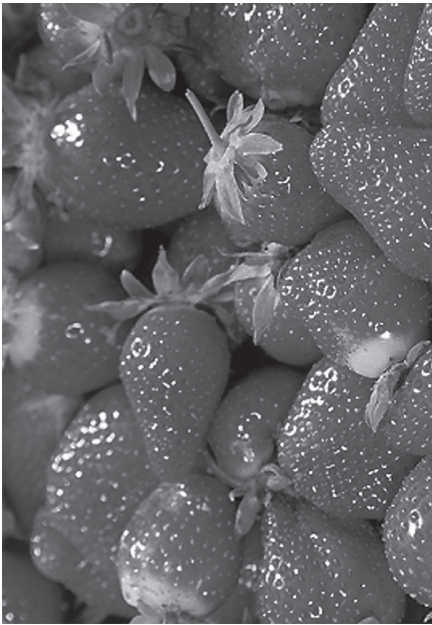


# Price Premiums for Organic Strawberries

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Organic strawberries command a price premium averaging \$0.61 per pound at the farmgate and \$1.00 per pound at the retail level. Using weekly time series data for the past five years, we find that we cannot explain retail price premiums as a function of farmgate price premiums. This suggests that much of the variation in organic premiums paid by consumers is derived from changes in marketing costs rather than costs of production incurred by the farmers or changes in the supply of organic produce.



Between 2007-2012, the average price for a pound of conventional strawberries was \$2.22 and the average price for a pound of organic strawberries was \$3.22. This means that the average premium was \$1.00 per pound, or 45% over the conventional retail price of strawberries.

Production of organic fruits and vegetables is growing in the United States, and many consumers are willing to pay a substantial price premium because they perceive that organic produce has certain desirable qualities. Much of the economic research on the prices of organic versus conventional produce focuses on the demand side of the produce market and analyzes consumer willingness to pay for organic.

Little existing research examines the extent to which supply side factors and costs of production influence organic price premiums, nor how farmgate price premiums compare to retail premiums. These premiums derive from a number of factors: there may be a limited supply of organic produce relative to the demand, unit production costs for organic farmers are usually higher than for conventional farmers, and processors and marketers may not benefit from the economies of scale that are available in conventional markets.

Identifying the factors that contribute to organic price premiums and differences in premiums between farmgate and retail prices is an initial step to better understanding the nature of the organic produce market—an important and growing niche in U.S. and California agriculture. This article investigates factors that comprise organic price premiums by comparing costs of production, farmgate prices, and retail prices of organic and conventional strawberries. Do differences in the cost of production of organic produce explain the observed differences in the prices of organic and conventional produce? Are the price premiums at the farmgate similar to the price premiums observed at the retail level?

We examine the prices of fresh organic strawberries in California as an example of whether and how price premiums are transmitted from the producer to the consumer. We calculate correlations of farmgate and retail prices for organic and conventional strawberries in California, controlling for seasonality, and we further calculate the correlation of organic price premiums at the farmgate and retail levels.

Price correlations close to one indicate that the farmgate and retail markets move together; correlations far from one, on the other hand, indicate that there may be inefficiencies of arbitrage or high, variable marketing costs incurred between the farmgate and retail levels of sale. We find that the relation between farmgate and retail price premiums is ambiguous, likely because farmgate prices explain little of the variation in retail prices for either organic or conventional strawberries.

## Method and Results

We analyze the weekly average shipping point price data and retail price data from the Agricultural Marketing Service (AMS) of the USDA. For many organic fruits and vegetables, the AMS database either does not include organic shipping point prices or the prices are only available for a few weeks each year. Consequently, we focus our analysis on strawberries for which both organic and conventional price data are available for several months of the year. Further, we use shipping point price premiums to represent farmgate prices because they are highly correlated for strawberries.

Various factors often make the data difficult to compare across organic and conventional products, limiting

the scope and breadth of analysis. Prices for fresh produce vary substantially depending on weather conditions, season, etc. Also, strawberries are often sold in packages of different weights or berry sizes. We can control for only some of these factors in the comparisons that follow.

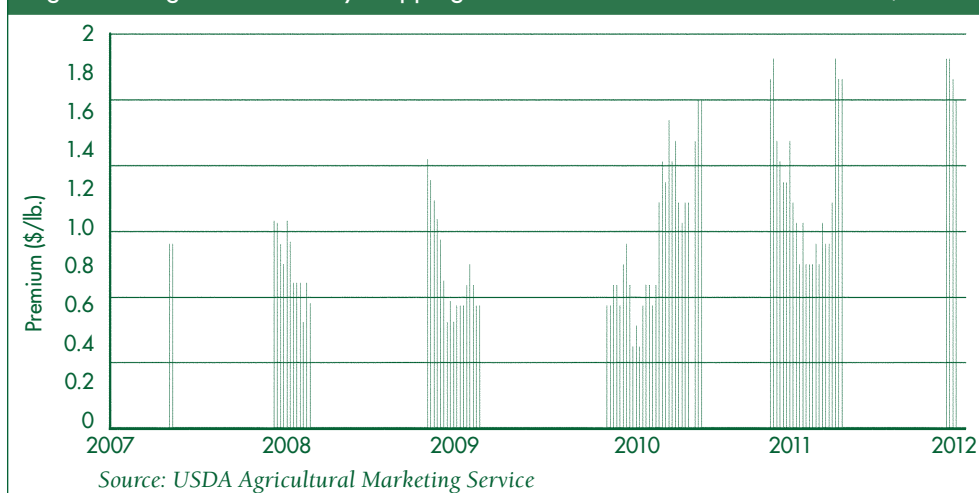
At the farmgate level, strawberries are usually sold in flats consisting of a fixed number of containers, each of a certain weight. The most data are available for flats of eight 1-lb containers for the Salinas-Watsonville region of California. Figure 1 shows how farmgate price premiums changed between 2007 and 2012 during the summer months. The gaps represent missing data, primarily for the winter months when berries are supplied from Southern California, elsewhere in the United States, or by imports.

On average, the farmgate premium for organic strawberries is \$0.61 per pound. For average conventional prices of \$1.11 per pound between 2007 and 2012, this represents a price premium of about 55%. The price premiums of strawberries vary substantially throughout the year, which is consistent with the findings of previous literature.

Jiang and Goodhue find evidence that strawberry promotions play a substantial role in determining the retail price. A seasonal pattern of price premiums is not readily apparent in our data, but seasonal changes in availability of strawberries and other substitutes, along with changes in promotions, likely explain some of the variation in the price premiums that we observe.

For retail prices, we use data collected by the *Fruit and Vegetable Market News*, which surveys more than 200 retailers, consisting of approximately 17,000 individual stores, for their online weekly advertised prices. The majority of the strawberry data are for 1-lb packages. We analyzed prices for the Southwest region of the country for the weeks corresponding to

Figure 1. Organic Strawberry Shipping Point Premiums in Salinas-Watsonville, CA



the Salinas-Watsonville price data. The retail price data are the weighted average prices for the stores surveyed for conventional and organic strawberries from 2007 to the present.

Figure 2 shows the retail price premiums. The average price for a pound of conventional strawberries was \$2.22 and the average price for a pound of organic strawberries was \$3.22. This means that the average premium was \$1.00 per pound, or 45% over the conventional retail price of strawberries.

One explanation for the existence of a price premium is differences in production costs of organic produce versus conventional. Using the calculated cost of production for conventional strawberries in 2010 from the UC Cooperative Extension Cost and Return Studies, we estimate the cost

per pound to grow and harvest conventional and organic strawberries.

Organic strawberry fields may yield more than 25% fewer strawberries than their conventional counterparts. As a lower bound for the cost difference, we look at the difference in cost of growing 25% fewer strawberries per acre using the same value of inputs.

Table 1 shows the estimated cost per pound in 2010 to grow and harvest organic and conventional strawberries, as well as the average farmgate and retail prices in the same year. The price premiums are between 40–45% for both farmgate and retail prices; however, the estimated cost of producing organic strawberries is only 13% higher, using our limited measure. This suggests that production cost differences explain some,

Figure 2. Organic Strawberry Retail Premiums in Southwestern United States

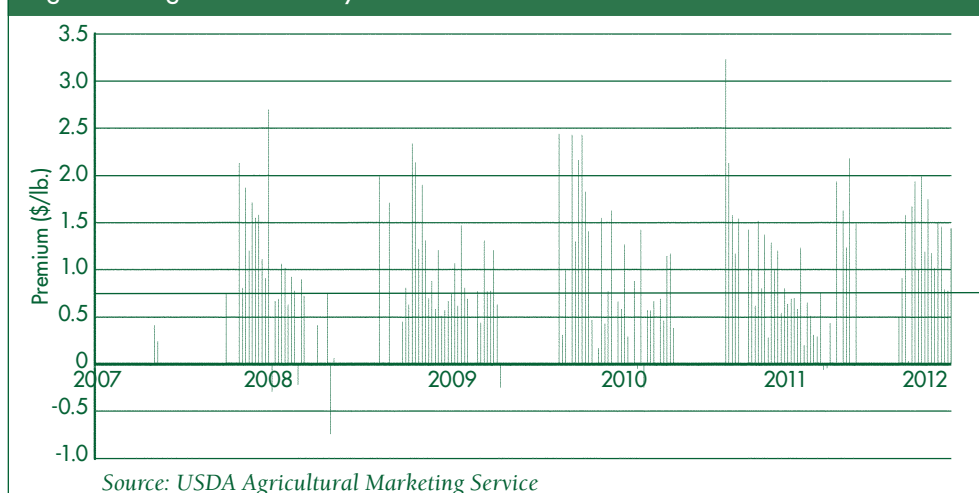
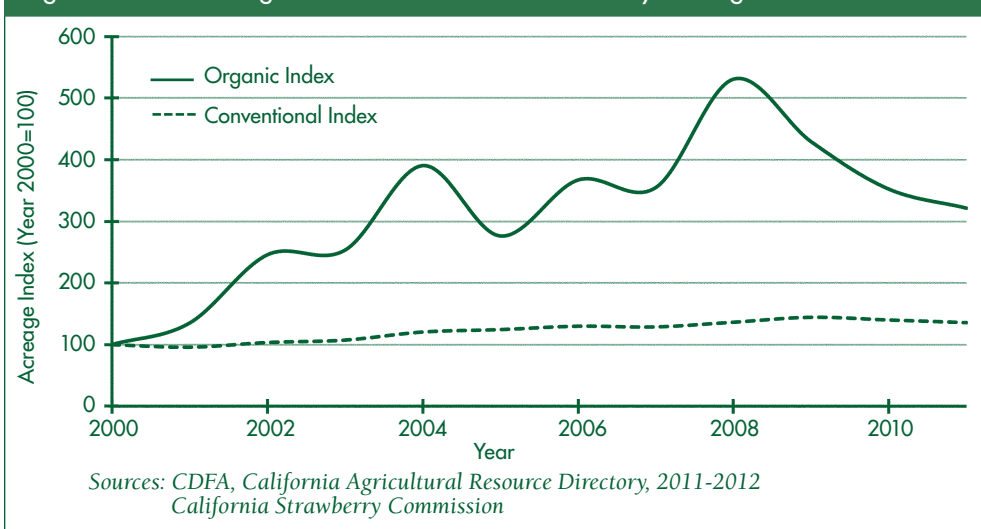


Figure 3. Index of Organic and Conventional Strawberry Acreage in California



but not all, of the price premiums. More complete cost data over several years could clarify this result.

Table 1. Strawberry Costs and Prices, for 2010

	Strawberry Prices (\$ per lb)	
	Conventional	Organic
Cost	\$0.99	\$1.12
Farmgate Price	\$1.20	\$1.75
Retail Price	\$2.30	\$3.21

Source: Compiled from USDA AMS UCCE Cost and Return Studies

## Discussion

The correlations between farmgate and retail prices of organic and conventional strawberries provide evidence that there may be little correlation of price premiums. The weekly retail prices of organic and conventional strawberries are only weakly correlated with their respective farmgate prices. In fact, we cannot reject the null hypothesis that the prices have zero correlation. This suggests that farmgate prices have little influence in determining the variation in prices that consumers pay for strawberries.

Consequently, the farmgate price premium likely has little predictive power to explain the premium consumers pay for organic versus conventional strawberries. The sample size in our

analysis is not large enough to assess how strong the relationship between farmgate and retail price premiums is, and a longer time series is needed to compare the price premiums directly.

Understanding how retail and farmgate price premiums are related is important for predicting shifts in the supply and demand of organic strawberries. Changes in the price premiums of organic produce are likely to affect the number of farmers and acreage in organic strawberries, imposing a simultaneous relationship between price and supply.

Figure 3 indexes the changes in acres of conventional and organic strawberry fields in California, with 2000 as the base year. In 2000 there were 509 acres of organic strawberry fields and 27,600 acres of conventional strawberry fields. Conventional strawberries have never experienced a change of more than 10% annually. By contrast, organic strawberry acreage, although on an overall upward trend, has fluctuated dramatically.

This study provides evidence that farmgate and retail prices move separately in the markets for both organic and conventional fresh strawberries. Since the farmgate and retail prices for both organic and conventional strawberries are not highly correlated, the premiums are also weakly correlated.

The lack of correlation might be due, in part, to changes in the number of farmers and acres growing organic strawberries or changes in advertising and marketing at the retail level.

The finding that retail and farmgate prices of organic and conventional strawberries are not highly correlated suggests that variation in retail marketing has a substantial influence on changes in the retail prices and consequent retail price premiums. Additional research with a longer time series and data on retail price promotions might shed more light on the reasons why retail and farmgate fresh strawberry markets operate distinctly for both conventional and organic berries.

### Suggested Citation:

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### For additional information, the authors recommend:

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