UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

KENTUCKY FARMERS' MARKET ASSOCIATION
TECHNOLOGY AND FOOD SAFETY PROJECT

AEC Extension Series 2011-02

Dr. Tim Woods
Department of Agricultural Economics
University of Kentucky
December, 2010

Overview and Acknowledgments

This project examines the economic impact of implementing point-of-sale (POS) technology supporting debit and electronic benefits transfer (EBT) transactions in rural farmers markets. It was funded by the USDA- Farm Market Improvement program and conducted jointly by the University of Kentucky and the Kentucky Farmers Market Association. Many individuals contributed to the design, implementation, data gathering, and evaluation of this project. Sara Williamson, Senior Extension Associate in the Agricultural Economics Department at the University of Kentucky, provided numerous hours of instrument design and project preparation, market interaction, data gathering, data summary, and authored/edited portions of this document. Janet Eaton and Stephanie Wetzel with the Kentucky Farmers' Market Association provided help with the project design and market training. Nick Wright, Extension Associate in the Agricultural Economics Department at the University of Kentucky, also provided some data gathering, data summary for this project. Market managers and vendors at both the test and control market locations contributed substantially to the on-going data collection for both the POS technology and sampling projects.

Questions about the project report can be directed to the attention of Tim Woods at tim.woods@uky.edu or 402 CE Barnhart, Department of Agricultural Economics, Lexington, Kentucky 40546.

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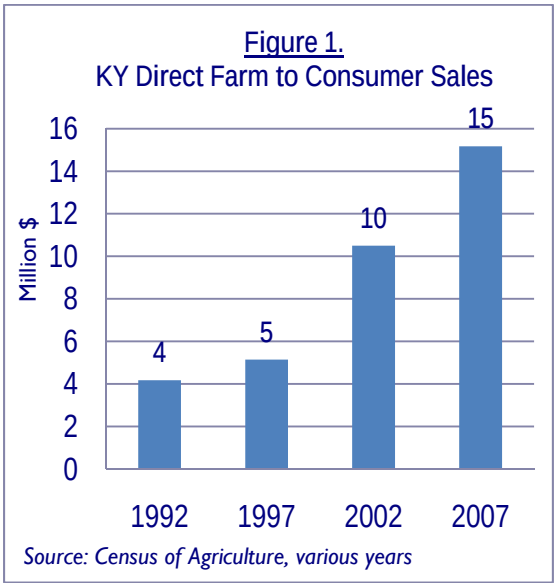
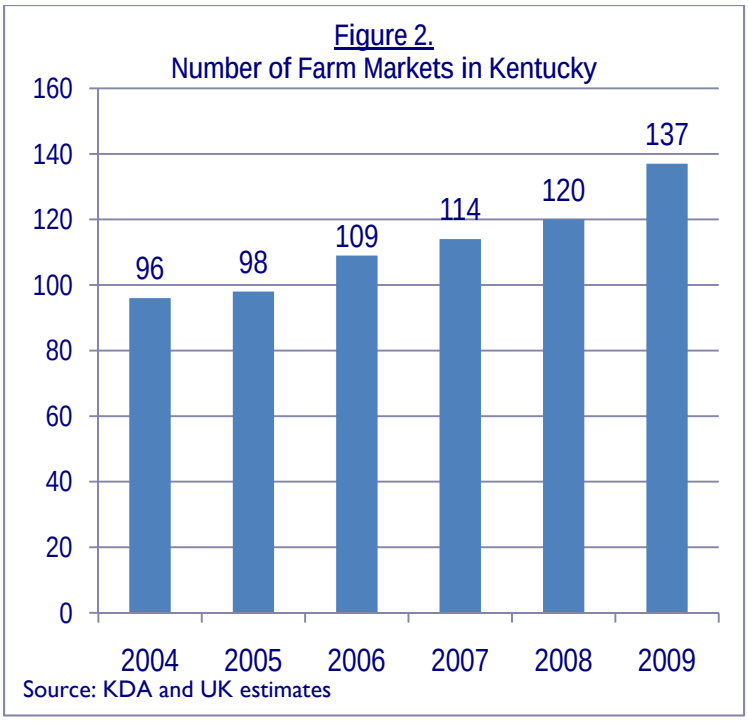
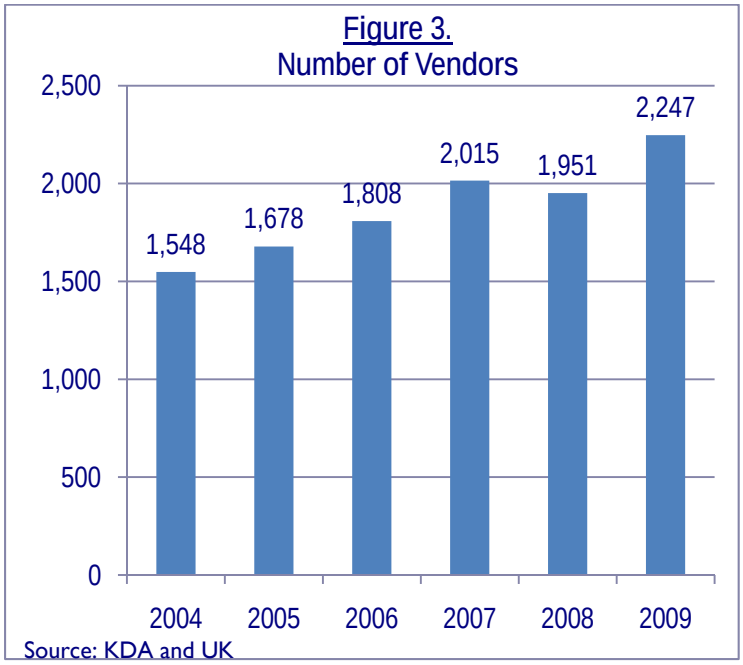
Introduction

The surging growth of local products in local markets has led to rapid expansion of on-farm retailing and community farmers' markets across the Commonwealth. Certainly, the passage of Kentucky HB 391[1] in 2003 served as a catalyst, as it opened the door for development of a wide range of on-farm processed products to be sold at a small scale, either on the farm or through farmers' markets. The significant increases in Kentucky's direct sales from farm to consumer are reported in both the 2002 and 2007 U.S. Census of Agriculture (Figure 1). Further, the number of farm market sites (Figure 2) and market vendors (Figure 3) have seen corresponding growth, reaching record highs for Kentucky in 2009, according to KY Department of Agriculture estimates.



[1] www.lrc.state.**ky**.us/Statrev/ACTS2003/0042.pdf provides the detail about this legislation. Accessed March, 2010.





The business of the farm market has become more demanding and sophisticated as food retailing in general has adapted to the new shopping behaviors of food consumers. Although becoming more widely utilized at traditionally cash-focused farm markets, electronic benefits transfer (EBT) and debit card use is still fairly new, particularly in rural markets. Product development and marketing are critical factors behind making successful long term buyer-seller connections. A big part of making that connection is product sampling. The 2008 Annual Farmers' Market Report from the Kentucky Department of Agriculture reported 11 markets accept EBT cards and nine accept credit/debit cards. Only two markets accepted both (Eaton, 2008).

This project looked at the viability of market vendors implementing retail selling practices of EBT/Debit sales and also sampling in relatively rural markets in Kentucky.

EBT

The USDA Supplemental Nutrition Assistance Program (SNAP), formerly the Food Stamp Program, recently converted to an electronic benefit transfer (EBT) system. Farm markets have wanted to remain a viable option for this consumer demographic and have adopted point-of-sale devices (credit card machines) to facilitate these transactions (R. Terk, 2009). The USDA reported 753 farmers markets had participated in SNAP, totaling $2.7 million in FY 2008.[2]

The current economic environment has seen a surge in SNAP participation. The Food Institute published a report relating the growth of unemployment and growth in the food stamp program participation[3], confirmed by USDA FNS data that reported 11.8 million participating households receiving $30.3 billion in SNAP benefits in FY 2007 growing to 15.2 million households with $50.4 billion in FY 2009.[4]

A 2009 analysis of costs and benefits associated with EBT availability at farmers' markets determined that, although several farmers experienced sales increases as a result of offering the service, costs associated with the machine operation itself could neutralize revenue benefits[5]. Results from this evaluation of farmers markets and vendors using wireless card services for food assistance programs yielded the conclusion that EBT technology does not have a general strategy for success, rather, the marketing venues need to consider customized programs.

Kentucky has 4.1 million people mostly living in relatively rural areas. The percent of the population below the poverty line has ranged 17-20% since 2004. The number of food stamp recipients in Kentucky grew from 234,271 in June 2004 to 325,578 in June 2009.[6] Growth in food stamp cases has been particularly acute in rural counties. Part of the motivation for the study was to see if EBT systems could attract rural consumers to the farmers market as well as to see if it may enhance revenue for rural market vendors. Rural communities in Kentucky have exhibited higher than average food stamp participation rates and higher unemployment. The growth in the SNAP program creates the potential for mutually beneficial market development for market vendors and SNAP participants, while also increasing food quality and nutrition for low income households. Detailed data noting the growth in the food stamp (SNAP) program in Kentucky are provided in Appendix A.

Debit Cards

Debit card use has steadily expanded over the past 10 years, becoming a widely used vehicle for making purchases. A modest estimate of four in 10 grocery customers are using the technology, which explains how the compound annual growth rate of 17% for debit usage from 2002-2007 exceeded that of credit cards in 2007 alone[7]. Woolsey and Schultz (2010) summarize debit card trends across a variety of trade data and highlight growth in use and volume noted in Table 1.

[2] USDA SNAP Factsheet, "Accepting EBT at Farmers Markets", USDA Food Nutrition Service, Revised May 2009.
[3] FI Report, *"Number of Unemployed Causing a Rise in Food Stamp Enrollment"*, pp.1-2, May 25, 2009.
[4] USDA FNS Monthly Reports, www.fns.usda.gov/pd/34SNAPmonthly.htm, accessed March 2010.
[5] Schumacher, A., Briggs, S., & Krumbhaar, G. (2009). "Wireless Card Services: Supporting SNAP, WIC, and Senior Farmers Market Nutrition Programs", Kresge Foundation Report. Revised May 2009.
[6] Kentucky Cabinet for Health and Family Services http://chfs.ky.gov/NR/rdonlyres/EA5A07D4-1915-4019-A9A7-A5F7472AD015/0/CombinedCounties122008.pdf accessed November 2009.
[7] FI Report, *"Debit Cards Emerging As Preferred Payment Method"*, pp.3, July 28, 2008.

They further noted that in 2008, 72% of consumers reported using a debit card in the past year, up from 65% in 2007.[8]

Table 1. U.S. Debit Card Transactions

Year	Debit Transactions	Debit Card Sales
2003	16.1 billion	$583 billion
2008	34.0 billion	$1,330 billion

Source: Woolsey and Schultz, 2010, based on the Nilson Report Dec 2009.

Farm markets, historically dependent on cash transactions, have recognized the growth in debit card use and have looked for ways to make this type of transaction feasible for the market. Adoption has been slowed by the typical remote setting of the market, the high cost per transaction of debit purchases, and the scale economies associated with a fairly expensive POS terminal.

An important research question associated with adopting systems that could accommodate both EBT and debit cards is the economic impact and the feasibility. One might expect urban markets with fairly high traffic and transaction numbers to more readily justify the expense of implementing such a system. But most community markets in Kentucky are fairly rural. Can these technologies work in smaller scale markets?

Sampling

The expansion of interest among farmers direct selling these value-added products in the wake of HB 391 and implementing sampling programs has led to a market sampling certification program by the Kentucky Department of Agriculture.[9] Two levels of certification have been developed, one for fresh (raw) products and one for processed products.

While careful attention has been placed on establishing quality assurance guidelines for these farmers, both in product preparation and in the sampling process, there remains a need to establish guidelines for effective sampling at farmers markets for farmers and to measure the economic impact of sampling. Anecdotal information suggests market visitors respond to sampling, creating more sales and overall market growth. The customer perception of sampling and the degree of economic impact, however, remains unknown. The development of a reliable estimate for the economic impact of sampling would inform discussions for the further development of support programs for these local markets among health inspection agencies, the state department of agriculture, local communities hosting the markets, and among the farmers themselves.

Project Objectives

Objective 1: EBT and Debit Card Impact

The first objective of this project is to try and identify the impact of implementing a POS system using tokens on a variety of vendor performance measures (sales, customer traffic, growth in customer numbers, customer loyalty).

[8] Citing a report published by Javelin, *"Credit Card Spending Declines"*, March 2009.

[9] A summary of the KDA program can be found at http://www.kyagr.com/marketing/farmmarket/sample.htm

Further, the feasibility (as measured by benefit/cost) of adopting this technology will be explored for rural markets. EBT and Debit transactions can be (and need to be) tracked separately even though they use the same technology. Feasibility will be gauged, because of the joint nature of the transactions, as the sum of sales from both kinds of transactions relative to the cost of gaining them.

Objective 2: Sampling Impact

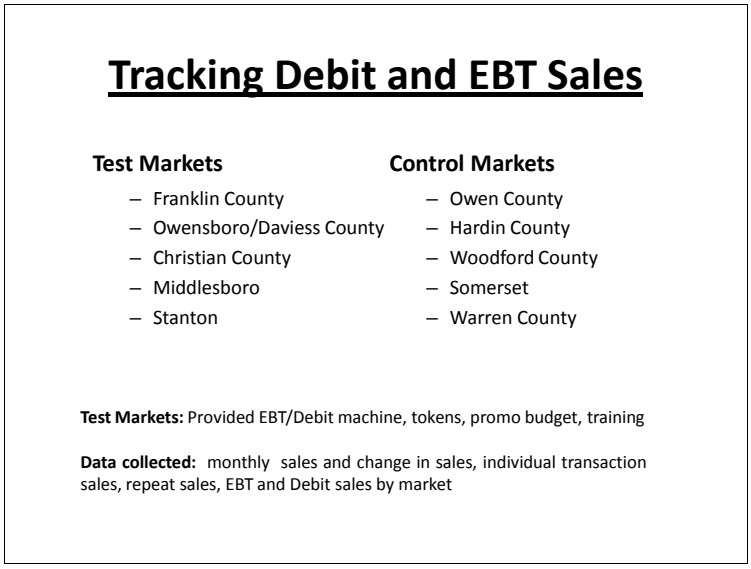
The second objective is to measure the importance of sampling to farm market customers across different kinds of products and to gauge some idea of the impact that offering samples has on the customer interest in products and ultimately sales.

Project Design and Methodology

Debit/EBT Study

Test and control markets were selected in rural Kentucky communities that indicated an initial willingness to participate in the study. Test markets received a debit/EBT machine for use during the market season, and vendors from control markets did not use this technology.

Table 2. Debit/EBT Methods Summary



The Kentucky Department of Agriculture keeps fairly detailed records of market and sales activity. The markets selected for each group approximately paralleled a counterpart market for size and sales.

Table 3. Market Data for Test and Control Markets, 2007

Market	Founded	Vendors in 2007	Gross Sales in 2007
Test Markets			
Franklin	1960	35	$100,000
Daviess	2003	27	$125,000
Christian	1991	40	n/a
Middlesboro	2007	10-15	n/a
Stanton	1984	15	$30,000
Control Markets			
Owen	2003	15	$20,000
Hardin	1980	30	$125,000
Somerset	1978	6	$60,000
Woodford	1992	45	$50,000
Warren	1968	25	$250,000

Source: unpublished data, Kentucky Department of Agriculture, 2008

Vendor Data. Five test markets were selected in rural Kentucky communities that vary in market structure, product emphasis, and community demographics. Five control markets were also identified that have similar characteristics.[10] A **Sales Progress Survey** was used where weekly market data were collected from vendors and market managers on sales, token use, patron counts, qualitative impressions from interactions with patrons, and an end-of-season vendor survey collecting data on differences observed in the market activity with the electronic exchanges versus the previous season.[11] Similar market data were collected weekly from cooperating control markets, using an index of change in sales and visits rather than absolute numbers.

Between season and cross market comparisons were used to estimate the impact of the electronic exchange technology, specifically estimating the marginal change in sales resulting from the technology adoption. A benefit/cost measure was used in each market and compared against a series of break-even measures.

The Sales Progress Survey was designed to identify vendors by weekly sales volume and if there were differences in sales and patron visits to the market from (1) the same month during the previous market season, (2) the previous month during the same market season.

A **Vendor Transactions Survey** was conducted in test and control sites to monitor differences in transaction activity between markets. The specific hypothesis was to test for differences in sales per transaction for markets where EBT/Debit exchanges were supported. These data included specific sales and item purchases weekly throughout the marketing season.

Producers were compensated with a small sum for completing each survey in both test and control markets and the market manager in each market was also compensated $50 per month for administering the surveys on site.

[10] See Appendix A for demographic data corresponding to each market, including historic EBT use.
[11] See Appendix B for a copy of (1) the Sales Progress Survey and (2) the Vendor Transactions Survey

Test markets were provided POS machines and tokens. Vendors received training on how to use the system. A small $500 promotion stipend was provided to each market to promote locally as they saw fit[12].

Debit/EBT Benefit-Cost Approach. The challenge of this project was to measure the marginal benefit of adding the POS technology to the market. The benefit-cost ratio would be the additional sales (or other benefit) relative to the cost of implementation. The test and control markets would presumably allow a statistically valid comparison of changes in market activity (sales, traffic, customer satisfaction, etc.) and compare it to the costs of implementation.

Cost of implementation involves several factors. The project contracted with Fidelity National Information Services for the POS units in the test markets. The POS unit cost $1,150 and $45 monthly service fee was assessed. Payment accepted transaction fees were $0.10/transaction for EBT and $0.40/transaction for Debit. Markets would use wooden tokens that customers could purchase using the POS and could be redeemed by their vendors for cash from the market manager. Markets were provided a grant for the POS units and transaction fees, as well as for the wooden tokens.

Some markets opted to provide for a specific POS attendant and/or cashier. This, of course adds to the cost as well as the potential benefit. This can be provided by market volunteers, but should be considered in the benefit/cost function.

Market Visitor Data. Urban versus rural market visitor comparisons were made by surveying visitors at 11 different Kentucky markets. The test and control vendor data were restricted to rural market communities, and so urban versus rural differences were difficult to ascertain just among vendors. Visitor demographic information was collected in addition to interest in different types of products, market services, frequency of farm market visits, and utilization of debit cards as a general practice. Detail on the **Farm Market Patron Survey** can be found in the Appendix B

Sampling

The initial experimental design to measure the economic impact of sampling was to pursue a five market test and control group similar to the EBT/Debit analysis. The intent was to find markets and vendors offering similar products – in one market where active sampling was taking place and in markets where similar products were being sold without active sampling.

This turned out to be more difficult than expected. The Kentucky Farm Market Association provided hundreds of cost-shared sampling kits to vendors across the state. The Kentucky Department of Agriculture also developed a sampling implementation guidebook. Training on how to provide samples was provided through UK Cooperative Extension during the winter fruit and vegetable growers meetings. In spite of all this, few vendors stepped forward to actually offer samples, even when offered incentive to participate from the project.

Producers identified a number of concerns about implementing sampling. These included the distraction involved in complying with health regulations while trying to sell, being intimidated by the health department compliance, not being convinced that sampling would provide a reasonable return to the effort, and still not being confident in knowing sampling 'best practices'.

[12] Most markets used some combination of additional POP signage and newspaper ads.

Our project used some alternative approaches to address the study objective outlined for sampling.

1. Survey market customers in 11 rural and urban markets (**Farm Market Patron Survey**), randomly assigning customers into one of three groups responding to otherwise identical surveys on product and service demand from the market: (a) control group, (b) "if sampling were provided" group, and (c) "if cooking and demonstrations were provided" group.[13]

2. Develop, demonstrate, and evaluate the effectiveness of a 'pooled' sampling delivery in a pilot market.

3. Piggyback a Family Consumer Science sweet potato value-added products demonstration to gather customer feedback on product sampled at point-of-purchase.

Farm Market Patron Survey.
This survey was completed by 302 market visitors at different points during the 2009 market season at 11 urban and rural markets. The control group completed the survey exactly as provided in Appendix B. The "sampling" group had a modified question B.1 that included the bolded text as following:

*If these products were offered at this market, **and sampling was provided,** how interested would you be in purchasing them?*

Similarly:

*If these products were offered at this market, **and cooking and demonstrations were provided,** how interested would you be in purchasing them?*

Customer responses were compared across each type of survey for interest in the various products and services potentially provided at the market. Additional questions included how much the individual liked to sample food at other retails stores – which could be examined by various demographics, as well as how frequently the watch shows on The Food Network. Detailed results are provided below.

Pooled Sampling.
The Owen County Farm Market in Owenton, KY was one of the control markets for the EBT/Debit component, but was interested in exploring options for sampling. This is a smaller rural market with typically 10-15 vendors that meet on a courthouse lawn. While vendors were reluctant to offer sampling of their own products from their own tables, they were open to having a central table where each of the vendors could provide items that one individual could manage the entire sampling task, including customer interaction and compliance with the health department regulations using the single hand washing station.

[13] See the Farm Market Patron Survey in the Appendix B.

A late summer market day was identified to do the pooled sampling. Thirty visitors were identified to participate in a follow-up survey sent by mail two weeks after the event. The survey examined customer recall, inquired about additional market visits, and specific purchase events. Most of the responses were qualitative in nature. Visitors were provided $10 each for participating in the survey.

A summary of the results are noted below with a copy of the Pooled Sample Survey instrument included in the Appendix B.

Sampling at Cooking Demonstrations.
The Paducah Farmers Market, a relatively rural market in western Kentucky, arranged for a cooking demonstration to be provided by the University of Kentucky Family Consumer Science Extension unit. The demonstration featured a variety of sweet potato products during the market – chips, chili, and won tons all made from sweet potatoes.

A point-of-purchase intercept survey was conducted with the first 30 participants sampling these products. Customers were asked to rate their sampling experience and indicate how willing they would be to actually buy the product sampled. Results from the survey are noted below and the instrument is included in Appendix B.

While both the pooled sampling table and the sampling at the cooking demonstration may exhibit some self-selection bias, it probably isn't much different from what a traditional food retailer would observe in a conventional sampling experiment. Neither circumstance allowed for detailed measure of vendor sales impact, but the sample delivery models are readily adaptable for small farm markets.

Project Results

Debit/EBT

Debit sales and EBT sales were recorded for each of the test markets. One of the difficulties of doing a single year analysis is that markets can be subjected to weather anomalies. This happened in the test markets in eastern Kentucky in 2009; Middlesboro and Stanton markets had a very difficult time getting started due to extended wet spring seasons. The timing of Debit/EBT promotion and availability of grower product set these test markets way behind. While it would have been ideal to have sales and transaction data from vendors at these markets, data pooled from the three active test markets can still be reasonably compared to vendor data in the control markets. A summary of gross Debit and EBT sales from the test markets is presented in Table 4.

Table 4. Debit and EBT Sales – Test Markets

Market	Debit Sales	EBT Sales	Total POS Sales
Franklin	$13,534	$2,733	$16, 267
Christian	$2,563	$1,894	$4,457
Owensboro	$1,580	$1,004	$2,584
Middlesboro	<$100	<$100	<$100
Stanton	<$100	<$100	<$100

Table 5. Debit and EBT transactions – Test Markets

Market	Debit Swipes	EBT Swipes
Franklin	642	191
Christian	157	223
Owensboro	77	82
Middlesboro	0	0
Stanton	0	0

Patrons were surveyed through the **Farm Market Patron Survey** on debit card use in over 11 farmers markets[14]. A total of 302 usable visitor surveys were summarized (Table 6) and revealed wide debit card usage among market visitors, paralleling closely the national average of 72% noted in the Nilson Report. A glimpse at the demographics behind debit card use shows some additional patterns among market visitors. Visitors making more frequent trips to the market are more likely to use a debit card (Table 7), and younger patrons were substantially more likely to use a debit card (Table 8). Rural versus urban market visitors did not reveal significant difference (Table 9).

The debit card is an important buying tool for market patrons. One would expect from this data that markets would benefit from accommodating this kind of purchasing. One can expect that, at least based on the age demographics of debit card use, that it will become even more important in the future.

Table 6. Debit Card Use by Market Patrons

Do you use a debit card?

	Number	Percent
Yes	212	71.9%
No	83	28.1%
Total	**295**	

[14] Farm Markets in the following counties: Boone, Christian, Daviess, Fayette, Franklin, Hardin, Jefferson, McCracken, Pendleton, Pulaski, and Warren.

Table 7. Debit Card Use by Frequency of Direct Market Visits

Do you use a debit card?	Number of Direct Market Visits	
	0-4	**5+**
Yes	30	181
	(63.8%)	*(73.3%)*
No	17	66
	(36.2%)	*(26.7%)*
	47	247

Table 8. Debit Card Use by Age

Do you use a debit card?	Age		
	<30	**30-59**	**60+**
Yes	20	127	54
	(95.2%)	*(78.9%)*	*(55.1%)*
No	1	34	44
	(4.8%)	*(21.1%)*	*(44.9%)*
Total	21	161	98

Table 9. Debit Card Use in Urban vs Rural Markets[15]

Do you use a debit card?		
	Urban	**Rural**
Yes	84	128
	(73.0%)	*(71.1%)*
No	31	52
	(27.0%)	*(28.9%)*
	115	180

Sales Progress Analysis.

The gross sales for debit and EBT transactions in the test markets were near to or exceeded the costs of the equipment and operating costs. The test and control markets, however, were designed to identify if there were specific sales or other benefits generated specifically from implementing the POS systems.

[15] Urban markets were identified here as those with county population above 80,000 (Jefferson, Fayette, Hardin, Warren, Daviess, and Boone) versus rural (Christian, McCracken, Pulaski, Franklin, and Pendleton).

A **Sales Progress Survey** was conducted in all test and control markets to track the following:

- gross sales distribution across the markets (Table 10)
- change in total sales from the same month the previous year (Table 11)
- change in total sales from the previous month the same year (Table 12)
- change in total visits to the market from the same month the previous year (Table 13)
- change in total visits to the market from the previous month the same year (Table 14)
- repeat customer activity (Table 15)

Table 10. Gross Sales Distribution Across the Markets (*Vendor Estimates*)

TEST MARKETS

Total # vendors responded	**13**	**20**	**20**	**19**	**16**
Approx. Sales	May	June	July	August	Sept.
<$250	15.4%	15.0%	10.0%	15.8%	6.3%
$250-$499	23.1%	0.0%	15.0%	0.0%	12.5%
$500-$749	23.1%	20.0%	20.0%	15.8%	18.8%
$750-$999	7.7%	15.0%	10.0%	5.3%	6.3%
>$1000	30.8%	50.0%	45.0%	63.2%	56.3%

CONTROL MARKETS

Total # vendors responded	**8**	**39**	**57**	**43**	**23**
Approx. Sales	May	June	July	August	Sept.
<$250	87.5%	33.3%	29.8%	14.0%	17.4%
$250-$499	12.5%	15.4%	7.0%	9.3%	13.0%
$500-$749	0.0%	7.7%	7.0%	20.9%	26.1%
$750-$999	0.0%	12.8%	22.8%	23.3%	17.4%
>$1000	0.0%	30.8%	33.3%	32.6%	26.1%

Table 11. Change in Total Sales from the Same Month Last Year
(Based on approximation by vendors, %)

TEST MARKETS	May	June	July	August	Sept.
% Increase	**60.0%**	**30.8%**	**21.4%**	**20.0%**	**28.6%**
% Decrease	**40.0%**	**38.5%**	**64.3%**	**53.3%**	**57.1%**
CONTROL MARKETS	May	June	July	August	Sept.
% Increase	**20.0%**	**50.0%**	**40.4%**	**36.1%**	**26.1%**
% Decrease	**20.0%**	**34.4%**	**25.5%**	**33.3%**	**43.5%**

Table 12. Change in Total Sales This Month Compared to Last Month
(Based on approximation by vendors, %)

TEST MARKETS	May	June	July	August	Sept.
% Increase	**50.0%**	**61.5%**	**17.6%**	**16.7%**	**14.3%**
% Decrease	**25.0%**	**23.1%**	**17.6%**	**44.4%**	**71.4%**
CONTROL MARKETS					
% Increase	**.**	**51.9%**	**54.3%**	**20.9%**	**13.0%**
% Decrease	**.**	**14.8%**	**15.2%**	**48.8%**	**69.6%**

Table 13. Total Visitors to the Market from the Same Month Last Year

(Based on approximation by vendors, %)

TEST MARKETS	May	June	July	August	Sept.
% Increase	**50.0%**	**15.4%**	**14.3%**	**7.1%**	**16.7%**
% Decrease	**33.3%**	**23.1%**	**42.9%**	**57.1%**	**58.3%**
CONTROL MARKETS					
% Increase	**0.0%**	**50.0%**	**44.4%**	**29.4%**	**21.7%**
% Decrease	**33.3%**	**23.3%**	**17.8%**	**44.1%**	**39.1%**

Table 14. Change in Total Visitors This Month Compared to Last Month

(Based on approximation by vendors, %)

TEST MARKETS	May	June	July	August	Sept.
% Increase	**80.0%**	**50.0%**	**50.0%**	**21.1%**	**21.4%**
% Decrease	**20.0%**	**14.3%**	**12.5%**	**52.6%**	**71.4%**
CONTROL MARKETS					
% Increase	**50.0%**	**57.1%**	**50.0%**	**17.5%**	**13.0%**
% Decrease	**0.0%**	**21.4%**	**17.4%**	**55.0%**	**65.2%**

Table 15. Is Repeat Customer Percent Higher Than Usual

(Based on approximation by vendors, %)

	May	June	July	August	Sept.
Higher (Test Markets)	**11.1%**	**6.7%**	**11.1%**	**11.1%**	**7.1%**
Higher (Control Markets)	**20.0%**	**14.3%**	**12.5%**	**52.6%**	**71.4%**

Understanding the Sales Progress Survey Data

The was little compelling evidence from the Sales Progress Survey that the POS technology improved total sales from the same month the previous year or the previous month for markets not using it. Total customer visits to the respective test and control markets also showed no appreciable difference. And there was no consistent improvement in repeat customer activity in the POS technology markets. This, of course, is strictly based on our single year of initial test and control market data and is not the final word on the appropriateness for implementation of the POS technology. Many other factors must be considered. A summary of the POS technology data, however, is summarized below.

Vendor Transaction Survey: Vendors at both test and control markets were asked to provide sample records of transactions throughout the season. The transaction would indicate if the purchase was made with cash, EBT, or debit.

Table 16. Cash, EBT, and Debit Transaction Descriptions

Test Markets	Transaction			Control Markets	Transaction		
	Number	Amount	Average		Number	Amount	Average
Cash	475	$3,739.61	$7.87	Cash	900	$6,434.87	$7.15
EBT	27	$271.31	$10.05				
Debit	21	$86.00	$4.10				

Market Site POS Data: Market managers at the Daviess County and Franklin County markets kept additional transaction data for debit and EBT from the POS units.

The Daviess and Franklin County markets charged a $1 fee for each debit 'swipe' in addition to token credits for the amount purchased. No swipe charge was levied for EBT in these markets. Christian County did not charge for either POS type of transaction.

Table 17. Average POS Token Purchase by Transaction Type

	Transactions	Tokens + fees	Total Purchase	Average
Daviess County				
Debit	77	$1,505 + $75	$1,580	$20.52
EBT	82	$904	$904	$11.02
Franklin County				
Debit	642	$12,892 + $642	$13,534	$21.08
EBT	191	$2,733	$2,733	$14.31
Christian County				
Debit	157	$2,563	$2,563	$16.32
EBT	223	$1,894	$1,894	$8.49

The individual transaction activity points to a typical debit purchase of about $20. Vendors wanted to include the $1 transaction fee to cover the transaction cost ($0.40 for debit and $0.10

for EBT) and contribute toward the fixed costs of the POS unit and management expense associated with managing the entire system. Average transactions for an EBT purchase varied a little more across markets, but ran slightly less, in the $8-14 range.

Customer redemption of tokens seemed to be in fairly small amounts, evidently splitting up their initial token purchase among a variety of transactions. The average debit purchase when tokens are used of just a little over $4 would not suggest big contribution to vendor sales.

The Vendor Transaction Survey tracked 523 randomly selected cash, debit, and EBT transactions at the three active test markets. Of these transactions, 475 (91%) were cash, 21 (4%) were debit, and 27 (5%) were EBT. There was very little joint cash and card purchase activity on the transactions recorded.

Summary of Debit/EBT Impacts

Franklin County put great effort into making their POS technology system work, hiring a record keeper and cashier that were present during most markets. This market grossed around $100,000 in 2007 and has grown since that time, like most Kentucky farm markets. With $16,267 in total debit and EBT redemptions in 2009, they appear to be the only market that can make a claim to having a possible positive benefit-cost. Even in this case, there is not clear evidence that the POS technology provided additional sales above what they would have otherwise received in cash sales without the system equal or above the amount of the cost of implementing the system.

EBT spending nationally and in Kentucky is growing and will likely create more opportunities in the future for Kentucky producers at farm markets eventually. Even so, the data from the Vendor Transaction Survey suggests these transactions currently represent a very small percent of total sales.

Debit purchases are growing rapidly, particularly among frequent patrons of the farmers market. This trend will also create opportunities for rural farm markets. Most retail operations have adapted to accommodate the growing use of debit cards. Farm markets will need to find an economical way to implement this technology.

The preliminary indications, however, do not suggest an overwhelming consumer response initially to having this service offered in the market. Interestingly, as noted later in the sampling discussion, having a market provide debit services falls down the list of priorities for Kentucky market visitors, according to the **Farm Market Patron Survey**.

There are some important limitations of this study. These would include at least the following:

■ POS technology is likely a longer-term investment for a market with relatively higher 1st year costs in equipment, training, and promotion. The cost of implementation in subsequent marketing seasons drops significantly. Even if the POS system is amortized out over 5 years, the additional sales generated to recover the fixed cost per year would be minimal. Learning on the part of the vendors and the market patrons would likely take place, increasing the impact of implementing the POS system in future years. This project was limited to the first year sales. activity only.

■ A single year study may not be adequate to capture the real benefits of implementing the POS system. Sales and visitor activity differences may be more significant in the 2nd and 3rd years.

■ The scale of the project cost needs to be considered against the risk of implementation. Even with outright purchase of all the necessary equipment and paying a small fee to a manager to implement the program and keep records, this is a fairly small cost for even a modest-sized market. While the study could not confirm direct sales or visitor benefits during the first year, the likelihood that future benefits would accrue is high and could be pursued with relatively low risk to the market.

■ Promotion and support for the POS system makes a big difference. If a market can find a cost-conscious POS system manager that can promote the program to patrons and support vendors, such as experienced with the Franklin County program, the implementation can go much more smoothly.

Economic Impact of Sampling

The impact of sampling was explored in three evaluations; the Farm Market Patron Survey, the pooled sampling project, and the sweet potato cooking demonstration project. The results of each are discussed here with particular implications for farm market sampling programs.

Farm Market Patron Survey

Patron intercept surveys were conducted at 11 different urban and rural farm markets in Kentucky, a total of 302 usable surveys completed. The surveys were completed during August, 2009 at the various locations. The instrument is included in Appendix B.

Table 18. Market Patron Survey Sites

Market	# responses	%
Boone	18	6.0%
Christian	26	8.6%
Daviess	20	6.6%
Fayette	12	4.0%
Franklin	55	18.2%
Hardin	7	2.3%
Jefferson	44	14.6%
McCracken	61	20.2%
Pendleton	13	4.3%
Pulaski	30	9.9%
Warren	16	5.3%

General data about market visits revealed that patrons had:

- visited the market **10.1 times** that season.
- visited other farm markets an average of **2.8 times** that season.
- visited roadside stands **1.9 times**.

- visited on-farm markets or wineries **1.1 times** that season
- traveled an average of **7.8 miles** to the market.[16]

Market visitors were relatively active patrons of the market and other direct marketing opportunities and were mostly living in very local proximity to the market.

Sampling Interest by Product Type

Product	A – Base (average score)	B – Samples (Δ from base)	C – Demos (Δ from base)
Organic produce	5.97	0.33	**0.76****
Baked goods	5.69	**0.42***[17]	-0.10
Cheese and other dairy	6.22	-0.40	-0.12
Eggs	4.53	**0.70****	**0.97****
Processed goods	5.67	0.27	-0.20
Frozen local meat	5.14	**0.41***	0.18
Specialty melons	6.30	0.13	0.06
Heirloom tomatoes	6.81	**0.42***	0.10

Patrons were presented with one of three versions of the survey; the base version (control), a version eliciting in bold text interest if samples were offered, and similarly a version eliciting interest if cooking or preparation demonstrations were provided. A 0-10 Likert scale was provided with anchor statements of "relatively little interest" and "significant interest". A list of products representative of similar families of items typically available in a farmers market were provided.

The test was to see if the addition of the offer of sampling or demonstrations favorably impacted visitor interest in any of the products. The average scores and difference from the base control response is summarized in Table 19. Interest scores reflecting the product to be 'very important' ('9' or a '10' rating) over all survey types are summarized in Figure 4.

Table 19. Market Visitor Interest in Various Products by Survey

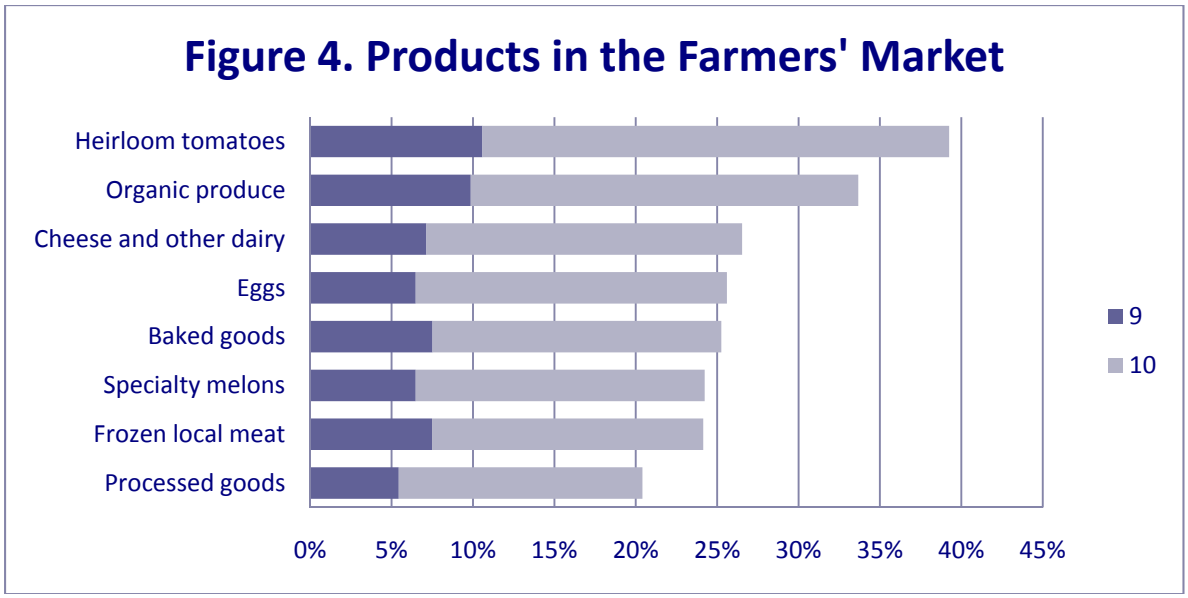
A: How interested would you be in purchasing these products?
B: How interested….If samples were provided?
C: How interested ……if cooking or preparation demonstrations were provided?

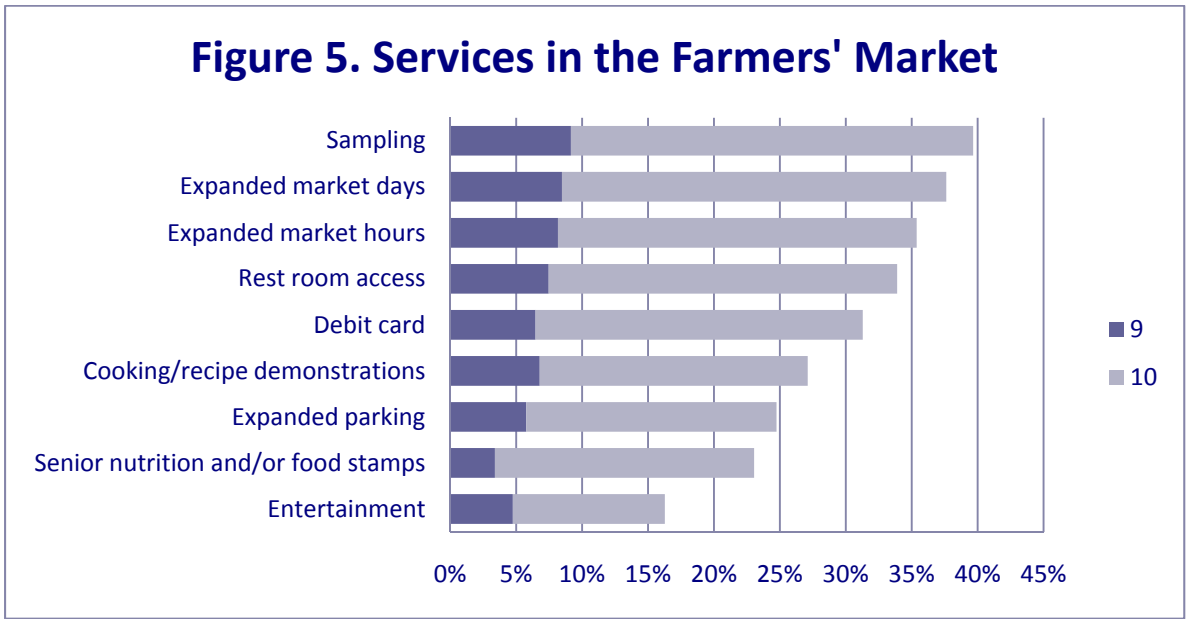
[16] The top 10 observations were omitted from the average with a few outliers indicating travel over 1,500 miles. This certainly happens, but the 7.8 miles represents the average distance travelled of 97% of the respondents.
[17] Z-test for statistically significant differences in mean responses between groups; * 90% and ** 95% confidence in statistically significant differences in mean from control group response.

The results reveal an order of interest in the various product groups, with heirloom tomatoes, specialty melons, and cheeses rated higher. Visitors with ***"if sampling were provided"*** included in the text rated interest in all products but cheese and dairy higher. Eggs, baked goods, heirloom tomatoes, and frozen local meat were particularly rated higher.

Visitors surveyed with ***"cooking or preparation demonstrations were provided"*** provided higher interest ratings over the control group for eggs and organic produce.

A second series of questions were provided examining visitor interest in various market services. A 0-10 Likert scale was again provided. A summary of responses is noted in Figure 5; services are rated by frequency of a '9' or a '10' rating – noted to be 'very important'.





Sampling was clearly a very important service demanded by market visitors. Interestingly, it was rated 'very important' more frequently than debit card capacity, cooking demonstrations, or entertainment.

Visitors were asked if they liked to sample products when they visited other food retail stores using the 0-10 Likert scale anchored by *'never sample products'* and *'love to sample'*. The 'love to sample' response ('9' or '10' rating) was noted by 46.1% of the market visitors.

Sampling is an important service visitors would like to see at the market and they are accustomed to sampling elsewhere. Few Kentucky farm market vendors, however, offer sampling. The Kentucky Department of Agriculture reported that, as of 2008, 710 vendors had completed a training developed by KDA, the Department for Public Health, and the Food Safety Branch, and received a certificate (Eaton, 2008). The means and opportunity for vendors to take advantage of sampling evidently exists. There just continues a reluctance to implement it.

Pooled Sampling

A pilot project with the Owenton Farmers Market was initiated to try a central station where vendors could pool products they wanted to offer for sampling. This project was very successful as a one-time sampling venture. Vendors appreciated the sampling exposure and, although a small sample result, results were immediately positive impacting sales and visitor interest in the market. One could expect a pooled sampling service offered at the market to continue to support customer interest.

A summary of the pooled sample effort and the results were developed in a project fact sheet provided in Appendix C.

Sampling with a Food and Cooking Demonstration

In October 2009, The Paducah Farmers' Market hosted a *product-specific cooking demonstration* conducted by the McCracken County Master Food Volunteers[18]. Patrons were offered samples of sweet potatoes in three culinary forms; chili, wontons, and chips. The intention was to determine the impact of featuring higher-value and/or seasonal items on consumer interest in the product.

A researcher was positioned at the end of the sampling table, and participants were offered $10 in exchange for completing a questionnaire immediately following their sampling experience (survey sample Appendix A). Survey results indicate that patrons increased their purchase of sweet potatoes as a result of sampling new ways to prepare the item. Additionally, several consumer comments suggested that post-sampling perception of the product was more positive than before sampling.

A summary of the pooled sample effort and the results were developed in a project fact sheet provided in Appendix C.

[18] Master Food Volunteers, a national model program administered by county Cooperative Extension offices and based on the very successful Master Gardener Volunteer program, focuses on food and nutrition education at the community level. Volunteers are certified food handlers.

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Appendix A
EBT and Demographic Data from Test and Control Counties; June 2004 and June 2009.

		Test Markets					Control Markets				
June 2009	**Kentucky**	**Bell**	**Christian**	**Daviess**	**Franklin**	**Powell**	**Hardin**	**Warren**	**Owen**	**Woodford**	**Pulaski**
Population	4,269,245	29,055	79,820	94,418	48,844	13,859	98,546	105,862	11,432	24,526	60,851
Per Capita Income	$28,272	$21,167	$26,271	$31,121	$33,366	$20,955	$32,544	$30,802	$20,592	$46,240	$26,172
Percent Below Poverty	16.9%	35.4%	16.0%	14.6%	11.9%	23.5%	12.5%	15.6%	16.1%	9.1%	18.6%
Percent Unemployed		13.3%	12.6%	10.6%	9.6%	16.4%	10.7%	11.3%	11.1%	8.7%	10.8%
Food Stamps											
No. of Cases	325,578	4,533	5,378	55,923	3,166	1,822	5,110	6,727	740	959	5,289
Total Monthly Redeemed	92,916,611	1,237,146	1,559,841	1,656,015	9,494,462	518,092	1,560,550	2,014,063	225,043	288,730	1,491,675
Average Benefit	$285.39	$272.92	$290.04	$279.59	$299.89	$284.34	$305.39	$299.40	$304.11	$301.07	$282.03
Total Recipients	723,193	9,787	12,546	13,360	6,887	4,060	12,539	15,137	1,810	2,148	12,073
Cases / Population	7.6%	15.6%	6.7%	59.2%	6.5%	13.1%	5.2%	6.4%	6.5%	3.9%	8.7%
Recipients / Population	16.9%	33.7%	15.7%	14.1%	14.1%	29.3%	12.7%	14.3%	15.8%	8.8%	19.8%

June2004	**Kentucky**	**Bell**	**Christian**	**Daviess**	**Franklin**	**Powell**	**Hardin**	**Warren**	**Owen**	**Woodford**	**Pulaski**
Population	4,117,827	29,953	69,912	92,540	48,051	13,347	96,052	95,778	11,092	23,659	58,013
Per Capita Income	25,494	17,521	23,444	25,310	28,481	18,341	25,468	25,183	18,053	34,135	21,986
Percent Below Poverty	13.9%	26.8	14.7%	11.2%	9.2%	20.5%	10.1%	13.2%	15.8%	7.3%	16.5%
Percent Unemployed		6.0%	7.1%	5.9%	3.4%	8.4%	6.6%	4.2%	5.4%	2.8%	4.6%
Food Stamps											
Number of Cases	234,271	3,575	3,728	4,480	1,886	1,244	3,182	4,847	501	648	3,712
Total Monthly Redeemed	46,201,572	705,355	760,266	885,044	381,447	254,768	691,505	968,156	111,528	131,077	699,644
Average Benefit	197	197	204	198	202	205	217	200	222	202	188
Total Recipients	551,475	8,539	9,119	1,070	4,226	3,149	8,330	10,906	1,411	1,514	8,954
Cases / Population	5.7%	11.9%	5.3%	4.8%	3.9%	9.3%	3.3%	5.1%	4.5%	2.7%	6.4%
Recipients / Population	13.4%	28.5%	13.0%	1.2%	8.8%	23.6%	8.7%	11.4%	12.7%	6.4%	15.4%

Appendix B

Sales Progress Survey
Farm Market Transaction Survey
Farm Market Patron Survey
Owen County Sampling Follow-Up Survey
Paducah Downtown Farmers Market Survey

Monthly Sales Progress Survey

As part of the Debit/EBT machine study, please answer the questions below.

Your responses are confidential and your participation is voluntary. Please help us to answer some important questions about the impact of debit/EBT at your market.

****ONLY REPORT YOUR PRODUCTS & SALES FROM THIS SPECIFIC MARKET.**

Today's Date: _____

Approximate total sales in **July 2009** (check one):
□ <$250
□ $250-$499
□ $500-$749
□ $750-$999
□ more than $1,000

Change in **total** sales **compared to July 2008**. "My sales this month were…" (select your best answer):
□ didn't sell during this month last year
□ down more than 50%
□ down about 50%
□ down about 25%
□ unchanged from same month last year
□ up about 25%
□ up about 50%
□ up more than 50%

Change in **total** sales **compared to June 2009**. "My sales this month were…" (select your best answer):
□ didn't sell last calendar month
□ down more than 50%
□ down about 50%
□ down about 25%
□ unchanged from last calendar month
□ up about 25%
□ up about 50%
□ up more than 50%

Number of days selling in **July 2009**: _____days

Types of products I sold in July 2009 at this market:

Fruit	□	no	□	yes
Vegetables	□	no	□	yes
Dairy	□	no	□	yes
Meat/Fish	□	no	□	yes
Eggs	□	no	□	yes
Herbs	□	no	□	yes
Value-Added Items (*bread, jams, salsa, etc.)*	□	no	□	yes
Non-food horticulture items (*cut flowers, potted plants, etc.)*	□	no	□	yes

<TURN OVER>

*** Answer these questions based your feelings about the whole market, not just your own booth.

How would you characterize **total visits** to the market **compared to July 2008**? " Market visits this **July 2009** were…" (select your best answer):

□ didn't sell during this month last year
□ down more than 50%
□ down about 50%
□ down about 25%
□ unchanged from this month last year
□ up about 25%
□ up about 50%
□ up more than 50%

Change in **total visits compared to June 2009**. "Market visits in **July 2009** were…" (select your best answer):

□ didn't sell during last calendar month
□ down more than 50%
□ down about 50%
□ down about 25%
□ unchanged from last calendar month
□ up about 25%
□ up about 50%
□ up more than 50%

About what percent of your customers were **repeat customers** this calendar month? _____%

Is this lower or higher than usual?

□ much lower □ somewhat lower □ about the same □ somewhat higher □ much higher

Thanks for your help with this survey. Please return this survey in the postage-paid envelope provided or give it to the market assistant who left it with you.

This survey is part of a study being conducted by
The KY Farmers' Market Association & The University of KY.

Questions? Contact:

Dr. Tim Woods, UK Cooperative Extension Professor in Ag Economics
(859) 257-7270 or tim.woods@uky.edu

Feel free to write comments within the survey.

KY Farmers' Market Transaction Survey

Market location:
Vendor ID (*assigned*) _____

Please indicate the amount of product purchased and tender

Cash _____**$**

EBT _____**$**

DEBIT _____**$**

Sale total _____**$**

List of *specific* items purchased in the transaction (ie, onions, salsa, flowers, tomatoes, eggs):

Repeat Customer? _____**Yes** _____**No** _____**Not sure**

Approximate number of different items available by vendor at time of sale_____

Time:_____

Date:_____

This survey is part of a study being conducted by
The KY Farmers' Market Association & The University of KY.

Questions? Contact:

Dr. Tim Woods, UK Cooperative Extension Professor in Ag Economics
(859) 257-7270 or tim.woods@uky.edu

University of Kentucky
Farm Market Patron Survey

Thank you for agreeing to take part in this research. In this survey, we are interested in your opinions regarding your experience at this farmers market and interest in market products and services.

Those responding to both this survey and our follow up will be entered into a **drawing for a $50 gas card.**

Visiting the Farmers Market

A1. How many times have you visited this particular farmers market this season?

_____ times

A2. How many times this season have you visited other farm markets? _____

Roadside stands? _____

On-farm markets or wineries? _____

A3. How far did you travel to come to this market? _____ miles

Products in the Farmers Market

B1. If these products were offered at this market, how interested would you be in purchasing them?

Organic produce

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Relatively little interest ***Significant interest***

Baked goods (breads, pies, etc.)

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Cheese and other dairy products

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Eggs

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Processed goods (salsas, jams, pickles, etc.)

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Frozen local meat (beef, pork, poultry)

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Specialty melons

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Heirloom tomatoes

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Services in the Farmers Market

C1. How important would the following services be for you in the market?

Senior nutrition and/or food stamps

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Not important ***Very important***

Cooking/recipe demonstrations

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Sampling

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Debit card

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Entertainment

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Expanded market days

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Expanded market hours

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Expanded parking

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Rest room access

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10

Just a Little About Yourself

D1. How many meals per week do you prepare at home (breakfast, lunch, dinner) _____ meals

D2. Do you like to sample products when you visit other food retail stores?

|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
0 1 2 3 4 5 6 7 8 9 10
Never sample products ***Love to sample***

D3. How often do you watch the Food Network or similar cooking shows?
□ less than once per month
□ 1-2 times per month
□ 3 or more times per month

D4. How many members are there in your household, including yourself? ____ people

D5. What year were you born? _____

D6. What is the highest level of school you completed? (check one)

□ not a high school graduate	□ bachelor degree
□ high school only	□ masters degree
□ some college, no degree	□ professional degree
□ associate degree	□ doctorate

D7. Do you use a debit card?

□ No □ Yes

***

Congratulations! You are now eligible to be entered into our $50 gas card sweeps. Please provide your mail address or e-mail. This is strictly for the purposes of our drawing and notification.

Again, all names and e-mails are kept in confidence. These are destroyed after we issue the gas cards.

Please <u>legibly</u> provide your –

Name:

Postal mail or e-mail address:

Owen County Farm Market Follow-Up Survey

Your comments will not be attributed to you personally and will be grouped with about 30 others. Please feel free to comment honestly.

Where possible, please give as complete and thoughtful an answer as possible. Your input will help in the design of future farm market sampling activities.

There are 10 short answer questions.

A1. Before August X, when you signed up for this study, how many times had you visited the Owen County farmers market?

A2. Are you a resident of Owen County?

A3. What products did you sample at the market?

A4. What of those products did you actually buy at the market?

A5. What did you like about having an assortment of products to sample at one table?

A6. What didn't you like about having everything at one table?

A7. Did sampling change your interest or perception of the products? (for better or worse)

A8. Do you like to have samples of products at other retail food places? What do you like to sample there?

A9. Did you visit the market again since August X?

A10. Does knowing that you may have samples available at the market change the likely frequency with which you would visit the market?

Thank you for your input.

Your contact information where we can send your $15.
No additional information will be sent to your e-mail or mailing address. Your contact information is used exclusively by our study and will not be shared.

Name:

Address:

Please allow 5-7 business days for the distribution of your funds. Contact me if you have questions.

Paducah Downtown Farmers' Market Survey

Your comments will not be attributed to you personally and will be grouped with about 30 others. Please feel free to comment honestly. Your input will help in the design of future farm market sampling activities.

$10 DOLLARS for your complete and thoughtful answers to these few questions.

There are 10 short answer questions.

A1. Before today (Oct. 3), how many times have you visited this farmers market during 2009?

A2. Are you a resident of McCracken County?

A3. What products did you sample today?

A4. Of those products, what do you actually plan to buy at the market?

A5. What did you like about having products to sample?

A6. What didn't you like about your sampling experience?

A7. Did sampling change your interest or perception of sweet potatoes? How?

A8. Do you like to have samples of products at other retail food places? What do you like to sample there?

A9. Will you visit this market again? Does today's sampling activity influence your decision?

A10. Does knowing that you may have samples available at this market change the frequency with which you would likely visit the market?

What was your impression today of the samples you tasted, and how likely are you to buy sweet potatoes as a result?

Bad Flavor, Wouldn't Buy ***Loved Flavor, Definitely Buy***

- Sweet Potato Chili |---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
  0 1 2 3 4 5 6 7 8 9 10
- Sweet Potato Wonton |---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
  0 1 2 3 4 5 6 7 8 9 10
- Sweet Potato Chips |---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
  0 1 2 3 4 5 6 7 8 9 10

Thank you for your input.

Your contact information where we can send your $10 check from UK: Please allow 5-7 business days for the distribution of your funds. *No additional information will be sent to your mailing address. Your contact information is used exclusively by our study and will not be shared.*

Name: Address:

Appendix C

Owen County Pooled Sampling Project 2009
Nick Wright

On September 4, 2009 a sampling experiment was conducted at the Owen County Farmers' Market in Owenton, Kentucky. The focus of the experiment was to find out how interested patrons of the farmers' market are in samples and how sampling impacts a patron's willingness to buy the sampled products. This information was gathered using a survey that was sent out to the participants two weeks after the sampling experiment took place.

The experiment was conducted to obtain data that would show vendors the demand and benefits of sampling. We had discovered that since the implementation of regulations regarding sampling at farmers' markets by the Kentucky Department for Public Health and the Kentucky Department of Agriculture that the overwhelming majority of vendors, although legally certified to sample their products, were not providing samples to their patrons.

The purpose of the regulations is to help deter any unsafe sampling practices that could potentially contaminate food products. We discovered that the new sampling requirements had given vendors the feeling that they were restricted in their ability to sample due to the hassle of the regulations. A copy of the "Kentucky Department for Public Health policy regarding product sampling at KDA Farmers' Markets or Kentucky Farm Bureau Certified Roadside Stands" attainted from the Kentucky Farmers' Market Association website states:

> Any vendor engaged in product sampling shall at a minimum provide:
>
> - An approved hand wash station. The station shall consist of a container of potable water of sufficient size to provide enough water for the entire sampling event, and be equipped with a free-flowing dispensing valve. The container should be raised off the ground to allow a catch basin under the spigot. The hand wash station shall also be equipped with hand soap and disposable paper towels.
> - A means of protecting the samples from dust and other environmental contaminants;
> - A means to prevent contamination by "double-dipping" (i.e., toothpicks, single portion containers, disposable utensils, etc.); and
> - A method to minimize bare hand contact with the food such as through the use of deli tissue, toothpicks, gloves, disposable utensils, etc.

The regulations also state that vendors who reuse utensils and cutting boards are required to bring a minimum of three containers along with water, dish soap, bleach and a dish rack for air drying. It is not that the vendors at the farmers' market are opposed to washing fruit and vegetables or sterile utensils but they have weighed out the pros and cons of sampling under the new regulation and decided that it is not worth the extra effort. Many of the vendors we talked to stated that they either did not have the extra room in their vehicle to carry the extra materials or that they feel it would require an additional person at the market to be able to offer samples effectively and legally.

With this in mind we set out to do some sampling of our own to get a first hand take of how patrons react when sampling is offered to them. We were able to get a great amount of cooperation from the vendors at the Owen County Farmers' Market so we proceeded with their help.

We set up a single table that was centrally located within the market to attract patrons to our table. Samples were provided by eight of the vendors as was the washing station complete with washing basins, soap, paper

towels, et cetera. Sampling items included three varieties of apples, two varieties of watermelon, pears, grapes, two kinds of jam, various breads including zucchini, Jewish apple cake and a variety of specialty soaps.

Pooled Sample Table at Owenton Farmers Market

Patrons who sampled the products were asked to leave their information so that a survey could be sent to them two weeks after the survey took place. Patrons were free to sample any and all of the products on the table in exchange for their assistance in the survey. The experiment took place over a period of 4 hours wherein 37 patrons agreed to take part in the survey. Of those 37 patrons, 25 were actually able to respond to the survey for a 67.6% response rate.

We first looked at what products the patrons remembered tasting and what they had decided to purchase at the market. The overall response indicated that giving out samples was a very successful venture since over 50% of the products sampled were then purchased afterward.

Product	Sampled	Purchased	Purchased / Sampled
Watermelon	4	3	75.0%
Jam	15	10	66.7%
Soap	7	4	57.1%
Apples	7	4	57.1%
Bread	11	5	45.5%
Grapes	7	3	42.9%
Jewish Apple Cake*	10	4	40.0%

*Sold Out

Watermelon had the best rate of purchase based on the number of times it was sampled, although it was sampled the least. This is not an unusual response since most people feel they know what basic fruits and vegetables taste like. Having two varieties to sample is a good idea so that patrons can taste the difference firsthand. Sampling is also a good strategy when you are selling a specialty item like the Niagara grape variety in this experiment. One of the responses we received declared, "The grapes had a "special" taste not found in store bought grapes. I would not have known that if I hadn't had a chance to sample them."

Value added products generally sell very well when sampled because they offer different tastes than simply offering a raw fruit or vegetable. Jam is a good example of this as you can see it was sampled and purchased as a result more than any other product in the study. The Jewish apple cake would most likely have been ranked just as high as the jam but the samples were consumed before the end of the day and the vendor who supplied the samples sold out of their product early in the day.

When asked what the patrons liked about having an assortment of products to sample at one table every response was positive. Nine replied that they liked the convenience of having everything at one table to sample while seven stated that they were happy to be able to taste something before the purchase to see whether or not they liked the product.

When asked what the patrons did not like about having everything at one table seventeen responded that they did not see anything that they did not like about it. There were a couple of comments that explained that the table may have been too crowded with all of the possible samples and that there were too many people around the table at one time so questions could not be efficiently answered and not all of the products were able to be sampled. It was also reported that table was set up in the sun for part of the time which caused some concern by a few patrons regarding the food.

A two week follow-up mail survey was sent to 30 market patrons that had participated in the sampling project. We were able to gain a lot of useful information about the types of people who participated and their opinion of sampling:

- 92% of those who responded to the survey replied that they were a resident of Owen County.
- The participants visited the market an average of 9 times in the same year. 75% stated that they have been to the market 4 or more times this year.
- 20 of the patrons stated that sampling changed their interest or perception of products for the better.
- 100% reported they like to have samples of products at other retail food places they visit.
- 52% report that knowing that there are samples available at the market would change the frequency with which they would visit the market. Although this may seem low, keep in mind that 50% of those who responded report that they have gone to the market 10 or more times over the course of the year and that the Owen County Farmers' Market only operates on Fridays. This means that half already show up nearly every week.

In another survey conducted at farmers' markets across the state, (Boone, Christian, Daviess, Fayette, Franklin, Hardin, Jefferson, McCracken, Pendleton, Pulaski and Warren Counties) patrons ranked sampling as the most important service provided at farmers' markets. The demand for sampling outranked the demand for expanded market days, expanded market hours, rest room access, debit card, cooking/recipe demonstrations, expanded parking, senior nutrition and/or food stamps, and entertainment.

All the research we have done has shown that sampling increases the interest of patrons and creates dialog between vendor and customer about their products. Patrons become more acquainted with the vendor and their products and are more likely to make a purchase. It is not unreasonable to say that if there are two vendors at a specific market selling zucchini bread, the vendor who offers samples will have an advantage on zucchini bread sales. Even if a vendor sells only raw vegetables they can create a dish, offer samples and recipe cards and say this is what you can make with my vegetables. If sales do not go up after several attempts at sampling then vendors can say I tried it and sales did not increase as I had hoped. We believe they will.

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2009 Kentucky Farmers' Market Research

SWEET POTATO SAMPLING SURVEY

The Paducah Farmers' Market

Introduction

In 2006, Kentucky legislation (HB 391) was passed, allowing food producers to manufacture and sell home-based and micro-processed foods at farmers' markets[19]. As vendors learned how to market and sell these new value-added items, many reported that sales would increase if sampling were allowed at the market. At the time, vendors were required to obtain temporary food handling permits from the county health department, which proved costly and complicated.

The requests by Kentucky farmers' market vendors ultimately lead to state legislation in 2009 that made appropriate provisions for Kentucky food producers to offer food samples at the farmers' markets without requiring the permits. Interest on behalf of the farmers was significant, and more than 1,100 producers have since completed the Kentucky Department of Agriculture's (KDA) certification training. However, when the markets re-opened in 2009, vendors were not offering samples. Although the Kentucky Farmers' Market Association (KFMA)[20] provided resources necessary to abide by health department standards (a measure that ensured food safety and ethical practices), vendors were overwhelmed by the process.

Historically, little information has been available about the specific impact of sampling on food sales. However, an August 2009 study of US retail grocery shoppers found that in-store sampling has a tremendous impact on categorical sales, both during the event and for several weeks afterwards. The RISE study[21] specifically found:

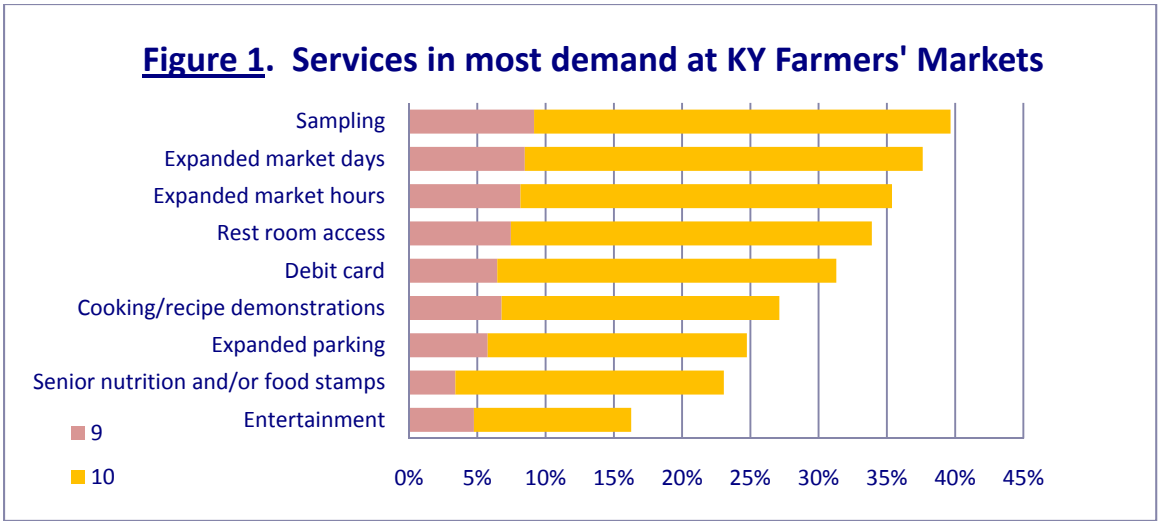
- ✓ Purchase of sampled items averaged +58% over 20 weeks after the sampling event.
- ✓ Several food categories experienced an average +475% cumulative sales increased on the day of sampling.
- ✓ The consumers who sampled products showed an overall shopping basket expenditure increase of +10%, compared to the retailer's average frequent shopper basket.

A consumer survey of Kentucky farmers' market shoppers was conducted by Extension Specialist Dr. Tim Woods in summer of 2009, and results indicated that markets could experience a sales lift from sampling, just as their commercial counterparts have. Survey analysis showed that sampling is more desired at Kentucky markets than is debit card acceptance or restroom accessibility (Figure 1).

[19] Today, more than 500 food producers have completed training and are certified to sell these value-added items at the market.

20 The Kentucky Farmers' Market Association (KFMA) was established in 2006 as a non-profit, market-members association and has since received funding for part-time staff assistance.

[21] Acronym for Report on In-Store Sampling Effectiveness, conducted by research marketing firm Knowledge Networks and commissioned by PromoWorks in 2009. www.promoworks.com



(Woods, 2010)

Additionally, the Kentucky Food Consumer Survey (2008) indicated that approximately 78% of Kentucky households had been to a farmers' market in the past 12 months, with 52% reporting the capability to preserve or freeze-store their food. Needless to say, 67% of the households classified the increase of fuel price as a significant factor in increasing the frequency of meals eaten at home (suggesting the probability that food behaviors become more home-based during hard economic times)[22]. Given that the KFCP also reported "taste preferences" as one of the most significant barriers for Kentuckians to increase fresh produce consumption (second to cost), the opportunities to increase sales with food sampling could be significant.

According to the Kentucky Department of Agriculture, there are currently 137 farmers' markets in the state, representing a 44% increase over 2004 market numbers. For the markets, Kentucky's estimated cumulative revenue for 2009 is around $10 million. The USDA Census of Agriculture (2007) reported more than $15 million in total direct sales by Kentucky producers. With state legislation in place that provides the necessary provisions for product sampling at Kentucky farmers' markets, vendors have a unique opportunity to use sampling as a low-cost and high yield marketing tool.

THE PROJECT

Project Relevance

During the farmers' market season of 2009, and in collaboration with the Kentucky Farmers' Market Association, UK conducted survey research as part of a pilot project to determine the economic value of providing a debit/EBT machine at farmers' markets. Included in the study was a consumer intercept survey about market preferences. Based on 302 patrons at 11 different markets statewide, results indicated that ***product sampling was the service most in demand at the farmers' markets, even in comparison to rest room access and use of debit cards*** (Figure 1).

To further identify the interest in samples at Kentucky farmers' markets, two of the 11 initially surveyed markets were chosen as locations for an experimental sampling event; the Paducah and Owen County Farmers' Markets.

[22] Source: Kentucky Food Consumer Panel (KFCP), 2008.

Objectives & Methodology

In October 2009, The Paducah Farmers' Market hosted a *product-specific cooking demonstration* conducted by the McCracken County Master Food Volunteers[23]. Patrons were offered samples of sweet potatoes in three culinary forms; chili, wontons, and chips. The intention was to determine the impact of featuring higher-value and/or seasonal items on consumer interest in the product.

A researcher was positioned at the end of the sampling table, and participants were offered $10 in exchange for completing a questionnaire immediately following their sampling experience (survey sample Appendix A).

Survey Results

A total of 40 market patrons participated in the survey, 19 of which resided within the county and 12 of which had never been to the Paducah market before. Of those who previously shopped there, the average estimated visits to the market exceeded 14 for the season thus far (10/3/09)[24].

Patrons comment about their experience:

"… (Sampling) encourages sales, brings excitement, and the overall experience is better."

"…(Sampling) helps bring people to the market."

"…(Sampling provides) great ideas on what to make with products bought from the market.".

" I enjoyed trying new things."

The majority of patron feedback was very positive:

- ✓ In general, 80% like to sample products when shopping at commercial retail locations.
- ✓ A whopping ***85% of the patrons reported that sampling changed their interest or perception of sweet potatoes for the better***
- ✓ 80% were influenced to visit the market again as a result of their sampling experience.
- ✓ In fact, 60% indicated that knowing samples were available would increase their frequency of market visits.

The response was overwhelmingly polar and positive when participants were asked to rank their overall satisfaction with the samples and interest in buying sweet potatoes as a result of tasting the samples. (Figure 2).

[23] Master Food Volunteers, a national model program administered by county Cooperative Extension offices and based on the very successful Master Gardener Volunteer program, focuses on food and nutrition education at the community level. Volunteers are certified food handlers.

[24] Any patron who indicated "once per week" was assigned a value of 28 visits to represent the typical market season in Kentucky.

Figure 2. Flavor Satisfaction & Resulting Interest in Purchasing Sweet Potatoes

	Bad Flavor, Wouldn't Buy 1	2	3	4	5	6	7	8	9	Loved Flavor, Definitely Buy 10
Chili	1	0	1	1	3	3	2	4	3	20
Wonton	0	0	0	0	1	2	2	1	3	30
Chips	0	1	0	1	0	2	2	4	3	27

After being offered samples of each, shopper interest in value-added products was significant.

Results available on the web (Woods, 2010)

Comments from participants on how the event changed their opinion about sweet potatoes:

"… (Sweet potatoes) are more than just casserole."
"…Love (sweet potatoes) but didn't realize they were so versatile."
" …was surprised they were used in so many ways!"
"I never enjoyed sweet potatoes before (today)."

Conclusions

Product-specific sampling with a cooking demonstration is likely to be most effective in larger or culturally diverse markets, particularly where highly differentiated products are present but could benefit from sampling availability.

Although it is unclear if a repetitive patron will spend more money at a farmers' market as a direct result of sampling a product, ***the survey data does show significant evidence that:***

1. New patrons are more likely to return to the market as a result of cooking demonstrations with product sampling.

2. Patrons are potentially influenced to shop at the market more often if samples are offered.

3. Customers, when exposed to new styles of preparation for unconventional products, are likely to perceive them as more versatile and may purchase them more frequently.

Furthermore, product-specific recipe cards (which were available on the demonstration table) may help decrease consumer anxiety associated with preparation skills. Just over 50% (22/40) participants mentioned the recipes or new preparation skill as part of their positive experience.

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