MERCOTERRA

Understanding the effect of organic certification on U.S. farmland rental values





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About Mercaris

Since 2013, Mercaris has helped clients capitalize on growing demand for organic and non-GMO foods by providing market access and services tailored to the needs of the identity-preserved agriculture sector. Mercaris focuses its data and services on identity-preserved commodities, including organic and non-GMO corn, soybean, meal and organic wheat, and other small grains markets across all regions of the United States and Canada, and recently launched an organic dairy initiative. Mercaris also maintains an online Trading Platform, a pioneering tool enabling buyers and sellers to find new markets and more profitably trade organic and non-GMO commodities.

Contributers













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Executive Summary

In 2019, Mercaris launched a multi-phase project called **Mercoterra** to fully understand the role of organic certification on farmland's market value. The findings in this paper represent the results of the first phase of this project, based on an initial survey of organic land owners and those who rent organic farmland, as well as a review of other available data, research, and case studies on the value of organic field crop farmland in the United States and how it might differ from comparable conventional land.

Mercaris surveyed 109 certified organic landowners and renters across the country, concentrated in the Corn Belt and East Coast, about their cash rental values to determine if certified organic land values differed from conventional land values within these regions.

Mercoterra is a two phase initiative:

- A small, initial study resulting in a white paper testing the hypothesis that the monetary value of certified organic field crop farms is significantly different from comparable conventional field crop farmland in several areas of the Corn Belt and East Coast.
- If statistically significant variations in organic versus conventional farmland are found, the launch of a digital tool to enable stakeholders in the sector to track average organic farmland values.

Mercaris compared the cash rental values reported in this survey to the corresponding 2019 cash rent county estimates reported by the *United States Department of Agriculture (USDA) National Agricultural Statistics Survey (NASS).* Single Factor ANOVA and Paired two-tailed t-Tests were used to analyze data collected.

Mercaris' data suggests there is a significant premium paid for organic land in the U.S. Mercaris concludes that more data needs to be collected, over time, to definitively determine the extent of the premium being paid for organic land.



Mercaris data suggests there is:



There is a premium paid for organic land in the U.S.

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There is a premium paid for organic land, for those renting organic and conventional land, of approximately **\$70 per acre,** annually.

Additionally, Mercaris found:

- Most organically farmed land was transitioned by the operator currently farming the land – regardless of whether that person or company is an owner-operator, or a renting operator.
- A lower percentage of certified organic land is operated by the landowner than for conventional farmland.
- Most organic landowners believe they can sell their land for a higher value than when purchased due to its organic status.

This study concludes with a series of recommendations for the industry as well as recommendations for further investigation and research.



Mercaris surveyed:

109 certified organic land owners and renters

Concentrated in the

Corn Belt and East Coast



Why Organic Land Values

Background

United States consumers are increasingly demanding certified organic food and other products, and in turn, more farmland is being transitioned into organic production every year.¹

Consumers are willing to pay a premium for these organic products; the organic market has grown more than 5 percent every year between 2010 – 2018, breaking through \$50 billion mark In 2018, up 6.3 percent from the previous year. ² Eighty-two percent of American households reported buying organic in 2016, according to data from Nielsen. ³ Many farmers and farmland investors struggle with the tradeoff between higher profitability of organic crops versus the safety and certainty of conventional markets in their decisions to transition to, maintain, or expand certified organic farming operations. To date, the monetary incentives to farm organically have focused on boosting farm income through higher-value crops and lower input costs. Little attention has been focused on the potential monetary incentives captured in the actual crop land.

Mercaris, the market leader in providing accurate, objective information and analysis on organic agricultural markets has launched the Mercoterra Project to fully understand the impact of organic certification on land's market value. The findings in this paper represent the results of a survey of organic landowners and those who rent organic farmland, as well as a review of other available data, research, and case studies.

Profitability of Organic Field Crops:

The U.S. Department of Agriculture (USDA) defines major field crops as **corn, sorghum, barley, oats, wheat (durum, winter and spring), rice, soybeans and cotton.** Organic is an identity-preserved labeling term referring to the way agricultural goods are grown and processed. It includes systems of production, processing, distribution, and sales that are defined and enforced by federal standards. For the purposes of this paper, crops grown using non-organic practices will be referred to as conventional.

To be marketed as USDA organic, the land on which crops are grown must undergo a three-year certification process, during which organic management practices are used, and meticulously documented. During these three years, the crops produced cannot be marketed as organic, meaning producers must forgo the organic premium, despite higher costs of production.

For organic field crop farmers, per-acre revenue can far surpass that of comparable, conventional operations due to the premium price organic crops command. These premiums are due to rising demand for organic food and fiber, and the barriers to entry for organic farming, which

restricts certified organic farmland supply. Mercaris' data shows that certified organic field crops generally receive a premium of 1.5 to 4 times conventional commodity prices. These premiums generally translate to increased income for organic farmers. The Organic Trade Association (OTA) found that organic farm income has nearly doubled between 2012 and 2017, \$400,603 average income for organic farms in 2017, up from \$217,836 in 2012.⁴



Organic & Non-GMO 1.5 to 4x

price premiums

Organic crop production has been found to be correlated to increased producer net incomes, but there is little consensus on if the higher revenue potential translates back to the value of the land itself.⁵ According to Purdue University Extension, "...farmland will generate returns for many years into the future, the perceived future income potential associated with the land has an important impact on the price people are willing to pay for farmland."⁶

Despite these premiums, the U.S. is not meeting the domestic demand for organic field crops. All organic acreage in the U.S. increased by more than 20 percent between 2011 and 2019. In 2019 there were 3.3 million acres of certified organic field crops in the U.S., representing about 1.15 percent of total U.S. cropland. These 3.3 million acres of cropland represents a 14 percent expansion in certified organic field crop operations from 2018.⁷

The U.S. remains a net importer of several organic grain and oilseed commodities.⁸ Given this reality, and the costly three-year transition





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period, the U.S. does not have enough certified organic farmland to meet domestic demand.

Potential for higher market value due to:

- Scarcity of Organic Farmland
- Higher Income
 Potential

The scarcity of organic farmland, especially for field crops, along with the higher income potential year-over-year compared to conventional land, implies the potential for organic land to command a higher market value.

Existing Research:

Little research has been done to determine if organic farmland is valued differently than conventional farmland, and even less research focused solely on field crops. *The Price of Organic Farmland: Does Certification Matter?* by Joe Janzen and Kate Fuller of Kansas State University and Montana State University, respectively, demonstrated on a limited basis, that certified organic farmland has a higher market value than comparable non-organic farmed land. As of July 2020, this paper is currently under peer review, and is forthcoming in the journal Land Economics. More extensive analysis has not been undertaken and as importantly, has not been shared with the sector in a way to enable organizations, farmers, banks and other stakeholders to make meaningful decisions.

In *The Price of Organic Farmland: Does Certification Matter?*, Janzen and Fuller found "an approximately 20 percent premium in organic farmland rental rates that does not appear to be the result of higher profits on organic farms."⁹ The study found that independent of yearly variations in the price of crops grown, there is a 20 percent premium for organic farmland. Additionally, according to Janzen's analysis of USDA Agricultural Resource Management Surveys (ARMS) data from between 2003 and 2011, "...average cash rental rates paid by organic farms for cropland were 34 percent higher than rental rates paid by conventional farms."¹⁰

In Is Organic Farming Risky: Improving Crop Insurance for Organic Farms, The National Center for Appropriate Technology (NCAT) examined the risk, as measured by farm loss ratio, associated with organic farms versus conventional farms using the Whole-Farm Revenue Protection (WFRP) model. The researchers "found no statistical difference between the WFRP loss ratios for organic and non-organic farms," demonstrating organic farming was no riskier then conventional. Their assertation that "crop insurance data makes organic farming look riskier than it actually is" is promising when examining the risk associated with converting to or investing in organic land. Many farmers struggle with the tradeoff between higher profitability of organic crops versus the perceived potential risk of transitioning land into organic production. This study demonstrates that the risk may be less than previously believed.

Lease 101

The two main types of lease arrangements are fixed cash rent, and share of output (or "crop share lease"). Within these two types of lease, there can be a lot of variability.

- Cash Rent Lease: the tenant is obligated to pay a set price per acre or a set rate for the leased land. With this form of lease, the tenant bears certain economic risks, and the landlord is guaranteed a predictable return, regardless of commodity prices.
- Share of Output: The landlord receives a share of the crops produced in exchange for the use of the land by the tenant. The landlord usually agrees to pay a portion of the input costs under a crop-share lease. This type of lease exposes the landlord to more risk but does allow the landlord to benefit if commodity prices or production increase. The crop-share lease also allows the tenant to spread the risk of reduced yields and price risk and reduces the amount of capital needed for the operation. Source: National Agriculture Law Center, Agricultural Leases: An Overview, accessed 2020





Methodology

The market value of farmland can be examined through any number of lenses. Primarily the industry relies on land sale or auction data, land appraisals, or cash rental values. Organic land poses some unique challenges around data availability. Because the federally certified organic label has only existed since 2000, there is very little accessible data on land sales of certified organic land. According to the USDA:

Ten percent (93 million acres) of all land in farms is expected to be transferred during 2015-19, most of which (6 percent) will change hands through gifts, trusts, or wills. Of all land expected to be transferred, only about a quarter (21 million acres) will be sold between nonrelatives. Another 14 percent (or 13 million acres) is anticipated to be sold from one relative to another. While the amount of farmland expected to be sold is relatively small, some of the land transferred through trusts, wills, and gifts may then be sold by the new owners, bolstering the supply of land available for purchase.

With only about 1.15% of American farmland in certified organic production today, relatively little exchange of organic farmland has occurred since 2000, especially to nonrelatives. As the organic label ages, and more farms have been in certified organic production for longer periods of time, there should be more available data on actual land sales and auctions of organic land. However, right now this data is too limited to conduct meaningful research. Land appraisals also present a difficult case because of the relative novelty of the organic certification. In conversations Mercaris conducted with those in the appraisal and real estate industries as a part of this study, we found that many land appraisers do not record any information about land's organic status when conducting their valuation. Therefore, it is nearly impossible to identify and analyze appraisal data for organic land.

Just as in conventional farming, many organic operators rent land from non-operator landlords. Cash rental values present a convenient stand in for the land's market value. Thirty-nine percent of all U.S. farmland is rented or leased. ¹¹ Often, rather than calculating the net income from owning farmland as a measure of earnings, current cash rent is often used as a proxy for earnings.¹² The income generating potential of a piece of farmland is a large determinant of that land's value. Therefore, Mercaris gathered data on cash rental values for organic farms and compared these values to cash rental values for comparable conventional farmland.

Mercaris conducted a survey measuring cash rent values-- either paid or charged -- for organic land in the U.S. Mercaris offered an incentive of \$50 for the first 50 respondents who filled out the entire survey. This survey asked about the number of acres farmed, crops produced, and the cash rents either paid or charged for the land. The survey also included an optional qualitative section which asked respondents about their sentiments toward the value of their organic land and organic land in their area. This survey was distributed to both organic landowners and those who rent organic land from others.

Of the 405 total responses received, 109 responses resulted in usable data points based on the following criteria: completed the entire survey, farm or own farmland that is certified organic, and grow field-crops in the U.S. These 109 observations account for about 56,300 organically farmed acres across the U.S., concentrated in the Corn Belt and East Coast, which is consistent with the concentrations of organic field crop production in the U.S.



Figure 1 - location of survey respondents





Findings

General Characteristics:

Of the 109 survey respondents, 70 percent were solely organic farm operations, while 30 percent were a mix of organic and conventional. Fifty-nine percent of respondents indicated renting some land from others; among these renters, with 69 percent of owning some of the land that they operate and rent some land, and 31 percent solely operate rented farmland. Thirty-six percent of respondents solely operated on organic land they owned, and therefore did not pay or charge a cash rent. Finally, 5 percent of respondents indicated owning the land they operated, while also leasing some acres. No absentee landowners (non-farming landlords) responded to the survey. The average lease length between landlord and operator was five years and 11 months.

For the 70 respondents who rented land to or from others, 71%

Ownership Structure





A landowner is someone who owns land who may operate all, a portion, or none of it.

- Owner-operator: operates all of the land they own
- Absentee Landowner: leases all owned land
- Own and Rent: some owned land, rents additional land from others
- Own and Lease (operator landlord) - some owned land, rents additional land to others

A renter is someone who rents land from others. of respondents had a fixed cash rent lease, 17% used a share of output lease, and 11% applied a mix of both or had a different type of arrangement. The average organic cash rental rates reported in the survey was \$175/acre for non-irrigated land and \$232/acre for irrigated land. The USDA reports that on average, nationally, non-irrigated cropland rents for \$127/acre and irrigated cropland rents for \$220/acre in 2019. The majority of survey respondents provided rental values for non-irrigated farmland.

For those owner-operators who did not rent or lease any land (39 respondents), 90 percent transitioned the land to organic production themselves. The remaining 10 percent inherited the land, or purchased the land after someone else had transitioned it. Furthermore, Seventy percent of respondents overall (regardless of if that is the owner or a renter) converted the organic land themselves. This statistic implies that very little organic farmland has been sold, purchased and kept in organic production at this point in time. Most certified organic farmland in the U.S. is farmed by the same operator who converted the land. On average, the organic land farmed has been certified organic for 10.9 years.

Seventy-five percent of the organic owner-operators who responded to the survey believe they can sell their land for a higher value than when they bought the land due to its organic status. Sixty-percent of this group reported that net operating income has *increased* since the land has been farmed organically. For organic owner-operators with both organic and conventionally farmed land, 30 percent are in the process of transitioning more of their land into organic production - on average, 600 acres– further illustrating the profitability of their organic acres.

According to the USDA Economic Research Service (ERS) 2014 Tenure,



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	Fixed Cash Rent	Share Output	Both	Other	Total
Lease	3	2	0	0	5
Rent	47	10	7	1	65
Total	50	12	7	1	70

Table 1 - Lease Types

Ownership, and Transition of Agricultural Land (TOTAL) Survey, 61 percent of U.S. cropland was reported as owner-operated, while 39 percent was either rented or leased. This is contrast to the results of the Mercaris survey, in which 36 percent of respondents were owneroperators, while 64 percent of respondents either rent or lease land. This implies farmland ownership is potentially less common for certified organic operators, however, this result could also be due to selection bias, and Mercaris' limited sample size. Finally, the TOTAL survey found that 69 percent of rented farmland is rented with a fixed cash rent lease type. This is in line with the 71 percent of respondents who reported that they rent or lease on a fixed cash basis.

Rental Rates

Mercaris compared the cash rental values reported by the 70 respondents who rent land to or from others to the average cash rental rate reported by the USDA National Agricultural Statistics Survey (NASS) in their 2019 Cash Rents Survey, for the corresponding counties. Mercaris used the county-level cash rents reported by NASS as representative of conventional farmland values for the purpose of this analysis. The NASS Cash Rents Survey obtains "acres rented and cash rental rates from farmers and ranchers in the U.S., in all counties or equivalent subdivisions within each state that have 20,000 acres or more of cropland and pastureland."¹³ While there are likely organic farms counted within the NASS Cash Rents Survey, the relatively minor percentage of land that is certified as organic across the U.S. is assumed to be too small to influence these results, and therefore the average values reported by NASS are taken as representative of

60% reported net operating income increased since the land has been farmed organically.







conventional farmland rental prices.

Data Homogeneity:

To determine if the organic field crop rent observations within Mercaris' survey are significantly and statistically from a comparable sample of conventional field crop acres, a set of tests were employed to determine if the Mercaris data set contained any bias that could impact the results. Mercaris conducted Single Factor ANOVA Tests, and Pair two-tailed t-Tests comparing USDA NASS county-level irrigated field crop land rents to various restricted samples of Mercaris' survey data pool. These two tests were used to determine if the two data sets contained statistically similar variances and mean values, or more simply, homogeneity between the two sets.

Within the Mercaris survey, a set of respondents reported renting both certified organic and conventional land (mixed acres). Within this group, some respondents reported paying the same cash rents across all acres (non-differentiated rental values), and others reported paying a differentiated cash rents for their organic and conventional land.

In order to determine homogeneity between the Mercaris and USDA survey data sets, we first conducted a Single Factor ANOVA Test, and Pair two-tailed t-Test comparing USDA NASS county-level irrigated field crop land rents to the set of non-differentiated irrigated land rent observations found within the Mercaris survey. These two groups were chosen because they are both aggregates of organic and non-organic acreage, and therefore a good test of any inherent bias in the Mercaris survey. The results of these two tests indicated that both the mean and variance of the two series were not statistically different within a critical level of 5%, subsequently implying Mercaris' survey data is not biased by sample selection.

To further determine the homogeneity of the USDA NASS and Mercaris data sets, we tested the conventional non-irrigated rental values reported in the Mercaris survey. In the first test, we restricted our data set to only the observations that paid the same land rent values for organic and conventional land, as this is nominally the most similar to the USDA set. However, the USDA NASS data set in practice is likely more similar to the non-organic land rent values captured by Mercaris' survey. This is the case because organic agriculture accounts for a marginal share (less than 2% overall) of all field crop acres within the U.S. Whereas, within the



ANOVA test & T-test

Anova Test: An ANOVA test is a way to find out if survey or experiment results are *significant* by comparing two means from two independent (unrelated) groups using the *F*-distribution.

T-test: The t-test assesses whether the means of two groups are statistically different from each other. This analysis is appropriate whenever you want to compare the means of two groups. (*Link*)

Tests were conducted at 5% critical value

Mercaris survey data group included in the previous test, organic crop land comprised about 14% of combined organic and conventional harvested acres. As a result, the result of the first test could be considered biased by the substantially larger share of organic acreage being farmed compared to the national average.

To determine if this was the case, Mercaris also conducted both a Single Factor ANOVA Test, and Paired two-

tailed t-Test comparing USDA NASS county level irrigated farmland rents to the conventional land rents observations found within the Mercaris survey. Again, the results of the test indicated that both the mean and variance of the two series were statistically similar within a critical level of 5% (*Annex 1*). Based on the results of these two tests, Mercaris concluded that the data reported into the survey does not contain any bias that could influence the results of an analysis of organic land rent premiums.

Organic Land Rent Premiums

Once we sufficiently established that our data set does not carry any inherent sample-based bias, we proceeded to determine if the organic land rent values observations from Mercaris' survey indicated the presence of a "premium" over comparable non-organic land rent values.

The resulting analysis includes all observations of irrigated organic field crop land rents from the Mercaris survey, a sample size of 53 with sixty-two percent of these observations located in the Corn Belt, thirty percent located on the East Coast, and eight percent from the High Plains or South East regions. Calculating the difference between the mean values of the two series, we found that **organic non-irrigated land rents averaged \$180/acre across the survey sample, 25% higher than the mean value for non-irrigated land rents reported by USDA NASS.**

In comparing the organic land rent values from the Mercaris survey against the USDA NASS irrigated land rent values, Mercaris conducted a Single Factor ANOVA test and a Two-tailed t-Test. The results of these two tests confirmed that the two data sets are similarly distributed, and that the 25% higher mean value for organic land is statistically significant at the 5% level (see annex 2). These results indicate that there is a premium being paid on certified organic farmland in the United States.

Despite the significance of these results, they do bear some further consideration. Of the 53 organic land rents included in this survey sample, 26 – or 49% – were below the NASS county average. Given the NASS values represent

	Conventional Rates	Organic Rents	% Difference
Standard deviation	\$85	\$132	74%
Mean	\$150	\$180	25%

Table 4 - Differentiated Land Rents and Premiums

a county average, and the Mercaris survey data represent a single observation, it is inconclusive if any one observation falls above or below the statistically significant range for a given county's average land rental rate.

Mercaris then revisited the group of respondents who rent mixed acres in order to test for a premium within this group. Overall, nineteen respondents to the survey reported renting both organic and nonorganic land from others. Sixteen out of these nineteen respondents reported the cash rent paid for both their organic and non-organic land. Among these sixteen mixed-acre renters, nine reported paying the same cash rental value for both the organic and the conventional acres that they rent; among this group 14% of total acres are certified organic, and the rest conventional. Seven respondents reported paying a separate, or **differentiated**, cash rental value for their organic land versus their conventional land, with 55% of land farmed organically. For these seven respondents, there was on **average a \$68 price** premium paid to rent certified organic land.

To test if this \$68 difference was statistically significant, we conducted a Single Factor ANOVA Test, and a Paired two-tailed t-Test comparing

the differentiated rental values for mixed acre renters (N=7).¹⁴ Focusing on only those with comparable non-organic observations within Mercaris' survey controlled for many variables that might also affect the cash rent beyond organic certification. The results of these two tests indicated that the mean values of the two series are not statistically different from each other. Although the results of the tests found Mercaris' organic and conventional land rent

Organic non-irrigated land rents averaged \$180/acre across the survey sample, 25% higher than the mean value for non-irrigated land rents reported by USDA NASS.



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data series were not statistically different, the calculated difference in the mean values was not negligible in size. Indeed, observing the difference between the mean values between the organic vs. conventional data reported in the Mercaris survey, we calculated the average non-organic land rent value at \$154/acre, with the average Mercaris organic land rent value calculated at \$222/ acre, or 44% higher.

The statistically insignificant difference in the mean land rent values is not conclusive evidence of strong, consistent organic land-rent premiums for organic field crop acres. However, these results also leave room for further inquiry as the 44% premium, or \$68 more paid for organic land,

Table 7 - Differentiated and Non -Differentiated Rental Values

			Differentiated	
STATE	Non-Differentiated	Organic	Conventional	Difference
		non-irrigated	non-irrigated	Difference
CA	\$100			
WI	\$120			
MI	\$140			
IN	\$150			
IN	\$195			
IN	\$200			
IA	\$225			
IA	\$250			
IL		\$450	\$180	\$270
MI		\$120	\$80	\$40
MI		\$110	\$90	\$20
MN		\$75	\$125	\$(50)
NE		\$300	\$250	\$50
PA		\$400	\$300	\$100
PA		\$100	\$50	\$50
AVG	\$173	\$222	\$154	\$69

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is notable. It is possible that due to small sample size (N=7) the results were inconclusive with regard to the presence of organic land rent premiums within the statistical tests.

Additionally, the homogeneity between the conventional rental values and the USDA NASS survey data for both the respondents with differentiated and non-differentiated rental values indicates that those who are not charging a higher price for the organic rent for mixed-acre land may be undervaluing their organic acres. For both of these groups, the rent being paid for the conventionally farmed acres is statistically comparable to average cash rental values reported by NASS for those same counties. However, the differentiated group is paying an average of \$68 more for their organically certified land, implying that those who are not charging more for organic acres on mixed acre farms, may be losing out.

State Level Analysis of Rental Data

Mercaris also analyzed the survey responses geographically for the states in which we received more then 5 responses per state: Illinois (12), Pennsylvania (11), New York (16), Michigan (13), Wisconsin (9), Iowa (10), Indiana (7). In doing so, we found that on average, compared to the average of USDA NASS rental values for the same counties represented in our survey data, that organic cash rental values were higher in Illinois, Pennsylvania, New York, Michigan, and Wisconsin. The average organic rental values from the Mercaris survey were lower than NASS Rental Values in Iowa and Indiana.

Table 8 - Rental Values by State

STATE	IL	PA	NY	MI	WI	IA	IN	A D
#OBSERVATIONS	7	7	7	6	4	7	5	
ORGANIC CASH RENT (MERCARIS SURVEY)	295	230.7	46.7	166.7	228.8	227.7	179	
NASS CASH RENT	222.4	153	44.8	116.2	197	239	189.6	
DIFFERENCE	75.6	77.6	1.9	50.5	31.8	-11.3	-10.6	3





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However, like in the previous test, Mercaris did not find these differences to be statistically significant. There were too few observations per state, and too many outliers to prove statistical significance. However, these initial results are promising and we believe these results warrant further investigation into organic cash rental values.

It is important to note Mercaris' survey over-represents rental values for those who pay or charge a fixed cash rent. The majority of respondents who reported renting land under a crop-share lease reported 0 as a value for their rent paid in 2019. This is most likely because they had not yet paid rent for 2019 at the time they filled out the survey. Therefore, we had little available data on rental values for crop-share lease types. Because organic crops sell at a premium, it is possible that organic farmers with a crop-share lease pay a higher rent then comparable conventional farmers who also use a crop-share lease. Mercaris hopes to address this issue in further surveys, ideally by collecting rental values paid for crop-share and fixed cash rents, over multiple years.

Sentiments Towards Organic Land

In the survey, Mercaris asked a series of qualitative questions to better understand the sentiments renters and landowners have towards the organic land marketplace. Of the 109 respondents, 55 percent (60) believe their organic land is worth more than neighboring conventionally farmed land. When asked to elaborate on why (an optional question), respondents gave answers that fell into the following three categories:

- Higher income potential of the organic operation (30)
- The soil health and environmental benefits of organic (17)
- A completed three-year transition is valuable (5)

A remaining 39 percent believe their organic land is not worth more than their neighbor's conventionally farmed land. The other 6 percent did not answer this question or answered with "other". Those who did not believe their land is worth more than their conventional neighbors stated that this was because:

- There are not enough organic operators in the area (3)
- Land can be bought by non-organic farmers due to location, etc. (3)
- Land is valued based on comparison sales in area
 organic certification is not considered (2)



The main stumbling block for those who do not believe their land is worth more, is that there are not enough organic operators in the marketplace to make their land more valuable. One respondent stated: "It is only worth what others are willing to pay. My area does not have any other organic operators, so it is only valued as conventional farm ground." Another stated, "Due to lack of available tenants to farm organically, there are not premiums being put on organic ground other than by organic farmers themselves". These responses demonstrate that as more land transitions into organic production each year, and as more non-owner organic operators become proficient in organic management practices, we can perhaps expect to see a steady increase in organic land values.





55% believe organic land is worth more.





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Implications and Opportunities for the Organic Industry

The findings demonstrate that there is a premium being paid for organic land in the U.S. Furthermore, for those whose rent both organic and conventional land, in some cases organic land commands a higher cash rental rate then comparable conventionally farmed land, at an average of \$70/acre more. While limited, this result is promising for organic landowners, investors, and farmers. As more land in the U.S. is certified organic for a longer period time, and as demand for organic products continues to grow; the value of organic land is something to watch.

The survey responses demonstrated that there are many ways organic landowners and farmers consider organic land and conventional land differently; first and foremost, by charging (or paying) more for organic land on mixed operations. One land renter in Pennsylvania states: "Typically, cash rent is \$100/acre more for organic land," and another in Minnesota said: "[organic land] is about double local conventional rent." Many organic renters expressed that paying more to rent their organic land benefits both them and the landowner. Operators who invested their time and money in a costly three-year transition period often strive to maintain a good relationship with their landlord, as they benefit from the security of longer leases. One farmer in Illinois who has a ten-year lease with their landlord stated: "We give them more at our own free will. We profit so we share that with the landowner." Others, even if not explicitly paying different rates for organic land, use a different lease structure for their organic land, such as one renter in Colorado who explained the lease structure they have with their landowner: "organic ground is cash rent, non-organic ground is crop share".

For renters who stated that their landlord did not charge a higher rent after they transitioned their land into organic production, most stated that this was because they took on the cost of the three-year transition



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alone, and therefore there was no change in the rent charged. A farmer in Kentucky explained: "I got the ground certified in 2010 and the land owner has not raised his price. As he put it, he is not going to capitalize on the work I did." It remains to be seen if these landlords will charge higher than market rates for rent, for future operators on their land.

Ultimately, respondents across the board highlighted the higher income potential of organic farming, and how that relates to the land they rent or own. One organic renter in Iowa stated: "One landlord wanted 3.5 percent return on his land purchase and since he paid \$12,500 for it, we were the only ones that could match his investment goals since we had organic crop prices." A renter in Iowa, responding to a question asking if they have experienced any difficulty securing loans due to their organic status, summed it up: "My balance sheet says enough, they don't have many guestions." Echoing this, one Nebraska farmer said: "Our profitable P&L sets us apart in the current environment, so we have gotten more favorable terms than we would expect if we had conventional cash flows." However, one Wisconsin farmer elaborated on challenges with securing a favorable loan: "Less favorable. They would only give me a loan for the value of conventional crops only." This statement echoes a sentiment felt by many farmers that many appraisers and financial institutions do not fully understand organic and its potential financial benefits.

The research demonstrates the myriad of opportunities for further research into organic land values as well as highlights various industry needs within this space. Currently, appraisers, landowners, institutional investors, banks, and farmers are working in both professional and geographical silos when it comes to understanding organic land management practices, and the impact of organic certification on land values. This fact, coupled with the scarcity of available data on organic land sales or cash rental values, highlights various unmet needs for the organic sector, namely: data availability, improved resources on organic for entire supply chain, enhanced coordination across industries and geographies, and further research.

The Mercaris survey represents a small percentage of organic farmers, and only one year of data. Right now, there is no available year-over-year data or tracking of cash rents or land sales for certified organic land. The lack of available data on organic land is currently the most significant roadblock to understanding this question in more depth. Clearly, there





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is both a need, and an opportunity to create an extensive, continuously updated tool to accurately track rental prices of organic land in the U.S. More available data, that is updated at least annually, could answer questions about how responsive organic land rental rates are to external economic factors, and if organic land value and conventional farmland values are correlated.

While surveys of renters and landowners are a direct way to gather this data, data



sharing at the institutional level would greatly enable further research into this topic.

Knowledge and Resources

The Mercaris survey along with conversations across the industry have highlighted a need for an improved institutional understanding of organic land management and its associated economic benefits. Currently, many banks, landowners, and appraisers have little exposure to the organic certification process, leading to inefficiencies and missed opportunities. Better tools and resources for organic farmers and for landowners such as reliable data on organic crop prices, sample organic leases, expanded transition loans, and information on how to find good organic operators could help solve some of these problems.

According to the many organic operators we spoke with, most landowners looking to rent their land have little knowledge of the organic production system, which can make it hard to negotiate an ideal lease for both parties. While organic production practices can provide a higher return to both the operator and landowner, this is only after a costly 3-year transition period. Often, the onus is on the organic operator to make the case for organic certification to the landowner, and to shoulder the financial burden of this transition themselves. Better resources aimed at helping organic operators have this conversation and negotiate a fair lease would be beneficial, can help maximize returns to both landowners and organic operators. More research on organicspecific leases would be beneficial to the entire industry.

Mercaris found that almost no land appraisal companies take organic certification into account when appraising land. While it is true that it is the operation that is certified organic, and not the land itself, organic





certification is easy to transfer from one operator to the next for a piece organic land, and the 3+ years of organic operation has benefits on the soil health and productivity of the land. Some appraisers Mercaris spoke with expressed an interest in learning more about organic production practices and its accompanying financial benefits. They stated that they have little data or experience when it comes to organic land, because organic land is rarely on the market. An improved institutional understanding of organic production among land appraisers could help bring more standardization to the process of appraising and valuing organic land that does come onto the market.

These are just a few of the areas in which improved data availability and understanding of organic land management could address inefficiencies and knowledge gaps. Mercaris hopes to address some of the opportunities and challenges outlined above by continuing to contribute to available data and research on organic land in the U.S. in order to enable land managers, farmers, banks and others to make meaningful decisions that take into account the full value of organic farmland.



Case Study 1:

One survey respondent, a farm operator in Nebraska, farms primarily alfalfa and corn in rotation with soy, wheat, field peas, barley, and rye on both organic and conventional land on multiple parcels of land.

This farmer currently rents several thousand acres of land from dozens of different landowners. In 2019, 61% of acres were in organic, up to 72% in 2020 with the rest in transition. The farmer shared that across these various parcels of land, he pays on average \$25 – \$50 (and up to \$75 on excellent flat ground) above market value per acre for certified organic land. This farmer has converted all of the organic land he farms into organic production. The farmer stated that the rent premium his business offers to landlords grants his company the "opportunity to hold the land in the long term in order to continue to reap the benefits of the higher profits the organic crops command." This farmer stated that typically he makes back the costs of transitioning the land into organic production and the premium paid for renting the land within two to three years of organic certification.

The farmer mentioned that for him, paying the premium after certification is worth the security of a longer lease, and something he proposes to landowners when negotiating a lease. On average the farmer's lease is for 5 years with the landowner, usually with the option to renew for another 5. The farmer did say that an ideal arrangement for his business would be a "shared investment approach" where the landowner provides a discount on the rent charged for the three-year transition period, in exchange for an even higher rent premium after the organic certification is obtained; but so far, landlords have not been willing to do this. He summarized his views:

"We didn't figure this out on the first day, there are problems along the way. when the land is generating more income, we feel it's reasonable to share this with the landlord. But we are taking on all of the risk, so don't want to have to pay a huge premium. Important to strike a balance"





Case Study 2:

Iroquois Valley is a farmland REIT that "provides farmer-friendly leases and mortgages to the next generation of organic farmers," through the acquisition of conventional farmland which is converted into organic production by organic operators who rent or buy the land from them. Iroquois Valley is one of the first private companies in North America to offer investors direct exposure to a diversified portfolio of certified organic farmland.

Iroquois Valley states that: "The growing demand for organic food, coupled with the price premium for certified organic products, is fundamental to our business model. Our income stream from Farmland Investments depends in large part on organic farmers' revenue and profitability. Ultimately, we believe that in this market, our farmland investments will allow us to create income for periodic dividend payments to our stockholders, in addition to the positive social and environmental impact we seek."

The majority of land leased to operators in their portfolio is row crop land in the upper Midwest. Iroquois Valley uses a fixed cash rent for their leased land that is determined by the basis, or a fixed annual percentage return on the amount invested in the farm. Therefore, the rent is directly based on the cost of the farm, and not the income earned by farmers, or comparable market rental values in the area.





Case Study 2:

The majority of time, Iroquois Valley has purchased land before it was transitioned into organic production.

In an interview, Arnold Lau, Chief Operating Officer, stated that once operators are certified, "their gross revenue and net operating revenues significantly increase, and the potentially higher base rent is worth it for them." He highlighted the fact that their leases are set up to run for an extended period of time (6 years with an option for a reoccurring 3-year renewal) and that this approach benefits both their company and the operators they rent to. He added while rents "might seem high in early years, the long-term lease buys them stability and an open-ended commitment from Iroquois Valley to support them through the certification process and beyond." He mentioned that farmers have continued to come to them looking to rent even more land from them, which demonstrates that their model works well for both parties.

Mark Schindel, Chief Financial Officer, deeply believes in the economic and environmental value of organic land, and stated that while organic is still in its relatively early stages, "we buy land and increase its value by converting it to organic".



Annex 1

Table 2 - Results of ANOVA Test for Data Homogeneity

ANOVA						
SOURCE OF VARIATION	SS	df	MS	F	P-value	F crit
Between Groups	631	1	631	0.09	0.77	4.75
Within Groups	88,500	12	7,375			
Total	89,131	13				

Table 3- Results of T-Test for Data Homogeneity

t-TEST: PAIRED TWO SAMPLE FOR MEANS

(Not statistically diff at the 5% threshold)

	NASS	Survey
Mean	167.00	153.57
Varience	6,010.97	8,739.29
Observations	7.00	7.00
Pearson Correlation	0.93	
Hypothesized Mean Difference	0	
df	6.00	
t Stat	1.02	
P(T<=t) one-tail	0.17	
t Critical one-tail	1.94	
P(T<=t) two-tail	0.35	
t Critical two-tail	2.45	



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Annex 2

Table 5 - Anova Test for Organic Premium

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F Crit
Between Groups	23,820	1	23,820	1.91	0.17	3.93
Within Groups	1,294,841	104	12,450			
Total	1,318,661	105				

Table 6 - t-Test for Organic Premium

t-TEST: PAIRED TWO SAMPLE FOR MEANS

(Not statistically diff at the 5% threshold)

	NASS	Survey
Mean	150.08	180.06
Varience	7,180.22	17,720.55
Observations	53.00	53.00
Pearson Correlation	0.76	
Hypothesized Mean Difference	-	
df	52.00	
t Stat	(2.47)	
P(T<=t) one-tail	0.01	
t Critical one-tail	1.67	
P(T<=t) two-tail	0.02	
t Critical two-tail	2.01	

The Single Factor ANOVA test produced an F-statistic of 1.91, and an F-Critical value of 3.93, indicating that variances of the two series were statistically similar. Furthermore, the Two-tailed t-Test produced a T-statistic of 2.47, exceeding the t-Critical level of 2.01 at the 5% significance level. These two tests demonstrate that the two data sets are similarly distributed, with a 25% higher mean value for organic land that is statistically significant at the 5% level.



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A note on COVID

As this report was being finalized, the U.S. was in the beginning stages of responding to the growing threat posed by the COVID-19 pandemic. Though it seems likely all commodity markets will be significantly affected by this seismic global threat, a comprehensive discussion of the associated health and economic risks and their potential impacts on U.S. organic markets at this time would be highly speculative, and thus not explicitly included in this report. Rather, the analysis within this report is based on the data and insights available at the time of this report's production.

Though a detailed examination of COVID-19's specific risks are not explicitly included in this report; it is clear that COVID-19's impact on organic markets will ultimately be determined by the pandemic's scope and duration.

Mercaris has conducted a more thorough examination of COVID-19 related risks, and on April 15th released these results in a publicly available market report. As the COVID-19 situation continues to develop, Mercaris will continue to monitor and report on its impact on organic markets.

For additional details and more current analysis, please contact Mercaris at Mercaris.com.



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