water, pollinators, and other resources.*

At the end of the General Criteria section, add:

On organic farms where substances of minimal toxic effect are currently in use, the enhancement of the environment to attract beneficial insects and other predators (bats, birds), will be approved for funding under this practice standard. Encouraging greater biodiversity, especially for the predator species, lessens the presence of problematic insects, while improving the quality and quantity of the organic production.

Under Additional Criteria to Protect Soil Resources, add at the end:

Weed management strategies will take into account the net impacts of tillage and cultivation on soil loss and soil quality, as well as the impacts of herbicide use on water quality, plant and human health.

Under Additional Criteria to Protect Air Resources, add at the end:

Timing and methods of tillage and cultivation for weed control will be adjusted to minimize dispersion of dust into the air.

Under CONSIDERATIONS, modify third bullet to read as follows:

Monitoring, such as pest scouting, soil testing, weather forecasting, etc. to help target suppression strategies and avoid routine preventative pest*icide applications, such as "calendar spraying."*

(Comment / rationale: the original statement ended with: "… avoid routine preventative pest control." Preventative pest control includes cultural controls like crop variety selection, crop vigor, crop rotation – tactics which should be encouraged under this Practice Standard for all operations.)

Proposed added language in CONSIDERATIONS section:

Pest management practices on certified organic and transitioning-organic farms shall comply with the National Organic Program (NOP) standards. Organic and transitioning-organic farmers mitigate pest management impacts on soil, water, plant, and other resources by not using synthetic pesticides, herbicides, and fungicides; and by integrating cultural, biological, and physical controls with judicious use of soaps, Bt, botanical pesticides, and other NOP-allowed pest control materials.

Organic producers are encouraged to develop advanced Integrated Pest Management (IPM) programs as part of their Organic Systems Plan or Organic Transition Plan. Advanced or "high level" IPM integrates crop variety selection and crop management for vigor and pest-resistance, sanitation, cultural techniques such as farmscaping (season-long or perennial habitat plantings to support natural enemies of plant pests), crop rotation to disrupt pest and weed life cycles, and physical and biological controls, including traps, lures, and repellants, with limited and targeted use of botanical and other pest control materials, thereby minimizing resource impacts of the latter. Whenever NOP-allowed pest control materials are utilized, pesticide label instructions and pesticide safety measures shall be observed as described under OPERATIONS AND MAINTENANCE.

Weed management in annual crops presents a unique challenge for organic farmers with regard to soil conservation, since tillage and cultivation can increase the risk of soil erosion losses and hinder the buildup of soil organic matter. Organic weed management strategies should integrate preventive and soil-building practices (crop rotation, cover crops, management of production crops to maximize their vigor and weed-competitiveness, and organic mulches) with judicious selection of tillage and cultivation tools, schedules, and practices to obtain the greatest weed control for the least damage to soil structure. Organic farmers are encouraged to utilize the greater crop rotation flexibility offered by herbicide-free weed management practices to design and implement an effective Conservation Crop Rotation.

7.3. Cover Crop – Code 340[21]

Proposed added language:

Under PURPOSE**,** add:

• *Enhance pest and disease control and reduce need for pesticides and fungicides, by breaking pest life cycles*

Under Additional Criteria to Capture and Recycle Excess Nutrients in the Soil Profile, insert the material in *italics* below into the third paragraph as follows:

"... If the objective is to best synchronize the use of cover crop as a green manure to cycle nutrients, factors such as the carbon/nitrogen ratios may be considered to kill early and have a faster mineralization of nutrients to match release of nutrient with uptake by following cash crop. *Note that soil incorporation of a succulent all-legume or brassica cover crop can lead to rapid mineralization of nitrogen that may be subject to leaching or volatilization; thus, such a green manure should be followed immediately by a crop that can rapidly utilize the nitrogen released.* A late kill may be used …"

(Comments / rationale: there is significant research evidence that incorporating a succulent, low C:N cover crop, especially a pure stand of alfalfa or hairy vetch can leach a lot of N.)

[21] Comments on this practice standard provided by Mark Schonbeck.

Under Additional Criteria to Promote Biological Nitrogen Fixation, modify and add to the first sentence as follows:

~~Only~~ *L*egumes,~~ or~~ legume-grass *or legume-forbs* mixtures will be established as cover crops. *Mixtures of legume with nitrogen-consuming species like cereal grains, sorghum-sudangrass, radish or other brassicas may accumulate more nitrogen and biomass than legume alone.*

(Comment / rationale: the original language is too restrictive, in that it does not allow for legume-brassica or legume-buckwheat combinations. In addition, diversified crop rotations used on organic and other vegetable farms may include both legume and non-legume cover crops. The farmer may want to grow a legume or legume-grass bi-culture to fix N ahead of sweet corn, tomato, brassicas and squash, but a grass-only cover ahead of peas and beans, which fix their own N; or ahead of onion, which is subject to disease problems when grown after any legume.).

Under Additional Criteria for Weed Suppression, modify second paragraph with italicized language as follows:

When appropriate and feasible, cover crop residues will be left on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects *during production of the subsequent crop.*

(Comment / rationale: It is not feasible to leave residues on the surface during organic production of some crops – e.g. carrot. However, weed suppression benefits of a preceding cover crop can still be significant – through direct competition during cover crop growth, and residual allelopathy. I have seen weed suppression continue into April or even early May from radish cover crops planted in August, freeze-killed in December, and lightly tilled in March. NOTE – this comment / change is *indirectly* covered in the organic considerations paragraph that follows. Organic and transitional producers must not use burning as a means of disposal for crop residues.)

Under Additional Criteria to Minimize and Reduce Soil Compaction, consider adding:

Judicious deep tillage (e.g. chisel plowing) just prior to planting a deep rooted cover crop into soils in which surface compaction or a subsurface hardpan already exists may be needed to facilitate cover crop establishment and deep root formation.
Mowing certain cover crops, especially sudangrass and sorghum-sudangrass hybrid followed by re-growth, stimulates formation of a denser and deeper root mass for enhanced penetration of hardpan.

(Comment: this could also go under "considerations" – the general considerations section, not specifically for organic.)

Under CONSIDERATIONS:

In the second paragraph, suggest added language in *italics* as follows:

Maintain an actively growing cover crop as late as feasible to maximize plant growth, allowing time to prepare the field for the next crop, and *limit* moisture depletion *to acceptable levels.*

In the eighth paragraph, suggest added language in *italics* as follows:

Use plant species that enhance bio-fuel opportunities *without compromising soil conservation and other cover crop benefits.*

(Comment / rationale: This last is an important caveat, as excessive removal of cover crop residue as biofuel feedstock can greatly reduce any benefits from this cover crop practice.)

Considerations for Cover Crop in Organic Production Systems

Cover crops perform multiple functions in organic crop production systems, and organic farmers may select a wide range of cover crop species and utilize them in unique ways or combinations to meet multiple, site-specific objectives. In addition, cover crop planting and management practices on USDA certified organic farms must comply with National Organic Program (NOP) regulations, which require the use of organically grown seeds when commercially available, and prohibit the use of most herbicides, including those commonly used to terminate cover crops in conventional systems.

Cover crops can be killed by mowing, rolling, roll-crimping, or undercutting prior to or after the cover crops begin to flower and shed pollen, thereby leaving residues on the surface for enhanced soil conservation, weed suppression, and moisture conservation. However, soil incorporation may be the only viable option for organic growers when the cover crop must be terminated while still vegetative, or when a seedbed must be prepared for certain direct-seeded crops (e.g. carrot, spinach, salad greens). In these circumstances, significant soil conservation, weed suppression and moisture benefits can still be realized during cover crop growth and subsequent decomposition of incorporated residues. Furthermore, while the non-use of herbicides limits no-till options in organic production, it also removes herbicide-carryover constraints on crop rotation and crop diversity. Organic farmers should design and implement "tight" crop rotations including cover crops to minimize bare soil periods and maximize cover crop biomass production and other cover crop benefits.

Cover crop mixtures that include an effective nitrogen-fixing legume component replenish soil organic matter and nitrogen without adding excessive phosphorus, potassium, and other nutrients. On soils that are already high in phosphorus and potassium, legume cover crops offer a vital nitrogen source for certified organic farmers, whose nitrogen fertilizer options are otherwise limited.

Under OPERATION AND MAINTENANCE:

The first sentence may merit clarification as to its meaning:

Control growth of the cover crop to reduce competition from volunteer plants and shading.

Question: does this refer to volunteer cover crop plants growing in the subsequent production crop – as sometimes happens with buckwheat or vetches? Or, does it refer to weed competition in the cover crop itself?

7.4. Conservation Crop Rotation – Code 328[22]

DEFINITION:

"Growing crops in a recurring sequence on the same field."

This definition is extremely general, defines *crop rotation* with no reference to conservation.
Suggested alternative definition: *Growing a sequence of different crops on the same field, designed to conserve soil and other resources while sustaining crop production.*
(Comment: The NOP defines "crop rotation" as "the practice of alternating the annual crops grown on a specific field in a planned pattern or sequence in successive crop years so that crops of the same species or family are not grown repeatedly without interruption on the same field. Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to introduce biological diversity in lieu of crop rotation.")

PURPOSES – modify 7th bullet to read (additional language in *italics):*

Manage plant pests (weeds, insects, and diseases) *and reduce the environmental and resource impacts of pest management practices.*

CRITERIA – general, first sentence:

Crops shall be grown in a planned, recurring sequence as outlined in Plans and Specifications.

Suggested alternative language: Crops shall be grown in a sequence that includes a minimum of three different crop species (alternatively, two different crop families), in which perennial, high-residue annual, or otherwise resource-conserving crops recur with sufficient frequency to realize one or more of the conservation purposes listed above.

(*Comments / rationale: Requiring a "recurring sequence" may be too restrictive, especially for highly diversified, long rotations, in which the farmer often modifies the rotation or makes cropping choices each year according to observed changes in soil, crop health, weed and pest pressures, and to changes in market needs and production plans. The OPERATIONS AND MAINTENANCE section allows for some of this flexibility, but it would be good to include the flexibility at the beginning.)*

[22] Ibid.

Suggested added language under CONSIDERATIONS:

Certified organic producers must utilize practices in compliance with the National Organic Program (NOP) requirements, including the use of organically produced crop seeds when these are commercially available, and untreated, non-GMO, conventionally grown seeds when organic seeds are not commercially available. Conservation crop rotations can be designed to enhance pest, disease and weed management on transitional and certified organic farms, where the use of synthetic pesticides, herbicides and fungicides is prohibited. For example, for disease or pest prone crops, the crop rotation should allow at least three years between successive plantings of crops within the same plant family.

Organic farming systems and specialty crop production systems are often characterized by high crop diversity, which can create greater opportunity to implement conservation crop rotations, and may require greater flexibility in approach to this practice. For example, whereas crop *species* may not necessarily recur in a regularly repeating sequence, resource-conserving crops such as perennial grass-legume sod, high residue crops such as cereal grains, and annual legume and/or nonlegume cover crops recur regularly within the crop rotation. Crop rotations dominated by low-residue crops such as certain vegetables shall be modified to include sufficient high-residue and otherwise resource-conserving crops to qualify as a conservation crop rotation.

(Comment: some of the above considerations apply to horticultural production, especially mixed vegetables, whether organic or not).

7.5. Residue Management, Seasonal – Code 344[23]

Proposed added language in CONSIDERATIONS section:

Seasonal residue management is ideal for organic production of annual crops, in which full-width tillage may be needed periodically to manage perennial weeds, or in which some crops in the rotation (e.g. carrot, spinach, salad greens) require a clean seedbed for successful establishment without the use of herbicides. Full-width clean tillage should be limited to the minimum required for crop planting and weed control. In diversified crop rotations, mixed systems in which a full-width clean tillage operation is alternated with no-till, strip-till, ridge-till or mulch-till practices can be implemented to maximize the benefits of seasonal residue management. Examples include but are not limited to:

- No-till planting of transplanted or large seeded production crop into mowed, roll-crimped or winterkilled cover crop or cereal grain residues; production crop residues tilled down and immediately followed by planting of the next cover crop.
- Incorporation of crop residues or cover crop immediately prior to sowing the production crop; interseeding or overseeding cover crop into production crop prior to harvest

7.6. Residue and Tillage Management:[24]

[23] Ibid.
[24] Ibid.

No Till / Strip Till / Direct Seed – Code 329
Mulch Till – Code 345
Ridge Till – Code 346

General Comments on these and on Residue Management, Seasonal:

Whereas organic farmers and researchers have been managing annual cover crops no-till (by mowing or roll-crimping) followed by no-till planting of transplanted (tomato family, brassica family, etc.) or large-seeded crops (corn, beans, cucurbits) for some time, *continuous* organic no-till does not yet appear practical for annual cropping systems. In Virginia, payments for *one-time* no-till planting and fertilizer N injection (including manure), as well as for continuous no-till, have been proposed in the State Technical Committee subcommittee on cropland and organic.

While the current conventional wisdom is that continuous no-till is the only way to build up soil organic matter (or carbon) and soil quality under annual cropping systems, at least two long term studies have documented as good or better soil carbon sequestration and soil quality under organic management with some tillage as under conventional, continuous no till.[25]

Mulch till and ridge till appear more feasible for organic production than no-till, especially since the current Practice Standard for Ridge Till allows for "mixed systems" as well as continuous ridge tillage (although full-width clean tillage was not specifically mentioned as an option under the mixed systems).

A variant under Ridge Tillage might be a form of zone tillage with controlled traffic, in which raised beds or other "grow zones" are managed differently from the alleys or traffic lanes

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[25] Drinkwater, L. E., P. Wagoner, and M. Sarrantonio. 1998. Legume-based cropping systems have reduced carbon and nitrogen losses. Nature 396:262-265.

Reports on 15 years of data from Rodale trial, including

- soil C increased significantly in both OG systems but not in conv due to increases in C_3-derived carbon (C deriving from all other plants besides corn)
- soil N increased under OG but not conv mgmt
- N leached from all systems but N losses from conv were twice that from OG plots

Teasdale, J. R., C. B. Coffman, and R. W. Mangum. 2007. Potential Long-Term Benefits of No-Tillage and Organic Cropping Systems for Grain Production and Soil Improvement. Agronomy Journal 99: 1297 - 1305.
A 9-yr comparison showing "Despite the use of tillage, soil combustible C and N concentrations were higher at all depth intervals to 30 cm in OR compared with that in all other systems."

Clark, M.S., W.R. Horwath, C. Shennan, and K.M. Scow. 1998. Changes In Soil Chemical Properties Resulting From Organic And Low-Input Farming Practices. Agronomy Journal 90:662-671.

Soil chemical properties were studied during the transition from conventional to organic and low-input farming practices over an 8-yr period at the Sustainable Agriculture Farming Systems Project in California's Sacramento Valley …Overall, the findings of this study indicate that organic and low-input farming in the Sacramento Valley result in small but important increases in soil organic C and larger pools of stored nutrients which are critical for long-term fertility maintenance.

between beds / grow zones. The grow zones are planted to production crops (with clean tillage, mulch tillage or no-till cover crop management, depending on needs of the production crop), while alleys are maintained in annual or perennial living mulch, or in no-till cover crop residue.

Perhaps this can be included under Ridge Tillage, with a specified minimum percentage of the field left untilled, or added as a new practice standard. If the beds / grow zones are oriented along the contour, this approach can control soil erosion on moderate slopes (up to 10 percent).

The goal is a flexible practice standard that recognizes the benefits of mixed systems, in which tillage and residue management practices are adapted to each crop in a diverse rotation, so that crop residue return to the soil is maximized and tillage intensity is minimized over the course of the rotation, while still maintaining acceptable weed control and desirable crop yields.

7.7. Composting Facility – code 317[26]

Comments:

The stated purpose appears limited: "To reduce the pollution potential of organic agricultural wastes to surface and ground water."

I would consider adding the following second purpose:

To produce a soil amendment that adds organic matter and beneficial organisms, provides slow-release plant-available nutrients, and improves soil conditions.

Possibly, additional language may be warranted to broaden the context of this from simply waste management / pollution prevention to production of a material that can contribute to soil quality, nutrient management, and reduction in soil erodibility.

7.8. Prescribed Grazing – Code 528[27]

The NRCS prescribed grazing conservation practice standard (528) has limited conflicts with certified organic production methods. The organic rule differs perhaps in emphasis on preventive animal health care that is related to the quality of pastures that can minimize the occurrence and spread of disease and parasites and maximizing access to the outdoors. However, certain approved synthetic vitamins and mineral supplements are allowed.

The NOP defines "pasture" as "land used for livestock grazing that is managed to provide feed value and maintain or improve soil, water, and vegetative resources."

Perhaps the most critical difference in the organic system of grazing livestock production is that no synthetic herbicides, pesticides and fertilizers are allowed to be used in the establishment and continued management of pastures. Also, any supplemental feed besides organic pasture has to be

[26] Ibid.
[27] Comments provided by Jeff Schahczenski.

100% certified organic. This may cause some issues with the practice standard which states that "supplemental feed and/or minerals will be balanced with the forage consumption to meet the desired level for the kind and class of grazing and/or browsing livestock". For instance, organic livestock producers may place greater emphasis on high quality pasture rather than balance pasture with more expensive supplemental feed in meeting livestock nutritional needs.

8. Recommendations for the Creation of New Practice Standards

In addition to the above recommendations, OFRF believes that NRCS should consider the following proposals for development of new practice standards, with corresponding specifications and payment schedules.

8.1. Adopt a national "Transition to Organic Production" (TOP) practice standard, successfully implemented as an interim practice standard in several states.[28]

OFRF recommends that NRCS adopt a national "Transition to Organic Production" (TOP) conservation practice standard based on the "Transition to Organic Production" (789) standard successfully implemented as an interim practice standard in Vermont, Rhode Island, New Hampshire, Massachusetts, Maryland, and Maine.

While existing NRCS practice standards address specific practices used by farmers during transition to organic production, none of the practice standards adequately captures the multiple systemic changes that occur when a farm converts from conventional to organic production. Without a systemic approach, and without sufficient planning, producers may experience losses in yield, increased weed problems, and income foregone during the three-year transition period. The implementation of a functioning organic system, with conscientious soil-building, diverse crop rotations, preventative pest management strategies, and the termination of prohibited substances, offers farmers the tools for pest and disease control, good yields, and environmental stewardship. However, it takes a few years for this system to start achieving its potential in these areas.

The development and implementation of an NRCS TOP practice standard will help farmers transition to a system of farm management that addresses and improves upon multiple resources of concern, and will help transitioning farmers comprehensively manage their organic systems from the get-go to avoid future failure. Farmers operating under the practice standard would have to work with USDA-accredited certifying agencies to ensure full compliance with the National Organic Program regulations.

A TOP will complement, rather than replace, existing NRCS practice standards. We are including in Appendix II a draft TOP practice standard based on a similar interim practice standard (789) successfully implemented in a number of states. The adoption of this TOP practice standard nationwide would both increase the accessibility of EQIP funds for transitioning to organic producers as well as recognize the ecological and conservation benefits

[28] Comments provided by Jim Riddle and Jeff Schahczenski.

offered by the implementation of organic production practices for all types of farming enterprises.

8.2. Create a New Practice Standard, "Residue and Tillage Management: Reduced Tillage for Organic Production Systems"[29]

As noted in Section 7.6 above, we propose the development of a new practice standard entitled, "Residue and Tillage Management: Reduced Tillage for Organic Production Systems."

Proposed descriptive paragraph:

Organic crop production excludes the use of most herbicides, including those commonly used to terminate cover crops or kill weeds prior to conventional no-till crop planting. In addition, certain production crops (such as carrot or salad greens) require a clean seedbed to establish successfully under organic management practices. Whereas these factors may preclude implementation of continuous no-till or strip-till in organic annual cropping systems, strategies can be implemented to reduce substantially the intensity and frequency of tillage, and to increase soil coverage and the addition of cover crop biomass and crop residues to organically managed soils. These include: ridge tillage or mulch tillage (suitable for many crops), no-till cover crop management and production crop planting (suitable for transplanted and large-seeded crops), interseeding or overseeding cover crops into standing cereal grain, row or vegetable crops (eliminating tillage for cover crop establishment), clean tillage within grow zones alternating with untilled vegetated or mulched alleys, winterkilled cover crop prior to early spring production crop, and leaving crop residues on the soil surface until just prior to seedbed preparation for the next crop.

Reduced tillage for organic production system may include any combination of the above practices along with some full-width tillage, with the following criteria:

Crop residues are left on the surface after harvest, except when a subsequent cover or small grain crop is planted shortly after residues are incorporated.

Tillage operations that leave the field less than 30% covered with either living vegetation or residues are performed not more than once per calendar year.

8.3 Consider developing a set of "Organic Management Practice Standards" based on NOP resource management requirements.

As noted above (Section 4), the National Organic Program Regulation (7CFR, Part 205) contains deliberate directives for resource conservation in the context of certified organic production.[30] These form an excellent basis for description and specification of a complete Conservation System.

[29] Comments provided by Mark Schonbeck.
[30] Specifically (for crops and pasture) §§ 205.203 through 205.207, inclusive.

NRCS should begin to explore the possibility of developing new practice standards based explicitly on the resource management requirements of the National Organic Program Regulation.

9. CONCLUSION

OFRF is grateful for the opportunity to submit comments on the NRCS conservation practice standards. Without significant changes to NRCS' conservation practice standards to incorporate organic agriculture systems, NRCS is undermining its ability to properly fulfill the mandates of FCEA. NRCS is also missing the opportunity to invest in and support the establishment of agricultural systems that can provide significant long-term conservation benefits. OFRF looks forward to working with NRCS to improving the standards for completeness, relevance, and accessibility for organic and transitional farms and farming systems.

APPENDIX I: CORE SIX ORGANIC INITIATIVE PRACTICES: CONSIDERATIONS TO APPLY CONSERVATION PRACTICES ON ORGANIC FARMING OPERATIONS

The following are key "National Organic Program" (NOP) rules to be aware of when providing conservation planning assistance on organic or transitioning to organic farming operations. The NOP rules are applicable to all standards being applied on an organic operation: Any supportive practices in addition to core six should be cautious of building materials and products e.g., fencing, etc. meets organic farming approved materials. It is the producer's responsibility to identify approved products. To reference the list of approved and prohibited products listed in Section 205 of the NOP see the following website:

http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateN&navID=NationalListLinkNOPNationalOrganicProgramHome&rightNav1=NationalListLinkNOPNationalOrganicProgramHome&topNav=&leftNav=NationalOrganicProgram&page=NOPNationalList&resultType=&acct=nopgeninfo

For Part 205 - NOP Regulations see the following website:
http://www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateF&navID=RegulationsNOPNationalOrganicProgramHome&rightNav1=RegulationsNOPNationalOrganicProgramHome&topNav=&leftNav=&page=NOPRegulations&resultType=&acct=noprulemaking

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NTSC Specialists

§205.202 Land requirements.

Any field or farm parcel from which harvested crops are intended to be sold, labeled, or represented as "organic," must:

(a) Have been managed in accordance with the provisions of §§205.203 through 205.206;

(b) Have had no prohibited substances, as listed in §205.105, applied to it for a period of 3 years immediately preceding harvest of the crop; and

(c) Have distinct, defined boundaries and buffer zones such as runoff diversions to prevent the unintended application of a prohibited substance to the crop or contact with a prohibited substance applied to adjoining land that is not under organic management.

§205.203 Soil fertility and crop nutrient management practice standard.

(a) The producer must select and implement tillage and cultivation practices that maintain or improve the physical, chemical, and biological condition of soil and minimize soil erosion.

§205.205 Crop rotation practice standard.

The producer must implement a crop rotation including but not limited to sod, cover crops, green manure crops, and catch crops that provide the following functions that are applicable to the operation:

(a) Maintain or improve soil organic matter content;

(b) Provide for pest management in annual and perennial crops;

(c) Manage deficient or excess plant nutrients; and

(d) Provide erosion control.

328 CONSERVATION CROP ROTATION

- Requirements of the National Organic Program will be followed for the implementation of the practice.
- The rotation needs to combine the proper mix of crops that when combined with the planned tillage systems and other support practices (i.e., contouring, strip-cropping, etc.) will achieve tolerable soil loss for both wind (WEQ) and water erosion (RUSLE2).
- The rotation needs to combine the proper mix of crops that when combined with the planned tillage systems and other support practices (i.e., contouring, strip-cropping, etc.) will achieve a positive soil conditioning index (SCI). An alternative to SCI would be to meet the one of the following criteria for crop rotations:
    - A minimum of two crops if one of the crops is a perennial lasting at least 2 years, OR;
    - A minimum of 2 crops, if no perennial, with a cover crop (not harvested) following one of the crop years (no silage or crop residue removed from the system), this may include a summer fallow if seeded to a cover crop, OR;
    - A minimum of 3 crops, if no perennial, where at least 1/2 the rotation consists of high residue crops.
- Consider a rotation with legume crops (especially perennial legume crops) to provide nitrogen for the non-legume crops and to aid in breaking pest cycles.
- Consider a mix of at least three different crops to help break pest cycles to minimize weed, insect, and disease concerns.
- Consider using crops from different plant families or species to minimize weed, insect and disease concerns.
- Consider using a mix of crops with different nutrient needs, alternating between those that are heavy feeders and light feeders
- Consider using a mix of crops with different rooting depths to utilize residual plant nutrients
- Consider incorporating a mixture of crops that are cool season and warm season to allow for a more timely application of manure and compost.
- Consider lengthening the rotation to include several years of perennial cover (sod) to break pest cycles, increase soil organic matter, and control erosion.
- Consider the mix of crops to meet livestock feed needs.
- Although not a part of the standard, be aware the producer will need to use approved organic seed for the planned crops.

340 COVER CROP

- Requirements of the National Organic Program will be followed for the implementation of the practice.
- The cover crop should address any needed erosion control and compliment the planned rotation.
- Consider cover crop types that will help address pest concerns.
- Consider legume cover crops that will provide additional nitrogen for non-legume crops.
- Consider cover crops that will grow later into the fall/early winter and provide early growth in the spring, especially if the goal is to provide biomass surface cover.
- Consider use of short-season cover crops, e.g., buckwheat, to suppress weeds between spring and fall crops, and attract beneficial insects and pollinators.
- Consider use of cover crop mixes to improve winter survival, increase biomass production, lengthen duration of growing season, and respond to variable soil conditions.
- Avoid cover crop species/ecotypes that may host problem insects, diseases, or nematode pests for the planned crop rotation.
- Consider cover crops during any fallow period in the crop rotation to maintain soil organic matter, fix nitrogen and cycle nutrients, suppress weeds and reduce weed seed production, and aid in control of insects and diseases.
- Consider inclusion of brassicas and mustard cover crops to alleviate soil compaction, improve soil infiltration, suppress weeds and scavenge nutrients.
- Plan how the cover crop will be killed and when (stage of growth, plant height, etc.) to manage the mulch cover and/or the organic matter.
- Plan the appropriate rate of seeding to accomplish the purpose, time of seeding, and method of seeding. Include the cover crop into the RUSLE2 and/or WEQ calculations.
- Although not a part of the standard, be aware the producer will need to use approved organic seed for the cover crops.

590 NUTRIENT MANAGEMENT

- Requirements of the National Organic Program will be followed for the implementation of the practice.
- The nutrient management for an organic farm follows the same basic principles as a conventional farm in that we must budget the nutrients (account for nutrient credits from legumes, manure, composts, etc.), soil tests, yield goals, manure analysis, etc.
- Organically approved nutrient sources will be used to supply the required nutrients. Many organic producers may apply less than the yield goal – this is permissible. To reference the list of approved and prohibited products listed in Section 205 go to the NOP website listed on page 1.
- Consider use of catch crops to capture residual nitrogen after harvest of cash crops.
- Additions of lime or other permissible products will be planned as needed to adjust soil pH to proper levels to facilitate availability of major, secondary, and minor nutrients.
- When completing the nutrient management plan the producer should provide to the planner the source of the approved nutrients.

595 PEST MANAGEMENT

- Requirements of the National Organic Program will be followed for the implementation of the practice.
- Pest management practice utilizes the Integrated Pest Management (IPM) approach to manage pests and does comply with organic production as indicated with the following listed practices and techniques.
    - Crop rotation and soil and crop nutrient management practices;
    - Sanitation measures to remove disease vectors, weed seeds, and habitat for pest organisms;
    - Cultural practices that enhance crop health, including selection of plant species and varieties with regard to suitability to site-specific conditions and resistance to prevalent pests, weeds, and diseases;
    - Scouting and monitoring to determine pest level and thresholds for control;
    - Pest problems may be controlled through biological or natural-substance methods including but not limited to:
        - Augmentation or introduction of predator or parasites species;
        - Development of habitat for natural enemies of pests;
        - Non-synthetic controls such as lures, traps, and repellents.
- Weed problems may be controlled through mulching with biodegradable materials, mowing, livestock grazing, hand weeding and mechanical cultivation, flame, heat, electrical means, and plastic or other synthetic mulches that are removed from the field at the end of the growing or harvest season.
- Disease problems may be controlled through management practices which suppress the spread of disease organisms or application of non-synthetic biological, botanical, or mineral inputs.
- Other alternative to pest control include the National List of synthetic substance allowed for use in organic crop production may be applied to prevent, suppress, or control pests, weeds, or diseases provided that the conditions for using the substance are documented in the organic system plan. To reference the list of approved and prohibited products listed in Section 205 go to the NOP website listed on page 1.

528 PRESCRIBED GRAZING

- Requirements of the National Organic Program will be followed for the implementation of the practice.
- The prescribed grazing plan for an organic farm/ranch will contain the same components as for a conventional farm/ranch. The prescribed grazing plan should contain:
    - a resource inventory,
    - forage inventory,
    - animal inventory,
    - forage-animal balance,
    - grazing schedule,
    - contingency plan,
    - and monitoring plan.
- Livestock feeding, handling, and watering facilities will be designed and installed to minimize plant and/or animal stress and spread of diseases and parasites. There are certain restrictions on building materials (See NOP Section 205) such as use of pressure treated fencing materials.
- Manage livestock distribution and concentration areas for manure distribution, enhancing nutrient distribution, and to reduce potential water contamination.
- Manage grazing intensity, frequency, duration, and timing to ensure optimum nutritional intake by livestock to reduce the need for supplemental feeding.
- Supplemental feed amounts should not be above livestock nutrition and health maintenance needs.

511 FORAGE HARVEST MANAGEMENT

- Requirements of the National Organic Program will be followed for the implementation of the practice.
- For organic operations follow the same criteria as non-organic other than as follows:
    - Do not plan the use of forage preservatives or forage enhancers, e.g., non-protein nitrogen additions.
    - Apply organic nutrients to increase forage yields. Use only approved nutrient sources per NOP Section 205.
    - Harvest at the proper stage of maturity for planned quality and quantity by forage species.
    - Harvest hay at a frequency and height to maintain healthy plants, to lessen incidence of disease, insect damage, and weed infestations.
    - Timing of forage harvest may be altered from recommendations when all other pest management practices and techniques or action have been exhausted in order to control forage pests and preserve the forage stand.

APPENDIX II: PROPOSED DRAFT TRANSITION TO ORGANIC PRODUCTION PRACTICE STANDARD

PROPOSED DRAFT
NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

TRANSITION TO ORGANIC PRODUCTION[31]

DEFINITIONS

Transition to Organic Production – "Utilizing agricultural management strategies while converting from conventional to organic farming techniques."

Organic Production - "A production system that is managed in accordance with the Act and regulations in this part to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity."

PURPOSE

This practice is applied as part of a resource management system to minimize negative impacts of agricultural production on soil, water, air, plant, animal and social and cultural resources while transitioning to organic production.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where:

1. A conventional farming operation transitions to organic production;
2. All practice components necessary to implement a complete system are specified; and
3. Natural resources are adequate to properly follow an organic production system.

CRITERIA

General Criteria Applicable to All Purposes

A Transition to Organic Production plan shall be developed. This plan shall be a component of an overall conservation plan or a stand-alone Transition to Organic Production plan. This requirement includes a commitment by the operator to develop and implement an Organic System Plan approved by an accredited certifying agent and using materials in accordance with the National List of Allowed Synthetic and Prohibited Natural Substances (National List).

All methods of organic production, including all practices and inputs used during transition, must comply with Federal, State, and local regulations, including the Organic Food Production Act of 1990, as amended (7 U.S.C. 6501 et seq.), and regulations in the National Organic Program Final Rule (7 CFR Part 205 – National Organic Program).

Organically produced food and crops cannot be grown or produced using excluded methods, sewage sludge, or ionizing radiation. Soil fertility and crop nutrients shall be managed through tillage and cultivation, crop rotations and cover crops, supplemented with animal and crop manures and allowed synthetic and non-synthetic materials. All classes of crop pests including but not limited to weeds, insects, and diseases, shall be controlled primarily through management practices including physical, mechanical, and biological controls. Approved non-synthetic substances and substances on the National List may also be used, when preventative practices have been implemented, but are insufficient.

An appropriate set of mitigation techniques must be designed and implemented to reduce environmental

[31] Based on Code 789 "Transition to Organic Practice Standard," NRCS-VT, NOVEMBER 2007.

risks associated with organic production management activities, in accordance with quality criteria in the local Field Office Technical Guide (FOTG). Mitigation techniques include practices such as vegetative buffers, filter strips and crop rotation, and management techniques such as nutrient application method and timing. All methods of transition to organic production must be integrated with other components of the conservation system.

Additional Criteria To Protect Soil Resources

In conjunction with a conservation plan, the number, sequence and timing of tillage operations shall be managed to maintain soil quality and maintain soil loss at or below the soil loss tolerance (T) or any other planned soil loss objective. Systems shall be designed to aggressively build soil organic matter during the transition to organic production phase, and throughout organic rotation for long-term sustainability of the system and to prevent soil loss. Producers shall implement practices that improve soil quality by increasing soil organic matter and maintaining protective cover on cropland and pasture. Soil-building cover crops shall be used frequently in rotations.

Forage crops such as clover and other legumes will be recommended to build soil organic matter and nitrogen levels, while reducing phosphorus accumulation from otherwise desirable use of manure and compost in organic systems.

Weed management will integrate cultural preventive practices such as optimum management of production crops, crop rotation, cover cropping, and reduced-tillage cover crop management with use of tillage and cultivation tools and techniques that yield the greatest weed control with the least adverse impact on soil conservation and quality.

Additional Criteria to Protect Water Resources

The number, sequence and timing of tillage operations shall be managed in conjunction with other erosion control practices, in order to minimize sediment losses to nearby water bodies. Permanent vegetative cover will be used, especially buffer practices, when appropriate, to reduce the threat of offsite movement of sediment. The amount, source, placement, form and timing of the application of plant nutrients, including manure, compost, and soil amendments will be properly managed to minimize agricultural nonpoint source of pollution of the ground and surface water resources. Livestock shall be managed to minimize negative impacts to nearby surface water bodies.

Additional Criteria to Protect Air Resources

Producers shall pay special attention when using approved pest and disease control inputs to minimize volatilization and drift that may impact non-target plants, animals or humans. Manure will be stored and managed so as to minimize the volatilization of ammonia. Producers will be encouraged to have a full understanding of transitional techniques to reduce the amount of dust and livestock odor that may impact surrounding communities and natural resources.

Additional Criteria to Protect Plant Resources

Producers shall be encouraged to pay special attention to input label instructions including those directed at:
1. Preventing misdirected pest management control inputs from negatively impacting plants;
2. Appropriate climatic conditions, crop stage, soil moisture, pH, and organic matter in order to protect plant health;

3. Limiting input residues in soil that can carryover and harm subsequent crops;
4. Creating buffers, hedgerows, and farmscapes using suitable plant species to improve habitat conditions, including food sources and micro-habitat conditions for beneficial insects and other natural predators of invertebrate pests.

Additional Criteria to Protect Animal Resources

Producers shall be encouraged to pay special attention to input label instructions and management practices to minimize negative impacts on livestock and wildlife. To the maximum extent possible, livestock will be grazed throughout the growing season using management intensive grazing techniques and pasture species composition for optimum animal health.

Additional Criteria to Protect Humans

Producers shall be encouraged to pay special attention to input label instructions and management practices to minimize negative impacts on residents and workers.

NOTE: *Specific cost-sharing programs or other funding sources may dictate criteria in addition to, or more restrictive than these.*

CONSIDERATIONS
Organic production responds to site-specific conditions by integrating and stacking management functions that include cultural, biological, and mechanical practices. The organic production system fosters the cycling of resources, promotes ecological balance, and conserves biodiversity.

Consider the following principles and methods when planning the transition to organic production:
1. Biological controls, such as insect predators, parasites, and pathogens, can be used to suppress pest populations;
2. Cultural controls such as crop rotations, tillage, mowing, planting sequences, companion plants, and plant spacing can make the environment less suitable for pest survival;
3. Approved pest and disease controls should be used judiciously in order to minimize pest resistance and environmental risk;
4. Livestock management systems, such as rotational grazing and grass-based dairying can reduce the need for synthetic inputs;
5. Use regionally-adapted plant varieties that have resistance or tolerance to insects and diseases to the greatest extent possible;
6. Create habitats for beneficial insects by increasing plant diversity, planting flowering plants in the families Compositae (daisy), Labiatae (mint), and Umbellifereae (dill), improving the spatial layout (increasing interspersion) of beneficial plants, and the planting of trap crops around the field perimeter;
7. Use carbon building and nitrogen building cover crops that can be mowed, rolled, or crimped in place to create long-lasting mulch. Cover crops may also be tilled into the soil, if conditions become necessary.

Consider controlling weed problems through:
• Mulching with fully biodegradable materials
• Mowing
• Livestock grazing
• Hand weeding and mechanical cultivation
• Flame, heat, or electrical means
• Plastic or other synthetic mulches, provided that they are removed from the field at the end of the growing or harvest season.

PLANS AND SPECIFICATIONS

Plans and specifications for the Transition to Organic Production shall be prepared for each field or farm unit according to the Considerations, Criteria, and Operations and Maintenance described in this standard, and in keeping with other standards that are needed in order to implement Transition to Organic Production systems. Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, and other acceptable documentation, including forms provided by the certifying agency. These shall describe the requirements for applying this practice and associated supporting practices to achieve the intended purpose.

As a minimum, the Transition to Organic Production practice shall be planned for at least a three year period, and shall specify:

1. The list of conservation practices and components that will be needed in the process of transitioning to organic production;
2. A description of the production practices to be performed and maintained;
3. A list of the production inputs to be used;
4. A description of the monitoring procedures to be implemented;
5. A description of the record keeping system;
6. A description of the management practices and physical barriers to be established to prevent commingling and contamination; and
7. Other information deemed necessary by the certifying agency, including, but not limited to:
    - Plan map and soil map of managed fields;
    - Requirements for the input materials that will be used;
    - Location of sensitive resources and setbacks, if applicable; and
    - Operation and maintenance requirements.

USDA-accredited certifying agencies will review and maintain copies of each operation's "Transition to Organic Production Plan" in their record keeping systems. An official "Organic System Plan" must be approved by an accredited certifying agent prior to organic certification of the land. Producers are encouraged to initiate contact and work directly with accredited certifying agents early in the process to determine the necessary steps in transitioning their land to organic production. The conservationist shall work directly with the certifying agent on any outstanding resource concerns discussed at the transition farm visits and certification inspections.

Components. Components of complete transition to organic production system may include, but are not limited to all applicable Field Office Technical Guide Practice Standards. Where contradictions exist between a practice standard and the NOP Final Rule, the NOP shall prevail.

Design criteria for individual components shall be according to standards in the NRCS Field Office Technical Guide and organic management criteria as approved by a USDA-accredited National Organic Program certifying agency.

OPERATION AND MAINTENANCE

An operation and maintenance plan (O&M) shall be prepared for this practice. Appropriate job sheets may be used to serve as the management plan, as well as supporting documentation, and shall be provided to the producer.

Operations and maintenance items may include:

• Review and periodic updates of the plan in order to incorporate new technology and follow the Organic Food Production Act of 1990, as amended (7 U.S.C. 6501 et seq.), and the National Organic Program Final Rule (7 CFR Part 205 - NOP).
• Mitigation techniques identified in the plan in order to ensure continued effectiveness.