

Organic System Plans: Field and Row Crops and Pasture and Range Systems



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Introduction. If you want to certify your farm as organic, you will need to complete an application form. This guide was developed to assist you in completing that application by explaining just what information certifiers want and why it is required.

Our example. Some of the best tools for teaching are practical examples. That is what we've provided in this guide. Our example is a model Midwestern crop farm. It has a number of features, both typical and not, that organic and transitioning farms might have. These include:

- ◆ Split production (both organic and conventional)
- ◆ Parallel production (both organic and conventional production of the same crop)
- ◆ Compost production
- ◆ Off-farm manure sourcing
- ◆ Use of restricted inputs
- ◆ Prior land-use issues
- ◆ Adjoining and noncontiguous land-use issues
- ◆ Previous certification history
- ◆ Contract production of processing crops
- ◆ A noncertified livestock component
- ◆ Dual-use equipment
- ◆ Custom field operations

The application form we have chosen is based on a recommended template that the National Organic Standards Board (NOSB) endorses because of its thoroughness and adherence to the National Organic Regulations. There is a good chance that the application form your certifier gives you will resemble this one.

Why are applications for certification so long and detailed? An application for certification serves two purposes. First, it provides basic contact and background information that the certifier needs to assess your compliance with the Organic Foods Production Act and the USDA Organic Regulations. Second, it meets the specific requirement of the National Organic Regulations for an organic system plan, as specified in §205.201. Your organic system plan explains how you plan to farm in compliance with the Organic Regulations. When you and your certifier agree on the details, it becomes a contract and road map that you are expected to follow.

Will I have to complete such a long form every year? Not necessarily. Under most circumstances, you will only need to complete a lengthy, detailed application for your first year of production. Thereafter, most certifiers allow you to submit a much shorter update form to list any planned changes and to bring your field history record up to date.

In the example we use for this guide, we chose a farmer who is applying for certification through a different certification agency and is required to complete a full application form. Doing so allows us to hint at what a good organic farm might look like after several years.

Navigating this guide. The guide provides an example of what a good application and system plan might look like. Notes are provided wherever supplementary information is appropriate. There will also be references to ATTRA publications and other helpful materials.

The application document has four main sections:

- a) Farm and facility maps page 6
- b) Field history sheet page 10
- c) Main application form page 12
- d) Supplementary documents page 57

This is also consistent with the way many organic applications are arranged.

What about intensive horticulture? Livestock? This guide features field-scale crop production. However, many organic farms are small operations that produce a mix of horticultural crops. Farms often have greenhouses, too. Even though these producers complete the same form as field crop producers, the details are often different. To address this difference, we've produced *Organic System Plans: Market Farms and Greenhouses*. For organic livestock enterprises, we developed a guide titled *Organic System Plans: Livestock Production*.

Need further background on organic farming and the Regulations? To read the National Organic Regulations, see the National Organic Program Web site at www.ams.usda.gov/nop/NOP/NOPhome.html. To understand what organic production entails as far as strategies, techniques, and basic system design, ask for a copy of ATTRA's *Organic Crop Production Overview*. For information on organic certification and background on organic regulation, request ATTRA's *Organic Farm Certification and the National Organic Program*. For guides on transitioning your operation to organic productions, ask for the *Organic Crops Workbook* and the *Organic Livestock Workbook*. To aid in getting ready for a key step in the certification process, ask for ATTRA's *Preparing for an Organic Inspection: Steps and Checklists* and *Organic Certification Process*. ATTRA publications can be found online at www.attra.ncat.org. Print copies can be requested by calling 1-800-346-9140.

More on our example farm. Cold Comfort Farms is owned and operated by Earnest Gardener and his family, a third-generation farmer on this land. Previously, his operation was dedicated to conventional cash crops and beef production. He transitioned about half of his operation to organic production in 2000.

Currently, the organic operation produces row crops, small grains and alfalfa hay. Food-grade organic soybeans and commercial canning vegetables are grown under contract to different organic processors. The farm also produces lamb on a small scale for direct sale. It is promoted as natural and pasture-raised, but is not certified organic. The conventional acreage on Cold Comfort Farms produces corn and soybeans much as it has since the 1980s. There is no plan at present to convert these fields to organic.

Most of the farm equipment is used for both organic and conventional production. Some field operations are done using custom services. Some of the crop storage may also alternate between organic and conventional use.

The farm has a single homestead site and all the original acreage is adjoining. However, in late 2005 Gardener arranged to rent a single large field from a neighbor. While the field has not previously been certified organic, it has been in low-use, permanent pasture for several years, with no prohibited fertilizers or pesticides applied to it.

What the organic regulations say about organic system plans

§ 205.201 Organic production and handling system plan.

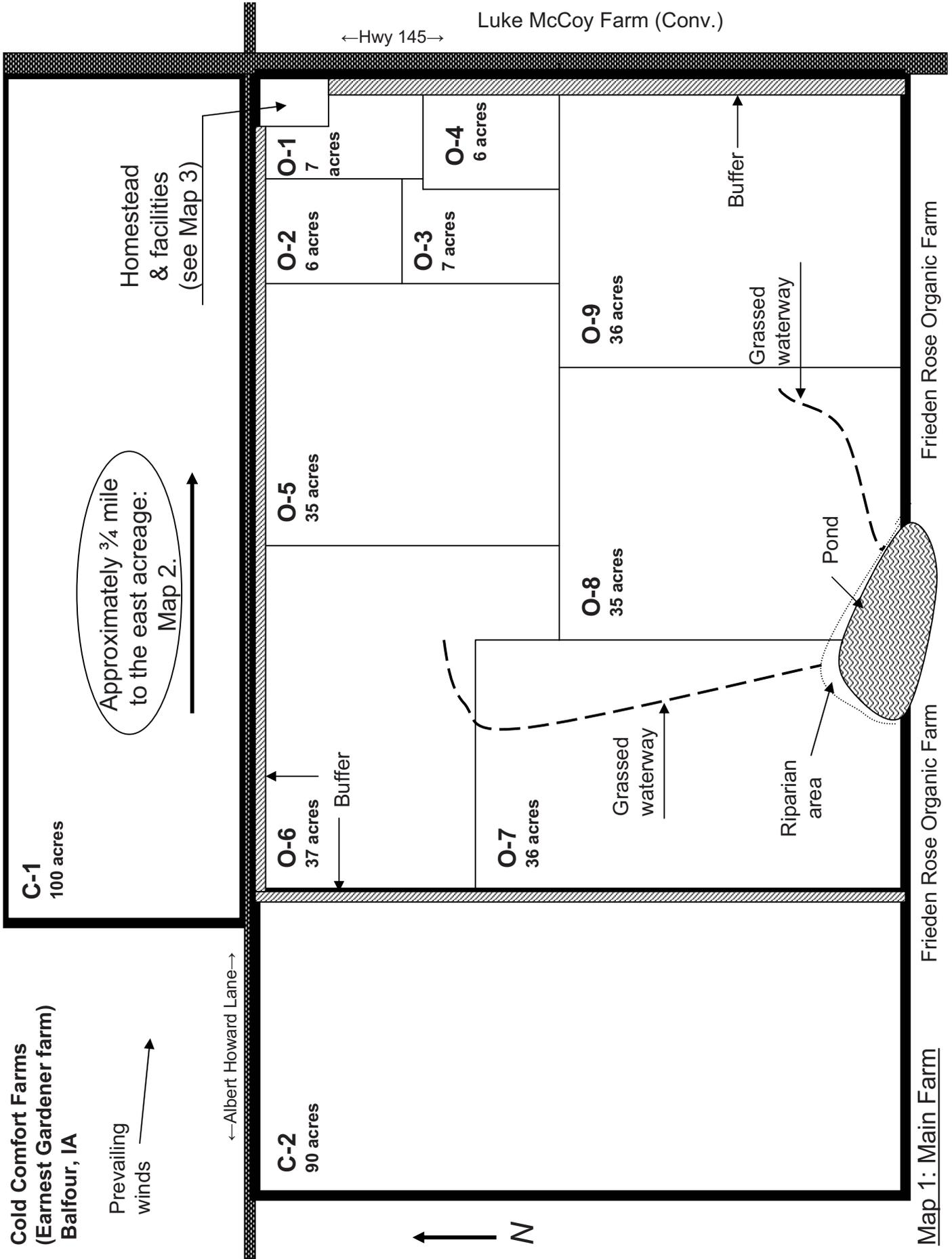
(a) The producer or handler of a production or handling operation, except as exempt or excluded under § 205.101, intending to sell, label, or represent agricultural products as “100 percent organic,” “organic,” or “made with organic (specified ingredients or food group(s))” must develop an organic production or handling system plan that is agreed to by the producer or handler and an accredited certifying agent. An organic system plan must meet the requirements set forth in this section for organic production or handling. An organic production or handling system plan must include:

- (1) A description of practices and procedures to be performed and maintained, including the frequency with which they will be performed;
 - (2) A list of each substance to be used as a production or handling input, indicating its composition, source, location(s) where it will be used, and documentation of commercial availability, as applicable;
 - (3) A description of the monitoring practices and procedures to be performed and maintained, including the frequency with which they will be performed, to verify that the plan is effectively implemented;
 - (4) A description of the recordkeeping system implemented to comply with the [recordkeeping] requirements established in § 205.103 [of the National Organic Regulations];
 - (5) A description of the management practices and physical barriers established to prevent commingling of organic and nonorganic products on a split operation and to prevent contact of organic production and handling operations and products with prohibited substances; and
 - (6) Additional information deemed necessary by the certifying agent to evaluate compliance with the regulations.
- (b) A producer may substitute a plan prepared to meet the requirements of another Federal, State, or local government regulatory program for the organic system plan: Provided, That, the submitted plan meets all the requirements of this subpart.

Cold Comfort Farms
(Earnest Gardener farm)
Balfour, IA

Prevailing winds →

← Albert Howard Lane →



Approximately 3/4 mile
to the east acreage:
Map 2.

Frieden Rose Organic Farm

Frieden Rose Organic Farm

Map 1: Main Farm

Map notes

Are field maps required? There is no provision in the Organic Regulations specifically requiring field maps. However, maps are the chief means for demonstrating that you meet the requirement of §205.202(c), stating that organic fields must have “distinct, defined boundaries and buffer zones...” Furthermore, maps are customary and most certifiers will expect you to provide one.

Essential features of a good field map include:

- ◆ Locations of fields with numbers or names
- ◆ Locations of roads and utility rights-of-way
- ◆ Hydrological features such as ponds, streams and wells
- ◆ Other natural features, such as woodland
- ◆ Locations of buildings and other structures
- ◆ Adjoining land use
- ◆ Orientation, such as an arrow indicating compass directions
- ◆ Prevailing wind direction during growing season
- ◆ Locations of field buffers. Buffers are strips of land that separate organic fields from conventional fields or other sources of contamination. No prohibited substances may be used in a buffer zone, however, any crops grown in there may not be sold as organic.

Nonorganic acreage? Because Gardener’s conventional production adjoins his organic fields, and storage and equipment are dual use, his map also includes his nonorganic acreage.

Field names or numbers. Choose names or a numbering system that is clear and not confusing either to yourself, your farm staff or the certifier. A combination of a letter with a number, as Gardener has done, is recommended. Since he recently added a new organic field, rented from a farmer down the road, his field numbering system easily accommodates it. It is important that field names or numbers be consistent with those used on the field history sheets and elsewhere throughout the application.

Is a separate facility map necessary? Since Gardener’s operation is split—having both organic and conventional production—his map set includes a sketch of his farm facilities. This sketch helps demonstrate how he keeps from mixing organic and conventional crops and where he stores prohibited chemicals. A detailed facility sketch would be optional for this farm if all production were organic.

Keep it simple. Maps must be sufficiently accurate to reflect the circumstances on the ground. They do not need to be elaborate. In fact, artistry and extraneous details can be confusing and are discouraged. While Gardener’s maps are computer-aided drawings, free-hand drawing is acceptable as long as it is clear. It is also common for applicants to use Farm Service Agency (FSA) aerial photos, with details added using a pen or pencil.

**Cold Comfort Farms
(Earnest Gardener farm)
Balfour, IA**

Prevailing winds →

←Albert Howard Lane→

←

Approximately 3/4 mile
to the main farm:
Maps 1 & 3.

→



Pepino Garza
Farm
(conventional)

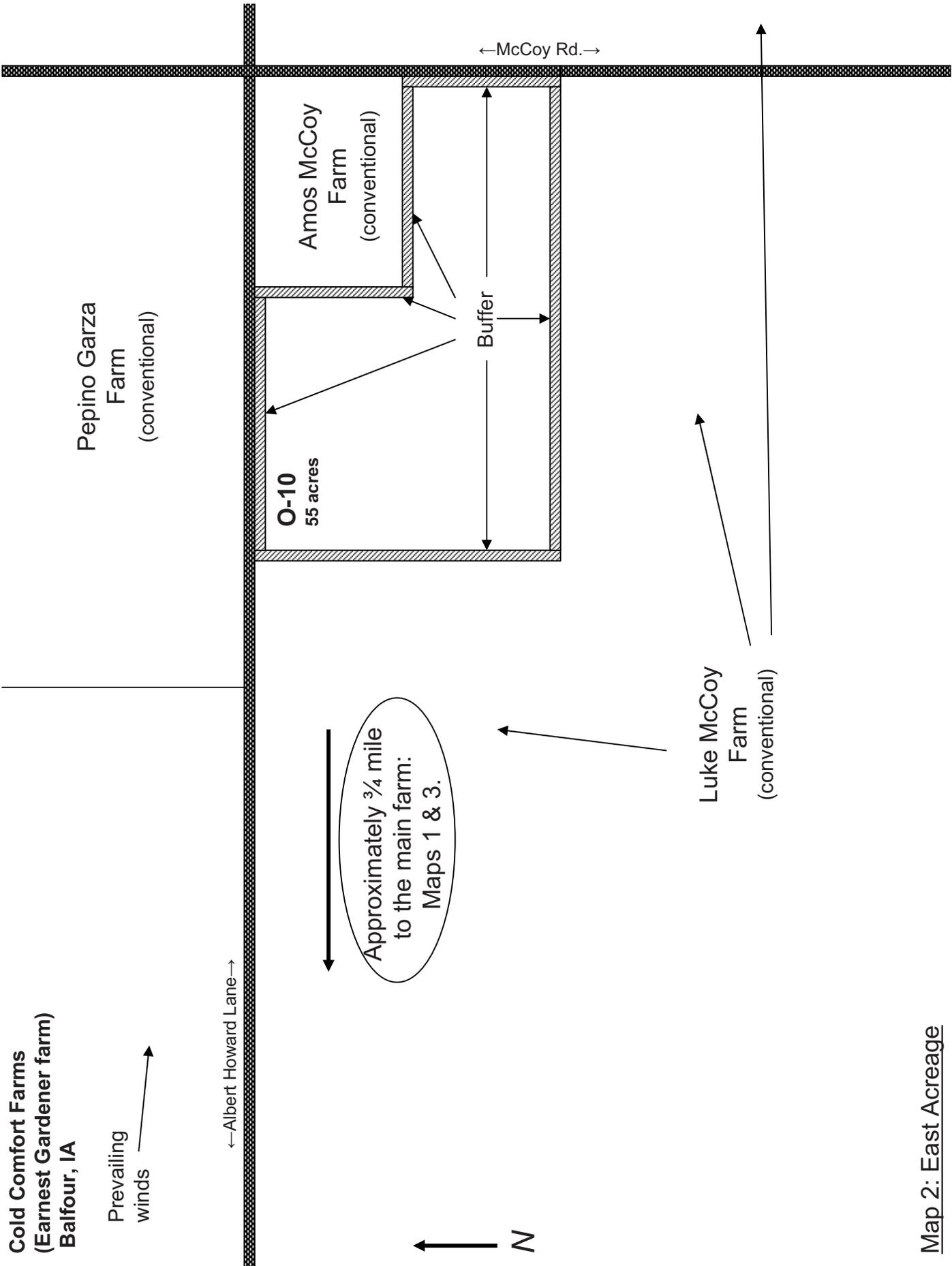
Amos McCoy
Farm
(conventional)

O-10
55 acres

Buffer

←McCoy Rd.→

Luke McCoy
Farm
(conventional)



Map 2: East Acreage

**Cold Comfort Farms
(Earnest Gardener farm)
Balfour, IA**

Prevailing winds →

←Albert Howard Lane→

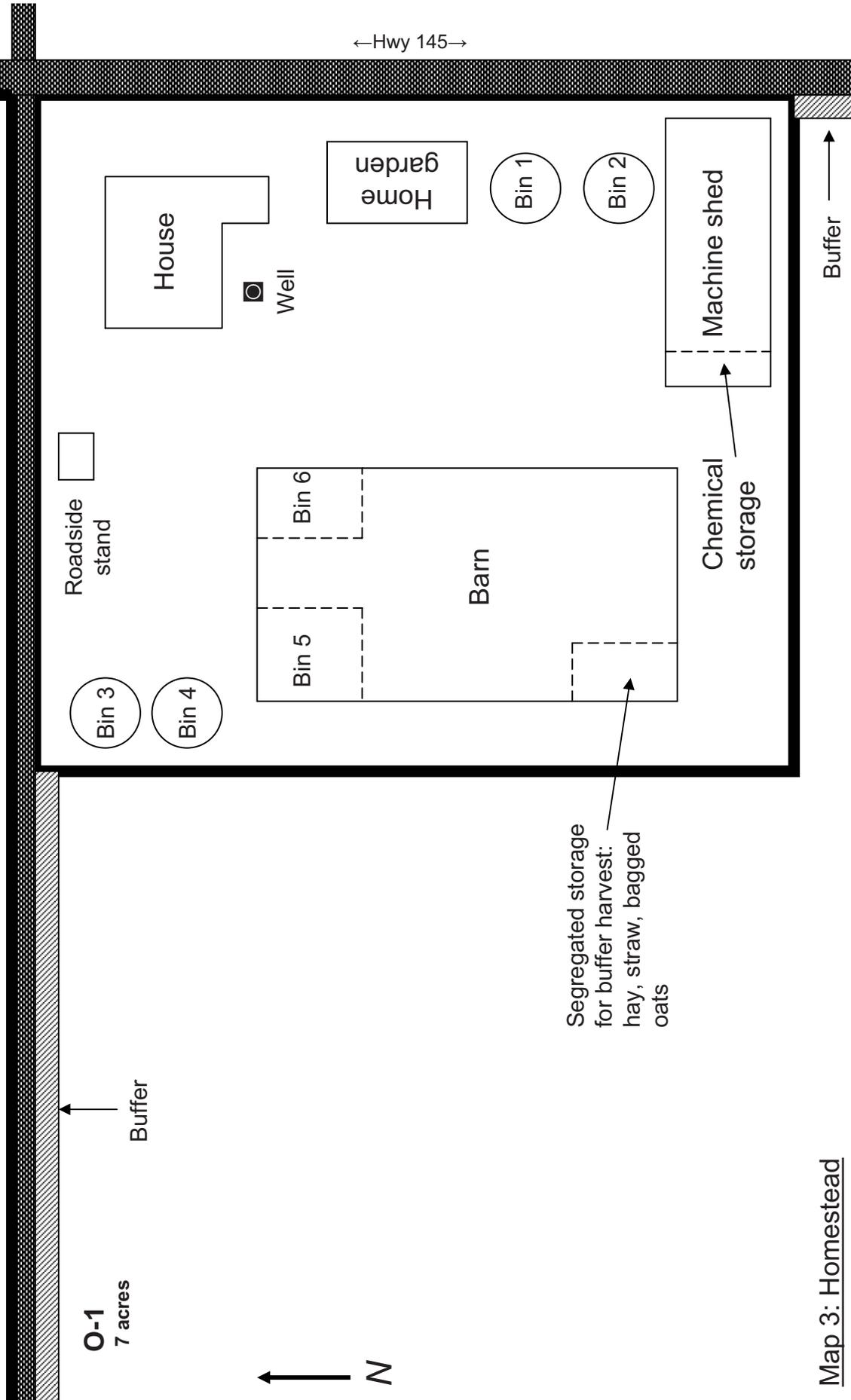
**O-1
7 acres**

Buffer

**C-1
100 acres**

←Hwy 145→

Buffer →



Segregated storage for buffer harvest: hay, straw, bagged oats

Chemical storage

Map 3: Homestead

FIELD HISTORY SHEET

Producer name: Earnest Gardener

Code: O = organic; T = in transition/conversion to organic; C = conventional

Code	Field No.	ACRES/ha.	Year 2006		Year 2005		Year 2004		Year 2003	
			Crop	Inputs	Crop	Inputs	Crop	Inputs	Crop	Inputs
C	C-1	100 a.	Corn	Atrazine, 2,4-D Captan, Poncho, Urea, DAP, KCl	Soybeans	Round-up, Cruiser, Apron -Maxx, Ag-lime, Soybean inoculant 10-20-10	Corn	Atrazine, 2,4-D, Captan, Poncho, Urea, DAP, KCl	Soybeans	Round-up, Treflan, Cruiser, Apron- Maxx, Soybean inoculant 10-20-10
C	C-2	90 a.	Soybeans	Round-up, Cruiser-Maxx, Soybean inoculant 10-20-10	Corn	Atrazine, 2,4-D, Captan, Poncho, Ag-lime, Urea, DAP, KCl	Soybeans	Round-up, Treflan, Cruiser, Apron- Maxx, Soybean inoculant, 10-20-10	Corn	Atrazine, 2,4-D, Captan, Poncho, Urea, DAP, KCl
O	O-1	7 a.	Oats/ pasture	Ag-lime Legume inoculants	Pumpkins	Compost, Dipel 2X, Pyganic	Pasture	None	Pasture	None
O	O-2	6 a.	Pasture	Ag-lime	Oats/ pasture	Legume inoculants	Pumpkins	Compost Pyganic Bordeaux mix	Pasture	None
O	O-3	7 a.	Pasture	Ag-lime	Pasture	None	Oats/ pasture	Legume inoculants	Pumpkins	Compost, Pyganic, Bordeaux mix
O	O-4	6 a.	Pumpkins	Compost, Ag-lime, Pyganic, Dipel 2X, Bordeaux mix	Pasture	None	Pasture	None	Oats/ pasture	Legume inoculants
O	O-5	35 a.	Canning peas/rye	Pea inoculant, Feed-N-Gro 2-4-2	Corn	Fishplus	Clover	Ag-lime Hog manure	Oats/ clover	Legume inoculants, Rock phosphate
O	O-6	37 a.	Food-grade soybeans	Soy inoculant, Fishplus, M-Pede, Serenade	Canning beets/ buckwheat	Feed-N-Gro 4-2-4	Corn	Ag-lime	Alfalfa	Hog manure, Rock phosphate
O	O-7	36 a.	Oats/ alfalfa	Legume inoculant	Soybeans	Soy inoculant, Fishplus	Canning beets/rye	Ag-lime Feed-N-Gro 4-2-4	Corn	Rock phosphate
O	O-8	35 a.	Clover	Hog manure	Oats/ clover	Clover inoculant	Soybeans	Ag-lime Soy inoculant	Canning peas/rye	Pea inoculant, Feed-N-Gro 2-4-2, Rock phosphate
O	O-9	36 a.	Sunflower	Fishplus, Sodium nitrate	Alfalfa	Hog manure	Oats/ alfalfa	Ag-lime Alfalfa inoculant	Soybeans	Soy inoculant Rock phosphate
O	O-10	55 a.	Oats/clover	Ag-lime, Clover inoculant	Permanent pasture	None	Permanent pasture	None	Permanent pasture	None

Field history notes

Field history records that cover the three previous years are required. Field history forms are intended to demonstrate your compliance with §205.202(3), which states that no prohibited substances may be applied in the three years prior to harvest of an organic crop, and §205.205, which requires crop rotation.

Conventional production? In a split operation where organic and conventional production are adjoining or close and where equipment and storage are dual use, it is necessary to provide field histories for conventional fields as well.

Record all crops and cover crops. Be certain to indicate cover crop and double crops. When more than one crop is grown in a season, it can be shown using a slash (/) between the names of the crops. For example, Gardener uses this to method to show that a rye cover crop follows his vegetable crops.

Record ALL inputs used. All input materials used in crop production must be recorded. Inputs that are often overlooked but need to be written down are seed coatings, seed treatments, inoculants, spray tank adjuvants and surfactants and foam markers. Remember to also include seed treatments and inoculants that might be used on cover crops.

Field names or numbers. It is important that field names or numbers be consistent with those used on the field maps and elsewhere throughout the application.

Cyclone State Organic Certifiers

Organic Farm Plan

Please fill out this questionnaire if you are requesting organic farm/crop certification. Use additional sheets if necessary. Sign this form. You must submit farm maps and field history sheets with this form. Attach all other supporting documents (soil, tissue or water tests, rented or recently purchased land histories, etc.) outlined in section 9 of this questionnaire. An update form may be used to update certification.

SECTION 1: General information			NOP Rule 205.401
Name <i>Earnest Gardener</i>	Farm Name <i>Cold Comfort Farms</i>	Type of Farm/crops <i>Grains, forages, vegetables</i>	
Address <i>18628 Albert Howard Lane</i>		City <i>Balfour</i>	For office use only
State <i>Iowa</i>		Zip code <i>50300</i>	Date received
Date <i>March 2, 2006</i>		Date reviewed	
Phone <i>712-555-0000</i>		Reviewer initials	
Fax <i>712-555-0001</i>		Fees received	
Email <i>natural@residuefree.net</i>		Inspector	
Legal status: <input checked="" type="checkbox"/> Sole proprietorship <input type="checkbox"/> Trust or non-profit <input type="checkbox"/> Corporation <input type="checkbox"/> Cooperative <input type="checkbox"/> Legal partnership (federal form 1065) <input type="checkbox"/> Other (specify)			
Year first certified <i>2000</i>	List previous organic certification by other agencies <i>Prairie Organics (2000) Hawkeye Organic Certifiers (2001-present)</i>	List current organic certification by other agencies <i>None</i>	Year when complete Organic Farm Plan Questionnaire was last submitted <i>2006</i>
List all crops or products requested for certification. <i>Sunflower, food-grade soybeans, oats, oat straw, canning peas, hay, pasture, pumpkins</i>			
Have you ever been denied certification? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, describe the circumstances: <i>N/A</i>		
Do you understand the current organic standards? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Do you have a copy of current organic standards?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	Do you have a copy of current OMRI Materials List?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Do you intend to certify any livestock (slaughter stock, dairy, or layers) this year? If yes, have you filled out an Organic Livestock Plan Questionnaire?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Please note that you must have an Organic Livestock Plan Questionnaire on file to certify any livestock. Contact Hawkeye Organic Certifiers to obtain an Organic Livestock Plan Questionnaire.			
Do you have any off-farm or on-farm processing done? (cleaning, bagging, bottling, etc.) If yes, have you filled out an Organic Handling Plan Questionnaire?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No
Please note that you must have an Organic Handling Plan Questionnaire on file to certify the processing/handling portion of your operation. Contact Cyclone State Organic Certifiers with your questions or to obtain an Organic Handling Plan Questionnaire.			
Give directions to your farm for the inspector. <i>We are located on the west side of Hwy 145, at the junction of Hwy 145 and Albert Howard Lane. The junction is about 4 miles south of downtown Balfour.</i>			
When are you available to contact? <input type="checkbox"/> Morning <input type="checkbox"/> Afternoon <input checked="" type="checkbox"/> Evening			
When are you available for the inspection? <input checked="" type="checkbox"/> Morning <input checked="" type="checkbox"/> Afternoon <input checked="" type="checkbox"/> Evening			

Section 1 notes

Certification history. You must disclose your previous history of organic certification, including any denials or suspensions. Such information is specifically required in the Regulations under §205.401(c). Divulging this information should not adversely affect your current application if you are currently in compliance with the National Standard. Concealing such information might be grounds for de-certification when discovered.

In our example, the applicant was previously certified by two different organizations. He applied to Cyclone State Organic Certifiers for the first time in 2006. This explains why a complete farm system plan is being submitted after six years of prior certification. Typically, a complete plan is only submitted one time to a certifier. Thereafter, most certifiers accept either much shorter update forms or ask you to complete only those sections of the long form that need updating.

Different kinds of certification. Sometimes certifiers offer further certification services in addition to the USDA's National Organic Program (NOP). For example, they might also be accredited to certify operations to the Japanese Agricultural Standard (JAS) or European Union (EU) standards. If so, this will probably be indicated on the first page. If so, discuss your needs with the certifier to determine whether you would benefit from additional certification and the additional costs and requirements.

OMRI List. OMRI is the Organic Materials Review Institute, a nonprofit organization that reviews products for use in organic agriculture. Many certifiers rely on the OMRI list of approved products as their main resource when deciding whether an input should be allowed for use. However, while widely respected, OMRI is not a regulatory agency and individual certifiers may elect not to use it. Check with your certifier to learn their criteria for verifying compliance of inputs.

On-farm processing. There is often a fine line between postharvest handling and on-farm processing. For example, washing produce before taking it to the farmers' market or placing it in an open box is NOT viewed as processing by most, but not all, certifiers. Instead, it is considered postharvest handling. You would NOT need to complete an additional system plan for handling for postharvest handling. However, if you produce, pack and seal the produce in plastic bags for sale, it is on-farm processing and another system plan is required. Since interpretations vary, it is wise to discuss your situation with your certifier in advance.

Directions to your farm. Be clear and precise. Inspectors may add lost time and extra mileage to the cost of the inspection.

SECTION 2: Farm plan information

NOP Rules 205.201(a) and 205.202(a) and (b)

Please complete the table below and attach updated field history sheets that show all fields [organic (O), in transition (T) or conventional (C)], field numbers, acres, crops planted, projected yields and inputs applied. The acreages listed in this table must equal field histories and maps. Pastures are considered a crop and must be listed on each form. At least 36 months of histories are required for all fields.

CROPS REQUESTED FOR CERTIFICATION	FIELD NUMBERS	TOTAL ACRES PER CROP	PROJECTED YIELDS (VOLUME)
Sunflower	O-9	36	20 tons
Food-grade soybeans	O-6	37	1600 bu
Canning peas	O-5	35	65 tons
Oats	O-1, O-7, O-10	98	9800 bu
Oat straw	O-1, O-7, O-10	98	75 tons
Clover hay	O-8,	35	140 tons
Pasture	O-2, O-3	13	—
Pumpkins	O-4	6	60 tons

Have you managed all fields for three or more years? Yes No

If no, you must submit signed statements from the previous manager stating the use and all inputs applied during the previous three years on all newly rented or purchased fields. *Signed affidavit for field O-10 is attached.*

Are all fields requested for certification located at the main address listed in Section 1? Yes No

Field O-10 is located about $\frac{3}{4}$ -mile to the East of the main farm.

Complete this information for main farm address and each parcel that is in a separate location from the main farm address.

FIELD NUMBERS	PARCEL ADDRESS/ LEGAL DESCRIPTION	NUMBER OF ACRES: ORGANIC (O), TRANSITIONAL (T), CONVENTIONAL (C)			RENTED (R) OR OWNED (O)
		O	T	C	
O-1, O-2, O-3, O-4, O-5, O-8, O-9, & portions of O-6, O-7	NE $\frac{1}{4}$, Sec. 23, Richfield Twnshp., Brigadoon Co.	182			O
Portions of O-6, O-7, & C-2	NW $\frac{1}{4}$, Sec. 23, Richfield Twnshp., Brigadoon Co.	23		90	O
Portion of C-1	S $\frac{1}{2}$, SE $\frac{1}{4}$, Sec 14, Richfield Twn- shp., Brigadoon Co.			80	O
Portion of C-1	E $\frac{1}{4}$, SE $\frac{1}{4}$, SW1/4, Sec 14, Richfield Twnshp., Brigadoon Co.			20	O
Portion of O-10	S $\frac{1}{2}$ & NW $\frac{1}{4}$, NE $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 24, Richfield Twnshp., Brigadoon Co.	35			R
Portion of O-10	E $\frac{1}{2}$, NW $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 24, Richfield Twnshp., Brigadoon Co.	20			R

Section 2 notes

Crops requested for certification. There are times when you need to be quite specific about crop type. For example, you should indicate whether soybeans are food or feed grade; whether corn is popcorn, field corn or sweet corn; and whether lettuce is head lettuce or leaf lettuce. Exactly how specific you need to be can vary with the context in which the crop is grown and the perspective of the certifier. When in doubt, ask the certifier how detailed you should be.

Crops requested for certification: field numbers. Note that this section is limited to crops requested for certification. Do not list crops that are only produced conventionally, or the conventional or transitional field numbers. Some certifiers, however, may also ask for that information.

Crops requested for certification: projected yields. If you are trying a new crop and there is no local information available, you can use standard yield figures from conventional publications. While you must be realistic, provide optimistic yield estimates. Certifiers compare these estimates to actual sales to see if the producer is selling more organic product than he or she actually produced. If your yield estimate is much lower than the actual harvest, it might appear that you are selling conventional production as organic.

Managed for three years or more. If you seek certification for land managed by another person during any portion of the last three years, you must obtain a signed affidavit from that person attesting to how the land was treated. Specifically, were any prohibited materials or sewage sludge applied? Were any treated seeds or genetically engineered crops planted? A copy of such an affidavit is among the attachments in this document. It is adapted from the land-use history verification form that is provided in ATTRA's *Forms, Documents, and Sample Letters for Organic Producers*.

NOP Rule requires the use of organically grown seeds, unless the variety is not commercially available. If using nonorganic seeds, you must have records of your attempts to source organic seed. Synthetic seed treatments are prohibited unless included on the National List. Genetically engineered or modified (GMO) seeds and inoculants are prohibited in organic production. NOP Rule uses the phrase "excluded methods" to refer to GMO products. Please save all seed and inoculant labels, and documentation of commercial unavailability of organic seeds to show the inspector.

List all seeds used or planned for use in the current season. Check the appropriate boxes and provide other information as needed. Attach additional sheets if necessary.

No seeds used All seeds are organic Some untreated seed used No GMO seeds purchased/planted

SEED/VARIETY/BRAND	ORGANIC (✓)	UNTREATED (✓)	TREATED (✓)	GMO (✓)	TYPE/BRAND OF TREATMENT		WHAT ATTEMPTS DID YOU MAKE TO USE ORGANIC/UNTREATED SEED?
					FUNGICIDE	INOCULANT	
<i>Sun 3708 Sunflower</i>		✓					<i>Checked 3 sources</i>
<i>Mammoth Red Clover</i>	✓					✓	
<i>Tug of War Alfalfa</i>	✓					✓	
<i>IA2020 Soybeans</i>	✓					✓	
<i>Miragreen Peas</i>	✓					✓	
<i>Buff Hulless Oats</i>	✓						
<i>Alice White Clover</i>		✓				✓	<i>Checked 3 sources</i>
<i>Timothy</i>	✓						
<i>Bromegrass</i>		✓					<i>Checked 3 sources</i>
<i>Puna Chicory</i>	✓						
<i>Aroostook Rye</i>	✓						
<i>New England Pie Pumpkin</i>	✓						
<i>K6700 Field Corn</i>			✓		✓		<i>Conventional field only</i>
<i>KB276RR Soybeans</i>			✓	✓	✓	✓	<i>Conventional field only</i>

Section 3 notes

Organic seed is required. Organic seed must be used unless the variety you seek, or its equivalent, is not commercially available. In such instances, untreated, non-genetically engineered conventional seed may be used (§205.204). An equivalent variety is understood to mean a cultivar of the same type with similar plant characteristics when compared to the original preferred variety. For these purposes, type refers to the basic plant type, such as head lettuce type versus leaf lettuce type. Characteristics refers to factors such as color, pest resistance, and maturation.

According to the Regulations, an equivalent variety of seed or planting stock would be considered commercially unavailable if the farmer could not locate an organic supplier.

It might also be considered commercially unavailable if the organic supplier could not provide seed in the quantities needed, or if the available seed quality were substandard. Factors that might make seed quality substandard include the presence of seed-borne disease, very low germination percentages, high noxious weed seed content and more. The higher cost of organic seed and propagation materials is NOT considered an acceptable reason for using nonorganic seed.

Ultimately, the certifier must make the final decision if the use of nonorganic seed or planting stock is justified. You must present ample documentation to support your decision to use nonorganic seed, including a record of attempts to locate organic seed sources. Traditionally this entails records of phone calls, letters or e-mails to and from seed suppliers documenting your efforts. Most certifiers want clear indication that you have contacted at least three suitable suppliers. There are handy forms for documenting the search for organic seed in ATTRA's *Organic Field Crops Documentation Forms*.

What about cover crops and green manure crops? The organic seed requirement applies to cover crop seed as well.

Seed treatments. When the term *treated seed* is used, it usually refers to seed that has been coated with some form of prohibited pesticide—usually a fungicide. There are, however, a growing number of seed treatments that are allowed. These include non-genetically engineered legume inoculants, which have been around a long time, and natural pelleting compounds. It is expected that allowable bio-fungicidal seed treatments will soon be on the market, if they are not already. If you are using or might be using an allowed seed treatment that does not fall into an obvious category in the table, attach a note or additional sheet that provides an explanation.

Finding organic seed. Finding sources for organic seed can be challenging. A good place to begin is ATTRA's resource list *Suppliers of Seed for Certified Organic Production*.

Annual seedlings must be produced according to organic standards. Nonorganic perennial plants (planting stock) must be managed organically for at least one year prior to harvest of crop or sale of the plant as certified organic planting stock. Organic seedlings and planting stock must be used if commercially available. Contact the certifying agent if you need to use nonorganic seedlings because of an emergency. A prohibited treatment may be used if such treatment is a Federal or State phytosanitary requirement.

A. DO YOU PURCHASE ORGANIC SEEDLINGS? Yes No Not applicable

Who are the suppliers?

If certified, by which agents?

Do you purchase nonorganic seedlings? Yes No

If yes, state why and describe your attempts to purchase organic seedlings.

B. IF YOU GROW ORGANIC SEEDLINGS ON-FARM: Not applicable

If treated wood is used in any part of your greenhouse, where is it used?

List all soil mix ingredients, fertility products, foliar sprays and/or pest and disease inputs used or planned for use in your organic greenhouse operation. Attach labels or have labels available for inspection, as applicable.

PRODUCT	BRAND NAME OR SOURCE	STATUS: APPROVED (A) RESTRICTED (R) PROHIBITED (P)	IF RESTRICTED, DESCRIBE COMPLIANCE WITH NOP RULE ANNOTATION	CHECK IF GMO (✓)

C. IF YOU GROW BOTH ORGANIC AND NONORGANIC PLANTS IN YOUR GREENHOUSE: Not applicable

What organic and nonorganic crops are grown? List varieties if the same organic and nonorganic crops are grown (parallel production).

How do you separate and identify organic and nonorganic growing areas?

List all soil mix ingredients, fertility products, foliar sprays, water system additives and/or pest and disease inputs used or planned for use in your non-organic greenhouse operation. Attach labels or have labels available for the inspector, as applicable.

PRODUCT	BRAND NAME OR SOURCE	STATUS: APPROVED (A) RESTRICTED (R) PROHIBITED (P)	IF RESTRICTED, DESCRIBE COMPLIANCE WITH NOP RULE ANNOTATION	CHECK IF GMO (✓)

D. PLANTING STOCK: (Use additional sheets if necessary) Not applicable

TYPE	PLANTING STOCK SOURCE	ORGANIC (✓)	NON- ORGANIC (✓)	IF NONORGANIC, DATE PLANTED	IF NONORGANIC, EXPECTED HARVEST DATE	IF NONORGANIC, DESCRIBE ATTEMPTS TO OBTAIN ORGANIC PLANTING STOCK

Section 4 notes

Not applicable? Many sections of an application may not apply to your operation. In such instances, be sure to check the not applicable box. If the certifier has not provided a check box, take the time to write not applicable, or N/A. Leaving a section blank suggests that you overlooked the question and may delay certification.

Source of seedlings and perennial stock. We have provided a very limited example for this section. For an example of how to provide this information and how to deal with greenhouse production, see ATTRA's *Organic System Plans: Market Farms and Greenhouses*. This document also provides a more thorough discussion about different kinds of planting stock, as does section XIII of NCAT's *Organic Crops Workbook*.

A. GENERAL INFORMATION AND EVALUATION:**What are your general soil types?***Loam; Clay loam***What are your soil/nutrient deficiencies?** No deficiencies**How do you monitor the effectiveness of your fertility management program?** soil testing

- microbiological testing tissue testing observation of soil observation of crop health
 comparison of crop yields crop quality testing other (specify)

*Attach copies of available test results.***How often do you conduct fertility monitoring?** weekly monthly annually as needed

- other (specify) *Soil test every three years. See attachment.*

Rate the effectiveness of your fertility management program. excellent satisfactory needs improvement*What changes do you anticipate?***What are the major components of your soil and crop fertility plan?**

- crop rotation green manure plowdown/cover crops interplanting incorporation of crop residues
 subsoiling summer fallow compost on-farm manure off-farm manure soil amendments
 side dressing foliar fertilizers biodynamic preparations soil inoculants other (specify)

Legume inoculation

Section 5 notes

Fertility monitoring. §205.203(a) of the National Organic Regulations states that “the producer must select and implement tillage and cultivation practices that maintain or improve the physical, chemical and biological condition of the soil...” Questions about soil and crop monitoring deal with how you go about assessing your progress maintaining or improving fertility.

Monitoring is broadly interpreted and can include something as simple as routine observation of crop performance and contrasting yields from year to year. However, most certifiers like to see evidence of scientific testing. Basic soil audits, plant tissue analysis and soil microbiological tests are standard examples. Gardener includes basic soil nutrient auditing as part of his monitoring system. Copies of his test results are included in the application in the **Supplementary documents** section.

Components of your soil and crop fertility program. Building soil fertility and sustaining agricultural production is at the heart of organic farming. Traditionally, organic strategy stresses cultural techniques, such as crop rotations that include sod crops, green manures, crop residue management and conservation of on-farm manures. This is in contrast to the conventional notion that soil fertility must be managed solely by bringing nutrients in from elsewhere. Most organic farms strike a balance between traditional self-reliant methods and importing fertilizers and soil amendments. To better understand the available options for organic soil fertility management, see ATTRA’s *Organic Crop Production Overview*.

List all fertility inputs used or intended for use in the current season on proposed organic and transitional fields. All inputs used during the current year and previous three years must be listed on the field history sheet. Not applicable

PRODUCT	BRAND NAME OR SOURCE	STATUS: APPROVED (A) RESTRICTED (R) PROHIBITED (P)	NUMBER OF APPLICATIONS PER YEAR	REASON FOR USE
Ag-lime, hi-calcium	Balfour Pelgrow	A	1	Calcium, pH adjustment
Rhizobium pea inoculant	Nitragin	A	1	N-fixation
Rhizobium soybean inoculant	Power-Pack	A	1	N-fixation
Rhizobium clover inoculant	Nitragin	A	1	N-fixation
Rhizobium alfalfa inoculant	Nitragin	A	1	N-fixation
Blended natural fertilizer	Feed-N-Gro 2-4-2	A	1	Starter fertilizer
Fish/kelp foliar blend	Fishplus	A	1-2	Foliar feeding
Sodium nitrate	Agri-Energy	R	1	Foliar feeding
Hog manure	Tangerine Hill Farms, Balfour, IA	R	1	Organic matter, crop nutrients
Compost	Made on farm	A	1-2	Organic matter, crop nutrients

If you use or plan to use restricted (R) fertility inputs, how do you comply with the annotation? Not applicable
 Raw hog manure is only applied to crops used as livestock feed. See use of sodium nitrate below.

If you use fertilizers with high salt content (sodium nitrate, potassium sulfate, etc.), how do you prevent salt buildup? Not applicable
 Sodium nitrate is used at very low levels in foliar fertilizer blend. Amount is well below 20% of the crop requirement.

Do you burn crop residues? Yes No
 If yes, please describe what materials are burned and why.

Do you apply sewage sludge to fields? Yes No
 If yes, list fields where applied.

Section 5 notes (continued)

Fertility inputs for organic and transitional fields. It is important that you list all the fertilizer and amendment products and materials you are using, plan to use, or might use in the coming season. Be certain to include crop and cover crop seed inoculants and seed coating products, even though you might not feel these are soil fertility inputs. If you apply soil or foliar fertilizer sprays, you must also list any tank additives such as adjuvants or surfactants. Keep in mind that this list should be consistent with the input column for the current year on your field history sheet(s).

If you are using compost, you do not need to list all the individual feedstock materials in this section as long as they are either described later in the section on compost use or are detailed in compost product literature obtained from a manufacturer.

You are expected to determine whether a material or product is allowed, restricted or prohibited for use. Obviously, if you had plans to use a prohibited material, you need to reconsider. If you have already used something prohibited, it will affect the certification of field(s) where it was applied. Materials are considered restricted when the Organic Regulations place some limitation on their use. For example, raw manure may not be used within 90 or 120 days of harvest if the crop is intended as human food. This restriction is detailed in §205.203(c)(1) of the Regulations and will be addressed again later in the application.

Other restrictions appear as annotations in the National List. There are two categories of the National List that apply to crop production: §205.601, which address “synthetic substances allowed for use...” and §205.602, which addresses “nonsynthetic [natural] substances prohibited for use...” In our example, Gardener uses sodium nitrate, also called Chilean nitrate, which is actually in the prohibited category, with an annotation that severely limits how much can actually be used.

For a good discussion of how to determine which inputs are allowed or prohibited see Text Box 6C in NCAT’s *Organic Crops Workbook*.

Complying with annotations: controlling salt buildup. When using any restricted material, you should explain how you address the restriction or annotation as written in the Regulations. Gardener explains, for example, that he addresses the restriction on raw manure use by applying it only to nonfood crops. He provides his explanation for sodium nitrate under the next question, which deals with salt-based fertilizers. Very few salt-based materials are allowed in organic production. Many, like sodium nitrate, have restrictions written into the Regulations. Sodium nitrate may not be used to satisfy more than 20 percent of the crops nitrogen requirement [§205.602(h)]. If you are using a nonrestricted salt-based fertilizer, such as natural potassium sulfate, you should still indicate how you plan to prevent salt buildup if there is potential for that problem in your region.

Burning crop residues. Burning crop residues is prohibited unless there is a need to control disease or to stimulate seed germination [§205.203(e)(3)].

Sewage sludge. Prohibited as per §205.105(g) and §205.203(e)(2).

B. COMPOST USE:

NOP Rule 205.203(c)(2) requires that the composting process include a C:N ratio of between 25:1 and 40:1 and maintenance of temperatures between 131°F. and 170°F for a specific number of days, depending on the method of composting. Keep a compost production record to verify compliance.

List all compost ingredients/additives. Not applicable

On-farm sheep and cattle manure, off-farm hog manure, oat straw, waste hay, kitchen scraps

What composting method do you use? in-vessel static aerated pile windrows other (specify)

What is your C:N ratio?

Estimate between 25:1 and 30:1.

Do you monitor temperature? Yes No

If yes, what temperature is maintained.

We ensure that the temperature reaches the required range of 131°-170°F.

How long is this temperature maintained?

At least for 3 days as required. A log is maintained.

If compost is windrowed, how many times are materials turned?

Not applicable.

C. MANURE USE:

NOP Rule 205.203(c)(1) requires that raw manure be fully composted unless applied to fields with crops not for human consumption or incorporated into the soil 120 days prior to harvest for crops whose edible portions has direct contact with the soil, or 90 days prior to harvest for all other crops for human consumption.

What forms of manure do you use? none liquid semi-solid piled fully composted
 other (specify)

What types of crops do you grow? Check all boxes that apply.

crops not used for human consumption

crops for human consumption whose edible portion has direct contact with the soil or soil particles

crops for human consumption whose edible portion does not have direct contact with the soil or soil particles

If you grow crops for human consumption and use raw manure, complete the following table. *If composting manure, please fill out Section B above.*

CROP(S)	FIELD NUMBERS	DATE MANURE IS APPLIED	EXPECTED DATE OF HARVEST

What is the source of the manure you use? on-farm off-farm Not applicable

List all sources of off-farm manure.

Tangerine Hill Farms, Balfour, IA

List all manure ingredients/additives.

None

If you use manure, what are the potential contaminants (pit additives, feed additives, pesticides, antibiotics, heavy metals, etc.) from these sources? *Attach residue analysis/additive specifications for manure, if available.*

Heavy metal analysis attached. Possible fly spray residue and antibiotic residues, also.

Section 5 notes (continued)

Compost. §205.2 of the Regulation defines compost as a product derived by decomposing plant and animal feedstocks using specified means. These means are detailed in §205.203(c)(2). There are requirements for initial carbon-to-nitrogen ratio, temperatures, timing, and turning. Only through this tightly defined means of composting can manure be converted so that it is not limited by the 90- and 120-day rules in §205.203(c)(1) that constrain raw manure applications.

It is helpful to know that the composting and manure provisions were created primarily to address food safety concerns in organic food production. Livestock manures are a significant source of human pathogens. High temperature composting and prolonged exposure to the soil environment are two means for controlling these pathogens.

Note that Gardener makes his own compost on farm using mostly farm-generated wastes. The compost is compliant with the Regulations and is applied to the tomato crop without restrictions.

If you need more information on composting, see ATTRA's *Farm-Scale Composting Resource List*.

Manure use. Gardener also uses raw manure that he obtains from a conventional confined hog feeding operation in the community. He applies the manure to animal feed crops and thereby avoids dealing with the 90- and 120-day requirements.

Conventional livestock manure is allowed in organic production. However, manure derived from concentrated animal feeding operations (CAFOs) may contain high levels of contaminants that prohibit their use in organic production. Certifiers may require that the producer provide evidence that a particular manure source is acceptable. Gardener anticipated this and provided a recent manure analysis, included in the **Supplementary documents** section. Note that the analysis only covers heavy metals and does not address residues from antibiotics or pesticides. At the present time, certifiers and the National Organic Program are most concerned about the presence of heavy metals, as these do not degrade through composting or other natural processes. Pesticides and antibiotics, because they do decay with time, are of less concern, though this could change. Gardener could be advised to compost his hog manure to accelerate and ensure the decomposition of these contaminants. At some point in the future, his certifier might insist on it.

For more information on manure, see ATTRA's *Manures for Organic Crop Production*.

D. NATURAL RESOURCES:

NOP Rule 205.2 defines Organic Production as a production system managed in accordance with the Act and its regulations to respond to site-specific conditions by integrating cultural, biological and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity. NOP Rules 205.200 and 205.203(a) require that production practices maintain or improve natural resources (soil and water quality, wetlands, woodlands and wildlife) of the operation.

Biodiversity management: Whole farm biodiversity considerations.

Does your field map include features such as hedgerows, woodlands, wetlands, riparian zones and special habitats?

Yes No *Buffer zones are being converted to native perennial hedges with wildlife benefits.*

List native plants present and/or wildlife seen moving through farm: (note priority species) *deer, rabbits, raccoons, skunks, foxes, red maple, black oak, dogwood, wild plum.*

What steps do you take to plan and provide for biodiversity conservation? understand farm's location within watershed

ascertain what native plants and animals existed on the land before it was a farm learn about regional natural areas and conservation priorities work with neighbors/others to enhance biodiversity (connectivity, restoration, etc.)
 other (describe/explain) *We are in the process of establishing trees and shrubs on our buffer zones to support wildlife.*

How do you manage water for the needs of crops/livestock, native species and riparian ecosystems?

plant regionally appropriate crops conserve water manage water for priority species retain/restore vegetated riparian buffers/wetlands protect/improve natural hydrology/ecological function of riparian area other (describe/explain) *Two grassed waterways leading to the pond.*

Biodiversity management: Uncultivated area biodiversity.

What actions do you take to provide habitat for pollinators, insect predators, birds and bats? bird/bat/bee boxes

hedgerows/windbreaks maintain/provide natural roosting/nesting/foraging sites other (describe/explain)

How are you restoring and/or protecting natural areas? manage for native plants/wildlife specific to the site

preserve/restore wildlife corridors establish legal conservation areas native habitats not converted to farmland since certification other (describe/explain) *We are expanding a riparian buffer around the pond.*

List problem invasives: *Shattercane in row crops; purple loosestrife and reed canary grass in uncultivated areas.*

What actions do you take to control invasive plant and animal species, especially those threatening natural areas?

learn about invasives use weed- and pest-free seed/planting stock/soil amendments/mulches monitor for new introductions and control immediately suppress invasives using organic methods other (describe/explain)

Biodiversity management: Cropland area biodiversity.

How do you conserve and provide habitat for wildlife? companion planting/intercropping crop diversity

wildlife-friendly fences manage fallow fields for wildlife other (describe/explain) *We are in the process of establishing native trees and shrubs on our buffer zones to support wildlife.*

How do you schedule farm practices to benefit wildlife? avoid nests during breeding season stagger

mowing/tilling practices plan fields to leave food/cover for wildlife other (describe/explain)

Section 5 notes (continued)

Natural resources and biodiversity. Included in the definition of organic production, in §205.2, is the statement that it is a system that conserves biodiversity. In 2005 the National Organic Standards Board (NOSB) added detailed questions on conservation and biodiversity to its model OSP template to help ensure that this goal not be overlooked.

For more information on farming in ways that support biodiversity, see *Biodiversity Conservation: An Organic Farmer's Guide*. This document is available from the Wild Farm Alliance, P.O. Box 2570, Watsonville, CA 95077, or can be downloaded from their Web site at www.wildfarmalliance.org.

Priority species. Priority species include endangered species, threatened species, species of special concern, and keystone species. Endangered species are those in danger of becoming extinct within the foreseeable future throughout all or a significant portion of their range. Threatened species are those likely to become endangered in the foreseeable future.

Species of special concern include those potentially at risk, declining in numbers or in need of concentrated conservation actions to prevent decline. Keystone species are those whose impacts on the ecosystem are often greater than would be expected from their abundance or biomass. Because a keystone species makes a significant contribution to the maintenance and modification of its ecosystem, its decline would lead to the decline of many other species. For example, the beaver is not endangered, but it is essential to its ecosystem because it actively expands and maintains the riparian habitats and functions upon which many other species depend.

Riparian zones. These are areas of transition from aquatic to terrestrial ecosystems. Riparian zones can be located adjacent to lakes, reservoirs, estuaries, potholes, springs, bogs or streams. For more information on riparian zones, see ATTRA's *Protecting Riparian Areas: Farmland Management Strategies*.

Native plants and animals. Native plants are preferred for habitat plantings. These species evolved with the native wildlife and generally provide the best shelter and food value.

Natural hydrology. This refers to the natural flows of streams and the natural wetlands. Preserving these helps ensure the proper recharge of groundwater.

Ecological function of riparian areas. These functions include the filtration of sediments, removal of nitrates, and the breakdown of toxins. Healthy riparian areas also aid in flood control and provide wildlife habitat.

Invasives. This term refers specifically to nonnative aggressive plants and animals that invade production fields, uncultivated areas or both. Invasives not only compete with crops, but may have profound ecological effects by driving out native plants and animals.

Invasives can also move from farms to protected natural areas, such as parks, reserves and refuges, where they can be particularly destructive.

Because many invasives were introduced to the Americas by early settlers, many are assumed to be native species. Reed canary grass—an invasive listed by Gardener—is native to Europe and was introduced as a forage crop in the late 1800s. It is an aggressive plant that is supplanting native species in wet meadow environments.

Biodiversity management: When livestock are involved.

How do you protect riparian areas and sensitive habitats? fence without impacting wildlife control sensitive area access prevent bank erosion animals fed away from water other (describe/explain)

What are you doing to improve your pasture or rangeland? prevent overgrazing reseed trampled/eroded areas plant native pasture active grazing management system prescribed burning other (describe/explain)

Liming, organic fertilization, rotation.

What wildlife-friendly management practices do you use? guard animals grazing scheduled when predation pressure low livestock spend night in protected area circumstances of livestock death documented other (describe/explain)

List problems with predators or other wildlife: *Threat to sheep from coyotes. No losses in recent years.*

Have you assessed the farm for biodiversity problems and greatest opportunities and developed goals and a timeline for biodiversity conservation? Yes No (If yes, describe/explain) *Copy of biodiversity conservation plan is attached to the application.*

How do you monitor farm biodiversity? visually species counts other (describe/explain)

Biodiversity management: Wild harvest enterprises.

How do you maintain or improve the sustainability of the harvested species? harvest from stable populations minimize disruption of priority species/sensitive habitats avoid erosion allow re-establishment monitor wild crop sustainability other (describe/explain)

Not applicable.

Soil conservation

What soil conservation practices are used? terraces contour farming strip cropping winter cover crops undersowing/interplanting conservation tillage permanent waterways windbreaks firebreaks tree lines retention ponds riparian management maintain wildlife habitat other (specify)

What soil erosion problems do you experience (why and on which fields)? none

Fields O-6, O-7, & O-8 are potentially erodible, due to slope.

Describe your efforts to minimize soil erosion problems listed above.

Rely on mulch tillage, grassed waterways and crop rotation to control erosion.

Describe how you monitor the effectiveness of your soil conservation program.

Visually check fields after heavy rains to assess erosion.

How often do you conduct conservation monitoring? weekly monthly annually as needed other (specify)

Section 5 notes (continued)

Biodiversity management when livestock are involved. Even though Gardener's livestock enterprise is not certified, it is tied to the land that is under organic management. Therefore, he is required to complete this subsection of the application.

Predator problems. Ideally, wildlife predators are managed in ways that do not threaten endangered populations. For guidance in selecting alternative management strategies, see ATTRA's *Predator Control for Sustainable and Organic Livestock Production*.

Goals and timeline for biodiversity conservation. A simple but written plan is recommended. Highlight problems and opportunities. Gardener has a simple plan for the farm. It is included in the **Supplementary documents** section.

Wild harvest. §205.207 defines the standard for harvest of organic wild crops. §205.207(b) specifically requires that harvesting or gathering be done in ways that are not environmentally destructive and allow sustained growth of the plant being harvested.

Soil conservation practices. This includes many practices traditional in organic production such as the use of cover crops, mulch tillage and deep mulching with organic materials. For more information on conservation techniques and options, contact your local Natural Resources Conservation Service (NRCS) office. Their staff members are trained to provide technical assistance in techniques and methods for conservation. It is their job to help private landowners plan and implement conservation measures.

WATER USE: none irrigation livestock foliar sprays washing crops greenhouse other (specify)**Source of water:** on-site well(s) river/creek/pond spring municipal/county irrigation district
 other (specify)*Attach current water tests for nitrates and coliform bacteria, per certifying agent policy.**None required.***Type of irrigation system:** none drip flood center pivot other (specify)**What input products are applied through the irrigation system?** none*Not applicable.***What products do you use to clean irrigation lines/nozzles?** none*Not applicable.***Is the system shared with another operator?** Yes NoIf yes, what products do they use? *Not applicable.***Is the system flushed and documented between conventional and organic use?** Yes No*Not applicable.***What practices are used to protect water quality?** fencing livestock from waterways scheduled use of water to conserve its use tensiometer/monitoring
 laser leveling/land forming drip irrigation micro-spray sediment basin
 compost/fertilizer stored away from water other (specify)**List known contaminants in water supplies in your area. Attach residue analysis and/or salinity test results, if applicable.***Nitrates, herbicides.***Describe your efforts to minimize water contamination problems listed above.** Not applicable*Do not use nitrate fertilizer or herbicides on organic fields. Manage manure and compost to minimize nitrate losses.***Describe how you monitor the effectiveness of your water quality program.***No active monitoring.***How often do you conduct water quality monitoring?** weekly monthly annually as needed other (specify) *Not applicable.***SECTION 6: Crop management**

NOP Rules 205.205 and 205.206

NOP Rule requires a crop rotation plan that maximizes soil organic matter content; prevents weed, pest, and disease problems; and manages deficient or excess plant nutrients. Your crop rotation may include sod, cover crops, green manure crops and catch crops. Producers must utilize sanitation measures to remove disease vectors, weed seeds and habitat for pests. Cultural practices, including selection of plant species and varieties adapted to site-specific conditions, must be used to enhance crop health.

Approved synthetic materials on the National List 205.601 may only be used when management practices are insufficient to prevent or control problems. All weed, pest, and disease inputs must be approved. A restricted input has specific annotations for its use. If you use a restricted material, you must provide evidence of how you address the material's annotation.

A. CROP ROTATION PLANS: (Use one line for each rotation used)

CROP ROTATION PLAN	FIELD NUMBERS WHERE PLAN IS FOLLOWED	ANTICIPATED CHANGES
<i>Oats/pasture→pasture→pasture→vegetable/cover crop→repeat cycle</i>	<i>O-1, O-2, O-3, O-4</i>	<i>None</i>
<i>Oats/legume hay→legume hay→field corn or other row crop→vegetable/ cover-crop→soybeans→repeat Cycle</i>	<i>O-5, O-6, O-7, O-8, O-9, O-10</i>	<i>O-10 has recently been added to the farm and will probably become part of this rotation. Rotation may change overall from 5-year to 6-year.</i>

Section 5 notes (continued)

Water use. Cold Comfort Farms does not use irrigation and does not have any postharvest operations that require water. For an example of an application and system plan where such matters are addressed, see ATTRA's *Organic System Plans: Market Farms and Greenhouses*.

Section 6 notes

Crop rotation requirement. §205.205 of the Regulations requires that crops be rotated for the purposes of maintaining or improving organic matter, controlling pests, managing nutrients, and controlling erosion.

Defining crop rotation. §205.2 defines crop rotation as “the practice of alternating the annual crops grown on a specific field in a planned pattern or sequence in successive years so that crops of the same species or family are not grown repeatedly without interruption on the same field...”

What about perennial crops like tree fruits, vineyards, permanent pasture and range? §205.2 continues: “...Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to introduce biological diversity in lieu of crop rotation.”

In perennial cropping systems, therefore, biological diversity is managed spatially. Each field has a mix of plants. For example, an orchard has trees and an understory cover crop; a permanent pasture has a mix of legumes, grasses, and herbs. By contrast, crop rotation is a temporal means for managing diversity. This means diversity is managed over time. A five-year rotation cycle may feature three or more crops and cover crops over that time span.

Crop rotation plans. In this part of the application, the certifier wants to see your plan for crop rotation. Therefore, it need not reflect the mix of crops or their sequence as shown on your field history sheet, though Gardener's rotation plans happen to do that.

There is no single way of presenting or writing down a crop rotation sequence when completing your application. Gardener uses an arrow between crops in the sequence. When two crops or cover crops occupy the field in the same growing season, such as when oats serves as a nurse crop for hay, he separates the names with a slash (/). Finally, at the end of a planned cycle, he writes *repeat cycle*. Gardener is not always specific about the crop in the sequence—he writes *canning vegetable* instead of *peas*; and *row crop* instead of just *corn*. This preserves his flexibility to change crops to meet market demands and to adjust for unpredictable weather while showing the certifier his intent to use organically sound rotations.

Section 6 notes (continued)

The importance of crop rotation. When it comes to field crop production, rotation is the key to making an organic system work. However, it is not often clear what constitutes an acceptable rotation. Because of its importance and because it is not well understood by novice organic farmers, additional notes on crop rotation follow.

Cold Comfort Farms four-year rotation

Fields O-1, O-2, O-3, O-4

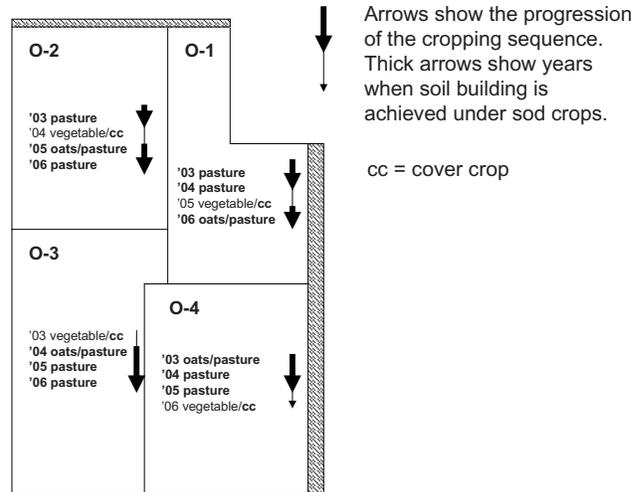


Figure 6-a

Cold Comfort Farms four-year rotation

Fields O-1, O-2, O-3, O-4

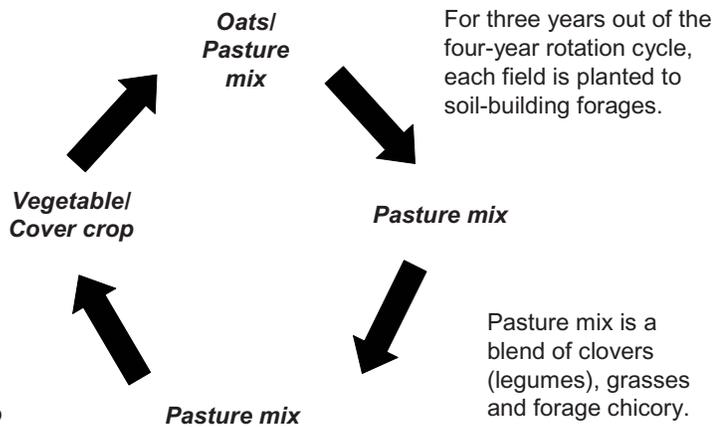


Figure 6-b

The four-year rotation. Cold Comfort Farms has two distinct rotations involving different fields. A four-year rotation provides pasture for Gardener's conventional freezer lamb enterprise, organic oats and a highly fertile, disease-free field for vegetable production. Disease management is an important aspect of crop rotation where vegetables are grown. Further notes on the effect of crop rotation on weed, insect and disease pests follow in later sections.

This rotation is a strong soil-builder since much of the rota-

tion has the land in perennial forages, called sod crops, and annual cover crops. As a rule of thumb, crop rotations that annually maintain about half of the acreage in sod crops and seasonal cover crops are sustainable with regard to maintaining or increasing soil organic matter. When rotations make less use of sod crops and cover crops, it is necessary to add more manure, compost or other organic wastes to avoid depleting organic matter.

Section 6 notes (continued)

Cold Comfort Farms five-year rotation

Fields O-5, O-6, O-7, O-8, O-9

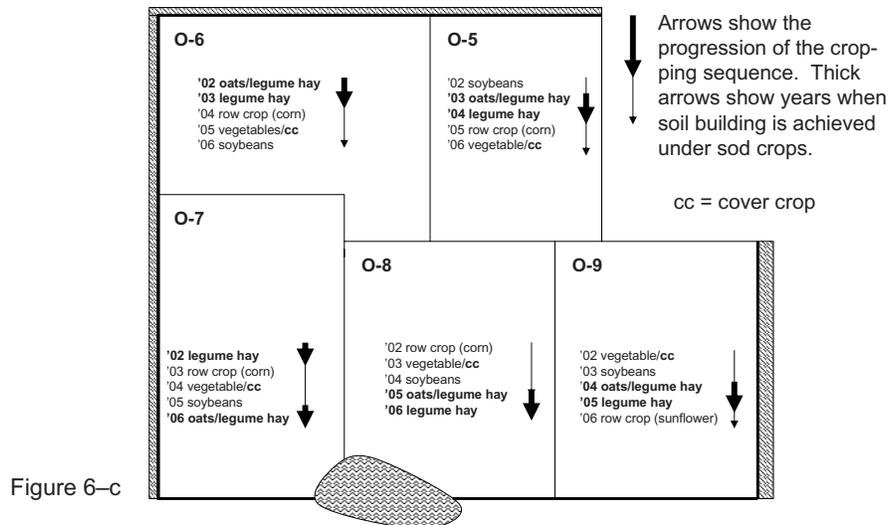


Figure 6-c

Cold Comfort Farms five-year rotation

Fields O-5, O-6, O-7, O-8, O-9

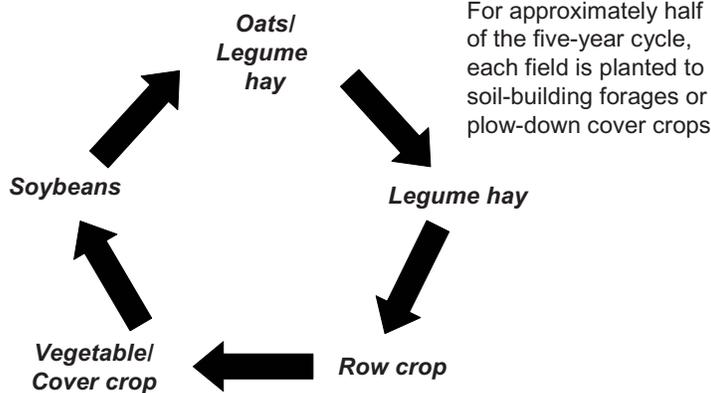


Figure 6-d

The five-year rotation. This rotation is more typical of an organic rotation that might be found on a cash-crop farm. It is considered sustainable from the standpoint of organic matter maintenance in that about 50 percent of the sequence features sod crops and cover crops.

Nitrogen management is one of the critical elements of an organic crop rotation. Forage legumes are the primary source of nitrogen in an organic system, providing large amounts of nitrogen to subsequent crops in the rotation. Soy-

beans actually produce less nitrogen than what is removed at harvest and on-farm livestock manures, though important, merely redistribute nitrogen and do not generate it.

Cover crops/green manures. Cover crops play many roles in organic systems including providing beneficial insect habitat, fixing nitrogen (legumes), building organic matter, preventing nutrient leaching and controlling erosion. Cover crops should be incorporated into rotations wherever and whenever possible and indicated on the rotation plan and on the field history sheet. It is sufficient to write *cover crop*, or *green manure* on the rotation plan; write in the actual crop used (rye, vetch, etc.) on the field history sheet.

B. WEED MANAGEMENT PLAN:

No weed problems

What are your problem weeds?

In row crops: water hemp, velvet leaf, shattercane, & foxtail. In oats and pasture: thistles. In hay: mustard.

What weed control methods do you use? crop rotation field preparation prevention of weed seed set

delayed seeding monitoring soil temperature soil sterilization use of fast emerging varieties

mechanical cultivation use of hand tools hand weeding mowing livestock grazing

flame weeding steam weeding electrical smother crops black fallow non-synthetic mulch

synthetic mulch corn gluten soap-based herbicides other (specify)

Do you keep a record of how often you utilize these weed control methods, such as dates and fields when you cultivate or flame weed? Yes No

All inputs used or intended for use during the current year and used in the previous three years must be listed on your field history sheet.

USE OF RESTRICTED WEED MANAGEMENT STRATEGIES:

none used

If you use plastic or other synthetic mulches, is the mulch removed at the end of the growing or harvest season?

Yes No

If no, why not?

If you use corn gluten, is the corn genetically modified?

Yes No

If no, what verification do you have?

If you use soap-based herbicides, list all areas where used.

If you use newspaper or other recycled paper for mulch, do you use paper with glossy or colored inks? Yes No

EVALUATION:

Rate the effectiveness of your weed management program: excellent satisfactory needs improvement

What changes do you anticipate? *Weed control is getting easier with time.*

How do you monitor the effectiveness of your weed management program? weed counts

observation of weed types comparison of crop yields records kept of observations/counts

other (specify) *Overall assessment of weed pressure related to crop performance.*

How often do you conduct weed monitoring? weekly monthly annually as needed

other (specify)

Section 6 notes (continued)

Weed problems. Weed control is the major cultural challenge of organic field crop production. The certifier does not expect you to list every weed that grows on your farm, only those that are a particular challenge to control.

Weed control methods. The Regulations for weed and pest control are written so that producers will use systems-based and cultural practices before using herbicidal materials, even though they are allowed. In weed management this means that crop rotation, rotations with cover crops, sanitation practices, competitive crops and timely planting, for example, would be in your first line of defense against weeds. This would be followed and supported by traditional practices such as mechanical weeding, mulching with organic materials, mowing, grazing and hand-weeding. Nonbiodegradable mulches and organically acceptable weed sprays should be treated mainly as final choice or supplementary control measures. With this hierarchy of options in mind, the certifier will want to see that your weed control methods include one or more systems-based tools, as well as second- and third-tier choices. To better understand the weed and pest control hierarchy, see section VII in NCAT's *Organic Crops Workbook*.

Keeping a record. All field operations must be recorded. There are convenient forms for this purpose in ATTRA's *Organic Field Crops Documentation Forms*.

Restricted practices. Restricted practices and materials are those that have some specific limitation(s) placed on their use by the Regulations. On this application, the nature of the restriction is obvious in most cases. Plastic mulches must be removed so that they do not degrade and leave petrochemical residues in the soil. Soap-based herbicides are limited to use in ornamental crops and for weed management on non-production ground, such as roadsides and around buildings.

Weed control "...getting easier with time." Gardener's comment that weed management gets easier with time is worth a mention. Though it is never easy, many organic producers report that weeds become easier to manage as time goes on. In part, this is certainly due to experience and progression along the learning curve. But it is also due to the cumulative effects of a sound production system. A good rotation, for example, changes the nature and timing of tillage and mowing practices year to year. This reduces the chances that any particular weed can dominate. Also, soil fertility improvements and increased biological activity favor crop competition, work against many problem weeds, and deplete the weed bank in the soil. It also makes tillage easier.

C. PEST MANAGEMENT PLAN:

No pest problems

What are your problem pests? insects (list) *squashbug, squash vine borer, soybean aphid*
 rodents gophers birds other animals (specify)

Do you work with a pest control advisor? Yes No

If yes, give name and contact information. *Joseph Cocker, ISU Cooperative Extension Agent—Brigadoon County, P.O. Box 502, Lindisfarne, IA (712) 341-1000.*

What strategies do you use to control pest damage to crops? none used

- crop rotation selection for plant species/varieties development of habitat for natural enemies
- timing of planting companion planting frog ponds bat houses bird houses hand picking
- monitoring trap crops physical barriers physical removal traps lures IPM
- insect repellents animal repellents release of predators/parasites of pest species
- use of approved products use of restricted products limited use of prohibited products
- other (specify)

Do you keep a record of how often you utilize these pest control methods, such as dates when you scout or apply inputs to a specific field or crop? Yes No

List all pest control products used or intended for use in the current season on organic and transitional fields. *All inputs used or intended for use during the current year and in the previous three years must be listed on your field history sheet.*

Not applicable

PEST PROBLEM	CONTROL PRODUCT	STATUS: APPROVED (A) RESTRICTED (R) PRO- HIBITED (P)	IF RESTRICTED, DESCRIBE COMPLIANCE WITH NOP RULE ANNOTATION	CHECK IF GMO (✓)
<i>Squashbug</i>	<i>Pyganic</i>	<i>R</i>	<i>Use only if pest numbers exceed threshold recommended by Coop. Extension.</i>	
<i>Squash vine borer</i>	<i>Dipel 2X</i>	<i>A</i>		
<i>Aphids (soybeans & tomatoes)</i>	<i>M-Pede</i>	<i>R</i>	<i>Use only if pest numbers exceed threshold recommended by Coop. Extension.</i>	

EVALUATION:

Rate the effectiveness of your pest management program. excellent satisfactory needs improvement

What changes do you anticipate?

How do you monitor the effectiveness of your pest management program? insect monitoring with traps

- observation of crop health comparison of crop yields crop quality testing monitoring records kept
- other (specify)

Attach copies of your test results, if applicable.

How often do you conduct pest monitoring? weekly monthly annually as needed

- other (specify) *Daily for pumpkin pests.*

Section 6 notes (continued)

Problem pests. As with weeds, the certifier will want to know only those pests that cause significant damage and require specific action to control.

Pest control methods. The Regulations for weed and pest control are written so that producers will use systems-based and cultural practices before using pesticidal materials, even though they are allowed. In insect pest management this means that crop rotation, sanitation practices, tolerant varieties, and timely planting, for example, would be in your first line of defense against insect pests. This would be followed and supported by cultural practices such as traps, natural repellents, introducing beneficial predator and parasite species and establishing refuges for native predators and parasites. Organically acceptable insecticides should be treated mainly as final choice or supplementary control measures when other practices are insufficient. With this hierarchy of options in mind, the certifier will want to see that your pest control methods include one or more systems-based tools, as well as second- and third-tier choices. To better understand the pest control hierarchy, see section VIII in NCAT's *Organic Crops Workbook*.

A note on crop rotation. Cold Comfort's five-year rotation is effective in breaking some important insect pest life cycles. The northern and western corn rootworm species are serious pests on corn in the Midwest and have long been controlled by rotating out of corn after every year in that crop. Unfortunately, the short rotation favored by many conventional farmers simply alternates corn and soybeans and has evolved rootworms of both species that can survive and attack corn after only one year in soybeans. The longer five-year rotation still ensures cultural control of these pests.

Keeping a record. All field operations must be recorded. There are convenient forms for this purpose in ATTRA's *Organic Field Crops Documentation Forms*.

Pest control products. List all the pest control products and materials you are using, plan to use, or might use in the coming season. Also list any spray tank additives such as adjuvants or surfactants. Keep in mind that this list should be consistent with the input column for the current year on your field history sheet.

You are expected to determine whether a material or product is allowed, restricted or prohibited for use. Obviously, if you had plans to use a prohibited material, you need to reconsider. If you have already used something prohibited, it will affect the certification of field(s) where it was applied. Materials are considered restricted when the Regulations place a specific limitation(s) on their use. For example, Gardener uses M-Pede, a brand of insecticidal soap. Insecticidal soap is considered restricted because it should only be used when systems-based and cultural methods are not adequate, as was explained above. He indicates that a scouting threshold will be used to trigger an application.

For a discussion of how to determine which inputs are allowed or prohibited see Text Box 6C in NCAT's *Organic Crops Workbook*. When in doubt, be sure to consult your certifier.

D. DISEASE MANAGEMENT PLAN:

No disease problems

What are your problem crop diseases?

Powdery mildew on pumpkins depending on season. Soybean rust may be a problem this coming season.

What disease-prevention strategies do you use? crop rotation field sanitation plant spacing
 selection of plant species/varieties timing of planting/cultivating vector management soil balancing
 solarization companion planting compost and/or compost tea use use of approved materials
 use of restricted materials limited use of prohibited materials other (specify)

Do you keep a record of how often you utilize these disease control methods, such as dates when you scout or apply inputs to a specific field or crop? Yes No

List all disease management inputs used or intended for use on your organic and transitional fields and crops.
All inputs used or intended for use during the current year and used in the previous three years must be listed on your field history sheet. Not applicable

DISEASE PROBLEM	CONTROL PRODUCT	STATUS: APPROVED (A) RESTRICTED (R) PROHIBITED (P)	IF RESTRICTED, DESCRIBE COMPLIANCE WITH NOP RULE ANNOTATION	CHECK IF GMO (✓)
<i>Powdery Mildew</i>	<i>Bordeaux Mix</i>	<i>R</i>	<i>Monitor weather conditions; soil test for copper levels</i>	
<i>Asian Soybean Rust</i>	<i>Serenade</i>	<i>A</i>		

EVALUATION:

Rate the effectiveness of your disease management program. excellent satisfactory needs improvement

What changes do you anticipate?

None

How do you monitor the effectiveness of your disease management program? soil testing
 microbiological testing observation of soil observation of crop health comparison of crop yields
 crop quality testing monitoring records kept other (specify)

Attach copies of your test results, if applicable.

How often do you conduct disease monitoring? weekly monthly annually as needed
 other (specify) *Every three years for soil testing to check copper levels. See attached report.*

Section 6 notes (continued)

Problem diseases. As with weeds and other pests, the certifier will want to know only those diseases that cause significant damage and require specific action to control.

Disease control methods. As with weed and pest control, the Regulations for disease control are written so that producers will use systems-based and cultural practices before using pesticidal materials, even though they are allowed. For disease management, for example, this means that crop rotation, sanitation practices, and resistant varieties would be in your first line of defense. This would be followed and supported by cultural practices such as vector control and biosecurity measures. Organically acceptable fungicides, especially allowed synthetics, should be treated mainly as final choice or supplementary control measures. With this hierarchy of options in mind, the certifier will want to see that your pest control methods include one or more systems-based tools, as well as second- and third-tier choices. To better understand the disease control hierarchy, see section VIII in NCAT's *Organic Crops Workbook*.

A note on crop rotation. It is generally advised not to grow vegetable crops of the same family, such as cucurbits and brassicas, on the same field more than once every four years. Cold Comfort's four- and five-year rotations are highly effective in breaking vegetable disease cycles because the sequences emphasize sod and agronomic crops.

Keeping a record. All field operations must be recorded. There are convenient forms for this purpose in ATTRA's *Organic Field Crops Documentation Forms*.

Disease control products. List all the disease control products and materials you are using, plan to use, or might use in the coming season. Be certain to also list spray tank additives such as adjuvants or surfactants. Keep in mind that this list should be consistent with the input column for the current year on your field history sheet.

You are expected to determine whether a material or product is allowed, restricted or prohibited for use. Obviously, if you had plans to use a prohibited material, you need to reconsider. If you have already used something prohibited, it will affect the certification of field(s) where it was applied. Materials are considered restricted when the Organic Regulations place a specific limitation(s) on their use. For example, Gardener uses Bordeaux mix, which is a blend of copper sulfate and hydrated lime, both of which are allowed synthetics. In order to use synthetic copper materials, he must show that copper is not accumulating to toxic levels in his soil [§205.601(i)(2)]. This is the reason his soil test for fields in the four-year rotation are tested for copper. See soil test report in the Supplemental documents section. Hydrated lime is also restricted in that it may only be used for disease control [§205.601(i)(3)]. It may not be applied directly to the soil as an amendment, manure additive or compost feedstock. Certainly some of the spray will reach the soil, but this application is considered incidental and indirect. For a discussion of how to determine which inputs are allowed or prohibited see Text Box 6C in NCAT's *Organic Crops Workbook*. When in doubt, be sure to consult your certifier.

A. ADJOINING LAND USE:

NOP Rule requires that organic production areas have distinct boundaries and buffer zones to prevent the unintended application of a prohibited substance or contact with a prohibited substance that is applied to adjoining land not under organic management. Adjoining land includes crop land, pastures, residential property, fallow land, and more. Buffer areas may change annually, depending on contamination potential from adjoining land uses. The width of the minimum buffer is dependent on certifying agent policy. The NOP Rule requires that the buffer must be sufficient in size or other features (windbreaks, diversion ditches) to prevent the unintended contact by prohibited substances applied to adjacent land areas. Crops within the required buffer must be left unharvested or harvested, stored and disposed of as nonorganic crops, with records kept of crop disposition. Indicate buffer zones and show all adjoining land uses on your field maps.

List specific buffer areas you maintain. (Show all adjoining land uses on your field maps.)

Not applicable

LOCATION OR FIELD NUMBER	TYPE OF BUFFER (CROP LAND, TREELINE, HEDGE-ROW, WILDLIFE PLANTING, GRASS STRIP)	WIDTH OF BUFFER	ADJOINING LAND USE	IF CROP IS HARVESTED FROM BUFFER, DESCRIBE USE (SALE, NON-ORGANIC LIVESTOCK FEED, SEED, ETC.)
O-1, O-2, O-5, O-6	Grass buffer headland with north edge planted to dogwood, choke cherry & elder berry	35 ft	Roadside ditch	
O-1, O-4, O-9	Grass buffer headland with east edge planted to dogwood, choke cherry & elder berry	35 ft	Roadside ditch	
O-6, O-7, O-10	Crop land	25 ft	Conventional row crops & permanent pasture	Used on farm as conventional livestock feed.

If crops are harvested from the buffer zones with equipment used for harvesting organic crops, what safeguards do you use to protect organic crops from contact with buffer crops during harvest?

Always clean out equipment prior to use on organic crops. Protocols are on file and a cleanout log is maintained.

What additional safeguards do you use to prevent accidental contamination?

none

Written notification to: highway departments electric companies aerial spray companies/airports
 adjoining landowners drainage commissions farm service office other (specify) "Do not spray" signs are used on north and east sides.

Have you posted "No Spray" signs along roadsides that adjoin organic fields?

Yes No

Do any fields or portions of fields flood frequently? (more than once every 10 years)

Yes No

If yes, list field numbers O-7, O-8

Section 7 notes

Organic integrity in the field. According to the Regulations, organic crops must be protected against contamination from spray drift and other prohibited materials [§205.202 (c)]. Precisely how you intend to accomplish this must be made clear in your application and organic system plan and be approved by your certifier.

Buffers. There are several ways you can protect a field from contamination. Buffers are probably the most common. Traditionally, certifiers have accepted a buffer zone of 25 feet in width, but such details are not specified in the Regulations, only that contamination be prevented. Therefore, a 25-foot buffer might be perfectly adequate for crops adjacent to fields where chemicals are applied using ground rigs, but inadequate where aerial application is used.

Buffer zones are often used as lanes for moving farm equipment, wildlife areas, beneficial insect habitats or windbreaks. Zones can also be planted to harvestable crops, but the crops cannot be sold or used as organic. Notice that Gardener has some of his cropland buffered with wildlife conservation strips and some with harvestable crops.

When the buffer is a harvestable crop, certifiers expect that you will establish procedures or protocols for cleaning or purging equipment before the harvest of organic production begins. Cleaning protocols should be written down and a log maintained to record who did the cleaning and when. You will also be expected to document how you use or sell the buffer harvest. Forms to assist in documenting clean-outs and the fate of buffer crop harvests can be found in ATTRA's *Organic Field Crops Documentation Forms*.

A buffer is not necessary when the adjoining land is not a potential contamination source. Of course, you will need to provide some evidence that this is the case. Gardener includes a letter from his neighbor, Frieden Rose, confirming that Rose's farm is also organic, thereby justifying the absence of a buffer on his southern border. See the **Supplemental documents** section for a sample letter.

Written notification. Another means for preventing contamination and ensuring integrity for organic crops is to notify road crews and utilities of your organic certification and arrange for management of brush, weed and grass yourself. Draft copies of notification letters can be found in ATTRA's *Forms, Documents, and Sample Letters for Organic Producers*.

"No Spray" signs. Certifiers like to see producers use these signs, especially along roadsides, utility rights-of-way, and on fields abutting conventional production where a lot of custom spraying occurs. For a list of vendors, ask for ATTRA's *Sources of "Spraying Prohibited" Signs for Organic Farms*.

Flooding. If a field is frequently flooded with water bearing high loads of conventional fertilizers, pesticides or other prohibited materials, you might be denied certification for that specific land. However, you must be given the opportunity to demonstrate that no significant contamination has actually occurred. Gardener's fields are only backflooded by the pond, which is surrounded by organic production. The certifier will have no concerns about this situation.

How do you monitor for crop contamination? visual observation residue analysis GMO testing
 photographs wind direction/speed data other (specify) *Schedule chemical applications on adjacent conventional fields only when wind conditions do not blow in direction of organic plantings. Do not plant GE corn varieties on conventionally managed fields.*

How often do you conduct crop contamination monitoring? weekly monthly annually as needed
 other (specify)

Do you grow the same crops organically, in transition and/or conventionally? Yes No

This is called 'parallel production'. If yes, list specific crop varieties in the next table for both organic and transitional/conventional crops.

If you grow any conventional or transitional crops, please fill out the following tables. Not applicable

SPECIFIC CROPS/VARIETIES	FIELD NUMBERS	TRANSITIONAL (T) OR CONVENTIONAL (C)	CHECK IF GMO (✓)	TOTAL ACREAGE	PLANNED USE OF CROP (SALE, SEED, NONORGANIC LIVESTOCK FEED, ETC.)	SAME AS ORGANIC CROP? Y OR N
<i>K6700 Field Corn</i>	<i>C-1</i>	<i>C</i>		<i>100</i>	<i>Sale</i>	<i>N</i>
<i>KB276RR Soybeans</i>	<i>C-2</i>	<i>C</i>	<i>✓</i>	<i>90</i>	<i>Sale</i>	<i>N</i>

Prohibited soil amendments used on conventional crops:

PRODUCT NAME	WHO APPLIES? SELF (S) OR CUSTOM (C)	FIELD NUMBERS WHERE APPLIED	WHERE STORED? (ON-FARM OR OFF-FARM; WHERE ON FARM?)
<i>Urea</i>	<i>C</i>	<i>C-1</i>	<i>Stored by applicator</i>
<i>DAP</i>	<i>S</i>	<i>C-1</i>	<i>On farm; machine shed</i>
<i>KCl</i>	<i>S</i>	<i>C-1</i>	<i>On farm; machine shed</i>
<i>10-20-10</i>	<i>S</i>	<i>C-2</i>	<i>On farm; machine shed</i>

Prohibited herbicides/pesticides used on conventional crops:

PRODUCT NAME	WHO APPLIES? SELF (S) OR CUSTOM (C)	FIELD NUMBERS WHERE APPLIED	WHERE STORED? (ON-FARM OR OFF-FARM; WHERE ON FARM?)
<i>Atrazine</i>	<i>S</i>	<i>C-1</i>	<i>Chem. storage room in machine shed</i>
<i>2,4-D</i>	<i>S</i>	<i>C-1</i>	<i>Chem. storage room in machine shed</i>
<i>Captan</i>	<i>C</i>	<i>C-1</i>	<i>Treated seed stored in machine shed</i>
<i>Poncho</i>	<i>C</i>	<i>C-1</i>	<i>Treated seed stored in machine shed</i>
<i>Round-up</i>	<i>S</i>	<i>C-2</i>	<i>Chem. storage room in machine shed</i>
<i>Cruiser-Maxx</i>	<i>C</i>	<i>C-2</i>	<i>Treated seed stored in machine shed</i>

Section 7 notes (continued)

Monitoring for contamination. The kind and frequency of monitoring should depend on the threats to integrity and how often they occur. Gardener uses this section to point out the things he is doing on his conventional fields to ensure integrity of organic fields. Not planting genetically engineered corn is a big step towards reducing genetic contamination of his organic corn in the years he grows it. Some contamination will still occur in a state like Iowa, where genetically engineered corn is planted everywhere. Despite this expectation, producers are still expected to take some preventive measures. Note that he does not have this concern with soybeans because the crop is self-pollinating.

For more information. For more details on the options for buffers and maintaining field integrity, see section IV in NCAT's *Organic Crops Workbook*, and the ATTRA workshop handout *Preventing Contamination & Seeking Compensation* on the ATTRA Web site at www.attra.ncat.org/downloads/organic_cert/preventing_contamination.pdf.

Recording conventional crops and inputs. Entries in this section should be consistent with those shown on the field history sheet for the current year, as should the field numbers showing where they are applied.

Of particular interest to certifiers is where conventional inputs are stored. They want assurance that there is no contamination of organic inputs or harvested crops and that conventional materials are not used in organic production. For this reason, Gardener noted where his chemicals are stored on the farm facility map, map 3.

B. EQUIPMENT:

To prevent commingling and contamination, all equipment used in organic crop production must be free of nonorganic crops and prohibited materials, Equipment used for both organic and nonorganic farming must be cleaned and flushed prior to use on organic fields or crops. Keep records of equipment clean and flush activities.

List equipment used for planting, tillage, spraying and harvesting.

Not applicable

EQUIPMENT NAME	OWNED (O), RENTED (R) OR CUSTOM (C)	CHECK IF USED ON BOTH ORGANIC AND CONVENTIONAL (✓)	HOW IS EQUIPMENT CLEANED BEFORE USE ON ORGANIC FIELDS?
<i>Chisel plow</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush</i>
<i>Disk</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush</i>
<i>Spring-tooth harrow</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush</i>
<i>Spike-tooth harrow</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush</i>
<i>Cultipacker</i>	<i>O</i>		
<i>Sprayer, conventional use</i>	<i>O</i>		
<i>Sprayer, organic use</i>	<i>O</i>		
<i>Rotary hoe</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush</i>
<i>Sweep cultivator</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush</i>
<i>Flame weeder</i>	<i>O</i>		
<i>Manure spreader</i>	<i>O</i>		
<i>Row-crop planter</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush; compressed air to remove fine particles and seeds; insecticide boxes disconnected when used on organic fields</i>
<i>Seed drill</i>	<i>O</i>		
<i>1-row vegetable seeder</i>	<i>O</i>		
<i>Bushhog mower</i>	<i>O</i>	✓	<i>Vegetation residues removed by hand</i>
<i>Sickle mower/conditioner</i>	<i>O</i>		
<i>Hay rake</i>	<i>O</i>		
<i>Square baler</i>	<i>O</i>	✓	<i>Purge baler with one bale</i>
<i>2 gravity wagons</i>	<i>O</i>	✓	<i>Compressed air</i>
<i>2 flatbed wagons</i>	<i>O</i>	✓	<i>Sweep off</i>
<i>Grain truck</i>	<i>O</i>	✓	<i>Compressed air</i>
<i>Lime/fertilizer spreader</i>	<i>C</i>	✓	<i>Compressed air</i>
<i>Combine</i>	<i>C</i>	✓	<i>Compressed air</i>
<i>Pea combine</i>	<i>C</i>		
<i>Batch grain dryer</i>	<i>O</i>	✓	<i>Compressed air</i>
<i>Grain elevator</i>	<i>O</i>	✓	<i>Compressed air</i>
<i>Bale elevator</i>	<i>O</i>	✓	<i>Remove hay/straw by hand</i>
<i>JD 7220 tractor</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush</i>
<i>JD 5400 tractor w/front loader</i>	<i>O</i>	✓	<i>Vegetation & dirt removed by hand/brush</i>

Section 7 notes (continued)

Equipment. Be certain to list all equipment you use in organic production and note if it is also used on conventional or transitional fields. For dual-use equipment, indicate how you clean it prior to organic use. For complex planting, field application, and harvesting equipment, it is expected that you will be able to provide a clear set of written protocols and a clean out-log for the inspector to see during the annual visit.

Don't neglect to mention custom or rented equipment. Most of these will be dual use, also. Be prepared to provide the same documentation of protocols and clean-out logs as you do for owned equipment. You can find forms to assist you in ATTRA's *Organic Field Crops Documentation Forms*.

Recommended reading. More details on harvesting and clean-out protocols can be found in section XVII of NCAT's *Organic Crops Workbook*. A good overall guide to read in advance of the annual inspection is ATTRA's *Preparing for an Organic Inspection*.

Is your equipment maintained so that fuel, oil and hydraulic fluid do not leak? Yes No Not applicable

If you use a sprayer:

What type? *Two boom sprayers, one dedicated to organic* Did you purchase it new or used? New Used

Other equipment:

Could any equipment you use have been contaminated by previous uses? Yes No

If yes, describe:

C. HARVEST:

NOP Rule 205.272(b)(1) and (2) requires that containers, bins and packaging materials must not contain synthetic fungicides, preservatives or fumigants. All reusable containers must be thoroughly cleaned and pose no risk of contamination prior to use.

How are your organic crops harvested? mechanical by hand

Are any organic crops custom harvested? Yes No

If yes, provide name and address of custom harvester.

Bob Marlee, Wailer's Farm, 2145 Hwy 145 South, Jamaica, IA 50333, (712) 555-9999 for combine grain harvest. Innacan Organic Vegetable Processors coordinates pea harvest and uses its own dedicated equipment. Innacan Organic Vegetable Processors, 525 Hwy 145, Balfour, IA 50300, (712) 555-0005.

Describe steps taken to protect organic crops from commingling and contamination during harvest.

Dual-use harvesting equipment, including wagons and trucks, are inspected and cleaned before harvesting of organic crop begins. Try to schedule harvest of organic soybeans before conventional.

What containers are used for harvesting? gravity wagons/boxes truck boxes cardboard/waxed boxes
 wooden totes plastic containers other (specify)

Are containers new or used? new used

If used, what did they contain prior to organic use? *Use has always been for organic vegetable harvest.*

Are the containers used for organic crops only? Yes No

Describe potential contamination or commingling problems you have with harvest of organic crops. none

Possibility of commingling organic and conventional soybeans, but this has been addressed through protocols and recordkeeping.

Section 7 notes (continued)

Engine fluids. Oil, gasoline, diesel fuel and engine coolants are all considered prohibited substances that should not contact soils or crops. During annual inspection, the inspector will look at all your tractors and other engines to ensure that they are not leaking.

Sprayers. Most certifiers will not allow continued dual use of spray equipment. Once a sprayer has been thoroughly cleaned for organic use, it should be dedicated to organic production thereafter. Be certain to document the date of converting such equipment to organic use and the procedures used.

Note that Gardener has two spray rigs. One is dedicated for organic production; the other for conventional.

For more information regarding farm equipment and organic integrity. See section XX in NCAT's *Organic Crops Workbook* for more details.

Commingling. Commingling refers to contact between organically and nonorganically produced crops. Commingling risks conventional product being sold or represented as organic. Commingling is a big concern on split operations, especially when the same crop, soybeans in Cold Comfort's case, is produced both organically and conventionally.

The certifier will want to know what measures you take at harvest to ensure that commingling does not occur. Be especially clear what steps you will take with dual-use harvesting equipment, including the trucks and wagons you use to remove the harvest from the field and the elevators and other equipment you use to place crops in storage. Any harvesting equipment that is not strictly dedicated to organic use must have clear clean-out protocols and a log recording clean-out dates. An example of such a log can be found in ATTRA's *Organic Field Crops Documentation Forms*.

Contamination. Contamination refers to the contact of an organic product with a prohibited substance. At harvest, one major concern is field totes and boxes. Certifiers want to know that the containers you use are not impregnated with fungicides or insecticides. If containers were used for non-organic harvest prior to this time, were the containers adequately cleaned?

For more information on maintaining organic integrity at harvest. See section XVII in NCAT's *Organic Crops Workbook*.

D. POSTHARVEST HANDLING:

Not applicable

NOP Rule 205.201(a)(5) requires that postharvest handling procedures do not contaminate organic products with nonorganic crops or prohibited materials. For on-farm processing, you may need to complete an Organic Handling Plan Questionnaire.

Describe your postharvest handling procedures and equipment.

Is the processing area and equipment used for both organic and nonorganic products?

Yes No

If yes, describe steps taken to prevent commingling and contamination.

Does packaging present any contamination problems for your organic products?

Yes No

If yes, what are they?

Check types of packaging material used: bulk paper cardboard wood glass metal
 foil plastic waxed paper aseptic natural fiber synthetic fiber other (specify)

In what form are finished products shipped? dry bulk liquid bulk tote bags tote boxes paper bags
 foil bags metal drums mesh bags cardboard drums cardboard cases plastic crates
 other (specify)

E. CROP STORAGE:

No organic crop storage

Operators must keep organic and nonorganic crops in separate storage areas and prevent commingling and contamination. Storage records must be maintained.

Describe your storage locations.

STORAGE ID #	TYPE OF CROPS STORED	TYPE OF STORAGE	CAPACITY/SIZE	ORGANIC (O), TRANSITIONAL (T), BUFFER (B), CONVENTIONAL (C)
Bin 1	Soybeans	Steel bin	6500 bu	C
Bin 2	Corn	Steel bin	6500 bu	C
Bin 3	Oats	Steel bin	6500 bu	O
Bin 4	Soybeans	Steel bin	6500 bu	O
Bin 5	Sunflower	In-barn granary	4200 bu	O
Bin 6	Oats	In-barn granary	3000 bu	O
Hay barn	Baled hay, baled straw, bagged grain	Wood barn	500 T	O & B

Section 7 notes (continued)

Postharvest handling and on-farm processing. Cold Comfort Farms does not have any postharvest handling or on-farm processing activities. We provide such an example in ATTRA's companion publication *Organic System Plans: Market Farms and Greenhouses*.

Storage bins. All storage bins and distinct areas, such as hay mows or sheds, should be numbered or be clearly distinguishable. This is most important on a split operation because it is important to document where organic and conventional crops are stored. The identification of storage units should appear not only on your facility map, as it does on Cold Comfort's map #3, but should be visible on the bin or storage area itself. The inspector will want to see such labeling during the inspection.

Do you use the same storage areas for organic, transitional, buffer and/or conventional crops? Yes No

If yes, how do you segregate organic crops from nonorganic crops? *Bins are clearly labeled. Storage records are kept at each bin to avoid commingling. I have indicated which crops I expect to store in which bins in 2006. I try to use bins 1 & 2 only for conventional crops and bins 3,4,5, & 6 for organic, but have made dual use of some of them in the past. Buffer hay, straw and bagged grains are stored in a separate section of the hay barn.*

How do you clean storage units prior to storage of organic crops?

Sweep out bins and vacuum crevices, if needed. Clean-out log is maintained.

How do you prevent/control insect pests in crop storage areas?

No insect problems

Sanitation. Maintain structures well.

How do you control rodents in crop storage areas?

No rodent problems

Mechanical and glue traps. Barn cats. Maintain tight bins.

What stored crop inputs have you used in the last three years?

none

- synthetic fumigants rodenticides sprouting inhibitors ripeners growth regulators
 preservatives oils coloring agents waxes other (specify)

Are any stored crop inputs used or planned for use on organic crops?

Yes No

If yes, specify input and retain labels.

F. TRANSPORTATION:

Not applicable

Who is responsible for arranging transportation of organic products? self buyer other (specify)

Describe how organic products are transported.

Processor vegetables are taken from the field in the processor's trucks. Organic grains and hay are picked up at the farm throughout the year. Buyers use their own vehicles in most instances.

What potential contamination or commingling problems do you have with the transport of organic crops? none

Possible to confuse bins of conventional and organic soybeans when loading out, but care has been taken to prevent this.

What steps are taken to protect the integrity of organic products during transport?

- dedicated organic only inspecting transport units prior to loading cleaning transport units prior to loading
 use of Clean Truck Affidavits letter/contract with transport company stating organic requirements
 other (specify) *Bins are clearly numbered and labeled to ensure no errors during loading.*

Section 7 notes (continued)

Dual-use storage bins. Ideally, organic storage is dedicated space. But this is not always possible, especially on split operations. Gardener had to make dual use of some of his bins in the past, though he tries to avoid it. He notes use of bin labeling, storage records, clean-out protocols and clean-out logs, all of which would be expected in the case of dual-use storage. To see some blank forms you can adapt to your operation, see ATTRA's *Organic Field Crops Documentation Forms*.

Stored crop inputs. If you think you might use some storage inputs in the upcoming season, be certain to list them here. Like field inputs, these must either be non-synthetic (natural) materials or synthetics that are listed in §205.601 of the National List. See section XVIII of NCAT's *Organic Crops Workbook* for more details on storage issues, including a discussion of structural pest management.

Integrity in transport. If you are responsible for the transport of your product, you continue to be responsible for ensuring its organic integrity. This entails making sure that your truck, or any rented or contract vehicle, is clean and appropriate for the purpose at hand. For more information, see section XXI of NCAT's *Organic Crops Workbook*.

NOP Rule requires that records disclose all activities and transactions of the operation, be maintained for five years and demonstrate compliance with the NOP Rule. Organic products must be tracked back to the field and location where the products were produced/harvested. All records must be accessible to the inspector.

A. RECORDS: *Please have these records available for the inspector.*

Which of the following records do you keep for organic production?

- field maps
- field activity log(s)
- field history sheets (previous three years)
- documentation of previous land use for rented and/or newly purchased land
- input records for soil amendments, seeds, manure, foliar sprays, and pest control products (keep all labels)
- documentation of attempts to source organic seeds and/or planting stock
- documentation of organic seedlings
- residue analyses of inputs such as manure sourced off farm
- compost production records
- monitoring records (soil tests, tissue tests, water tests, quality tests, observations)
- equipment cleaning records
- harvest records that show field numbers, date of harvest, and harvest amounts, including custom harvest records
- label records
- storage records that show storage location, storage identification, field numbers, amounts stored, and cleaning activities
- clean transport records
- sales records, including purchase order, contract, invoice, cash receipts, cash receipt journal, sales journal and more
- shipping records, including scale ticket, dump station ticket, bill of lading, and more
- transaction certificates
- audit control summary
- complaint log
- other (please specify)

How long do you keep your records? *Complete records have been kept since becoming organic in 2000.*

Which of the following records do you keep for conventional production?

Not applicable

- | | |
|--|--|
| <input checked="" type="checkbox"/> field maps | <input type="checkbox"/> labor records |
| <input checked="" type="checkbox"/> field history sheets | <input checked="" type="checkbox"/> storage records |
| <input checked="" type="checkbox"/> input records | <input checked="" type="checkbox"/> sales records |
| <input checked="" type="checkbox"/> harvest records | <input checked="" type="checkbox"/> shipping records |
| <input type="checkbox"/> other (specify) | |

Section 8 notes

Recordkeeping. It should be clear that you will need to document everything you detailed in your application and organic system plan to comply with the Regulations. The task may seem daunting. But good farmers already keep most of those records as a tool for assessing their farming system and making decisions. If you already have a good system in place, be sure to use it. Take a look at ATTRA's *Organic Field Crops Documentation Forms* for further ideas.

Audit trail. Perhaps the most important indicator that your recordkeeping system is adequate is whether it provides a clear audit trail for organic products from field to final sale or use. In other words, if the purchaser or a regulator were to inquire about a particular lot of grain or a pallet of produce, you would have the documentation available to show when and from which field(s) it was harvested, what variety or varieties were planted and how the product was grown.

B. MARKETING:

Type of Marketing:

- farmers' market direct to retail CSA/subscription service wholesale on-farm retail
 bulk commodities to processor contract to buyer other (specify) *Direct sales to other organic farmers.*

Do you use or plan to use the USDA organic seal on product labels or market information? Yes No
Do you use or plan to use the seal of the certifying agent on product labels or market information? Yes No
Attach copies of all organic product labels.

SECTION 9: Affirmation

I affirm that all statements made in this application are true and correct. No prohibited products have been applied to any of my organically managed fields during the three-year period prior to projected harvest. I understand that the operation may be subject to unannounced inspection and/or sampling for residues at any time as deemed appropriate to ensure compliance with the Organic Foods Production Act of 1990 and National Organic Program Rules and Regulations. I understand that acceptance of this questionnaire in no way implies granting of certification by the certifying agent. I agree to provide further information as required by the certifying agent.

Signature of Operator *Earnest Gardener* Date *March 2, 2006*

I have attached the following documents:

- Maps of all parcels and fields showing adjoining land use and field identification
- Field history sheets
- Documentation for fields owned or rented for less than three years, if applicable
- Water test, if applicable
- Soil and/or plant tissue tests, if applicable
- Residue analyses, if applicable
- Input product labels, if applicable
- Organic product labels, if applicable
- Adjoining land-use letter
- Notification letter

- I have made copies of this questionnaire and other supporting documents for my own records.

Submit completed form, fees, and supporting documents to:
Cyclone State Organic Certifiers
P.O. Box 327
Sears, IA 50399

Section 8 notes (continued)

Regarding labels. Certifiers like to see mock-ups of labels in advance, even if they are hand-drawn. It is wise to include them with your application as opposed to waiting for the inspector.

Use of the USDA and certifier seals. Use of either USDA or certifier seals is optional. However, it is important for the certifier to know whether you choose to use these seals on your labels. There are quite a few specific requirements regarding labeling (§§205.300–205.311) that the certifier will want to review and make certain you are in compliance with.



Section 9 notes

Make copies. Do NOT forget to make copies of your complete application, including all attachments. You are required to keep a copy of the document and there is always the risk that the original document might get lost along the way. You can save yourself a lot of time and frustration should a loss occur.

Special delivery? Ask your certifier whether you should send your application or other documents in a manner that requires a signature for delivery. Some may prefer the security and documentation this provides.

Supplementary documents

The last part of this sample application features a selection of supplementary documents similar to those that a certifier might expect or require. Templates for some of the letters shown can be found in the ATTRA publication *Forms, Documents, and Sample Letters for Organic Producers*.

Final note

Remember that your completed application constitutes your organic system plan and functions like a contract. If you need to modify, update, amend or otherwise deviate from this plan, be sure to consult your certifier. Do so in advance if at all possible.

SUPPLEMENTARY DOCUMENTS

Notification letter to county

Adjoining land-use letter

Land use history verification

Soil test audits (2)

Manure audit

Biodiversity conservation plan

February 20, 2006

Bill Chambers
Brigadoon County Highway Department
P.O. Box 17
Balfour, IA 50300

Dear Mr. Chambers,

I am writing again, as I have in the past, to remind you and the other county employees that Cold Comfort Farms has organically managed fields at the southwest corner of the junction of Highway 145 and Albert Howard Lane. I will voluntarily mow the roadsides bordering these fields and ask that you not spray them with herbicides.

I understand that the county abatement program may result in spot spraying to eradicate purple loosestrife. Please take care to prevent drift onto the farm when such treatment is required.

Thank you for your attention to this matter.

Earnest Gardener

Earnest Gardener
Cold Comfort Farms
18628 Albert Howard Lane
Balfour, IA 50300

Frieden Rose Organic Farm
1532 Highway 145 North
Balfour, IA 50300

January 15, 2006

To Whom It May Concern:

I am writing to confirm that all of my farm acreage, located in Section 23, Richfield Township, Brigadoon County, Iowa, and bordering on Cold Comfort Farms, is certified organic by Acme Organic Certifiers. This land is not and has not been treated with prohibited materials for the past 12 years.

Sincerely,

Frieden Rose

Frieden Rose
(712) 555-5000

Land use history verification

Organic producer name: Earnest Gardener Crop production year: 2006

I, Amos McCoy, declare that the parcel(s) of land described below were farmed by me or were under my control during the crop years of 2003 to 2005. I also declare that during this time, to the best of my knowledge, there were no herbicides, pesticides, fungicides, fungicide-treated seed, genetically engineered seed, synthetic fertilizers or other prohibited materials applied to this land.

Description of land parcel(s) by field number, section number, township and county, or other regulatory description):

S 1/2 S NW 1/4, NE 1/4, NE 1/4, Sec. 24, Richfield Twnshp., Brigadoon Co., Iowa

E 1/2, NW 1/4, NE 1/4, Sec. 24, Richfield Twnshp., Brigadoon Co., Iowa

Number of acres in parcel(s): 55 acres

If any materials were applied to any of these fields, describe what was applied, the specific date of application and field number or parcel.

Field number or parcel	Material applied	Date
<u>Nothing applied to any of this acreage since 2001.</u>		

I submit that the above is true and accurate on this date of December 5, 2005

Name (printed): Amos McCoy

Signature: Amos McCoy Date December 5, 2005

GAIA Soil Analysis Service

112 3rd St., Balfour, IA 50300 (515) 555-0002

Date printed: May 3, 2005

Client:

Earnest Gardener
Cold Comfort Farms
18628 Albert Howard Lane
Balfour, IA 50300

Soil Test Results

	Garden	O-1	O-2	O-3	O-4	O-5	O-6	O-7	O-8	O-9
Organic Matter	4.80%	5.20%	5.00%	5.40%	5.20%	4.60%	4.70%	4.60%	4.60%	4.80%
Soil pH	7	6.9	6.8	6.8	6.9	6.8	6.6	6.8	6.9	6.9
Bray-1 Phosphorus	35 ppm	42 ppm	40 ppm	42 ppm	42 ppm	30 ppm	32 ppm	31 ppm	31 ppm	31 ppm
Potassium	180 ppm	201 ppm	198 ppm	197 ppm	200 ppm	168 ppm	160 ppm	175 ppm	177 ppm	160 ppm
Calcium										
Magnesium										
Sulfur										
Boron										
Copper		43 ppm	45 ppm	43 ppm	42 ppm					
Iron										
Manganese										
Zinc										
Sodium										

Sample ID

GAIA Soil Analysis Service

112 3rd St., Balfour, IA 50300 (515) 555-0002

Date printed: November 8, 2005

Client:

Earnest Gardener
 Cold Comfort Farms
 18628 Albert Howard Lane
 Balfour, IA 50300

Soil Test Results

	O-10																	
Organic Matter	4.30%																	
Soil pH	6																	
Bray-1 Phosphorus	22 ppm																	
Potassium	165 ppm																	
Calcium																		
Magnesium																		
Sulfur																		
Boron																		
Copper																		
Iron																		
Manganese																		
Zinc																		
Sodium																		

Sample ID

*Biodiversity conservation plan
Cold Comfort Farms*

Goal: Enhance biodiversity of the farm with an eye to protecting wildlife, encouraging native plants, and optimizing natural pest control.

2006 objectives:

- 1) Identify invasive plant species and map farm locations where these appear. Develop long-term management plan.*
- 2) Evaluate additional native plants for O-6, O-7 and O-10.*
- 3) Build and install at least two bat houses near pond.*
- 4) Build purple martin house for homesite.*
- 5) Review progress on 2006 objectives at end of year.*

2007 objectives:

- 1) Implement invasive plant species management plan developed in 2006.*
- 2) Proceed on development of native plant buffers on O-6, O-7 and O-10.*

Earnest Gardener November 15, 2005

**Organic System Plans: Field and Row Crops
and Pasture and Range Systems**

By George Kuepper
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Katherine Adam and Holly Michels, Editors
Cynthia Arnold and Robyn Metzger, Production

This publication is available on the Web at:
www.attra.ncat.org/attra-pub/cropsfarmplan.html
or
www.attra.ncat.org/attra-pub/PDF/cropsfarmplan.pdf

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