

Draft Only

Wheat Miller and Distributor Organic Wheat Quality and Quantity Requirements

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Introduction

Organic wheat acreage represented 1.2% of all wheat acreage in the U.S. in 2019 (USDA NASS, 2020a; USDA NASS, 2020b). The Intermountain West states of Montana, Wyoming, Utah, and Colorado have been among the top five organic wheat producing states in terms of organic wheat acreage consistently since 2010, accounting jointly for 54% of all U.S. organic wheat acreage in 2019 (USDA NASS, 2020a). At the same time, consumer demand for organic foods experiences annual double-digit growth. Sales in the organic breads and grains category has grown steadily and was the fifth largest category of organic products sold by 2014, accounting for 9% of total U.S. organic food sales (USDA-ERS, 2017). However, the market for organic grains continues to be constrained by lack of supply (Koory, 2018). Organic grain acreage increased by only 20% between 2008 and 2016 while the organic meat industry tripled production during the same period (McNeil, 2019). In 2019, organic food-grade wheat averaged \$12.20/bushel, significantly higher than conventionally grown wheat selling at \$5.35/bushel (USDA-AMS, 2019). Hence, the market for organic wheat is promising if growers can maintain profitability. Given the significant contribution of the Intermountain West's production to domestic organic wheat supply, it's important that growers understand the needs of organic wheat millers and distributors.

The objective of this fact sheet is to summarize the findings of a survey conducted with wheat buyers (millers and distributors) to assess their organic wheat quality and sourcing needs. We examine the importance of various quality measures in miller and distributor decisions to purchase organic wheat, as well as their perceptions of organic and conventional wheat quality. We also discuss the hurdles and issues wheat buyers face when purchasing organic wheat, and what prevents them from buying organic wheat if not currently doing so. The information in this factsheet will be important to organic wheat growers and breeders.

Wheat Buyer Survey Overview

The wheat buyer survey data were collected from December 2020 and January 2021 using an online platform. In total, 25 wheat millers and distributors responded to the survey, the majority (56%) are wheat millers. All are located in U.S. western states including Montana (25%), Washington (25%), Utah (21%), Oregon (17%), and California (13%), with some operating in multiple states. Among the wheat buyers surveyed, 16 handle organic wheat currently and nine have never handled organic wheat. More than half of wheat buyers sell wheat or wheat flour to wholesalers/distributors (56%), and among those handling organic wheat, other markets include traditional bakeries (63%), artisan bakeries (56%), and food processors (56%). Those handling organic wheat (46% report more than 60 employees) tend to be larger establishments than those who have not handled organic wheat (0% report more than 60 employees). The wheat buyers surveyed have been involved in wheat sales/processing for more than 20 years, with monthly gross sales from all operations above \$5 million selected most frequently. On average, any wheat sales and organic wheat sales represent 70% and 24% of all sales among those who handle

organic wheat, while wheat sales represent 86% of all sales among those who have not handled organic wheat.

Table 1 provides wheat purchasing and use details for wheat buyers who handle organic wheat. Many indicated that they handle hard red winter (88%), soft white (75%), hard red spring (69%), and hard white (63%) organic wheat classes to some extent. Overall, organic hard red winter and hard red spring classes are handled the most 38%. The majority of the wheat buyers source organic wheat from growers directly (94%) and utilize between 1 to 20 suppliers (69%). Forward contracts with growers are used most frequently (60%), but other types of contracts are also used.

Table 1. Organic wheat business specifics (N=16)

Wheat buyer characteristic	Category	N	Percentage
Organic wheat classes handled ^a	Hard red winter	14	88%
	Hard red spring	11	69%
	Soft red winter	3	19%
	Soft white	12	75%
	Hard white	10	63%
	Durum	4	25%
Organic wheat class handled most	Hard red winter	6	38%
	Hard red spring	6	38%
	Soft red winter	0	0%
	Soft white	2	13%
	Hard white	1	6%
	Durum	0	0%
Organic wheat source ^a	All/many	1	6%
	Wheat growers	15	94%
	Grain elevators	8	50%
	Distributors or brokers – U.S.	7	44%
	Distributors or brokers – imported	3	19%
Number of regular organic wheat suppliers	Own fields/farm	1	6%
	None (own fields/farm)	1	6%
	1-20 suppliers	11	69%
	21-50	0	0%
	51-100	2	13%
Organic wheat purchase transactions used ^a	101-200	2	13%
	Forward contracts with growers	9	60%
	Other contracts with growers	7	47%
	Contracts with suppliers other than growers	8	53%
	Spot purchases	8	53%

^a Respondents could select multiple options, so percentages do not add up to 100%.

Importance of Organic Wheat Quality

We asked wheat buyers that handle organic wheat to rank the importance of various factors when making organic wheat purchase decisions on a scale of 1=“not at all important” to 5= “extremely important.” We calculated the average ranking for each factor and ordered them from most important (highest average ranking) to least important (lowest average ranking). Results in Table

2 show that wheat quality aspects and consistent quality between shipments are two most important factors, followed by price. Feedback from customers, as well as interaction with suppliers, are also quite important. The region of wheat origin and services provided by suppliers are viewed as least important.

Table 2. Importance of factors when purchasing organic wheat

Factor	Mean
Wheat quality aspects	4.07
Consistent quality between shipments	3.93
Price	3.86
Customer feedback/requirements	3.85
Interaction/relationship with the supplier/grower	3.77
On-time delivery	3.54
Baking properties	3.38
Attributes of the final baked product	3.38
Quality aspects of resulting flour	3.29
Quality aspects of resulting dough	3.23
Wheat origin (region)	3.00
Services provided by supplier (e.g. delivery, storage)	2.86

Perceptions of Organic Wheat Quality

Next, we asked wheat buyers to rate the overall quality of organic and conventional wheat on a scale from 1=“very low quality” to 5=“very high quality.” The average ranking of organic wheat quality (3.50) was lower than that of conventional wheat (4.44), and the difference is statistically significant. Half of the wheat buyers consider organic wheat of high or very high quality, while 88% felt that conventional wheat is high quality.

We also asked the wheat buyers which characteristics they view as important indicators of organic wheat quality, and for the important characteristics, whether they perceive organic wheat to be inferior to conventional wheat. Table 3 shows that moisture content, test weight, and protein content and quality are important to two thirds of the wheat buyers or more, and up to 42% of them perceive organic wheat to be inferior for those characteristics. Two-thirds of the wheat buyers consider dockage and wheat defects to be important, and the majority perceive organic wheat to be inferior for these two characteristics, suggesting that there is room for improvement in these organic wheat characteristics. Of the remaining characteristics examined, they were important to less than half of the wheat buyers and only a few considered organic wheat to be inferior in those characteristics. But we also find that 57% of the wheat buyers somewhat agree or strongly agree that there are notable differences in organic wheat quality by supplier/grower, as well as by origin (region).

Table 3. Important indicators of organic wheat quality

Quality characteristic	Important^a	Organic inferior^b
Moisture content	13 (81%)	2 (15%)
Test weight/1000-kernel weight	12 (75%)	5 (42%)
Protein content	12 (75%)	4 (33%)
Protein quality	11 (69%)	4 (36%)
Dockage	10 (63%)	8 (80%)
Wheat defects	10 (63%)	6 (60%)

Contamination with other classes	8 (50%)	2 (25%)
Farinograph test	7 (44%)	2 (29%)
Single kernel characterization	3 (19%)	1 (33%)
Other factors ^c	6 (38%) or less	0 (0%)

^a Percentages represent the share of those who viewed the characteristic as important among those who handle organic wheat currently.

^b Percentages represent the share of those who indicated that organic wheat is inferior to conventional among those who viewed the characteristic as important.

^c Including flour falling number, wet gluten test, flour color, ash/mineral content, microbial contamination, mixograph test, alveograph test, extensigraph test, amylograph test.

Hurdles Impacting Organic Wheat Use

We also examined wheat buyer hurdles to securing their desired quality or quantity of organic wheat, as well as issues preventing those who have not dealt with organic wheat from handling it. Those who handle organic wheat currently were asked whether they perceive certain issues to be hurdles on a scale from 1=“not a hurdle” to 3=“definitely a hurdle.” Averages reported in Table 4 show that not enough growers willing to grow organic wheat and the cost/price of organic wheat are perceived as the biggest hurdles, with 80% and 70% of wheat buyers viewing them as hurdles.

Table 4. Hurdles to securing desired quality or quantity of organic wheat

Hurdle	Mean	Not a hurdle	Somewhat of a hurdle	Definitely a hurdle
Not enough growers willing to grow organic wheat	1.90	20%	70%	10%
Cost/price of organic wheat	1.90	30%	50%	20%
Suppliers do not understand our quality requirements	1.60	50%	40%	10%
Suppliers are unable to verify some of the quality requirements	1.60	50%	40%	10%
Not enough interaction with wheat growers and breeders	1.50	50%	50%	0%
Difficulty finding organic wheat suppliers	1.50	60%	30%	10%
Complexity of handling and transporting organic wheat	1.40	60%	40%	0%
Contamination of organic wheat during handling and transportation	1.10	90%	10%	0%

However, it appears that the issue is not the lack of organic wheat supply (only 14% of wheat buyers agree that they need more organic wheat than their suppliers can provide), but rather the organic wheat quality (43% agree that they need organic wheat of higher quality than their suppliers currently provide). Since the price of organic wheat was noted as a major hurdle, it could be that high quality organic wheat is not cost effective. Also, 36% of the wheat buyers agree that suppliers sometimes provide lower quality organic wheat than agreed to. On the other hand, wheat quality issues likely do not affect the milling process (only 8% agree they have to adjust milling process for organic wheat) and 64% agree that millers are able to enhance the quality of the resulting organic wheat flour. In fact, only 27% somewhat disagree or strongly disagree that organic wheat flour quality is similar to conventional wheat flour.

In contrast, those who have never handled organic wheat are most concerned about demand for organic wheat or wheat flour (5 out of 9 respondents), while 54% of those who handle organic wheat currently agree that the demand for organic wheat flour is strong. Two out of the nine wheat buyers who don't handle organic are also concerned about organic wheat quality, issues

related to segregation of organic and conventional wheat, and organic wheat supply. One wheat buyer is concerned about the price, compliance with USDA standards, and organic wheat flour quality.

Conclusions

We find that quality (including its consistency) is the most important factor to wheat millers and distributors when purchasing organic wheat, and organic wheat lags somewhat in quality behind conventional wheat. Dockage, wheat defects, and test weight were selected most frequently as quality characteristics where organic wheat is perceived to be inferior to conventional wheat. These characteristics were important to at least two thirds of the wheat buyers. On a positive note, we find that millers are usually able to enhance the quality of the resulting organic wheat flour.

Wheat buyers view price as the second most important factor when purchasing organic wheat. Price is also a major hurdle to securing organic wheat of desired quality and quantity among those who handle organic wheat currently, and organic wheat quality appears to be a larger issue in the market than the lack of organic wheat supply. Those who have never handled organic wheat are most concerned about organic flour demand.

This fact sheet shows that from the perspective of organic wheat buyers, improvements to organic wheat quality is needed without increasing prices. Understanding the quality requirements of wheat buyers is essential to wheat growers as they make management decision which impact end product quality.

References

(USDA-ERS, 2017).

(Koory, 2018).

(McNeil, 2019).

(USDA-AMS, 2019).

USDA NASS. (2020a). *Census of agriculture, organic survey*.

https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Organic_Production/

USDA NASS. (2020b). *Quick stats*. <https://quickstats.nass.usda.gov/>

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