Making the Transition from Conventional to Organic

Farming organically allows producers to incur many economic and social advantages compared to farming conventionally (Chase et al., 2019). Understanding and planning the economic returns of the transition process can aid the producer in planning and in becoming organically certified.

In Iowa, higher organic prices and lower production costs more than compensate for lower yields. The size of the economic advantage will differ by the crops within the rotation, the time period of the study, and geographic location of the farm.

However, there has been enough consistency among the research comparing conventional and organic production systems to permit some degree of confidence. For example, Delate et al. (2013) concluded that a well-managed organic system held an economic advantage over the conventional. Cox et al. (2019) found organic corn had mixed results regarding yields compared to conventional corn, depending upon the cropping system. Soybean yields were approximately 10% lower.

Despite lower yields, overall organic returns for all crops were substantially higher over the four-year period of the study. Other research has found organic premiums improved the economic performance of the organic system compared to conventional systems; see White et al. (2019).

More recently, Chase et al. (2019) concluded that a four-crop organic rotation increased returns to management substantially, from -$5 per acre for the conventional corn-soybean rotation to $490 per acre for the organic rotation. The dramatic increase in returns per acre would allow a farmer to reach an overall economic goal with significantly fewer acres. For example, if the economic goal of the producer was to receive returns to management of $50,000 for the farm, they would not reach the goal producing conventionally, but only would need 105 acres organically. Keep in mind the conventional commodity prices for corn and soybean were $3.64 and $9.86, respectively, over the six-year period between 2013-2018 in this study.

Organic prices according to USDA Agricultural Marketing Service reports (USDA, various dates, www.ams.usda.gov/mnreports/lsbnof.pdf) averaged $10.45 per bushel for corn and $23.45 for soybeans. Organic oat price averaged to $4.75 per bushel, and premium alfalfa prices, which were used for the study, were $171.67 per ton over the six-year period between 2013-2018. If these prices were received, returns to management would be approximately $490 per acre, resulting in a $495 per acre return over the conventional producer. Given these assumptions, a $50,000 economic goal could be achieved with 102 acres of organic production.

The exact numbers for return to management and acres needed vary by assumptions, but the comparison has remained fairly constant over the last 13 years. The economic advantage to the organic system in Iowa, given the four-crop rotation of the study, has been between $200 and $300 per acre compared to the conventional corn-soybean system. This economic advantage would allow the organic producer to achieve a designated economic goal with fewer acres.

The need for fewer acres would allow the producer to enter into farming with lower capital requirements. Fewer acres also translates into a smaller machinery investment. Machinery for organic producers tends to be smaller and less expensive equipment compared to conventional producers. The much lower machinery and land investment for the organic producer would

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allow farmers with limited resources to attain economic goals with minimum debt. Therefore, organic rotations offer beginning farmers an opportunity to gain access to farming without a debt load and risks that can be overwhelming. Programs and funding that are available for beginning farmers can be stretched farther in organic production than conventional.

Organic Certification and the Transition Process

Changing from conventional to organic production is a regulated process. Organic certification requires that crops do not receive any synthetic chemicals including fertilizers or pesticides for three years prior to the harvest of the crops (see Delate 2003 for a full explanation of the certification process). As an example, selling this year's corn harvested on Nov. 1, 2019, as organic would require that the land received no synthetic chemicals since Oct. 31, 2016. While the transition to certification time period is three years, the number of crops that need to be sold as transition crops could be two. For this example, crops grown in 2017 and 2018 must be grown using organic methods but cannot be sold as organic.

Split farming operations that simultaneously grow crops organically and conventionally are allowed in Iowa but require special conditions (Delate, 2003). The ability to split farm operations allows producers to change from conventional to organic production on a field-by-field basis rather than on a whole-farm basis. Current organic producers indicate a field-by-field transition is easier to manage due to extensive differences in nutrient and pest management between the two production systems.

Organic producers must use a longer crop rotation than conventional counterparts. Also, the same row crop cannot be produced in consecutive years on the same field. The usual organic rotation includes a legume (alfalfa, clover, or vetch) and small grain (oat, wheat, or barley) in addition to corn and soybean. Legumes supply nitrogen while the small grains supply nutrients, particularly carbon, and aid in weed management. Organic corn and soybean are normally grown in the rotation in Iowa due to higher organic price premiums and profitability. The common organic rotation in Iowa is from four to six years.

Land coming out of the Conservation Reserve Program (CRP) needs to meet the three-year requirement of no prohibitive substances. But it is possible to harvest an organic crop the first year coming out of CRP if synthetic chemicals have not been applied during that period. Which crop to start with would depend upon the potential problems from weed and pest pressure and the ability to provide the necessary nutrients to the crop the first year.

Transition Production Plan

As stated previously, organic transitions in Iowa can occur on a field-by-field or whole-farm basis. Review the plan before determining which transition plan makes sense for an individual farming operation. The transition plan should start with the development of a production plan, followed by the development of budgets and determination of projected profitability.

For example, assume the proposed farm is 400 acres and currently produces conventional corn and soybean. To simplify the example, assume the farm is easily divisible into four 100-acre fields (or combination of fields). The transition plan is to convert 100 acres per year. The selected organic rotation is corn-soybean-oat/alfalfa-alfalfa. The oat and alfalfa are seeded together, with the oat harvested in the seeding year along with one cutting of alfalfa. Each field will begin the transition with oat. Oat is selected to control weeds and begin the process of developing soil tilth.

Oat is followed by alfalfa to provide corn with a nitrogen source. The other recommended nutrient source for corn is animal manure. Corn follows alfalfa and is the first crop that can be sold organically. The benefit of corn as the first organic crop is that it provides the largest economic returns and provides some financial stability to the rotation. Soybean is the fourth crop and provides some nutrients for the following oat crop. The production plan for the transition process is illustrated in Table 1.

While it is possible to start with a row crop such as corn or soybean in the transition process, these crops often do not do as well as small grains or legumes because of inadequate soil fertility or weed and insect pest pressures. It takes time for the land to readjust to an organic system, as well as for the farmer to adjust to organic practices. Most organic production specialists would suggest the transition start with crops that are easier to manage and provide the pest and nutrient basis for the crops that follow.

"Making the Transition from Conventional to Organic Production", a decision tool developed by ISU Extension and Outreach, (www.extension.iastate.edu/agdm/crops/xls/a1-26organictransition.xlsx) is available to help analyze the transition process. The spreadsheet allows the user to choose which crops to change first, as well as to develop a whole-farm summary to see how returns are affected each year of the transition process. The spreadsheet uses a five-year transition process. Conventional budgets are available for corn, soybean, and oat. Organic budgets are provided for corn, soybean, oat, and alfalfa. A blank budget is available to enable the user to input a crop that is not listed (e.g., barley, wheat, clover, etc.)

To use the Decision Tool, complete the enterprise budget for each crop within the rotation. Keep in mind the budgets listed are to be used as a starting point or guideline only. To get accurate results, actual farm records should be used. On the summary page, enter the acres for each crop grown for all years of the rotation. The annual returns for each crop are calculated along with the summary returns for each year of the rotation.

The returns for the proposed farm described in Table 1 are shown in Table 2. Over the five years, the return to management averaged $278.54. Using the same costs, had this farm done an even rotation of the 400 acres with only conventional crops, the five-year average return to management would have been -$4.17.

Accurate records are a key component of becoming certified organic. The style of recordkeeping varies somewhat among certification agencies, but all require detailed logs of non-GMO seed selection and organic-compliant inputs. Therefore, it is important to identify an organic certification agency prior to beginning the transition process to make sure the production practices being followed and the records being kept will lead to a successful transition.

References

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United States Department of Agriculture, Agricultural Marketing Service Organic Reports. www.ams.usda.gove/market-news/organic

Links to USDA organic certification information:
www.ams.usda.gov/services/organic-certification
www.ams.usda.gov/nop
http://extension.agron.iastate.edu/organicag

Table 1. Transition production plan.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Field 1	Conv Sb	Conv Corn	Conv Sb	Trans Oat	Trans Alfalfa	All fields organically certified
Field 2	Conv Corn	Conv Sb	Trans Oat	Trans Alfalfa	Organic Corn	
Field 3	Conv Sb	Trans Oat	Trans Alfalfa	Organic Corn	Organic Sb	
Field 4	Trans Oat	Trans Alfalfa	Organic Corn	Organic Sb	Organic Oat	
Conv=conventional; Trans=transitional; Sb=soybean.						

Table 2. Transitional organic economic returns.

Transition Rotational Returns	Year 1	Year 2	Year 3	Year 4	Year 5	5-Year Average
Receipts	$554.13	$604.00	$839.99	$929.81	$962.91	$774.17
Total costs	$517.21	$514.99	$500.79	$494.03	$494.04	$504.21
Returns over total cost	$16.91	$89.01	$339.20	$457.23	$490.33	$278.54
Returns to LLM	$285.88	$359.54	$612.01	$734.80	$767.90	$552.03
Returns to LM	$275.41	$347.51	$597.70	$715.73	$748.83	$537.04
Returns to management	$16.91	$89.01	$339.20	$457.23	$490.33	$278.54

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