August 11, 2008

The Honorable Ed Schafer, Secretary
United States Department of Agriculture
14th and Independence Ave SW
Washington, DC 20250

Dear Secretary Schafer,

We, the undersigned organizations, are writing with respect to the U.S. Department of Agriculture's implementation of the Food, Conservation and Energy Act of 2008 Conservation Title as it relates to organic agriculture. In enacting FCEA, Congress recognized the conservation benefits of organic agriculture. The new law has substantial provisions to foster increased adoption of organic systems by improving organic farmers' access to USDA conservation programs. These provisions are intended to capture the critical conservation and environmental gains achievable through organic farming and ranching. The changes enacted by FCEA represent a watershed point with regard to the integration of organic agriculture into Natural Resources Conservation Service (NRCS) programming, and will require the development of new capacities and expertise within the agency.

Appreciating the magnitude of work that lies ahead in implementing the 2008 Farm Bill provisions, we have compiled background information and recommendations that we hope can guide and facilitate the agency's work as it moves forward. As NRCS moves further into the implementation process we would be happy to answer any questions about the attached information and provide any additional information that may be useful to you and your staff.

Thank you in advance for your careful consideration of our recommendations.

Sincerely,

Appalachian Sustainable Development
Center for Rural Affairs
Illinois Stewardship Alliance
Maine Organic Farmers and Gardeners Association
Midwest Organic and Sustainable Education Service
National Center for Appropriate Technology
National Organic Coalition
Northeast Organic Dairy Producers Alliance
Oregon Tilth
Organic Farming Research Foundation
Organic Trade Association
Organic Valley
Southern Sustainable Agriculture Working Group
Sustainable Agriculture Coalition
Union of Concerned Scientists
Virginia Association for Biological Farming
Wild Farm Alliance

Cc:

Deputy Secretary Chuck Conner
Chief of Staff Dale Moore
Deputy Chief of Staff Dave Johnson
Deputy Chief of Staff Beth Johnson

OBPA Director Scott Steele
FAFAS Deputy Under Secretary Floyd Gaibler
OCR Deputy Assistant Secretary Lowell Randel

NRE Under Secretary Mark Rey
NRE Deputy Under Secretary Gary Mast
NRCS Chief Arlen Lancaster
Chief of Staff Daniel Whiting
NRCS Acting National Farm Bill Coordinator Doug Lawrence
NRCS Deputy Chief/Programs Tom Christensen
NRCS EQIP Specialist Edward Brzostek
NRCS Agricultural Management Assistance Program/SWCA Manager Dave Mason
NRCS Assistant State Conservationist – Programs Bill O'Donnell

Considerations and Recommendations for Conservation Program Rulemaking and Implementation as it Relates to Organic Agriculture

Technical Assistance – Essential Core of the Agency's Organic Strategy

Advance Conservation Goals via Organic Agriculture. Recognizing the excellent fit between organic agriculture and NRCS' mission goals of high quality productive soils, clean and abundant water, healthy plant and animal communities, clean air, an adequate energy supply, and working farms and ranchlands, the new Farm Bill language directs the agency to *"fully incorporate…organic crop production…into the conservation practice standards and provide for the appropriate range of conservation practices and resource mitigation measures available to producers involved with organic…agriculture,"* while at the same time ensuring that *"adequate technical assistance is available for the implementation of conservation practices by producers involved with organic…through the Federal conservation programs."*[1] In other words, Congress is directing the agency to actively promote organic agriculture as a means to conservation and environmental enhancement.

Organic systems have been shown to support soil quality and retention, water quality and conservation, biodiversity, and animal health, among other benefits.[2] In fact, organic producers, as a requirement for organic certification under the National Organic Program Final Rule, must integrate a number of conservation practices. Individually, many of these practices overlap with current NRCS conservation practice standards. To illustrate this point, we have appended a chart prepared by the National Center for Appropriate Technology and the University of Minnesota highlighting the correlation between conservation requirements under the organic rule and existing NRCS conservation practice standards.[3] From the chart, it should be apparent that numerous organic practices align with those supported by NRCS, and when taken together as a production system consisting of all of these practices, organic production is a model Resource Management System using a comprehensive conservation systems approach.

Technical assistance lies at the very heart of NRCS' mission and is critical to the successful delivery of conservation financial assistance programs. With its knowledge and management-intensive, systems-based production model, maximizing the conservation benefits of organic agriculture through conservation programming will hinge on NRCS' ability to provide comprehensive technical assistance. Without providing for robust organic technical assistance, financial assistance expenditures will be far less effective. The new farm bill provides a two-part definition for technical assistance that includes both technical services and technical infrastructure.[4] We urge you to begin a deliberative process, in consultation with organic stakeholders, to comprehensively develop both the services and infrastructure components of a new, forward-looking organic technical assistance and outreach regime at NRCS.

[1] SEC. 1242(i) (as added by SEC. 2706)
[2] See Appendix I "Organic Bibliography with Annotations," for a compilation of annotated research studies detailing the research supporting this statement.
[3] See Appendix II "Correlation Chart for NRCS Conservation Practices and NOP Regulations."
[4] SEC. 2001(f)

Increase NRCS Capacity to Support and Promote Organic Agriculture. Although organic farmers have been eligible to participate in the Conservation Security Program (now the Conservation Stewardship Program), the Environmental Quality Incentives Program, and other federal conservation programs for years, organic farmer participation in these programs has lagged. Prompted by the passage of the 2002 Farm Bill, NRCS took a step to address this by creating website accessible documents detailing "What Organic Growers Need to Know About NRCS" and "What Conservationists Need to Know About Organic Growers." Relative to efforts made beforehand, this was an important first step. In comparison to the wholesale shift in NRCS' approach required by the directives of the 2008 Farm Bill, however, far more will be needed to fully incorporate organic agriculture into the conservation programs.

The most significant changes will need to be made in the delivery of technical assistance. As recognized in the "What Conservationists Need to Know About Organic Growers" document on the NRCS website: *"national standards provide only limited TA for organic growers" and "extra outreach may be required for organic growers who may not be accustomed to working with federal programs."* To fulfill the 2008 Farm Bill directives aimed at addressing these observations, NRCS should take a coordinated approach that includes contracting with NGOs, certifiers, and others who currently have the appropriate expertise to provide the necessary outreach and assistance in the near-term, while working to build capacity within the agency to deliver adequate technical assistance over the long-term. To facilitate contracting with other parties in the near term, we have appended a provisional sampling of individuals and organizations that can provide organic technical assistance.[5] (Note: We will provide a more comprehensive list in the near future).

In terms of building in-house capacity for technical assistance we recommend a number of strategies for the agency to undertake. Many of the same individuals and organizations that we listed as proficient providers of organic technical assistance to producers also can help to inform NRCS staff regarding organic practices and the needs of organic producers. In fact, some states with existing EQIP organic conversion programs have already sent their staff to trainings held by organizations on the list. Encouraging participation of individuals from these organizations and other organic stakeholders on the State Technical Committees and Local Working Groups would also help bolster technical expertise among NRCS staff at the state and local levels.

In addition, federal government agencies including the Agricultural Marketing Service (AMS), Agricultural Research Service (ARS), Cooperative State Research, Education, and Extension Service (CSREES), and Economic Research Service (ERS) have significant programming in organic agriculture nationwide and would be another resource for NRCS staff to turn to, to build their knowledge of organic agriculture. These same agencies could also help develop and/or refine NRCS operations and technology, such as the RUSLE2 tool or the Soil Conditioning Index, to meet the needs of organic producers, and create or refine answers to questions regarding organic systems.

[5] See Appendix III "Provisional Sampling of Individuals and Organizations with Organic Technical Assistance Expertise."

One particular inter-agency relationship that we highly encourage NRCS to build is with CSREES. The Integrated Organic Program under CSREES' umbrella is the main federal organic research program which consists of two programs, the Organic Agriculture Research and Extension Initiative and the Organic Transitions Research Program, which fund research to help improve existing organic systems and facilitate transitioning to organic production, respectively. In addition to the general applicability of the organic research funded by the programs, a new purpose was added to the Organic Agriculture Research and Extension Initiative in the 2008 Farm Bill to specifically examine *"optimal conservation and environmental outcomes relating to organically produced agricultural products."* This new research purpose represents a significant opportunity for NRCS to engage with CSREES to build a research agenda that fosters the knowledge base necessary for NRCS to maximize the conservation outcomes of organic systems. We strongly encourage state and local NRCS offices to develop partnerships with ARS, Land Grant Universities, State Departments of Agriculture, and growers' organizations in their area to identify scientific and educational opportunities related to organic conservation systems.

Finally, in addition to increasing the capacity of existing staff through trainings and inter-agency collaboration, we strongly urge hiring an organic expert in each state who can serve as the state organic technician or organic specialist. This model of technical assistance delivery has already proven successful in states where no-till specialists have been hired by NRCS. Organic farmers, with their site-specific needs and knowledge-based management systems, would greatly benefit from having a local person they could turn to for assistance in maximizing the conservation benefits of their systems. Having someone in each state would also help in facilitating "…*innovative approaches to engage local resources in providing technical assistance for planning and implementation of conservation practices,*'' as required in the Farm Bill.[6] Furthermore, such a position could be the linchpin of research and education partnerships mentioned above.

EQIP and Organic Conversion

Support Transition to Organic Production. Prior to the 2008 Farm Bill, several states took it upon themselves to offer assistance for transition to organic production through their respective state EQIP programs. The Northeast states also provided such assistance under the Agricultural Management Assistance program as well as EQIP. Congress, recognizing the wisdom of this activity, has now authorized organic assistance, including organic conversion assistance, under EQIP at the national level.

Ensuring Nationwide Access. Organic farmers have been eligible for EQIP funding for years, but have faced significant barriers to accessing the program, including the absence of an organic practice standard in many states and ranking criteria and funding set-asides that favor conventional agriculture. With the 2008 Farm Bill adding "conservation practices related to organic production" in the purposes section of EQIP and calling for the full integration of organic systems into the conservation practice standards we are confident that NRCS will work to correct these problems for organic farmers looking to access the general EQIP program, while

[6] SEC. 1242(i)(2)(B)(ii) (as added by SEC. 2706)

at the same time ensuring that these problems are avoided from the outset for farmers looking to access the new transition to organic production provision.

To avoid problems with farmers accessing the transition to organic production option at the outset, USDA must ensure nationwide access. No longer should those farmers looking to transition to organic production, anywhere, be told that EQIP does not pertain to them or be told that their state or county does not have the relevant conservation practice standard or activity for organic conversion. As a first step, the agency should ensure that all counties and all states offer an organic conversion practice or suite of practices. As a second step, NRCS needs to create a nationwide set-aside, (or a similar mechanism that would achieve the goals of a nationwide set-aside), to ensure that the program is offered in every state, and that producers looking to transition to organic production in every county of every state, would have the ability to compete for a substantial separate pool of funding, increasing the likelihood that they would be able to access funding. If the agency were to go ahead with the existing nationwide set-aside mechanism, we propose the following guidelines:

First, with the organic share of the domestic food retail market approaching 5%, it seems that an initial set aside that reflects this share would be a reasonable to get the program off the ground. This figure would include money to provide both financial assistance and technical assistance. The national set-aside money should be allocated to each state based on a formula that takes into consideration the ratio of existing organic acreage to conventional acreage in the state and the rate of increase in organic acreage in the state in the last five years

Second, the national allocation to each state should be treated as a minimum, and should not preclude states from setting aside additional money from their state EQIP budgets for the program. To encourage states to set-aside additional funds for the transition to organic production, an allowance to re-pool any unused funding for general use should be included. The timing for this re-pooling option should come after the main EQIP ranking process and contract signing which usually takes place in January or February and allow for sufficient time for transitional producers to access the funding.

Ensure Adequate and Appropriate Technical Assistance. We recommended above that money for technical assistance be included in the initial set-aside because technical assistance is absolutely critical to the success of the transition to organic production program. Transitioning to a whole new production system can be a daunting task and time and time again it has been shown that those who have proper technical assistance during the process are the most successful. The success of the new program in the producer's mind and the taxpayer's mind ultimately rests upon the technical assistance that is provided.

Many of the same suggestions made earlier in the general provisions section of this document will help NRCS meet the demand for technical assistance. States with EQIP conversion programs have built up their own capacity to provide assistance by using their training budgets to send staff to organic trainings. At the same time, many states have contracted with third-party providers such as NGO's, universities, and state departments of agriculture with expertise in organic agriculture to deliver needed technical assistance. In many cases, the success of the program can be attributed to the third-party provider.

In addition to the need for technical assistance that reflects expertise and understanding of organic systems, transitional producers have unique technical assistance needs that are critical to their success. When transitioning to organic production, not only must producers change their farming and conservation practices, but they must also change their marketing practices and business planning to access new markets to sell their goods. Without technical assistance that addresses these aspects of transition to organic production, many farmers will not be able to sustain the economic viability of their farm and will have to forego the conservation benefits that transition to organic production represents. Although one of NRCS' six mission goals is supporting "working farms and ranchlands," we do not expect NRCS to develop this particular expertise, but do expect that NRCS will contract with qualified third-party providers to provide this crucial aspect of technical assistance.

Recognizing the magnitude of management-intensive changes that a producer must undertake to convert to organic production, the Managers included language in their report encouraging the Secretary *"to provide levels of technical and education assistance for organic conversion commensurate to the need."*[7] As illustrated above, there are technical assistance needs above and beyond just conservation practice technical assistance that need to be met to ensure a successful transition, without which, would jeopardize the success of the producer and achieving the conservation benefits of a successful organic system. In addition, the conservation practice technical assistance that is provided will need to be tailored to the systems-based approach of organic production and also need to be proportionate to the knowledge-intensive nature of organic production. As a result, in many instances, the technical assistance amount for organic conversion may be twice the level of ordinary EQIP. NRCS must take these considerations into account when determining payment rates for technical assistance.

Appropriate Practice Standards. To allow for transition to organic production payments to be made in every state, we strongly urge NRCS to consider a conservation practice standard at the national level that authorizes transition to organic production payments. To inform this process, we encourage NRCS to look to how states with organic conversion programs have approached the practice standard.

States with EQIP conversion programs have taken two main approaches to creating practice standards that serve as the basis for granting transition to organic production payments.[8] The first method, mainly used in the Midwest, offers increased payments through the use of interim conservation practice standards that built off of existing practice standards, with the most common being interim versions of CPS 327 or 328, Conservation Cover and Conservation Crop Rotation, and CPS 528A, Prescribed Grazing. The second method, mainly seen in the Northeast, uses a separate "transition to organic production" practice, CPS 789, which more comprehensively captures the practices involved in transition to organic production.

[7] Joint Explanatory Statement of the Committee of Conference, pg. 49.
[8] See Appendix IV "Summary of State EQIP Organic Conversion Practices."

We are aware that the agency has been petitioned by the Northeastern States (MA, ME, NH, RI, and VT) to adopt the 789 standard nationally, and would fully support the agency doing so.[9] But recognizing that both approaches have been successful on the state level, we would also support the agency's adoption of the first approach, if it would ensure expedient implementation of the program.

Whichever approach or combination of approaches is ultimately taken, the agency should ensure that the payment structure under the standard is competitive enough to attract producers to the option. Once there has been some experience with the program at the national level, the agency should re-evaluate the practice standard and its accompanying payment structure to make sure it is meeting programming needs.

Coordinate with Existing Organic Institutions. Being that organic production has its own separate regulations and associated institutions, NRCS should establish systems that minimize the burdens placed on producers also complying with organic regulations. One way to do this would be to streamline the application process for EQIP transition assistance and National Organic Program organic certification by using the organic system plan as the basis for the application process. With a 2008 Farm Bill requirement for NRCS to engage in a similar streamlining of applications between the Conservation Stewardship Program and the National Organic Program,[10] NRCS should be able to use the experience it gains to inform a similar and simultaneous effort with regard to EQIP.

Similarly, with NRCS transition to organic production assistance predicated on the fact that producers in the program are adhering to the organic regulations, NRCS will need to establish a means to verify that producers are meeting the requirements of the organic system plan and are on track to achieve certification. To do so, we encourage NRCS to use the existing network of USDA-accredited organic certifying agents.

Organic certifiers typically audit/certify producers for organic compliance only when they have completed the 3-yr. transition period, but states with EQIP conversion programs have set up mechanisms to audit producer compliance for each year of the transition period to ensure wise use of tax dollars. In Vermont, a producer must receive a letter from a certifier documenting the producer's intention to transition to organic production to receive assistance in the first year. To continue receiving assistance for the second year, the producer signs a Self-Certification Form[11] created by VT NRCS indicating that they are continuing to transition their land. By the third year a producer must provide a document from the certifier saying that parts of the operation have been certified – hay is usually first in most operations. In Minnesota, to receive assistance, a producer is required to hire and annually receive documentation (either a certificate or verification letter) from an USDA accredited certification agent stating that the USDA organic rules are being followed. Whether the national level uses these state models or creates a different national scheme that includes certifiers, paying certifiers directly to cover the

[9] "Transition to Organic Production (789) Conservation Practice Standard Northeastern States (MA, ME, NH, RI, and VT) Final Technical Evaluation Report 2008."
[10] SEC. 1238F(h) (as added by SEC. 2301)
[11] Part 407 Documentation, Certification, and Spot Checking: Subpart B – Documentation and Certification http://www.vt.nrcs.usda.gov/technical/Organic_Farming/450_GM_VT407-10.pdf.

transitional certification costs or covering the producers' costs of hiring a certifier, should be budgeted for.

Conservation Stewardship Program

Despite USDA's promise in the 2004 Interim Final Rule for CSP that NRCS would be "generating a crosswalk between the regulatory NOP [National Organic Program] practices and NRCS Field Office Technical Guide practices to assure that certified growers get full credit for their NOP compliance" and that the CSP rule will include "a clear mechanism for coordinating participation in the NOP and the CSP," this commitment, much to our disappointment, has yet to be fulfilled.[12] We are pleased that Congress has now taken the appropriate step of mandating USDA coordination through the inclusion of an organic crosswalk provision in the 2008 Farm Bill.[13] We urge you to fulfill this mandate by immediately beginning an interagency process as well as a stakeholder process to ensure that all the appropriate guidance documents and outreach materials are in place for the 2009 sign-up and that organic producers, organic certification agents, organic farming associations, organic researchers and Extension specialists, and of course NRCS staff have been brought into the process. These same stakeholders should be engaged in ensuring that the program specifications are appropriate for organic producers.[14]

To further ensure participation of organic producers in CSP, Congress took the additional step of requiring that there is special outreach and technical assistance to specialty crop producers and to all types of organic producers.[15] We hope that over time the Department in general, including NRCS, will have added the expertise required to adequately fulfill this directive, but in the meantime, we urge you act quickly to develop cooperative agreements with NGOs, certifiers, and others with appropriate expertise to provide the necessary outreach and assistance.

Cooperative Conservation Partnerships Initiative

We believe the inclusion of organic agriculture in the sole CCPI example that the Managers included in the Joint Statement of the Managers should serve as a strong indication to NRCS that organic agriculture should be an important focus in CCPI projects. We urge the agency to actively support projects aimed at leveraging the conservation outcomes of organic agriculture and enhancing the conservation outcomes of organic systems.

The Managers include the following as an example of a CCPI partnership: A cannery has closed and near-by orchards are going out of business. A local watershed council pulls together several partners such as a State university, a wildlife organization, and an organic growers' cooperative. They agree to work together to improve water quality and wildlife habitat while working with interested local producers to transition their orchards to organic grass-based cattle operations. The watershed council files an application with the Department proposing to conduct local producer outreach; provide training on transitioning to a new agricultural sector, including organic certification and cattle management workshops; assist with tree removal; and

[12] 69 Fed Reg at 34,508
[13] SEC. 1238F(h) (as added by SEC. 2301)
[14] SEC. 1238G(c) (as added by SEC. 2301)
[15] SEC. 1238G(c) (as added by SEC. 2301)

assist in implementing habitat diversity practices with workshops, labor, and seed. The council asks for designation of $10,000,000 in EQIP and $250,000 in WHIP.[16]

Conservation Reserve Program

Although Farm Service Agency has the lead role in implementing the Conservation Reserve Program, an important role exists for NRCS regarding implementation of the new option created by Congress in the 2008 Farm Bill that allows Beginning Farmers or Ranchers and Socially Disadvantaged Farmers who will be the transferees of CRP land to begin the organic certification process up to one year before the existing contract expires.[17] Producers who choose this option will need the technical assistance and financial assistance that NRCS can provide through CSP and the EQIP organic conversion option to ensure that the conservation benefits are maximized and continued. We therefore encourage NRCS to work with FSA to ensure that these producers are connected to the conservation programs that provide the necessary assistance. The new CRP option, when coupled with the technical and financial assistance available under CSP and the EQIP transition to organic production authorization, represents a seamless way to increase the use of organic production systems by a new generation of farmers and harness the associated environmental benefits for a long time to come.

[16] Joint Explanatory Statement of the Committee of Conference, pg. 63.
[17] SEC. 2111(b)

Organic Bibliography with Annotations

Compiled by Rex Dufour, National Center for Appropriate Technology (NCAT), and Jane Sooby, Organic Farming Research Foundation (OFRF).

Organic vs. Conventional: Nutrient Management

L. R. Bulluck, III a, 1, M. Brosiusb, G. K. Evanylob and J. B. Ristaino. Organic and synthetic fertility amendments influence soil microbial, physical and chemical properties on organic and conventional farms. Applied Soil Ecology. Volume 19, Issue 2, February 2002, Pages 147-160

> *Alternative fertility amendments enhanced beneficial soil microorganisms, reduced pathogen populations, increased soil organic matter, total carbon, and cation exchange capacity (CEC), and lowered bulk density thus improving soil quality.*

Kramer, S.B., J.P. Reganold, J.D. Glover, B.J.M. Bohannan, and H.A. Mooney. 2006. Reduced nitrate leaching and enhanced denitrifier activity and efficiency in organically fertilized soils. Proceedings National Academy of Sciences 103:4522-4527.

> *This 2006 study reported reduced N pollution from organic and integrated farming systems compared with a conventional farming system. Annual nitrate leaching was 4.4–5.6 times higher in conventional plots than in organic plots, with the integrated plots in between. This study demonstrates that organic and integrated fertilization practices support more active and efficient denitrifier communities, shift the balance of N2 emissions and nitrate losses, and reduce environmentally damaging nitrate losses.*

McIsaac. G.F., and R.A. Cooke. 2000. Evaluation of Water Quality from Alternative Cropping Systems Using a Multiple-Paired Design
www.aces.uiuc.edu/~asap/research/stew_farm/home.html

> *In a study which compared the water quality from organically and conventionally managed fields, the authors concluded: "On average, nitrate and chloride concentrations in samples of drainage water from organic fields monitored in this study were significantly less than the concentrations from conventionally managed fields with similar characteristics**….. It appears the organic farming practices have considerable potential for reducing nitrate transport to surface water."***

Fundamental Differences Between Conventional and Organic Tomato Agroecosystems in California. L. E. Drinkwater, D. K. Letourneau, F. Workneh, A. H. C. van Bruggen, C. Shennan. *Ecological Applications*, Vol. 5, No. 4 (Nov., 1995), pp. 1098-1112

> *Conventional and organic systems could not be distinguished based on agronomic criteria such as fruit yield and arthropod pest damage levels. However, differences were demonstrated in many soil, plant, disease, and diversity indicators suggesting that the ecological processes determining yields and pest levels in these two management systems are distinct. In particular, nitrogen mineralization potential and microbial and parasitoid abundance and diversity were higher in organic farms.*

Reganold, J. P., J. D. Glover, P. K. Andrews, and H. R. Hinman. 2001. Sustainability of three apple production systems. Nature. 410:926-930.

When compared with the conventional and integrated systems, the organic system produced sweeter and less tart apples, higher profitability and greater energy efficiency. Our data indicate that the organic system ranked first in environmental and economic sustainability, the integrated system second and the conventional system last.

Wander, M.M, and E. E. Marriot. 2006. Total and Labile Soil Organic Matter in Organic and Conventional Farming Systems. Emily E. Marriot and Michelle M. Wander
Soil Science Society of America Journal, Vol. 70:950-959. Online April 19, 2006.

This study summarizes the findings of nine long-term comparative trials assessing the impacts of conventional and organic cropping systems on soil quality. Overall, ***organic management "increased SOC concentrations approximately 14% above values found in conventional systems after an average of 10 yr."*** *The* ***authors noted that "these gains in soil organic carbon under organic management occurred despite the relatively heavier reliance by organic farmers on cultivation for weed control."***

Organic vs. Conventional: Biodiversity

Janne Bengtsson, Johan Ahnström and Ann-Christin Weibull. The effects of organic agriculture on biodiversity and abundance: a meta-analysis. *Journal of Applied Ecology*. Volume 42 Page 261-269. April 2005

This study reviewed 66 pre-2002 articles for comparison of biodiversity between organic and conventional farms: On average, organisms were 50% more abundant in organic farming systems, but the results were highly variable between studies and organism groups. Birds, predatory insects, soil organisms and plants responded positively to organic farming, while non-predatory insects and pests did not.

Beecher, NA; Johnson, RJ; Brandle, JR; Case, RM; Young, LJ. 2002. Agroecology of birds in organic and nonorganic farmland. *Conservation Biology*. 16:6:1620-1631.

Ecological relationships between wildlife conservation and farm management provide common ground for the enhancement of bird habitat and the natural suppression of pests on farmland. We compared bird populations in 15 paired organic and nonorganic sites (cornfields plus edges, 30 sites total) that were similar in environment and edge habitat but that differed in use of fertilizers, herbicides, cultivation, and crop rotations. …we recorded 54 bird species, 51 in organic and 39 in nonorganic sites. On average, bird abundance on organic sites was 2.6 times higher than on nonorganic sites, and mean species richness per visit was 2.0 times greater. When analyzed separately, organic edge, perimeter, and field transects supported higher bird abundance and greater richness than did their nonorganic counterparts. Abundance and richness were higher on organic sites for insectivores, omnivores, and granivores, and for each of three migratory groups. Twelve species were individually more abundant on organic sites, and one regularly observed species was observed only on organic sites. No species had greater abundance on nonorganic sites.

Kremen, C., N. M. Williams, R. L. Bugg, J. P. Fay and R. W. Thorp. 2004. The area requirements of an ecosystem service: crop pollination by native bee communities in *California. Ecology Letters*, 7:1109-1119.

Liat P. Wickramasinghe, et al., "Bat Activity and Species Richness on Organic and Conventional Farms: Impact of Agricultural Intensification," *Journal of Applied Ecology*, Vol. 40 (2003).

Bat activity is 61% higher on organic farms, and foraging activity is 84% higher on organic farms than on conventional farms. Insects were 64 percent more abundant on organic farms versus conventional ones.

The Biodiversity Benefits of Organic Farming. 2000. UK Soil Association, at: http://www.soilassociation.org/web/sa/saweb.nsf/24ffc96e2350a4e680256ab10047def0/67bff1084a5b1d0880256ae50039d8cb/$FILE/Biodiversity%20Report.pdf

In a review of 9 studies, the UK's Soil Association found that both abundance and diversity were substantially higher on organic farms than comparable conventional farms. ***Plants****--Five times as much biomass of wild plants in arable fields, two times as many rare or declining wild plant species and several rare species found only on organic farms.* ***Birds****—25% more birds at the field edge, 44% more in-field in autumn/winter.* ***Invertebrates****—1.6 times as many of the arthropods that comprise bird food, three times as many non-pest butterflies and 1-5 times as many spiders in the crop area.*

Pfiffner, Lukas; Häring, Anna; Dabbert, Stephan; Stolze, Matthias and Piorr, A. (2001) Contributions of organic farming to a sustainable environment. Paper presented at European Conference - Organic Food and Farming, Copenhagen, Denmark, 10.-11.05.2001; Published in *Organic Food and Farming. Towards Partnership and Action in Europe. 10-11 May 2001, Copenhagen, Denmark*, page pp. 115-123. Dänish Ministry for Food, Agriculture and Fisheries. http://orgprints.org/2943/01/pfiffner-2001-proceedings-copenhagen.pdf

This study reviewed 41 studies, looking at environmental indicators such as Biodiversity & Landscape, Soil, Ground and Surface Water, Climate and Air, as well as Farm Input and Output. For each indicator organic farming is ranked at least equal to conventional farming, while in the majority of environmental indicators organic farming performs better or much better. In two cases, the subjective confidence interval could allow conventional farming to appear as the preferable system (partly due to the lack of evident data). However, when considering the aggregation level of the indicator categories, the analysis becomes more uniform. With the exception of climate and air, organic farming performs better than conventional farming in all categories. None of the indicator categories showed that organic farming performed worse.

Klingen,-I; Eilenberg,-J; Meadow,-R. Effects of farming system, field margins and bait insect on the occurrence of insect pathogenic fungi in soils. *Agriculture,-Ecosystems-and-Environment*. 2002; 91(1/3): 191-198 PB:

A method for baiting soil samples with Delia floralis larvae was developed, and a systematic survey was conducted on soils from northern Norway for insect pathogenic fungi, using D. floralis and Galleria mellonella larvae as bait. The occurrence of insect pathogenic fungi in soils from arable fields and adjacent field margins of conventionally

and organically managed farms was compared. The study showed a significantly higher occurrence of insect pathogenic fungi in soils from arable fields of organically managed farms.

Organic vs. Conventional: Yields

Brumfield, R.G., A. Rimal, and S. Reiners. 2000. Comparative cost analyses of conventional, integrated crop management, and organic methods. HortTech 10:785-793.

Dobbs, Thomas L. and James D. Smolik. 1996. "Productivity and profitability of conventional and alternative farming systems: A long-term on-farm paired comparison." *Journal of Sustainable Agriculture* 9(1):63-79.

Drinkwater, L. E., Letourneau, D. K., Workneh, F., van Bruggen, A. H. C., Shennan, C. Fundamental Differences Between Conventional and Organic Tomato Agroecosystems in California *Ecological Applications*, Vol. 5, No. 4 (Nov., 1995), pp. 1098-1112

Entz, M.H., et al. 2002. Glenlea long-term crop rotation study: a comparison of organic and conventional systems. In Proceedings, 14th IFOAM Organic World Congress, Aug. 21-24, 2002, Victoria, Canada. p. 119.

"The best overall performance was recorded for the alfalfa-containing cropping system conducted under organic management." (this study site is in Canada. corresponding author A. Schoofs, schoofsa@ms.umanitoba.ca)

Goldstein, Walter. Developing and testing nutrient and organic matter budgeting and practices that will reduce the leaching of nutrients into surface and groundwaters. 2003? In The Wisconsin Integrated Cropping Systems Trial—Ninth Report. pp. 82-105. Contact Walter at phone (262) 642-3303; ext. 112, e-mail wgoldstein@MichaelFieldsAgInst.org, and read a similar report on the web at http://www.misa.umn.edu/Other/symposium/Goldstein%20Proceedings%2003.pdf

An "organic matter and nutrient budgeter" computer program was developed to project nitrogen release in various cropping scenarios. The budgeter was tested in on-farm trials in Wisconsin, Iowa, and Illinois. Corn root health was also assessed. Data from farms was grouped into 8 different management systems, 4 organic and 4 conventional. Corn seems to rely primarily on soil organic matter for N source rather than on applied nitrogen inputs. Fertilization with mineral N fertilizer increased N uptake in corn only 11%, while fertilization with manure increased N uptake by only 10%. In this study, conventional yields were slightly lower than organic, though not significantly so. An exception was corn grown after small grains/clover, which produced unusually low yields (79 bu/acre). Corn growth was stunted, root production was low, and corn encountered strong weed competition. Organic corn after alfalfa-grass mixtures yielded unusually well (153 bu/acre).

Granstedt, A. and L. Kellenberg. 1997. Long-term field experiment in Sweden: effects of organic and inorganic fertilizers on soil fertility and crop quality. (In Proceedings of an International Conference in Boston, Tufts University, Agricultural Production and Nutrition, Massachusetts March 19-21, 1997.) on the web at http://www.jdb.se/sbfi/publ/boston/boston7.html

In 1958, Bo D. Pettersson in the Nordic Research Circle for Biodynamic Farming in Järna, Sweden, began an agricultural field experiment that lasted until 1990, i.e. 32 years. The field experiment included eight different fertilizer treatments, each with a four-year crop rotation without repetitions: summer wheat, clover/grass mix, potatoes, beets…./ In these experiments a comparison was made between two systems, biodynamic farming and conventional farming, in which both fertilizer regimes and crop rotations were studied…. During the time between 1958 and 1990 the yield increased in all treatments in accordance with the overall trend in the Swedish agriculture, but the increase was highest in the organic treatments (65 % in the biodynamic in comparison with 50 % in the conventional).

Hanson, James C., Erik Lichtenberg, and Steven E. Peters. 1997. "Organic versus conventional grain production in the mid-Atlantic: An economic and farming system overview." *American Journal of Alternative Agriculture* 12(1):2-9.

Letourneau, D.K. and B. Goldstein. 2001. Pest damage and arthropod community structure in organic vs. tomato production in California. J. Appl. Ecol. 38:557.

"Letourneau and Goldstein have studied tomato production on 18 commercial farms (half of them managed organically) in the Central Valley of California; they find that the withdrawal of synthetic insecticides does not lead to increased crop losses as a result of pest damage."

Lotter, D.W. Organic agriculture. 2003. J. Sustain. Agric. 21(4). On the web at http://www.donlotter.com/lotter_organicag.pdf

"Yield reductions of [organic] systems average 10-15% relative to [conventional], however these are generally compensated for by lower input costs and higher gross margins." Also features a 381-citation literature review of organic research.

Mader, P., A. Fließbach, D. Dubois, L. Gunst, P. Fried, U. Niggli. 2002. Soil fertility and biodiversity in organic farming. Science 296:1694-1697.

NPK nutrient input was 34-51% lower in organic than in conventional systems, while yields averaged 20% lower over the 21-year study period. This is interpreted as the organic system being more efficient than the conventional. Energy required to produce "a crop dry matter unit" was 20-56% lower in organic than conventional systems, and 36-53% lower per unit of land area. Organic potato yields were 58-66% lower than conventional potato yields, due to low K supply and infection with Phytophtora infestans. Organic winter wheat yields were 90% of conventional yields. Soil aggregate stability was 10-60% higher in organic than in conventional plots. Soil pH was slightly higher in the organic systems. Root length colonized by mycorrhizae was 40% higher in organic than conventional systems. Earthworm biomass and abundance was 1.3-3.2 times higher in organic compared to conventional plots. "Average activity density of carabids, staphylinids, and spiders in the organic plots was almost twice that of the conventional plots."

Mendoza, T.C. 2002. Comparative productivity, profitability and energy use: intensity and efficiency of organic, LEISA, and conventional rice production in the Philippines. In Proceedings, 14th IFOAM Organic World Congress, Aug. 21-24, 2002, Victoria, Canada.

p. 2: "The case study had shown that rice grown the organic method … was more profitable and less cash capital requiring." … Organically grown rice also utilized significantly low amount of fossil fuel energy, thus, it was also the most energy efficient method of growing rice."

Miller, P., and D. Buschena. 2003. Agroeconomic analyses of the transition period to organic and no-till diversified cropping systems in the northern Great Plains. Handout from Tri Societies meeting, Denver, CO, Dec. 2003.

Compares yields, precipitation use efficiency, and net returns of 1 organic and 4 no-till rotations, after 4 years. Winter wheat water use was the same under organic and no-till management. After 4 years, organic winter wheat yields averaged 103% of the no-till winter crop treatment and 125% of the highly diversified no-till rotation treatment. In the short-term, the highly diverse rotation did not yield as highly as expected, largely because of the decline in wheat yield two years after sunflower! Sunflower yields, however, were large enough to justify keeping them in the rotation. Organic crop production was economically competitive with no-till systems during the transition.

Petersen, C., L. E. Drinkwater, and P. Wagoner. 1999. The Rodale Institute Farming Systems Trial: the first 15 years. Kutztown, PA: The Rodale Institute.

Corn yields were initially lower under organic than conventional management, but then increased to equivalent yields. "After a transition period, the organic systems produced better corn crops than the conventional system in dry years." "On average, soybean yields in both organic systems have been as high as those in the conventional system…" "In general, yields of wheat, oats, barley, hay, and corn grown for silage … were comparable to the [county] average …"

Porter, P.M., D.R. Huggins, C.A. Perillo, S.R. Quiring, and R.K. Crookston. 2003. Organic and other management strategies with two- and four-year crop rotations in Minnesota. Agron. J. 95:233-244.

After 6 years, organic corn yields were 7-9% less than conventional, while organic soy yields were 16-19% less than conventional.

Reganold, J.P., J.D. Glover, P.K. Andrews, and H.R. Hinman. 2001. Sustainability of three apple production systems. Nature 410:926-930.

Compares organic, conventional, and "integrated" apple production in Washington state. "All three systems gave similar apple yields. The organic and integrated systems had higher soil quality and potentially lower negative environmental impact than the conventional system."

Stanhill, G. (1990). The comparative productivity of organic agriculture. Agriculture, Ecosystems and Environment, 30, 1-26.

Welsh, R. 1999. The economics of organic grain and soybean production in the Midwestern United States. Henry A. Wallace Inst. for Alt. Agric. Policy Studies report No. 13.
Reviews Midwestern organic grain and soybean research. Excellent background on earlier organic research in the U.S.

Nutrition: Organic vs. Conventional

Worthington, V. 2001. Nutritional Quality of Organic Versus Conventional Fruits, Vegetables, and Grains. The Journal Of Alternative And Complementary Medicine Volume 7, Number 2, 2001 PP. 161—173

Asami, D.K., Hong, Yun-Jeong, Barrett, D.M, and A.E. Mitchell. 2003. Comparison of the Total Phenolic and Ascorbic Acid Content of Freeze-Dried and Air-Dried Marionberry, Strawberry, and Corn Grown Using Conventional, Organic, and Sustainable Agricultural Practices. J. Agric. Food Chem., 51 (5), 1237 -1241, 2003.

Mitchell, A.E., Hong, Yun-Jeong, Koh, E., Barrett, D.M., Bryant, D. E., Denison, R. F., and S. Kaffka. 2007. Ten-Year Comparison of the Influence of Organic and Conventional Crop Management Practices on the Content of Flavonoids in Tomatoes. J. Agric. Food Chem., 55 (15), 6154 -6159, 2007.

L. Rist, A. Mueller, C. Barthel, B. Snijders, M. Jansen, A.P. Simoes-Wust, M. Huber, I. Kummeling, U. von Mandach, H. Steinhart and C. Thijs. 2007. Influence of organic diet on the amount of conjugated linoleic acids in breast milk of lactating women in the Netherlands. British Journal of Nutrition. April 2007, Volume 97, Issue 4, Pages 735-743

M.L. Amodio, G. Colelli, J.K. Hasey, A.A. Kader. 2007. A comparative study of composition and postharvest performance of organically and conventionally grown kiwifruits. Journal of the Science of Food and Agriculture. Page 8. March 27.

Pesticide Residues:

Baker, BP, CM Benbrook, E Groth III and KL Benbrook. 2002. Pesticide residues in conventional, integrated pest management (IPM)-grown and organic foods: insights from three US data sets. Food Additives and Contaminants 19 (5): 427–446.

Correlation Chart for NRCS Conservation Practices and NOP Requirements

Examples from California NRCS Field Office Technical Guide and USDA's National Organic Program (NOP) Regulation

Production Practice	NOP Final Rule 7 CFR Part 205, Section and Practice Standard	Wording in NOP Final Rule (Key phrases from the National Organic Program regulation)	NRCS Mission Goals	NRCS Practice Standard (Name and Number)	Definition/Purposes (Highlights from the practice standards)
Natural Resource Conservation	205.200 General	Production practices implemented in accordance with this subpart must maintain or improve the natural resources of the operation, including soil and water quality.	Productive Soils; Clean & Abundant Water; Healthy Plant & Animal Communities		
Natural Resource Conservation	205.2 Terms defined: "Natural Resources of the Operation"	"The physical, hydrological, and biological features of a production operation, including soil, water, wetlands, woodlands, and wildlife."	Productive Soils; Clean & Abundant Water; Healthy Plant & Animal Communities		
Conservation of Biodiversity	205.2 Terms defined: "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."	Productive Soils; Clean & Abundant Water; Healthy Plant & Animal Communities		
Cover Cropping	205.203 Soil Fertility and Plant Nutrient Management	The producer must select and implement tillage and cultivation practices that maintain or improve the physical, chemical and biological condition of the soil; manage soil fertility through rotations, cover crops… maintain or improve soil organic matter.	Productive Soils; Clean & Abundant Water	340 Cover Crop	Seasonal cover to reduce erosion, increase soil organic matter, manage excess nutrients, promote biological nitrogen fixation, increase biodiversity, suppress weeds, manage soil moisture.
Crop Rotation (annual crops)	205.2 Terms defined:	"The practice of alternating annual crops on a specific field in a planned pattern	Productive Soils; Clean & Abundant	328 Conservation Crop	Growing crops in sequence on the same field to reduce erosion,

Production Practice	NOP Final Rule 7 CFR Part 205, Section and Practice Standard	Wording in NOP Final Rule (Key phrases from the National Organic Program regulation)	NRCS Mission Goals	NRCS Practice Standard (Name and Number)	Definition/Purposes (Highlights from the practice standards)
Crop Rotation (annual crops, cont'd)	"Crop Rotation"	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…"	Water; Healthy Plant & Animal Communities	Rotation	maintain or improve soil organic matter content, manage plant nutrients, improve water use efficiency, manage plant pests (weeds, insects, and diseases), provide food for livestock, and food and cover for wildlife.
	205.203(b) Soil fertility and crop nutrient practice standard	The producer must manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials.		603 Herbaceous wind barriers	Vegetation established in rows or narrow strips in the field across the prevailing wind direction to reduce soil erosion, protect growing crops, increase plant available moisture, and provide food and cover for wildlife.
	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.			
	205.206 Crop pest, weed, and disease management practice standard.	The producer must use management practices to prevent crop pests, weeds, and diseases including but not limited to: (1) Crop rotation…			
Crop Rotation (perennial crops)	205.2 Terms defined: "Crop Rotation"	"…Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to	Productive Soils; Clean & Abundant Water; Healthy	311 Alley cropping Related Practice	Trees or shrubs planted…with crops, or forages produced in the alleys between the rows of

Production Practice	NOP Final Rule 7 CFR Part 205, Section and Practice Standard	Wording in NOP Final Rule (Key phrases from the National Organic Program regulation)	NRCS Mission Goals	NRCS Practice Standard (Name and Number)	Definition/Purposes (Highlights from the practice standards)
Crop Rotation (perennial crops, cont'd)	205.203 Soil fertility… (see above) 205.205 Crop Rotation practice standard 205.206 Crop pest, weed, and disease management practice standard.	introduce biological diversity in lieu of crop rotation." The producer must … minimize soil erosion. The producer must: (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. (a) The producer must use management practices to prevent crop pests, weeds, and diseases including but not limited to: (1) Crop rotation… (b)(2) Development of habitat for natural enemies of pests.	Plant & Animal Communities	Standards: 386 Field Border 380 Windbreak/ Shelterbelt Establishment 422 Hedgerow planting 704 Agroforestry Planting	woody plants to improve or optimize the economic viability of the operation… to reduce excess surface water runoff and erosion, improve utilization and recycling of soil nutrients …create habitat for biological pest management, improve crop diversity, quantity, quality and economic returns, enhance aesthetics, increase net carbon storage in the vegetation and soil.
Erosion Control	205.203 Soil fertility and crop nutrient management practice standard 205.205 Crop Rotation practice standard	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. The producer must … provide erosion control.	Productive Soils	330 Contour Farming 331Contour Orchard and other fruit areas 332 Contour Buffer strips Related Practice Standards: 393 Filter Strip 329 A, B, C and 344 Residue Management 344 Residue Management, 350	Tillage, planting, and other farming operations performed on or near the contour of the field slope to reduce erosion and transport of sediment and other water-borne contaminants downslope, reduce soil and water loss, to better control and use water, and to operate farm equipment more easily, and enhance wildlife habitat. Related Program regulation (continued from previous column: 586 Stripcropping, 599 A and C

Production Practice	NOP Final Rule 7 CFR Part 205, Section and Practice Standard	Wording in NOP Final Rule (Key phrases from the National Organic Program regulation)	NRCS Mission Goals	NRCS Practice Standard (Name and Number)	Definition/Purposes (Highlights from the practice standards)
Erosion Control (cont'd)				Sediment Basin, 386 Field Border, 412 Grassed Waterway, 423 Hillside Ditch, 342 Critical Area Planting, 390 Riparian Herbaceous cover, 484 Mulching, 557 Row Arrangement, 570 Runoff Management (continued in next column)	Cross Wind Ridges, 612 Tree and shrub planting, 601 Vegetative barrier, 603 Herbaceous wind barriers, 741 Vegetative buffer strip, and many others.
Protection of Water Quality	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.	Clean & Abundant Water		
Protection of Air Quality	205.203(e)(3)	The producer must not use: Burning as a means of disposal for crop residues produced on the operation:	Clean Air; Productive Soils	660 Tree/shrub pruning/smoke reduction	

Production Practice	NOP Final Rule 7 CFR Part 205, Section and Practice Standard	Wording in NOP Final Rule (Key phrases from the National Organic Program regulation)	NRCS Mission Goals	NRCS Practice Standard (Name and Number)	Definition/Purposes (Highlights from the practice standards)
Protection of Air Quality (cont'd)	205.203(e)(3)	Except, that, burning may be used to suppress the spread of disease or to stimulate seed germination.			
Nutrient Management and Fertilization	205.203(c) Soil fertility and crop nutrient management practice standard	The producer must 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 plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.	Productive Soils; Clean & Abundant Water	590 Nutrient Management 633 Waste Utilization Related Practice Standards: 484 Mulching 317 Composting Facility	…supply nutrients for plant production to properly utilize manure or organic by-products as a plant nutrient source, minimize agricultural non-point source pollution, maintain or improve the physical, chemical and biological condition of soil. Using agricultural wastes such as manure…and other organic residues; to protect water quality, provide fertility for crop, forage, fiber…and forest products, improve or maintain soil structure…
Pest Management	205.206 Crop Pest, weed, and disease management practice standard.	The producer must use management practices to prevent crop pests, weeds, and diseases including but not limited to: (1) crop rotation and soil and crop nutrient management… (2) sanitation measures to remove disease vectors, weed seeds, and habitat for pest organisms, (3) 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…	Healthy Plant & Animal Communities	595 Pest Management Related Practice Standards: 422 Hedgerow planting 380 Windbreak	Manage agricultural pest infestations (including weeds, insects, and diseases) to reduce adverse effects on plant growth, crop production, and environmental resources. To develop a pest management program that is both consistent with selected crop production goals and environmentally acceptable.

Production Practice	NOP Final Rule 7 CFR Part 205, Section and Practice Standard	Wording in NOP Final Rule (Key phrases from the National Organic Program regulation)	NRCS Mission Goals	NRCS Practice Standard (Name and Number)	Definition/Purposes (Highlights from the practice standards)
Protection of Natural Areas	205.207 Wild crop harvesting practice standard	(b) A wild crop must be harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the wild crop.	Healthy Plant & Animal Communities		
Manure Management	205.203(c) Soil fertility (Composting of raw manure) 205.239(c) Livestock living conditions	Raw animal manure…must be composted unless it is (i) applied to land used for a crop not intended for human consumption; (ii) incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with soil…(iii) …90 days prior to the harvest of a product whose edible portion does not have direct contact… The producer of an organic livestock operation must manage manure in such a manner that it does not con-tribute to contamination of crops, soil, or water by plant nutrients, heavy metals or pathogenic organ-isms and optimizes recycling of nutrients.	Productive Soils; Clean & Abundant Water	634 Manure Transfer 635 Wastewater Treatment Strip Related Practice Standards: 575 Animal trails and walkways	Manure conveyance system …to transfer animal manure (bedding material, spilled feed, process and wash water, and other residues… to agricultural land for final utilization. A treatment component of an agricultural waste management system consisting of a strip or area of herbaceous vegetation to improve water quality by reducing loading of nutrients, organics, pathogens, and other contaminants associated with animal manure and other wastes…
Livestock Operations	205.236 Origin of livestock 205.237 Livestock feed	Livestock must be organic from the last third of gestation; dairy for 12 months; poultry from second day of life. Feed must be 100% organic. Ruminants must have access to pasture. Approved synthetic vitamin and mineral supplements are allowed. Feeding animal by-products, urea and manure is	Healthy Plant & Animal Communities; Working Farms & Ranches	721 Rangeland fertilization 210 Hayland Management 512 Pasture and Hay Planting Related Practice Standards:	Establish /prolong life of desirable plant species or plant cover for erosion control, wildlife habitat, to maintain or improve the quality and quantity of forage, protect the soil and reduce water loss. Establish adapted and compatible species, improve or maintain

Production Practice	NOP Final Rule 7 CFR Part 205, Section and Practice Standard	Wording in NOP Final Rule (Key phrases from the National Organic Program regulation)	NRCS Mission Goals	NRCS Practice Standard (Name and Number)	Definition/Purposes (Highlights from the practice standards)
Livestock Operations (cont'd)	205.238 Livestock health care practice standard	prohibited Preventative Health Care Selection of species…suitability for site-specific conditions and resistance to prevalent diseases and parasites. Provision of feed rations sufficient to meet nutritional requirements…appropriate housing. Pasture conditions…minimize the occurrence and spread of diseases and parasites. …allow exercise and freedom of movement…reduction of stress. Performance of physical alterations as needed for the animal's welfare. Administration of vaccines and veterinary biologics are allowed.		528: Prescribed grazing 548 Grazing land mechanical treatment 550 Range Planting 614 Watering Facility 511 Forage Harvest Management	livestock nutrition and/or health, extend the length of the grazing season
	205.239 Livestock living conditions	Must accommodate the health and natural behavior of animals: Access to outdoors, shade, shelter, sun, fresh air… Pasture for ruminants. Appropriate clean, dry bedding.			
Prescribed Grazing	205.239(a) Livestock living conditions	(a) The producer of an organic livestock operation must establish and maintain livestock living conditions which accommodate the health and natural behavior of animals, including: (1) Access to the outdoors, shade,	Clean & Abundant Water; Healthy Plant & Animal Communities	528: Prescribed grazing	

Production Practice	NOP Final Rule 7 CFR Part 205, Section and Practice Standard	Wording in NOP Final Rule (Key phrases from the National Organic Program regulation)	NRCS Mission Goals	NRCS Practice Standard (Name and Number)	Definition/Purposes (Highlights from the practice standards)
Prescribed Grazing (cont'd)	205.2 Terms defined: "Pasture"	shelter, exercise areas, fresh air, and direct sunlight suitable to the species, its stage of production, the climate, and the environment; (2) Access to pasture for ruminants; "Land used for livestock grazing that is managed to provide feed value and maintain or improve soil, water, and vegetative resources."			
Protection of Soil and Water Quality	205.239(b) Livestock living conditions	(b) The producer of an organic livestock operation may provide temporary confinement for an animal because of: (1) Inclement weather; (2) The animal's stage of production; (3) Conditions under which the health, safety, or well being of the animal could be jeopardized; or (4) Risk to soil or water quality.	Productive Soils; Clean & Abundant Water; Healthy Plant & Animal Communities; Working Farms & Ranches		

Prepared by Ann Baier and Rex Dufour, Program Specialists, National Center for Appropriate Technology, and Jim Riddle, Organic Outreach Coordinator, University of Minnesota. July 31, 2008.

Provisional Sampling of Individuals and Organizations with Organic Technical Assistance Expertise

National

National Center for Appropriate Technology
Jeff Schahczenski Rex Dufour
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jeffs@ncat.org rexd.@ncat.org
NCAT staff has developed dozens of organic workshops specifically designed for farmers, CES and NRCS staff, and written over 100 publications specific to organics which are available upon request by phone or via the web. NCAT's ATTRA project is one of the prime national sources for farmers seeking information about organic production and marketing. ATTRA has toll-free lines staffed 12 hours per day in both English and Spanish to respond to questions from farmers and agricultural professionals about any aspect of organic production. Staff available for technical assistance in organics include 12 who have passed the IOIA Organic Crop or Livestock Certification courses, have on-farm organic production experience, and/or experience research and writing about organic agriculture.

Mid-Atlantic

Pennsylvania Association for Sustainable Agriculture
Brian Snyder
814-349-9856
Brian@pasafarming.org
Through its Farm Based Education program PASA promotes and demonstrates sustainable and organic farming methods. The program supports others seeking to initiate training and awareness-raising in the area by providing funding, technical support and event coordination/ publicity where needed.

Midwest

Center for Rural Affairs
Martin Kleinschmit, Rural Opportunities and Stewardship Program Sustainable Agriculture Specialist
402-254-6893
MartinK@cfra.org
Experience training NRCS staff on sustainable and organic agriculture.

The Land Connection
Terra Brockman
847-338-1861
terra@mtco.com
The Land Connection delivers workshops and field days, sometimes in conjunction with other organizations, on subjects ranging from organic transition to direct marketing.

Midwest Organic and Sustainable Education Service, Inc.
Contact: Faye Jones
608-872-2164
faye@mosesorganic.org
Produces a comprehensive organic certification guidebook, educational resources and fact sheets for transitional farmers; holds farm field days and workshops; disseminates information through newsletters; holds annual conference with workshop and training content. MOSES has partnered with SARE and University of Wisconsin extension on long term educational activities. Also runs an organic transition telephone advice line and organic farmer mentoring projects.

Practical Farmers of Iowa
Teresa Opheim
515-232-5661
teresa@practicalfarmers.org
Partner with educators and other agriculture professionals in the delivery of workshops and training opportunities at their annual conference, field days and district events. PFI also disseminates news, research and information to its members. PFI members carry out small scale trials to meet annual research objectives on subjects including; cover cropping comparisons; field efficiency; and manure analysis.

Northeast

Northeast Organic Dairy Producers Alliance (NODPA)
Ed Maltby
413-772-0444
ednodpa@comcast.net
NODPA is the largest grassroots organic dairy farmer organization in the country dedicated to peer mentoring and providing professional support and advice on production methods to organic dairy farmers. NODPA works closely with its sister organizations in the Western (WODPA), and the Midwest (MODPA) under the umbrella of the Federation Of Organic Dairy Farmers, (FOOD Farmers). NODPA organizes an annual meeting and Field Days Event; produces and distributes 3,000 copies of the NODPA News bi-monthly newsletter; moderates an organic dairy electronic discussion group with over 950 subscribing members (odairy-subscribe@yahooogroups.com); updates and maintains a web site that includes educational information on animal health, grazing management, industry news, certification, classifieds, calendar events, and a business directory (www.organicmilk.org, www.nodpa.com).

Northeast Organic Farming Association of Vermont (NOFA-VT)
David Rogers
802-434-4122
dave@nofavt.org
NOFA-VT Dairy & Livestock Technical Assistance Program provides; 1. Consulting, advising and technical assistance; 2. Training, advanced technical workshops and informational meetings, and; 3. Web based support, technical assistance and materials - to commercial farmers, part-time farmers, landowners, prospective farmers and agricultural service providers. NOFA-VT also

facilitate the connection of farmers and apprentices through their Apprentice and Willing Worker program. In addition NOFA VT also works to develop agricultural awareness in the wider community by building ongoing relationships between local communities, their farms and schools.

NOFA-VT is a technical service provider of the Vermont Farm Viability Enhancement Program, as are the Intervale Foundation, University of Vermont Extension, and Working Landscapes. As a provider, NOFA-VT is able to offer on-farm technical assistance in production and business planning to organic and transitioning vegetable, grain, dairy and livestock farms in Vermont.

Vermont Pasture Network
Rachel Gilker
802-656-3834
rgilker@uvm.edu
Vermont Pasture Network (VPN) - Pasture Program provides technical assistance in many and grazing planning, as well as research in support of grass-based livestock farming to farmers (both organic and non-organic) throughout Vermont and in the northeast region. VPN has partnered with NRCS to provide technical assistance and grazing plans for farmers involved in the NRCS cost share program. VPN has also worked with National Organic Farming Association of Vermont (NOFA-VT) to provide technical assistance to improve on farm nutrient balances, to reduce nutrient pollution.

South

Federation of Southern Cooperatives
Ralph Paige
404-765-0991
fsc@mindspring.com
Sustainable Agriculture project aims to help farmers develop successful family farm businesses through; Developing agriculture cooperatives, financial analysis of farms, alternative crop analysis. Further project areas include; technical assistance in setting individual farm goals; technical assistance in farm management; assistance in debt restructuring.

Georgia Organics
Contact: Alice Rolls
alice@georgiaorganics.org
678-702-0400
Annual conference provides an oppurtunity for 30+ workshops on many areas including speciality crops/ marketing / CSAs. GO have formed a Working Group to address the challenges and oppurtunities of reducing pesticide use in three regionally grown crops - which will feed into workshops and field demonstrations to educate growers and trainers alike. Other projects include; farm mentoring; developing a curriculum for sustainable and organic farmers to be used at all levels of education; and, producing a local food guide to assist growers in connecting with consumers.

Rural Advancement Foundation International – USA
Benny Bunting
919-542-1396
advocate@greenvillenc.com
RAFI's Farm Sustainability Program serves small and mid-scale family farmers by assisting them in transitioning to more sustainable farming operations and increasing their chances for success. The program assists individual farmers who are facing financial crisis and provides training and publications for farmers and advocates on significant agricultural issues.

Southern Sustainable Agriculture Working Group (SSAWG)
Jim Lukens
479-422-5831
jlukens@ssawg.org
Serves the 13 USDA Southern Region states. Annual conference for educational sessions and networking opportunities. Also have an education program with educational courses for organic producers and produce training materials (DVD/CD) utilized by growers, NGOs and service providers. Organized an experienced organic farmers network, that is utilized to help those whose needs and experience are beyond current research scope.

West

California Certified Organic Farmers (CCOF)
Claudia Reid
916-317-6479
Claudia@ccof.org
Flagship 'Going Organic' project provides a network of support for farmers interested in transitioning to organic by addressing systemic, economic, and technical barriers to organic conversion. This is administered through a separate entity to the CCOF Certification Services.

Colorado Organic Producers Association
Jim Dyer
970-588-2292
jadyer@frontier.net
Work on outreach and dissemination of organic production and marketing information utilizing a website, newsletters and an annual three day conference in partnership with Colorado State University.

Hawaii Organic Farmers Association
Contact: Susan Sanford
808-969-7789
hofa@hawaiiorganicfarmers.org
Although a Certification provider - In conjunction with Hawaii State Dept of Ag HOFA released an Organic Products Directory. This resource documents Hawaii's organic farmers and their crops, as well as a multitude of information sources valuable to farmers such as market information, seed sources, agriculture supply stores, etc.

Marin Organic
Helge Hellberg
415-663-9667
helge@marinorganic.org
Run 'on the farm' workshops in conjunction with UC Cooperative Extension Farm Advisors for organic and sustainable practices. Topics cover; production; marketing strategy; soil conditioning. The focus is also region specific, for example reflecting the good conditions for potential high return caneberries (raspberry and blackberry). Works with the Marin County Agriculture Commissioner's Office to connect producers with a source for certification advice.

Rural Roots – Community Food Systems Association
Colette DePhelps
208-883-3462
Colette@ruralroots.org
Cultivating Success, its sustainable small farms education program, offers a series of courses that provide beginning and existing farmers with the planning and decision-making tools, production skills and support necessary to develop a sustainable small acreage farm. Courses are offered in various locations in Washington and Idaho, to audiences that include academic students, new and experienced farmers, immigrant farmers, and agricultural professionals.

Southwest Marketing Network (SWMN)
Jim Dyer
970-588-2292
jadyer@frontier.net
Serving AZ, CO, NM, and UT; SWMN has approx 3500 on mailing list and works on outreach and dissemination of production and marketing information, encompassing organic. Has a website, newsletter, and holds an annual conference to reach producers.

Summary of State EQIP Organic Conversion Practices

Prepared by Organic Trade Association June 15, 2007[18]

State	Practice Code	Practice Title	Payment Amount	Contract Restrictions	Contract Length (years)	Total Eligibility (years)
Indiana	328	Conservation Cropping Rotation	$50/acre	$5000	1	3
Iowa	328	Conservation Cropping Rotation	$10/acre		1	3
Maryland	789	Transition to Organic	$200/acre	75%	1	3
Massachusetts	789	Transition to Organic TO1: Converting, but not to be certified	$65/acre	Flat rate 100%		
	789	Transition to Organic TO2: Will be certified at end of transition	$200/acre	Flat Rate 100%		
Minnesota	328	Conservation Cropping Rotation	$45/acre		1	3
Missouri	328	Conservation Cropping Rotation	$40/acre		1	3
Montana	328b	Conservation Cropping Rotation	$35/acre cropland	100 acres	1	3
			$3.5/acre livestock	1,000 acres	1	3
Nebraska	328	Conservation Cropping Rotation	$50/acre	160 acres	1	3
New Hampshire	789	Transition to Organic Production	$25/AU** $30/Ac*		1	3
New Jersey	328	Conservation Cropping Rotation	$10/acre		1	3
Rhode Island	789	Transition to Organic Production				
Wisconsin	328	Conservation Cropping Rotation	$50/acre	40 acres	1	3
Vermont	789	Transition to Organic Production				

Abbreviations used: *AC or Ac. Means acreage **AU means Animal Unit

[18] This chart may contain outdated information as it was excerpted from a document entitled "Prioritizing EQIP Programs for Organic Conversion," prepared by the Organic Trade Association and published on June 15, 2007.