

DO ORGANIC FRUITS and VEGETABLES TASTE BETTER THAN CONVENTIONAL PRODUCE?



43 percent of consumers choosing organic food do so because of "better taste"



OUR CONCLUSIONS

Many studies that have compared the taste and organoleptic quality of organic and conventional foods report no consistent or significant differences between organic and conventional fruits and vegetables. But among the well-designed studies that have found differences, the vast majority favor organic produce.

There have been more comparative studies of the organoleptic quality of organic and conventional apples than any other fresh fruit or vegetable. The results consistently show enhanced organoleptic quality in organic apples.

The more intense flavors in organic fruits and vegetables probably stem from two factors: somewhat higher average levels of antioxidants, and somewhat lower average crop yields. Yield levels, and the availability of

nitrogen to crops, clearly can alter both nutritional and organoleptic quality. The high yields achieved today in some fruit and vegetable crops have likely come at the expense of crop nutritional and organoleptic quality.

Organic produce tends to store better and has longer shelf life, probably because of lower levels of nitrates and higher average levels of antioxidants. The former can accelerate food spoilage, while antioxidants help preserve the integrity of cells and some are natural antibiotics.

DEFINITION

ORGANOLEPTIC QUALITY

a term relating to the sensory properties and quality attributes of a specific food

More research is needed to refine methods for comparing the organoleptic quality of food and to establish reliable linkages between organic farming practices and enhanced quality. Progress in tracing the roots of food quality to core farm management practices will no doubt point the way toward farming systems that consistently deliver both good nutrition and great taste.

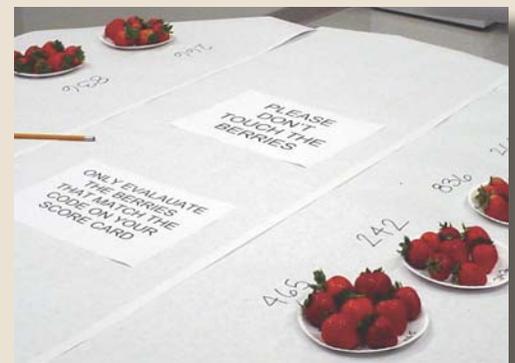
To support the efforts of innovative farmers that enhance the flavor profile of fresh produce, the organic food industry – and consumers – will need to develop routine ways to base the price of farm commodities on both quality and quantity. Such a change in how farm income is determined will be of great significance given that for decades the number one goal driving change in farming systems has been increasing yields, irrespective of changes in crop quality.

The Art and Science of Sensory Testing

Measuring organoleptic quality is tricky and inherently subjective. Experimental research indicates that the "organic" label, by itself, sometimes increases consumer acceptability of the food. This is known as the "halo effect." The expectation of better quality in organic fruits and vegetables may be responsible for the conviction by some consumers that organic produce tastes better.

Results from sensory tests can vary depending on whether or not the taste panelists are trained vs. untrained. Differences in the ripeness of food at harvest, and how the food was handled post-harvest, can also impact the results of taste tests.

It is crystal clear that plant genetics and farming practices can also alter organoleptic quality, but it is difficult to isolate these impacts from those linked to soil quality, the weather, the overall health of the crop, and how and when a crop is harvested and handled. Still, published research does support some tentative conclusions about how farmers can consistently enhance the taste of food.



The sensory quality laboratory at Washington State University tested consumer preferences for organic and conventional strawberries as part of a project funded by the Organic Center. The organic berries were consistently judged as sweeter.

TASTE AND SENSORY DIFFERENCES

Comparing the Studies; Apple Data the Strongest

Apples. Organic apples especially are usually preferred over conventional or integrated production system apples in university-designed taste tests, and at worse, are judged equivalent to conventional apples. Plus, data show clearly that organic apples store better. They are firmer and crisper when coming out of storage, and tend to hold more of their flavor. These findings have been replicated in comparison studies in at least six countries involving multiple apple varieties, and different methods and lengths of storage.

Organic management yielded sweeter and less tart Golden Delicious apples in Washington State compared with conventionally grown apples. Another study compared Gala organic apples to conventional in the Yakima Valley of Washington State. Organic apples had higher flesh firmness than the conventional. Consumers consistently rated organic apples as firmer and to have better textural properties. Recent testing has also shown



that organic apples have higher levels of antioxidants, plant secondary metabolites that often give food its distinctive flavor.

Strawberries. Organic and conventional strawberries were grown in adjacent plots in Spain under identical environmental conditions. The organic fruit had superior quality to the conventional, including more intense color (indicating more antioxidants) and higher sugar content. Organic strawberries had a higher resistance to deterioration during simulated marketing conditions, and thus better keeping quality. Organic strawberries grown in California were slightly smaller but sweeter, better-looking, and were preferred by consumers over conventionally grown berries. They also contained higher levels of certain key vitamins and antioxidants.

Tomatoes. Organic tomatoes were preferred by taste testers because of their taste, flavor, texture and juiciness. In contrast, conventional tomatoes were described as “not as ripe,” “dry,” and having “less aroma” in this study. In a well-designed study by U.S. Department of Agriculture scientists, organic ketchup was found to be notably brighter in color than conventional, in part because of higher levels of the antioxidant lycopene.

Storability and Quality

Several studies have reported that organic produce stores better and has longer shelf life than conventional produce. This, of course, positively affects taste.

Better storability appears to be linked to the lower level of nitrate that is usually found in organic produce. Lower nitrate levels have been linked in many studies to better taste. But this comes with a caveat; lower nitrogen also usually means lower crop yield. The Organic Center is sponsoring ongoing research designed to better understand the impact of high levels of fertilization, and high crop yields, on the flavor and nutritional quality of food. Evidence suggests that high yields in some crops can dilute the concentration of vitamins and antioxidants in plants, changes that can reduce nutritional quality and diminish flavor. This is why winemakers look for grapes from vines that have dealt with a certain level of stress during the growing season. Grape vines managed for maximum yields produce more grapes per acre, but lower quality, less flavorful wines.



Think apples. It isn't just the taste. It's everything you experience when eating an apple -- color, firmness, crispness, the burst of smells following a bite, juiciness, flavor, appearance, lack of blemishes, and the way the food feels once in the mouth.



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Access more information on taste and sensory differences and the State of Science Review, “**Do Organic Fruits and Vegetables Taste Better Than Conventional Produce?**”, written by Richard C.Theuer, Ph.D., at www.organic-center.org under “State of Science” and then “Nutritional Quality.”