FARM-TO-SCHOOL

Key Findings of 2011 WSDA Survey

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NUTR 531 - Public Health Nutrition
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EXECUTIVE SUMMARY

The 'Farm to School' initiative connects schools with regional or local farms in order to serve healthy meals using locally produced foods. The Washington State Farm to School team conducted a survey about Farm to School activities in the state to learn more about local efforts, identify areas of need and opportunity, and prioritize actions.

Methods and Sample

- Food service directors from the 295 school districts in Washington State and other entities that participated in the National School Lunch and National School Breakfast programs in 2009/2010 were invited to participate in an on-line survey in 2011.
- A total of 82 surveys were completed. Respondents represented diverse and geographically distributed school districts.
- The 39-question survey asked about current practices, capacity to overcome barriers, and need for technical assistance.

Main Findings

- Farm to School efforts are underway across the state; there is strong interest in doing more; these efforts are not usually integrated into district policies.
- All of the 22 districts that had experience purchasing food locally stated they would continue to purchase locally.
- Four of the top 10 fruits and vegetables purchased by schools (apples, pears, potatoes, grapes) are also among Washington's top 10 commodity crops.
- Schools may lack kitchen facilities to process fresh produce; those with larger percent free and reduced price lunch eligibility are more likely to have this capacity.
- Larger school districts require a large volume of produce, which is a barrier to sourcing foods locally.
- The top three Farm to School training interests are:
    - Learning about the availability of farm products in the region
    - Seasonal recipes and menu planning
    - Budgeting and cost management

Recommended State-level Actions to Support Farm to School in Washington

- *For Food Service*: Promote use of central kitchens or other processing facilities; train foodservice staff on food preparation and safety.
- *For School Communities*: Provide resources and training to teachers, administrators, parents and farmers to extend the benefits of Farm to School beyond the cafeteria; support integration of the program into school wellness policies by coordinating with state wellness policy training efforts and offering model policies.
- *For Farmers:* Develop matchmaking tools and networking opportunities to connect schools and farmers.
- *For the Farm to School Program:* Build state leadership for interagency coordination, program evaluation, and marketing.

Washington State is well positioned to grow its Farm to School Program.

INTRODUCTION

'Farm to School' initiative is an effort to connect schools with regional or local farms in order to serve healthy meals using locally produced foods (1). Since the passage of the National School Lunch Act in 1946, key legislation has played an essential role in providing our Nation's children with access to healthier meals (1). Farm to school is one such initiative that is targeted at providing children with nutritious diet; at the same time it improves the local economy by encouraging farmers to sell their fresh produce to schools. More than 30 million children eat school food five days a week, 180 days a year. If schools can improve the health of kids, develop new marketing opportunities for farmers and support the local economy, everyone is benefited (5).

National Farm to School Initiative

As early as 1997, United States Department of Agriculture (USDA) began connecting small farm to school programs which encouraged small-scale farms to sell fresh fruits and vegetables to schools and schools to buy produce from small scale farms. In 2009, 'Know you farmer; Know your food' initiative was created to strengthen the connection between consumers and local producers. In response to the interest shown by schools and farmers in this initiative, the Department created 'USDA Farm to School Team', with staff from both the Food and Nutrition Service and Agricultural Marketing Service (3). Working with local and state authorities, school districts, community partners, the Farm to School team provides guidance and develops mechanisms for assisting schools in accessing local markets; enabling food producers to effectively service their local schools and facilitating communication between interested stakeholders (1).

Long-term goals of the USDA Farm to School Team include:

- Providing access to resources and information on beginning and maintaining Farm to School activities for schools, farmers, and local community members
- Providing technical assistance to assist schools and farmers in the development, progression, and/or sustainability of Farm to School activities
- Identifying obstacles faced by schools and farmers in implementing and/or sustaining Farm to School activities and suggesting solutions (1)

Healthy, Hunger-Free Kids Act, 2010 authorized USDA to provide technical assistance and competitive matching farm to school grants which may be used for training, supporting operations, planning, purchasing equipment, developing school gardens, developing partnerships and implementing farm to school activities (2).

Farm to school activities bring local food items into the school meal programs; encompass activities such as nutrition and agricultural curricula, school gardens, and farm tours. These activities teach children essential lessons about how farm products are produced and the role they play in a nutritious, healthful diet. These programs are gaining increasing public awareness and policy support around the country as concern grows about childhood obesity, nutrition and health (2). Multiple stakeholders, including students, school food service personnel, farmers, parents, teachers, and the community at large benefit from such Farm to School activities (3).

Eligible schools, State and local agencies, Indian tribal organizations, agricultural producers, and nonprofit organizations are eligible to receive the Farm to School funding to improve access to local foods in schools. Highest priority is given to projects that make local foods available on the menu; serve high proportion of children who are eligible for free or reduced-price lunches; encourage participation of school children in farm and garden-based agricultural education activities; demonstrate collaboration between schools, nongovernmental and community-based organizations, agricultural producer groups, and other community partners; include adequate and participatory evaluation plans; and demonstrate the potential for long-term program sustainability (1).

Washington State Farm to School Initiative

In Washington State, the Local Farms-Healthy Kids Act, passed in March 2008, authorized the formation of Washington State Department of Agriculture (WSDA) Farm to School program. The Program assists food producers, distributors and food brokers to market Washington-grown foods to schools; assists schools in connecting to local producers; and identifies and recommends mechanisms to support the success of these connections. The Program also gathers and shares educational resources to help schools teach students the nutritional, environmental, and

economic benefits of preparing and consuming locally grown food, and supports efforts to advance other farm-to-school connections such as school gardens and farm visits (2).

Goals of the WSDA Farm to School Program are in perfect alignment with the USDA Farm to School program. These goals include:

- Raise awareness of the Program among food producers and distributors, school foodservice directors and nutritionists, and existing community Farm to School organizations.
- Advise and provide technical assistance to growers seeking to sell local food to schools, schools seeking local foods and organizations and individuals seeking to create Farm to School programs.
- Assess the interests, capacities, and needs throughout the food distribution system - from farm to plate to identify impediments and opportunities.
- Seek additional resources to achieve Program goals and leverage existing resources through partnerships with other agencies and organizations (2).

The Farm to School program works closely with WSDA Small Firms and Direct Marketing Program, the Office of Superintendent Public Instruction, WSU Small Farms Team and other partners around the state to facilitate and improve Farm to School connections for health and learning. For farmers, food service professionals and community organizers, Farm to School programs are an opportunity to work together to achieve the goals of many, while providing access to fresh, nutritious, local and delicious foods (5).

The Legislature appropriated $290,000 from the general funds to the WSDA Farm to School Program for fiscal year 2009 and 2.5 full -time equivalents (FTEs). The 2009 supplemental budget reduced funding to $142,000 and permanently cut staff to 1.5 FTEs. Looking ahead, the biennial budget provides about $152,000 per year for the program, not including the $250,000 grant funding obtained by WSDA staff to supplement program operation through 2012 (3). A survey was conducted among food service directors of school districts in Washington State to understand the districts' current status and willingness to engage in farm-to-school activities. The purpose of the survey is to help the WSDA Farm to School team to identify areas of need, prioritize their work and seek additional funding.

METHODS

The Survey

WSDA developed this 2011 survey as a follow-up from a survey that was created by WSU Extension in 2008. Improvements were made and new questions were added to this survey by the WSDA staff, based on questions from other states' surveys. WSDA partnered with The State of Washington Office of the Superintendent of Public Instruction Child Nutrition Programs and Oregon Department of Agriculture Farm to School Program to review the new survey. The survey, which was funded through a USDA Specialty Crop Block Grant, was sent to the food service directors of 295 school districts in Washington State, participating in the National School Lunch and National School Breakfast programs (NSLP/NSBP) in 2009/2010. It was distributed through the OSPI Child Nutrition program, and also made available on the WSDA Farm to School website. The survey was conducted using Survey Monkey, an online survey software and questionnaire tool. It had a total of 39 questions and covered a wide range of areas including the produce purchased by the schools at present to the capability of the schools to process fresh produce.

The Analysis

The data, comprising of the responses from the individual districts, were downloaded to SPSS software, version 18 and saved on secure, password protected server at the University of Washington. Graduate students in Nutritional Sciences 531 – Public Health Nutrition, analyzed the data as part of their coursework during January – February 2012. The following analyses were done:

- Descriptive analysis of the sample of school districts and their survey responses.
- Data analysis and exploration for non-response, distribution outliers, and data quality.
- Comparison of demographic characteristics of the school districts in the sample based on data obtained from the Office of Superintendent of Public Instruction (OSPI), Washington State Report Card for school districts (4).
- Statistical comparison of key survey findings with demographic characteristics of the districts. A two-way chi square test was used for this comparison (α level-0.05).

In addition, as an evaluation of the current survey students compared questions from this survey to Farm to School surveys from other states and WSDA Farm to School survey from 2008. Data regarding surveys from other states was obtained from individual summary reports available online of the different states' Farm to School programs. A review of literature from PubMed and Agricola was done to identify policies and practices that best support the Farm to School initiative. Information from research papers, case studies and surveys were reviewed as well to determine successful activities and policies implemented by other states. The survey was also analyzed on a question by question basis in terms of its structure and sectioning.

The results of the initial phases of work were presented by the students to WSDA Farm to School staff. Based on the feedback and discussion during the presentation, final stages of analyses were performed and this report was generated. The report contains results of the statistical analyses, recommendations for future surveys based on the comparison to other states and peer literature review. Important findings from comparison of this survey to survey from 2008 are also reported. These conclusions and recommendations are the result of a process of critical analysis and discussion throughout the academic quarter.

References

1. USDA Website for Farm to School: http://www.fns.usda.gov/cnd/f2s/about.htm#Initiative
2. Farm to school 2008-2009, report to legislature from the Office of Superintendent of Public Instruction http://agr.wa.gov/marketing/farmtoschool/docs/285-farmToSchoolLegislativeReport2008-09.pdf
3. USDA farm to school team, 2010 summary report, July 2011.
4. Office of Superintendent of Public Instruction, Washington state report card - http://reportcard.ospi.k12.wa.us/summary.aspx?year=2010-11
5. WSDA Website for Farm to School: http://www.wafarmtoschool.org/Page/3/wsda-farm-to-school

RESULTS

Sample Description

The WSDA survey was distributed to schools and districts throughout the state. We received 82 responses as summarized in Table 1 below:

School Districts	56
Individual Schools	4
Other Entities	2
Unknown	20
Total	82

Table 1. Summary of survey respondents

Our aim was to analyze farm-to-school potential at the district level. Therefore, we considered only responses from the 56 school districts, and discounted those from individual schools, other entities, and unknowns. We created a new variable and coded known districts as 1 and unknown districts as 2.

Despite the omissions, our survey responses were fairly representative of the state's population in terms of geographic distribution, as indicated in the map below:

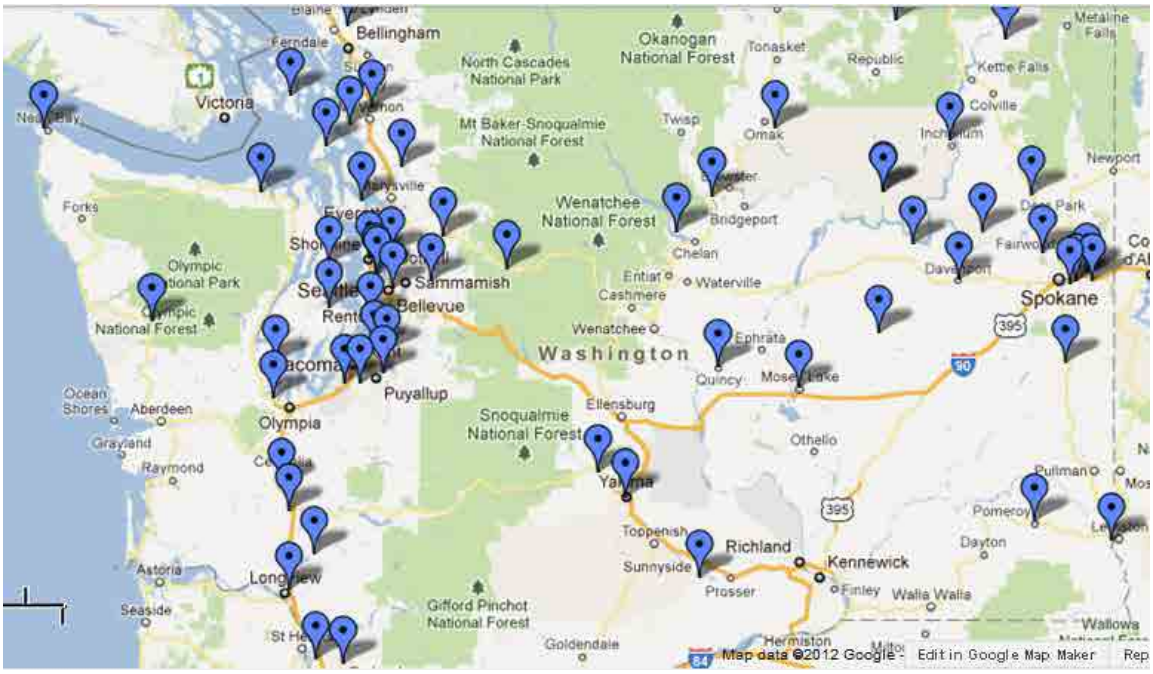

Figure 1: Map of school district responses received.

Most of the respondents were in the population-dense areas of Puget Sound and Eastern Washington, but few respondents from the less density populated areas of Central and Southern Washington.

We characterized school districts by several factors including enrollment size, %FRPL (percentage of students participating in the Free or Reduced Price Lunch program), and demographics (specifically the percentage of enrolled students that are Caucasian). Distribution patterns of these characteristics are summarized below:

	% of District in FRPL	% of District that is Caucasian	District Total Enrollment (May 2011)
Average	50.2	63.3	4971
Std Dev	20.5	27.2	6581
Max	90.3	96.9	28768
Min	9.9	1.6	31

Table 2. Distribution patterns of district characteristics

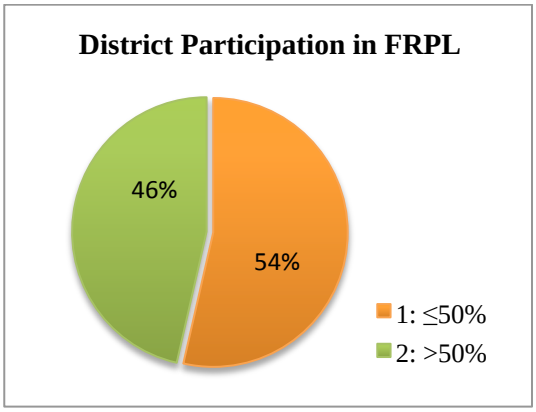

Figure 2a: Percentage of surveyed districts with majority of students participating in FRPL.

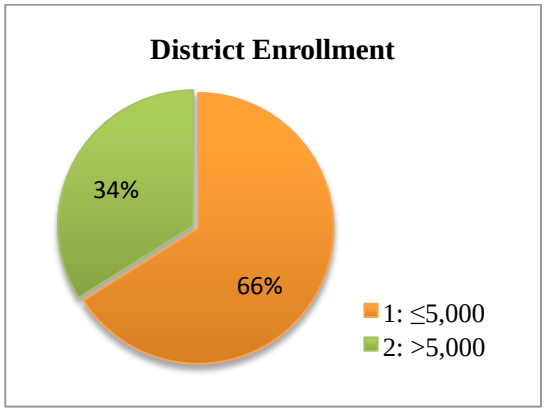

Figure 2b: Total district enrollment as of May 2011.

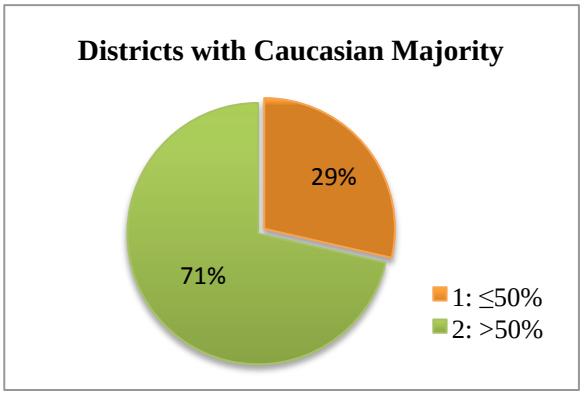

Figure 2a: Percentage of surveyed districts with majority of students participating in FRPL.

Survey Question Responses

Existing efforts and current capacity

The data displayed in the following chart indicates that the majority of districts surveyed already serve Washington-grown foods in their school meals and/or purchase such food directly from a WA farm or producer. In addition, nearly half of the respondents either: highlight such food when it is served, provide education about WA food and agriculture, participate in "Taste Washington Day," take students to visit a farm or farmers' market, or plant a school garden. However, most of the surveyed districts have not visited the F2S website, invited a farmer to school, hosted a harvest event, or shared information about locally grown food with families or the public. There is certainly room for improvement and an opportunity to grow in those areas.

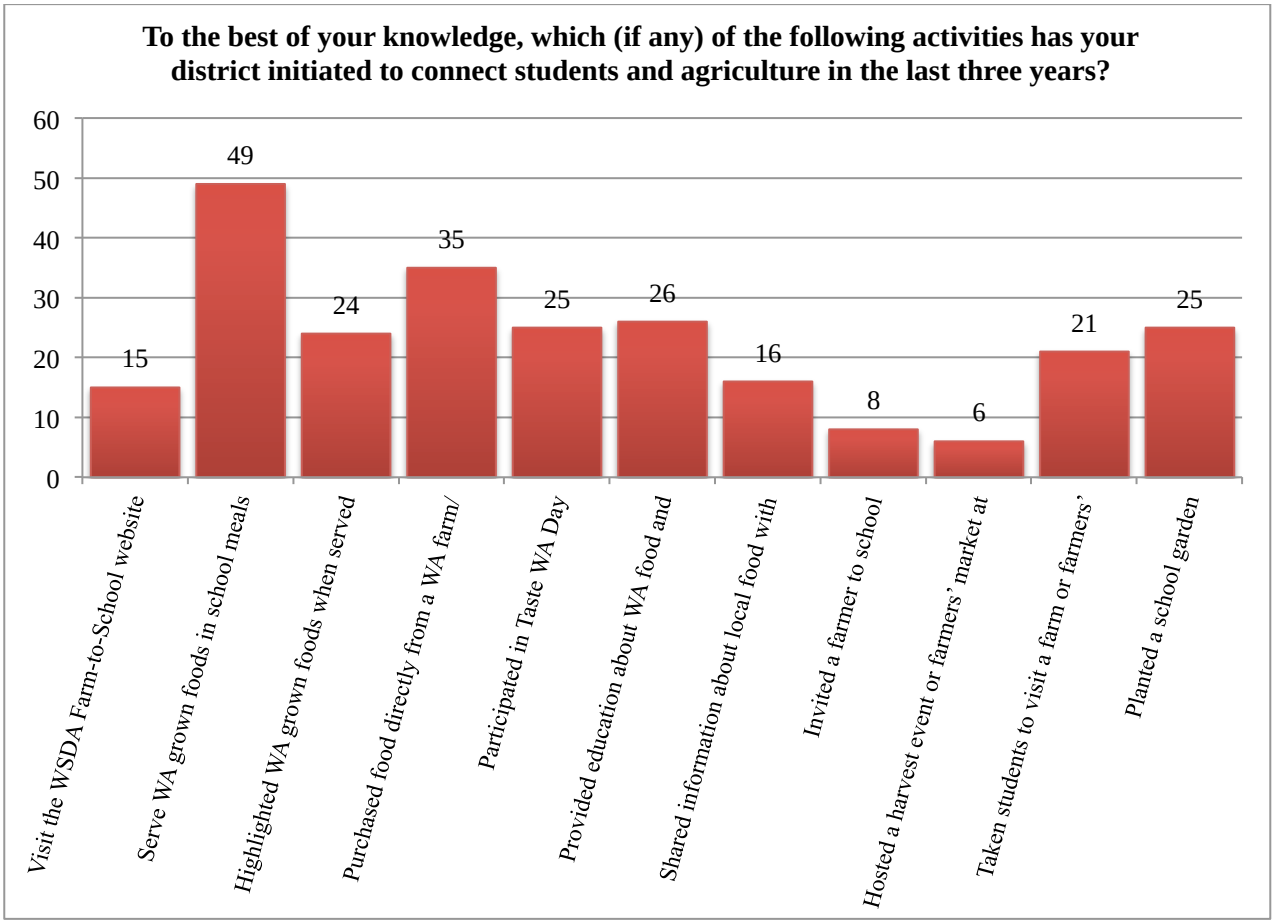

Figure 3. Response to Question 8: To the best of your knowledge, which (if any) of the following activities has your district initiated to connect students and agriculture in the last three years? Other answers: Prepared a fruit stand with local fruit, posters, classes about food and nutrition, and a community greenhouse for students. n=62 respondents. Response rate = 75.6%.

The overall response rate for question 9 was low and the number of countable, numeric answers was even lower. This question should either be removed or retooled in next year's survey. However, even from this data one can infer that elementary school children have more access to salad bars than older children. Result for this question can be found in Appendix A.

According to the data from the five following questions (10, 11, 12, 13, 14 and 15) most respondents have central kitchens and individual school kitchens with the capacity to process fruits and vegetables to some degree. Moreover, most of these districts could work with fresh, whole produce on a regular basis. Of the number that cannot process whole foods on a regular basis, many can do so on an occasional basis. However, there are still several districts lacking the capacity to process foods in such a way. This may be a significant barrier when it comes to serving fresh and local produce to students, especially for the smaller districts.

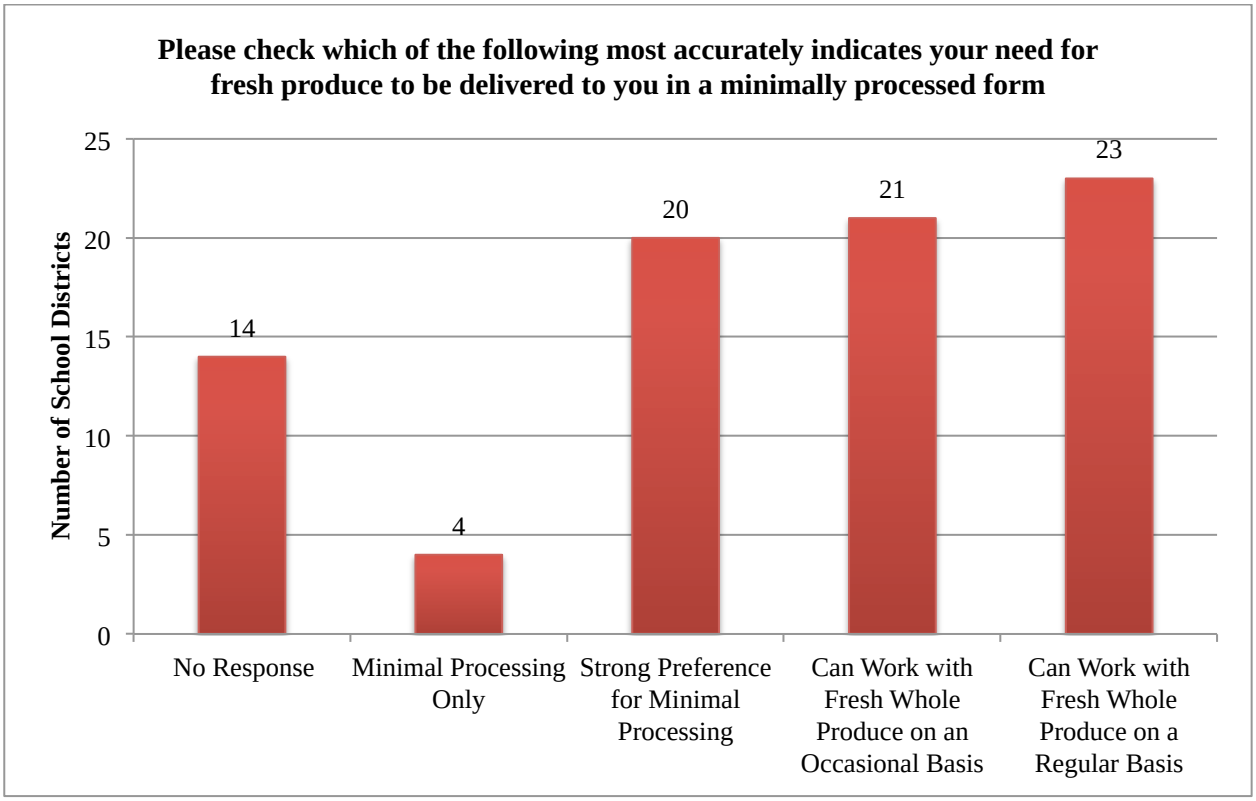

Figure 4. Response to Question 15: Please check which of the following most accurately indicates your need for fresh produce to be delivered to you in a minimally processed form? n=28 respondents.

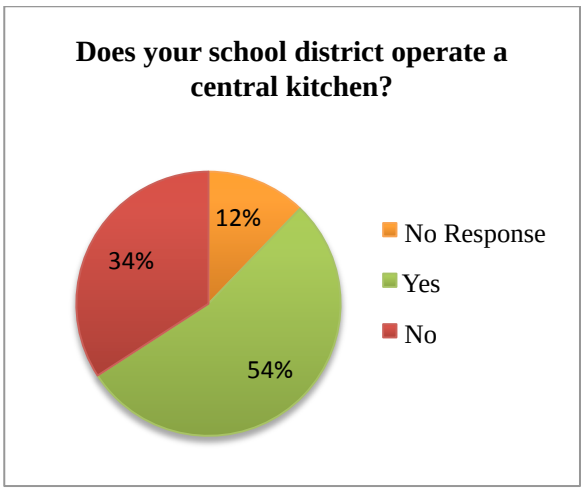

Figure 5. Response to Question 10. n=72 respondents.

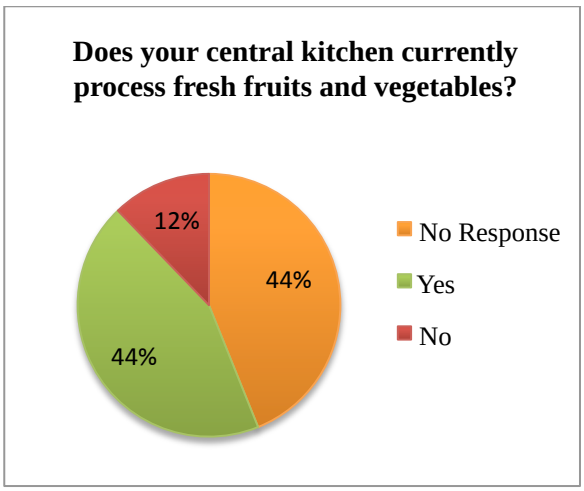

Figure 6. Response to Question 11. n=46 respondents.

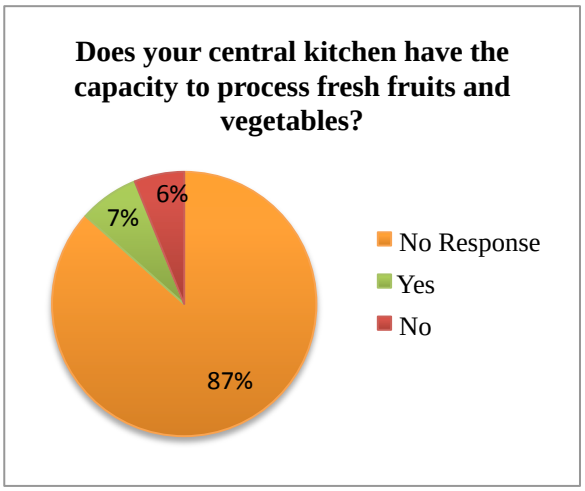

Figure 7. Response to Question 12. n=11 respondents.

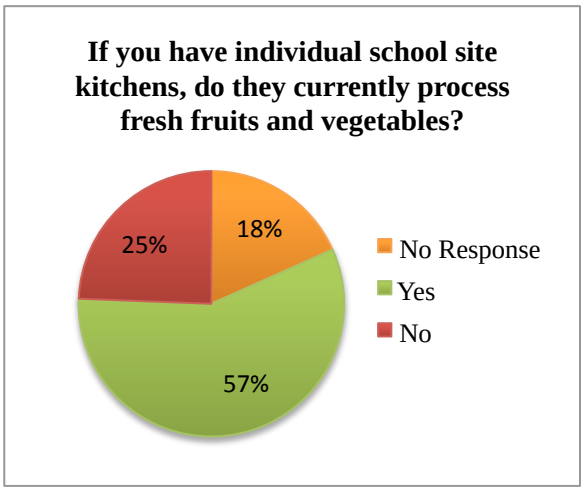

Figure 8. Response to Question 13. n=67 respondents.

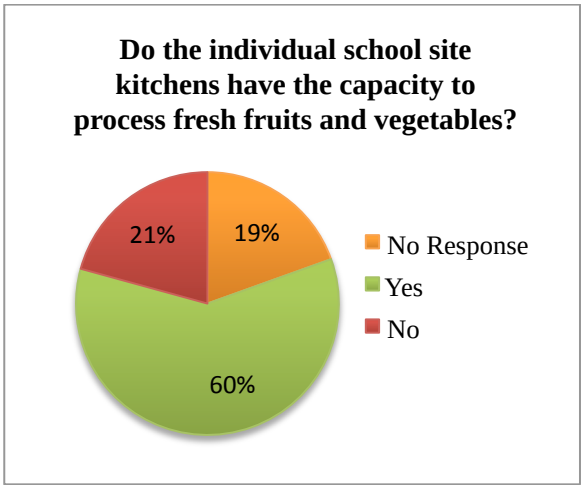

Figure 9. Response to Question 14. n=66 respondents.

Foods currently used and interested in using

The top 10 whole fruits or vegetables that were most frequently purchased for school meals during the 2009-2010 school year are listed in figure 10. For a complete list of all of the fruits and vegetables listed, please refer to the appendix B.

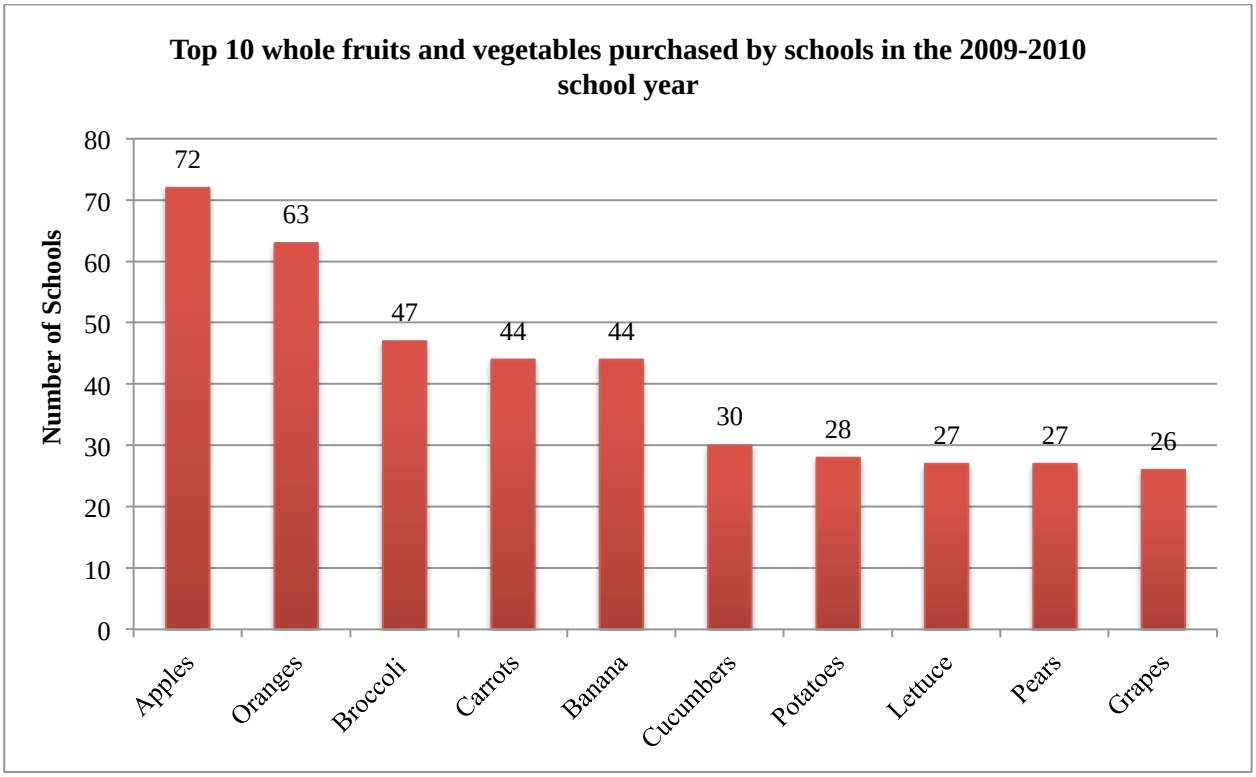

Figure 10. Response to Question 6: Top 10 whole fruits and vegetables purchased by schools in the 2009-2010 school year. n=82 respondents.

As expected, apples and oranges were the two most popular whole fruits and vegetables purchased by schools. According to the Washington State Department of Agriculture, apples, potatoes, grapes, and pears are part of the top ten commodity crops produced in the state of Washington (http://agr.wa.gov/AgInWa/). Since these crops are grown abundantly throughout the Washington area, they are very conducive to being sourced and purchased from local farmers. Therefore, when school directors are looking for fruits that would not only be economical to purchase locally but would also be easy to acquire, they should look towards purchasing apples, potatoes, grapes, and pears from Washington sources.

The top 10 minimally processed fruits or vegetables that were most frequently purchased for school meals during the 2009-2010 school year are listed in figure 11. Minimally processed is defined as frozen, dried, or otherwise prepared, stored and handled to maintain its fresh nature while providing convenience to the user; this may involve cleaning, washing, cutting or portioning. For a complete list of all of the fruits and vegetables listed, please refer to the Appendix C.

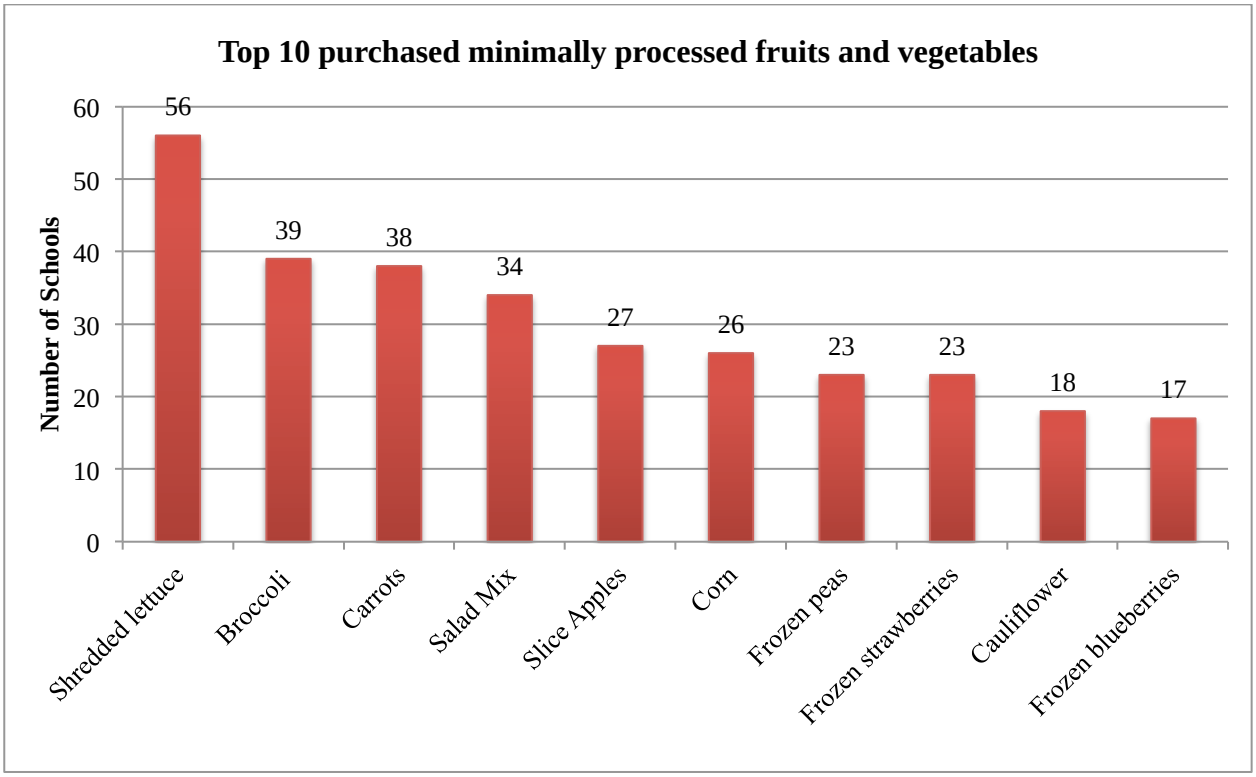

Figure 11. Response to Question 7: Top 10 minimally processed fruits and vegetables purchased by schools during the 2009-2010 school year. n=82.

The school directors were asked about potential products that may be useful to them in their foodservice operations. While a majority of the respondents (n=82) said that they currently purchase minimally processed fresh fruits and vegetables (n=54, 55, respectively), only 14 of them said that they would prioritize purchasing these products if they were produced locally. Furthermore, the school directors noted that they would not prioritize purchasing their most frequently purchased items [canned fruit (n=62), bread (n=61), dairy (n=61), whole fresh fruits & vegetables (n=60), and canned vegetables (n=59)] if they were locally produced. Therefore, it does not seem as if the school directors in Washington have any interest in prioritizing

purchasing their top products from a local source if the opportunity were to arise. For the entire list of products included in this analysis, please refer to the appendix D.

Even though school directors would not *prioritize* purchasing products from local producers, a majority of them would be *willing* to purchase fruits and vegetables from a local source, as seen in table 3 and table 4.

Fruit	Have Purchased	Would Be Willing To Purchase
Apples	61	43
Strawberries	43	41
Watermelon	48	40
Grapes	47	39
Pears	48	39
Blueberries	31	37
Melon	47	34
Peaches	37	33
Plums	24	32
Kiwis	39	30
Raspberries	10	30
Apricots	22	27
Cherries	15	27
Nectarines	23	26
Pluots	24	26
Blackberries	10	25
Boysenberries	4	22
Kiwi Berries	5	14

Table 3. Response to Question 32: Fruits schools have purchased (from any source) and would be willing to purchase (from a local source). n=82.

Vegetable	Have purchased	Willing to purchase
Artichoke	0	7
Asparagus	12	22
Beans (green)	33	29
Beans (shell)	6	10
Beets	6	14
Broccoli	49	42
Brussel Sprouts	2	7

Table 4 (continues to next page). Response to Question 33: Vegetables schools have purchased (from any source) and would be willing to purchase (from a local source). n=82.

Table 4 (continued). Response to Question 33: Vegetables schools have purchased (from any source) and would be willing to purchase (from a local source). n=82.

Vegetable	Have purchased	Willing to purchase
Cabbage	34	26
Carrots	50	44
Cauliflower	40	34
Celery	44	33
Celery root	0	6
Corn	39	28
Cucumber	45	40
Eggplant	3	7
Fennel	0	3
Garlic	9	10
Greens (arugula, bok choy, chard, collard, kale, etc.)	12	19
Herbs	8	15
Leeks	4	11
Lettuce	50	43
Mushrooms	17	22
Onions	39	33
Peas (fresh)	17	28
Peppers	42	34
Potatoes	42	33
Radish	19	16
Rhubarb	2	7
Salad mix	44	37
Shallots	3	8
Spinach	29	26
Squash (summer)	16	20
Squash (winter)	11	17
Tomatillos	5	9
Tomatoes	49	39
Root crops (burdock, kohlrabi, parsnips, turnips)	5	14

The majority of the top ten whole and minimally processed fruits and vegetables – blueberries, strawberries, lettuce, broccoli, carrots, salad mix, corn, cauliflower, apples, pears, grapes – that were purchased by schools in the 2009-2010 school year were also the top fruits and vegetables that schools would be willing to purchase from a local source. Therefore, there is a lot of overlap between what the schools are already buying and what they would be willing to purchase from a local source. However, some of the schools had commented that they already receive some of

these vegetables from their school garden, eliminating the need to source them from a local farmer. The price of produce and the processing required to prepare these fruits and vegetables were also concerns that were expressed by the survey respondents. Therefore, even though many of the school directors are willing to purchase Washington produce, there are many other factors (ex. price, preparation) that must be factored into their decision. The results of this survey tend to show that even though the desire is there to purchase from local farmers, there are many other critical logistical factors that must be considered before purchasing produce from a local provider.

Possibilities for expanding F2S actions

One important aim of the survey was to determine interest in expanding farm-to-school operations.

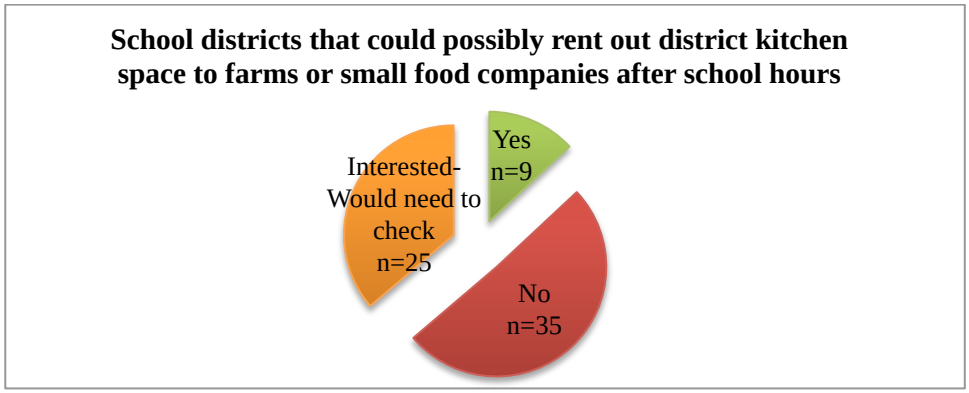

Figure 12. Response to Question 17: School districts that could possibly rent out district kitchen space to farms or small food companies after school hours.

Overall, responding districts seemed to be split on their ability/ interest to rent out district kitchen space for farms or small food companies after school hours. Perhaps clarifications of district/state policies regarding renting out kitchen space may help those that are interested but unsure about their abilities to do so. There is also the possibility that such a clarification would make some of those who answered "no" change their answers as well.

In Question 23 here was a wide range in the amount spent by schools on products purchased from farmers/producers ranging from $0.00 to $45,000.00 and only 16 districts responded with a dollar amount. Many did not respond, while others did not know what their district spent on farm produce. The average amount spent was $6,950.00, but the average was heavily influenced by a

small number of districts that spent large amounts. Districts that were able to spend more on Washington grown products could possibly be further questioned for insight as to how other districts could expand their Farm-to-School Programs to be a bigger part of their food budget. (See detailed information in Appendix E.

In question 24, there seemed to be unanimous support for the farm-to-school program, since all 22 of the districts that responded said that they would purchase Washington grown products directly from farmers/producers again. Since only 22 districts provided an answer to this question, it seems that many respondents either missed the question or may have been indifferent. The lack of negative responses demonstrates that the general attitude favors continuing to directly purchase Washington grown products.

In question 30, most of the respondents expressed interest in working with local farmers in the offseason to ensure that the schools would be able to get the foods they need. Of the 63 districts that answered, 49 reported that they were interested while only 14 of them reported that they were not interested in doing so. Given the interest from most of the respondents, developing materials to facilitate communication between schools and farms would likely make it easier for schools to expand their produce orders and for farms to better accommodate schools' needs.

Question 38 asked about what kinds of information or events they were interested in to support their farm-to-school initiatives. Fifty-seven districts reported they were interested in information about the availability of farm products in their regions. Responding districts also seemed to be interested in seasonal recipes and menu planning information, budgeting and cost management information, supplemental funding opportunities, as well as networking events within the school and community. There was less interest expressed in kitchen skills and food safety training, and, surprisingly, policy and procedure information. Districts may not have responded either because the respondent skipped the question or from a lack of interest.

	Availability of farm products in your region	Budgeting and Cost Management	Kitchen Skills and Food Safety Training	Networking within your School and Community	Policies and Procedures	Supplemental Funding Opportunities	Seasonal Recipes and Menu Planning
Districts Interested	57	34	20	33	21	34	37

Table 5. Response to Question 38: Indicated interest in events or information.

Developing materials in conjunction with farms to increase awareness of different farm products might lead to increased farm-to-school program participation.

In question 39, districts were asked about their interest in connecting school programs with foodservice; specifically, culinary arts and horticulture programs, cooking classes, nutrition education, school gardens, and sustainability programs/ clubs. Results show that some respondents expressed interest or a lack of interest even if they did not have the program, which may indicate that respondents may not know if their district offers such a program or were expressing interest in potential connections to clubs in the future.

Of those that responded, most districts were either interested or indicated that they would be interested in connecting foodservice with the various school programs. Very few districts responded that they were not interested in connecting to the various school programs. Connecting school programs to foodservice will allow for increased student awareness of farm-to-school programs and possibly create the desire for increased participation.

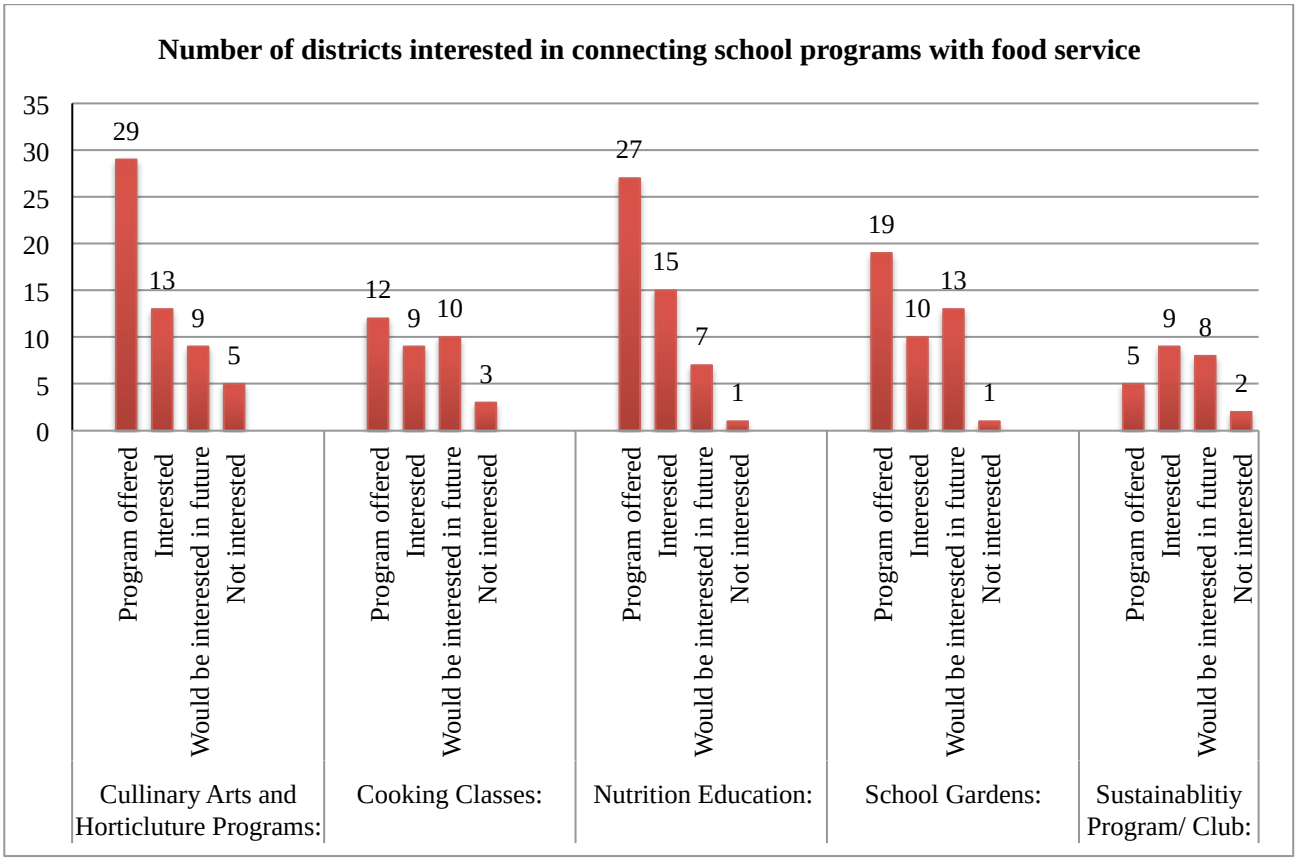

Figure 13. Response to Question 39.

Policies

In this section we reviewed questions 25, 26, 27, 29 and 31. The results of these questions are presented in figures 14, 15, 17, 18 and 19. If the answer to questions 26, 27 and 31 were yes, the detail of this answer is shown in figure 16, tables 6 and 7 respectively. From this data it appears that the majority of respondents' districts do not have any odd policies on liability insurance, vendor requirements, etc. However, of the respondents that claimed their districts had food safety requirements for vendors, many did not know what those policies were. Only one mentioned good agricultural practices (GAP). Perhaps a deeper look into the food safety requirements of these districts would reveal that local producers meet these requirements.

Two-thirds of respondents are able to purchase local produce with short notice, leaving one-third unable to make short-notice purchasing. If we were to discover why these twenty districts do not have the capacity to purchase food in this way, we may find ways to make them more flexible. Finally, an overwhelming majority of responding districts do not have wellness policies affecting local purchasing. However, because of the wording of this question we are unable to discern if these are districts that do not have restrictive wellness policies or if these are districts that do not have any local purchasing requirements. If the latter is the case, this could be a potential point of intervention by incorporating Farm to School purchasing into a district's practices.

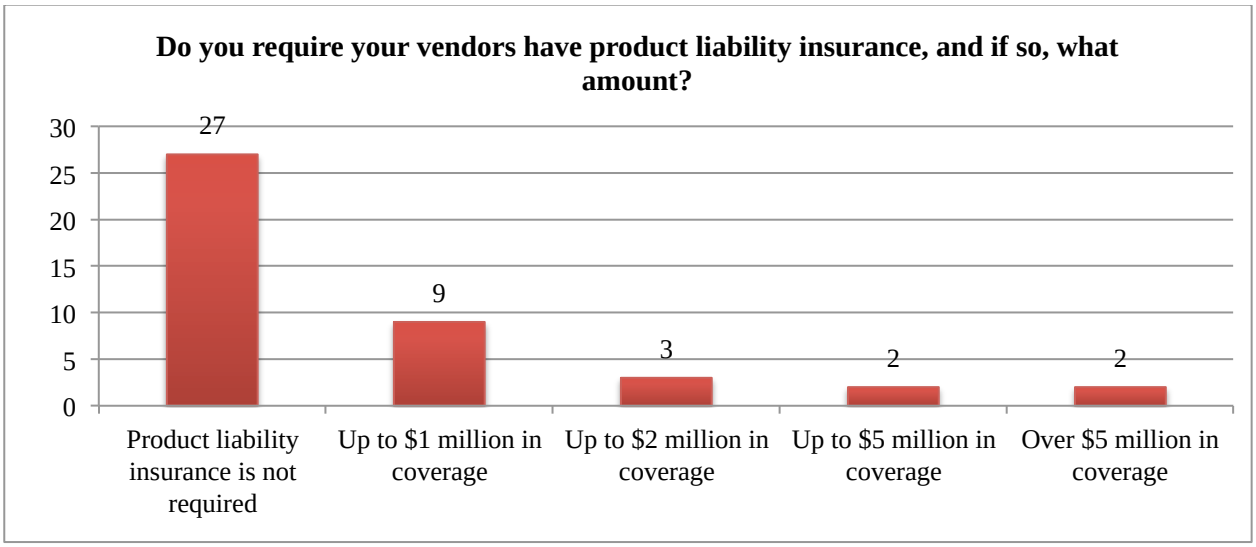

Figure 14. Response to Question 25**:** Do you require your vendors have product liability insurance, and if so, what amount? n=43 respondents. Response rate = 52%.

Figure 15. Response to Question 26. n=61 respondents. Response rate = 74.4%.

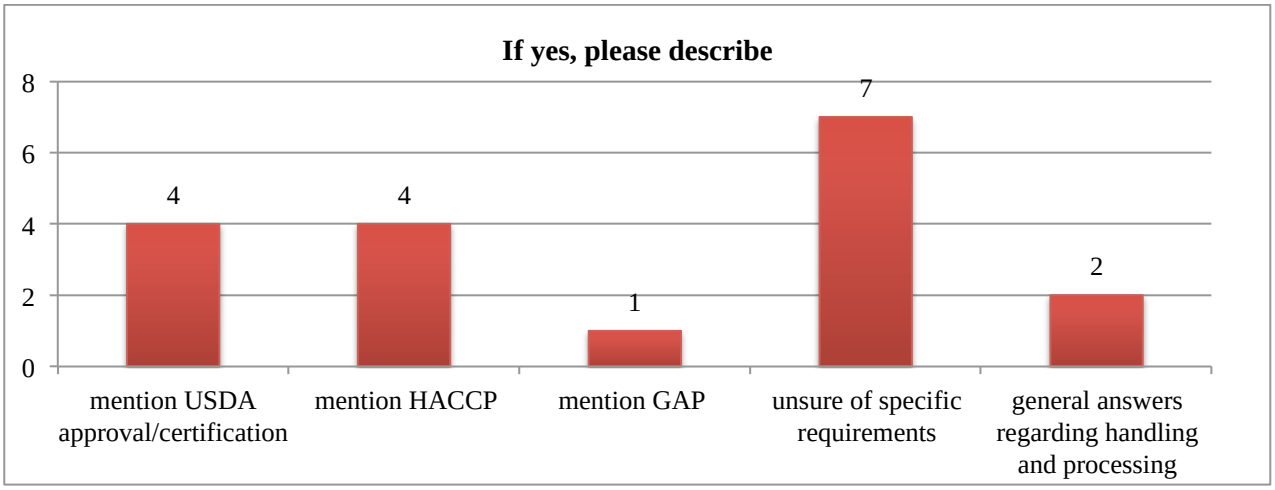

Figure 16. If the answer to question 26 is yes, then please describe. n=18 respondents.

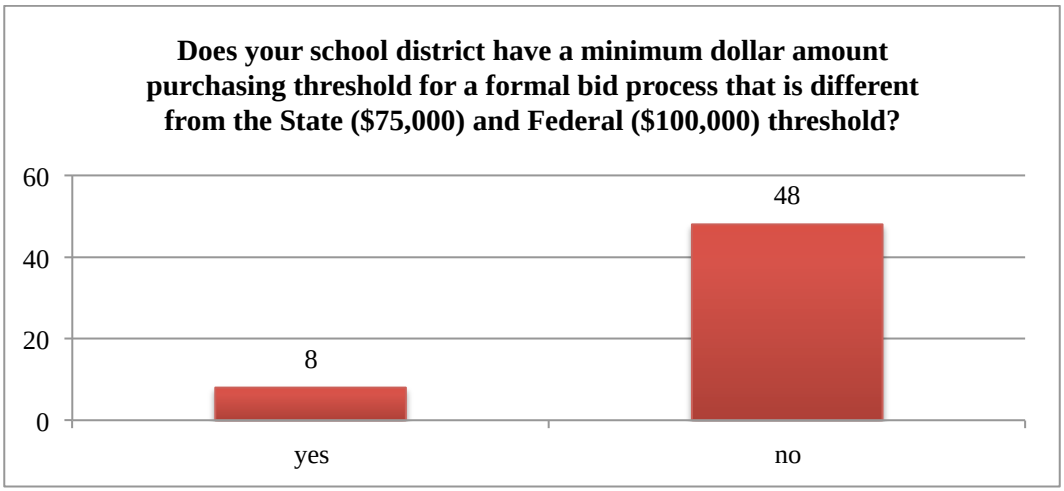

Figure 17. Response to Question 27. n=56. Response rate = 68.3%.

If yes, what is the minimum amount requiring a competitive bid process and how many vendors must you contact?
$40,000 and three vendors
$50,000
$75,000 but have not come close to that-ongoing comparison with distributor and AP
$50,000 and three vendors
Same as above, three
We are a contract company and not sure what the bid process is.
We have limited access in our area to vendors We are extremely out of the way so we only have SYSCO that is will to travel this far.

Table 6. If the answer to question 27 is yes, then what is the minimum amount requiring a competitive bid process and how many vendors must you contact?

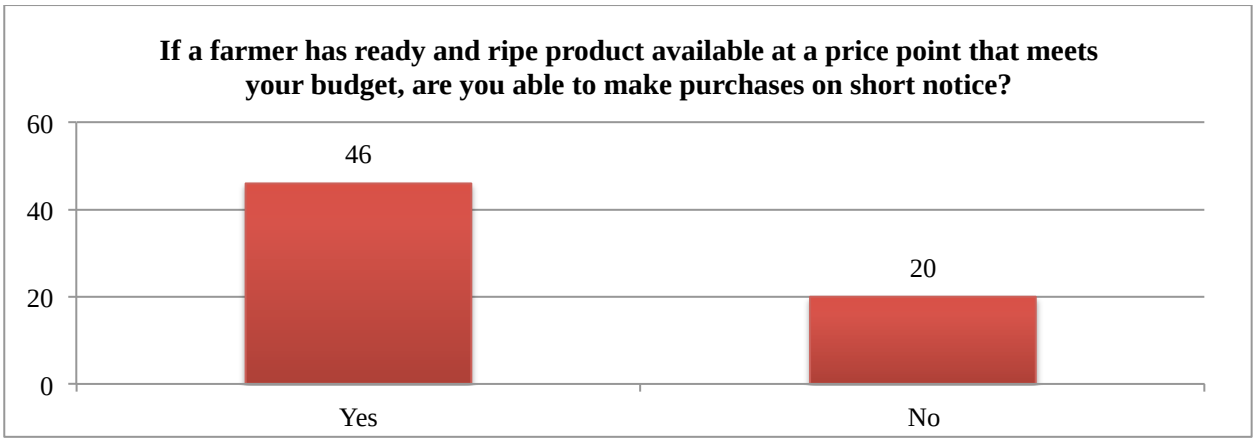

Figure 18. Response to Question 29. n=66 respondents. Response rate = 80.5%.

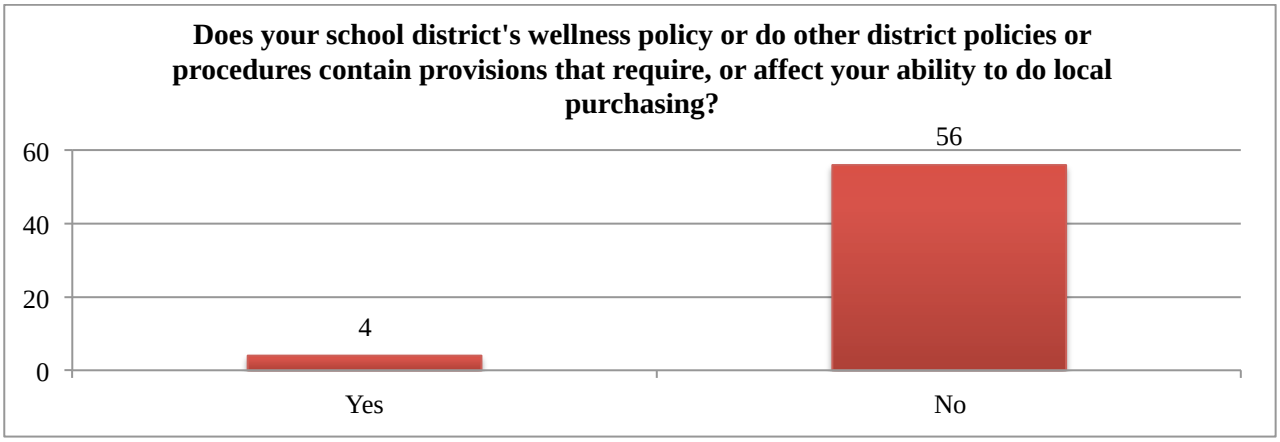

Figure 19. Response to Question 31. n = 60 respondents. Response rate = 73.2%.

If yes, please describe
Not sure
I believe the state has something that says you should chose grown in US if possible.
USDA Approved
I am sure we could work that out.

Table 7. If the answer to question 31 is yes, then please describe.

Perceptions about F2S

This section of survey questions was analyzed together because the questions all refer to the perceptions of the farm-to-school program, including its benefits, barriers, and the experience of buying locally. The results from this section suggest that the main perceived barriers of the program include cost and seasonality constraints. The main benefits are believed to be support of the local economy and higher quality food, and that of those who have bought locally for their district, the vast majority had a positive experience. In this section the results are discussed in more detail and policies suggested to relieve the perceived barriers of buying from local farms.

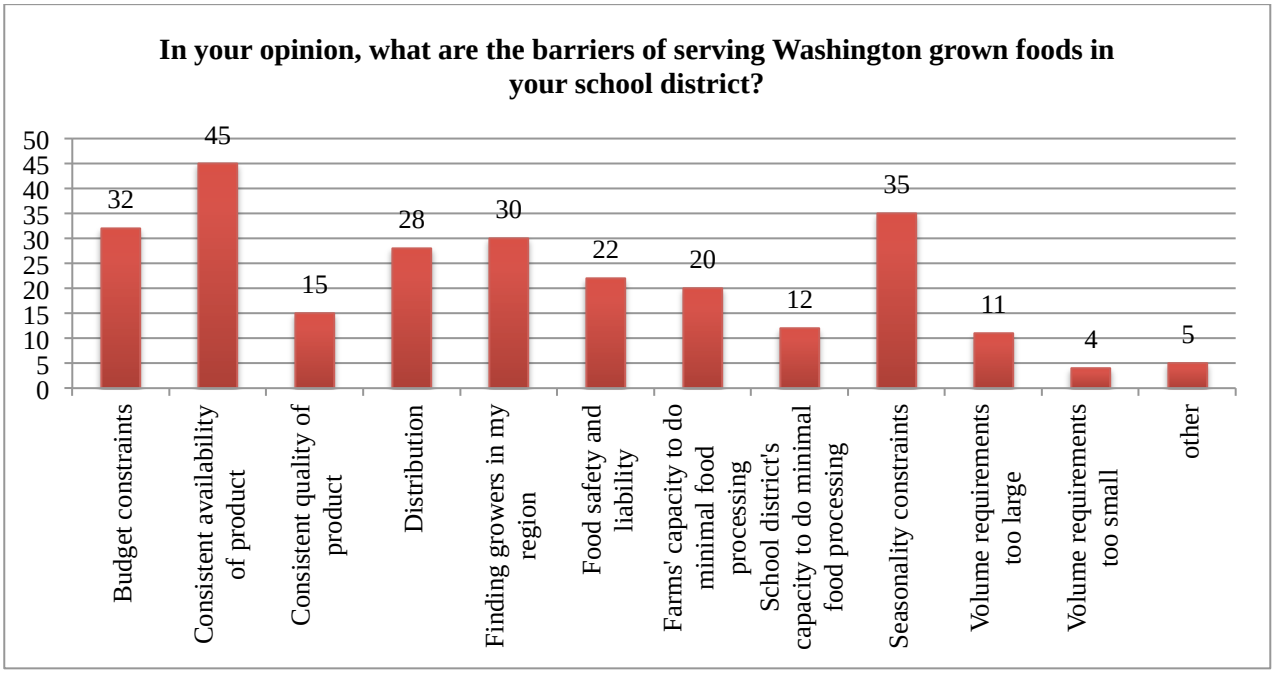

Figure 20. Response to Question 36. n=63 school districts responded (n=259 total items selected).

The results of this question illustrate the greatest perceived barriers to serving Washington grown food in schools. Each survey taker was asked to choose their top three concerns. The greatest concern among the survey takers was the consistent availability of the product, followed by seasonality constraints and budget constraints. The least concerning aspects of serving Washington grown food in schools were that the volume requirements for buying were too small, that volume requirements were too large, and that the school district's ability to do minimal food processing was lacking. In other states that participate in Farm to School projects, the top concerns for serving locally grown foods in their schools include cost, extra equipment and prep time requirements, inadequate supply in the local area, food safety, seasonal availability, and

transport and storage. Some policy changes that may aid in alleviating some of these barriers include requiring state agencies to purchase local as long as pricing requirements are met, requiring a 5% price preference above lowest bid for state grown products, and the development of a state-wide food distribution program to procure local foods.

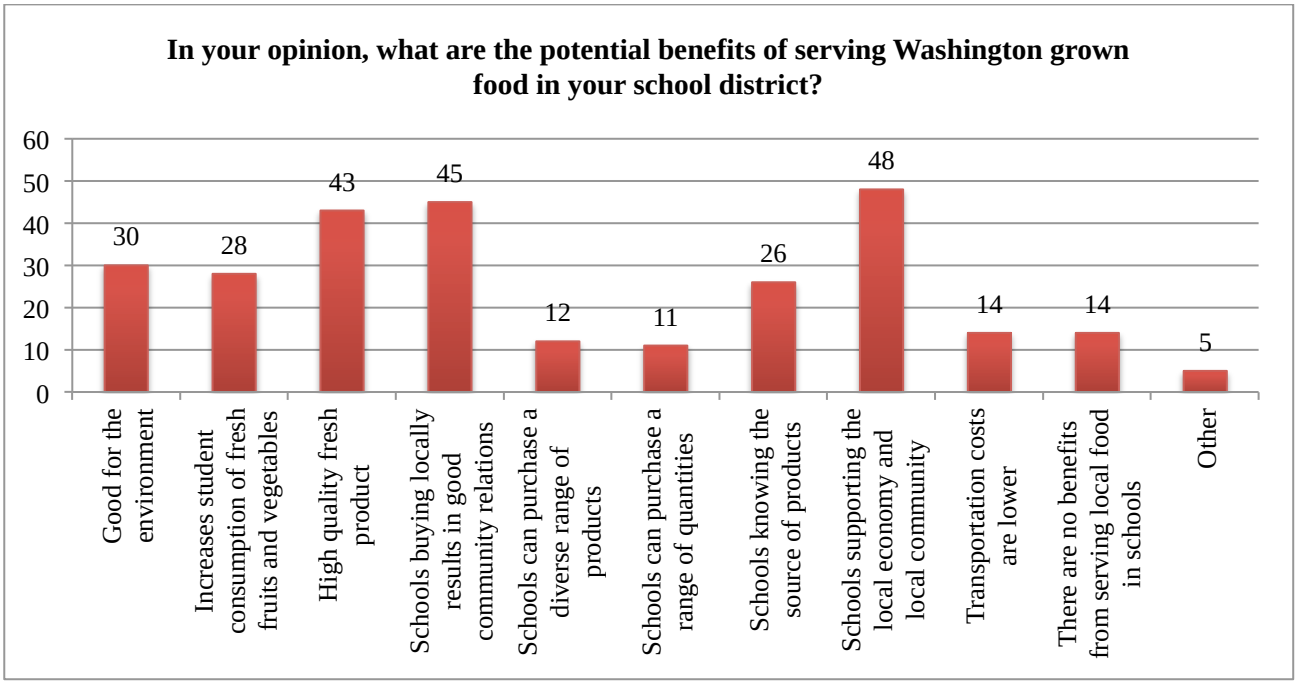

Figure 21. Response to Question 35: In your opinion, what are the potential benefits of serving Washington grown food in your school district? n=276 total items selected.

The results of this question demonstrate the perceived benefits to serving Washington grown foods to children for school lunch. Survey takers were asked to pick the top three potential benefits. The leading reported benefits in the opinion of the survey takers include schools supporting the local economy, schools buying locally resulting in good community relations, and the high quality of the fresh product. The least beneficial results reported were that schools can purchase a range of quantity of foods and that schools can purchase a range of foods as well as lower transportation costs. Fourteen people responded that they did not see any benefits to serving local food in schools. Reported top benefits from other states that have participated in farm-to-school programs include supporting the local economy, increasing fruit and vegetable preference in children, and higher food quality in schools.

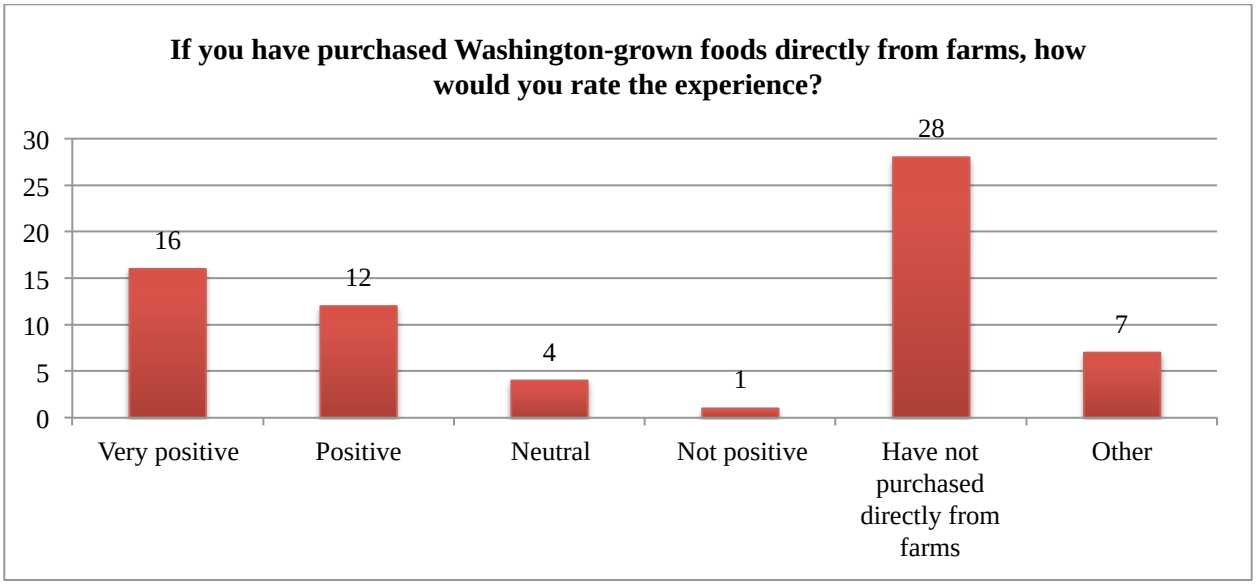

Figure 22. Response to Question 34: If you have purchased Washington-grown foods directly from farms, how would you rate the experience? n=68 respondents.

The results from this question reflect the overall experience in buying food directly from Washington farms. The results show that most survey takers had not yet bought food directly from farms, but of those who had the results were either very positive or positive. Only one survey taker reported having a negative experience buying food directly from a Washington farm. Data on the experience other states had with buying directly from farmers is not available. However, of those states already participating in the program, there was an overall trend that indicated that they would continue buying locally and participating in the program the next year. This indicates an overall satisfaction with the experience and a willingness to continue their efforts. The graph from Question 37 can be found in Appendix F.

The results of this survey question were meant to illustrate whether children responded positively to being served locally grown foods and if this resulted in an increase in school meal participation. However, the response rate for this question was very low. Of those who did respond, the majority said that participation stayed the same. This may indicate that the survey takers were unaware of the trends in school meal participation, or that their district had not yet begun serving local foods to children. Other states, namely Vermont, Iowa and Minnesota, saw small to significant increases in lunch participation and/or fruit and vegetable intake after implementing farm-to-school programs.

Associations between district characteristics and responses

We examined survey responses in an attempt to identify potential associations between district characteristics and responses to individual questions that might prove significant in further analysis. We ultimately decided to focus on the following survey questions, as they seemed the most relevant to an investigation of current and potential farm-to-school activity:

Question 11	Does your central kitchen currently process fresh fruits and vegetables (this may include cleaning, washing, cutting, or portioning from 'As Purchased' to 'Edible Portions')?
Question 21	Does your district purchase WA foods directly from farms? (This may include fresh fruits and vegetables, meat, grains, lentils, beans, jams, dried fruits, etc.)
Question 36	In your opinion, what are the barriers of serving Washington grown foods in your school district? Please check the three you find most significant. (Budget constraints; Consistent availability of product; Consistent quality of product; Distribution; Finding growers in my region; Food safety and liability; Farms' capacity to do minimal food processing; School district's capacity to do minimal food processing; Seasonality constraints; Volume requirements too large; Volume requirements to small; Other)

Table 8. Survey questions examined for associations with district characteristics

Processing facilities and access to local food are critical to the success of farm-to-school programs; questions 11 and 21 account for these factors, and thus help address the likelihood of success of a farm-to-school program in a particular school district. Question 36 addresses districts' concerns over farm-to-school programs, and can be used to frame marketing efforts to these districts.

Statistical Analysis

We performed a chi-square test for independence between responses to these questions and the district characteristics of %FRPL, % Caucasian Enrollment, and District Enrollment. Districts that did not answer a particular question were not included in the assessment of that question. Furthermore, due to the nature of question 36, we chose to consider each barrier option to be a separate question. For example, we determined whether an association existed between district characteristics and the consideration of *budget constraints* as a barrier, and then separately determined whether an association existed between district characteristics and the consideration

of *consistent availability* as a barrier. A "√" next to an option indicated that the district considered it a barrier to local food sourcing; omitting a "√" was interpreted to mean that the district did not consider it a barrier.

For each potential association considered, we constructed a 2x2 contingency matrix that summarized the *expected* number of districts responding positively and negatively to the particular question. Separate matrices were then constructed to summarize the *actual* number of districts responding positively and negatively to the question. These matrices can be found in Appendix G.

Comparing the expected and actual responses, we then computed a *p*-value for each potential association, and determined $p \leq .05$ to be indicative of a positive association. Our statistical analysis is summarized below:

Survey Question	**% Students on FRPL** Under vs. Over 50%	**% Caucasian Students** Under vs. Over 50%	**Total Enrollment Size** Under vs. Over 5000
Capacity to Process fresh fruits & vegetables? (Q11)	**0.034**	**0.056**[1]	0.072
Purchase WA food directly from farms? (Q21)	0.435	0.621	0.860
Barrier to serving WA grown foods, choose 3 (Q36)			
Budget constraints	0.410	0.134	0.299
Consistent availability of product	0.436	0.469	0.503
Consistent quality of product	0.709	0.303	**0.044**
Distribution	0.666	0.100	0.143
Finding growers in my region	0.206	0.390	0.108
Food safety and liability	0.436	0.587	0.253
Farms' capacity to do minimal food processing	0.603	0.462	0.171
School district's capacity to do minimal food processing	0.112	**0.015**	0.467
Seasonality constraints	0.803	0.672	0.299
Volume requirements too large	0.549	0.645	**0.024**
Volume requirements too small	0.234	0.325	0.696

Table 9. *p*-values for potential associations between survey responses and school district characteristics.

[1] In our analysis, we chose to include the association between % students that are Caucasian and capacity to process fresh produce. Although the *p*-value of .056 is outside of our threshold, we felt that it was close enough to 0.05 to warrant further analysis.

As indicated in red in the table above, we discovered five associations, specifically between the following factors:

- ✓ % of students participating in FRPL / Capacity to process fresh produce
- ✓ % of students that are Caucasian / Capacity to process fresh produce
- ✓ % of students that are Caucasian / Consideration of district's ability to do minimal food processing as a barrier to sourcing food locally
- ✓ District Size / Consideration of quality consistency as a barrier to sourcing food locally
- ✓ District Size / Consideration of large food requirements as a barrier to sourcing food locally

Shown below are the 2x2 (or 3x2) contingency tables used to calculate the chi-square test for independence of these associations (between survey responses and district characteristics):

%FRPL	Yes	No	No Response	Total
1: ≤50%	14	8	8	30
2: >50%	12	1	13	26
Total	26	9	21	56

Table 10a. Association between % FRPL and response to Question 11: Does district have the capacity to process fresh produce?

%Whites	Yes	No	No Response	Total
1: ≤50%	8	0	8	16
2: >50%	18	9	13	40
Total	26	9	21	56

Table 10b. Association between % white and response to Question 11: Does district have the capacity to process fresh produce?

%White	Yes	No	Total
1: ≤50%	0	16	16
2: >50%	9	31	40
Total	7	47	56

Table 10c. Association between % white and response to Question 36: Is district's ability to do minimal food processing considered a barrier to sourcing food locally?

District Size	Yes	No	Total
1: ≤5,000	5	32	37
2: >5,000	7	12	19
Total	12	44	56

Table 10d. Association between district size and response to Question 36: Is quality consistency considered a barrier to sourcing food locally?

District Size	Yes	No	Total
1: ≤5,000	3	34	37
2: >5,000	6	13	19
Total	9	47	56

Table 10e. Association between district size and response to Question 36: Are large volume requirements considered a barrier to sourcing food locally?

Based on these data, we were able to hypothesize the following associations:

- ✓ The likelihood of a district's capacity to process fresh produce increases with % of students participating in FRPL programs
- ✓ The likelihood of a district's capacity to process fresh produce decreases with increasing % Caucasian make-up
- ✓ The likelihood of considering a district's capacity to do minimal food processing to be a barrier to sourcing food locally increases with % Caucasian demographic
- ✓ The likelihood of considering quality consistency to be a barrier to sourcing food locally increases with district size
- ✓ The likelihood of considering large volume requirements to be a barrier to sourcing food locally increases with district size

Discussion

The ability to process fresh produce is important for the success of farm-to-school programs. These suggested associations imply that more success might be achieved by promoting farm-to-school programs to school districts with high participation in FRPL programs.

Knowing the perceived barriers to local food sourcing is useful in developing framing strategies for marketing farm-to-school programs. Based on these suggested associations, large school

districts seem concerned about quality consistency as well as the ability of local food sources to meet large volume requirements. Marketing efforts to large school districts should therefore attempt to address these concerns.

Although we determined associations between the presence of a Caucasian majority and certain survey responses, the associations were not very strong. We would not recommend catering farm-to-school marketing and development based on the Caucasian make-up of enrolled students.

State-by-state comparison

All questions in the current survey were compared to various farm-to-school summary reports from eight states. We did not find corresponding data for some of the questions; all eight states reported data focusing on varied aspects of farm-to-school programs that in many instances did not correspond to the focus of the WSDA 2011 survey. In addition, states with more established programs such as Minnesota had more information available than those with less established programs such as Oklahoma.

Nevertheless, several patterns did emerge for each state (Table 11). Of those that had data available on the topic of their districts' future plans, the overall trend appeared to favor the expansion of their farm-to-school programs. Iowa and Missouri are especially notable, with more than 80% of districts reporting that they were "very likely" to purchase at least some of their produce locally. Schools in four of the states –Vermont, New Jersey, Minnesota and Colorado – already obtain at least some of their top whole fruits and vegetables such as apples and tomatoes from local sources. And schools in most of the states are connecting students to agriculture most commonly by organizing farm visits and starting school gardens.

Table 11. Farm-to-School Comparative Research

	Colorado (2011)	Iowa (2008-09)	Minnesota (2011)	Missouri (2010)	New Jersey	Oklahoma (2008)	Pennsylvania (2008)	Vermont
General School Info								
# of school districts represented by survey (response rate)	70 (39%)	13 public, 5 parochial	165 (50%)	421 (56%)	193 (28.5%)	276	182 urban, 196 rural (75%)	
# of students served daily by school meal program (or % of student body)	384,504 lunches daily, 111,061 breakfasts	16 schools serve lunch (48-1680 daily), 15 serve breakfast (12-300 daily)	Not Available	Not Available	101-1000 (55.6%), >1000 (37.6%)	<500 (65%), 500-1000 (18%), 1000-2500 (10%), 2500-5000 (3%), 5000-100,000 (1.5%), >10,000 (2%)	Not Available	55% of all students eat lunch daily, 17% eat breakfast daily.
F2S Participation Data								
Participate in F2S Program/ Purchase locally (% yes respondents)	41%	44%	123 districts engaged in FTS, 86 districts purchase some MN-grown	13.3%	6%	233 schools	34%	FEED locally purchasing report shows 12.5% of all total fresh produce sales went to schools
Intend to purchase locally produced products again in coming year	Yes (no specific % provided).	88% Very Likely, 12% Somewhat Likely (local vegetables), 50% Very likely, 38% somewhat likely (local fruits)	49 will keep participation the same, 68 will increase F2S efforts	81.1% very likely to purchase locally grown food from vendor in future, 52.1% very likely to purchase from farmer directly	7.7% will keep FTS effort same level, 19.7% will expand existing FTS effort	Not Available	17% have begun looking at/expanding local purchasing	Not Available
Top whole fruits/ veggies purchased	Apples, lettuce, carrots, bananas, oranges (all but bananas & oranges purchased locally)	Apples, bananas, melon, grapes, salad mix, baby carrots, broccoli florets, corn, green beans, spinach	Apples, cucumbers, tomatoes, potatoes, winter squash (all purchased locally)	Apples, melons, cucumbers, tomatoes and peppers	Apples, tomatoes, peppers, cantaloupe, watermelon purchased locally	Not Available	Celery, lettuce, carrots, tomatoes, apples	Apples, lettuce and tomatoes purchased locally
F2S Efforts Initiated in Past 3 Years to Connect Students to Agriculture	Youth farmers markets, farm & market visits, in class food education, nutrition education, cooking classes, school gardens	School gardens, farm tours, using Iowa F2S website in classes	F2S education, school gardens, composting, using school garden produce in meals, F2S week, farm tours	Farm visits, school gardens, taste-testing, in-class education	F2S promotions in cafeteria, farm visits, class activities, videos, school gardens, growing in classrooms	Not Available	Farm & market visits, farmer visits to schools, agricultural/ nutrition education in-class, school gardens	Composting, taste-testing, meet a farmer

Table 11 (continued). Farm-to-School Comparative Research

	Colorado (2011)	Iowa (2008-09)	Minnesota (2011)	Missouri (2010)	New Jersey	Oklahoma (2008)	Pennsylvania (2008)	Vermont
Benefits & Challenges								
(Perceived) Benefits of Local Purchasing	Increased fruit & veggie preference, greater awareness of in-season produce, awareness of environment, fresher products	Support local economy, support IA farms, know the source of products, good PR, increase student access to fresh produce	Not Available	Support local economy, community & farmers; help children & adults have healthier diets, good for school PR, better flavor, comes from a known source.	Not Available	Not Available	Increased support of PA businesses, support local economy, enhance school district PR, know more about local food sources, preserve open space & environment	Higher quality food, believe that local is fresher, desire to teach and support state history of farming & bring kids onto farms, local interest/ community demand.
Top Concerns or Barriers to Purchasing Locally	Costs, lack of facilities, transport & storage, inadequate staffing, no central warehouse or kitchen.	Product costs, adequacy, reliability, quality of supply, liability, safety concerns, logistical challenges	Extra equipment & prep time required, costs, difficulty sourcing farmers & products, food safety, liability concerns, multiple orders & invoices	Inadequate supply in local area, cost, reliability, seasonality, delivery issues, quality/ consistency of products	Liability/food safety concerns, costs, product quality concerns, difficulty finding local farms & products	Cost, delivery issues, seasonality, health concerns/ food safety, product availability and freshness	Seasonal availability, inadequate supply, inconsistent quality, HACCP compliance issues/liability/safety, delivery issues.	Limited supply, seasonality, costs, transportation costs, lack of knowledge of local farms, inadequate definition of what's "local"
Tools Desired to Aid with F2S Imple-mentation	Not Available	Not Available	Strategies for engaging teachers, students & community, F2S recipes, help connect with farmers, Intro F2S Training, hands-on food prep training	Help connect with farmers/ directory of local farms, clarify regulations, examples & peer info, share info & newsletters with students & families, promo materials for cafeterias, hands-on workshops, recipes, website with best practices	e-newsletters, nutrition information, foodservice/ hands-on trainings, classroom education materials, blog, listserv	Not Available	Directory of local providers, better health & safety info, clarify regulations, assistance in developing systems for purchasing from multiple vendors, guidebook/ manual on sourcing local foods.	Not Available

Frequently cited tools desired by districts to aid in farm-to-school implementation included publicity materials, recipes and hands-on foodservice training, and help with connecting to local providers as well as a clarification of regulations. While the most commonly perceived benefits included support of the local economy, improved community relations and increasing students' access to fresh produce, districts struggled with perceived challenges of costs, product quality and availability, and food safety regulations.

We re-organized this information into a table that emphasized the farm-to-school practices of each individual state, also including the key partners in the implementation of each state's program (Appendix H).

We subsequently considered topics covered in the states' summary reports that were not directly covered in the WSDA 2011 survey.

Highlights of findings from other states:

- The majority of schools in Missouri (53%) and Iowa (72%) have salad bars
- The majority of schools in New Jersey (70%) have on-site kitchens
- Vermont, Iowa and Minnesota saw small to significant increases in lunch participation and/or fruit and vegetable intake after implementing farm-to-school programs
- Vermont has a large number of schools reporting significant student consumption of fruits and vegetables and interaction with local farms, including:
    - 74% of students reporting that they have eaten from a family produce garden
    - 69% of students reporting that they visited a farm or orchard with family
    - 52% of students reporting that they eat more than 2 cups of fruits daily
    - 43% of students reporting that they eat more than 2 cups of veggies daily
- New Jersey, Iowa, and Missouri all reported very high degrees of satisfaction/ease of purchasing locally. Minnesota reported an average score of 2.78 (out of a high of 7) in terms of "trouble-free" experience.

During the development of future WSDA surveys for farm-to-school, it may be useful to consider whether further insight could be gained by asking different or additional questions. We compiled questions not asked by the 2011 survey for consideration in inclusion in future WSDA surveys (Appendix I). The main questions from other states that emerged through this analysis include:

- Procurement: Is WA grown produce competitively priced?
- Is your district willing to pay more for WA grown produce?
- Foodservice: Specific equipment needs
- Farm-to-School Opinions and Experience: What would motivate you to increase the use of local foods in your district?
- What are your plans for Farm to School in the future? Increase efforts, keep the same, decrease, no plans, would like to start for the first time
- How would you describe the feedback you have received about your Farm to School activities from: (a) school food service staff, (b) students, (c) parents, (d) teachers/administrators, (e) community, (f) farmers/producers
  Very Positive/ Positive/ Neutral/ Negative

We also compared data from the 2011 survey to data presented in a draft report based on the 2008 WSDA farm-to-school survey. We found that the two surveys varied in their focus; the 2008 survey asked about experience with farm-to-school to date while the 2011 survey was more concerned with perceptions and capacity for implementation and potential future needs. Due to the differences in questions, we did not find many points of comparison.

The 2008 data is based on slightly more responses -- 90 rather than 82 for the 2011 survey. The ability of those responders to make local purchases seems to have remained relatively constant. In the 2008 survey, 69% of districts had no exclusive contracts specifying that they purchase certain products from their contracted vendor. In 2011, 68% (56 of 82) had no policies that would prevent them from making local purchases. The two questions take different approaches to learn about barriers that would hinder a school's ability to participate in the program. Both surveys reveal that almost one third of school districts have at least one barrier in the form of

policies or contracts that prevent them from purchasing some if not all of their products locally. Yet this data must be interpreted with caution, since the relevant question on the 2011 survey had a high non-response rate.

One difference that emerges from a comparison of two questions in the surveys is the growth of districts making local purchases. About on third (33%) of school districts reported having made a purchase directly from a local farm during 2007, while in 2011 that percentage grew to nearly half at 49% or 40 of the 82 responses. It should be noted, however, that the 2011 survey did not ask this directly. Rather, the figure can be inferred from question 34, which asks survey takers to rate the experience of purchasing WA grown foods directly from farms if they have done so. Fourteen did not respond and 28 selected the "have not purchased" option, which indicates that 42 responders did not have the experience of purchasing locally.

While local purchasing may be on the rise, districts still have many of the same perceived barriers. Amongst the most commonly cited barriers for both surveys were inconsistent availability of products and budget constraints. It is notable that the question on the 2008 survey was restricted the responders who did not already source locally, while the 2011 survey asked everyone to choose the top three barriers. On the 2007 survey, lack of reliability among farmers and the amount of effort and difficulty in coordinating with farmers did not appear as barriers in 2011. But perhaps both could be considered to apply to the broader category of "distribution," cited fifth as a top barrier in 2011 behind availability (45), seasonality (35), cost/budget (32), and finding growers (30). Finding growers was not listed as a top barrier in the draft report of the 2008 survey, and neither were the 2011 categories of safety (22) and processing (20). One potentially significant change relates to the category of "inconsistent product quality." This was listed amongst the top five barriers in the 2008 survey but was down to eighth in terms of barriers cited in the 2011 survey out of eleven different categories presented as choices.

An additional point of comparison between the two surveys is the type of produce that districts are interested in purchasing locally. The list of top ten fruits has for the most part remained consistent, but a notable trend that does seem to emerge is a slight growth of interest in berries. Strawberries, grapes and blueberries moved up in rank in 2011 when ordered by the number of

school districts interested in purchasing this locally available produce. The top ten vegetables also remained fairly consistent with the notable exception of the appearance of broccoli on the 2011 survey list --this vegetable was not mentioned at all in the 2008 survey.

Furthermore, we noted a few questions that were asked on the 2008 survey and not directly addressed by the 2011 survey that might be of interest for inclusion on future surveys:

- Would you be willing to pay higher prices to buy locally produced foods?
- If price and quality were competitive and a source was available, would you purchase food directly from a local producer?
- What % of the food you purchase is organic?
- Do you purchase rBGH/Hormone-free milk?
- If you participated in the USDA FF&V Program, have you noted a
  - Positive impact on students' fruit and vegetable consumption?
  - Classroom focus and behavior?
  - Test score

BEST PRACTICES AND RECOMMENDATIONS

Farm-to-Cafeteria

Best Practice – Train Staff for FTS

It is vital for all staff members to have adequate resources and support to implement FTS changes. Teachers need to be educated on FTS and basic nutrition in order provide nutrition education to students; foodservice personnel must be prepared to work with the fresh produce that FTS supplies; school staff must be trained to implement school food activities and programs (Izumi, Joshi, USDA).

Twenty school respondents indicated they are interested in receiving guidance on kitchen skills and food safety training (Q38). Almost half of these respondents (nine total) are also among the 20 respondents (out of 82 total respondents) that do not currently process fresh fruits and vegetables on individual school site kitchens (Q13), *or* were among the 17 respondents' respondents (out of 82 total respondents) that no not have the capacity to process fruits and vegetables on individual school site kitchens (Q14). This overlap of interest in food prep training and current lack of processing fresh produce may signify that the *lack* of trained food service staff is a barrier to their capacity to process fresh produce.

For example, 12 respondents (out of 82 total respondents) perceived that the district's capacity to do minimal food processing was a barrier to serving WA-grown foods (Q36). Also, the very high non-response to Q12 (71 out of 82 total respondents) regarding their central kitchen's current capacity to process fresh fruits and vegetables may indicate a lack of training and awareness of the current food preparation environment.

Other states with FTS programs identified the following tools desired for FTS implementation: strategies for engaging teachers, students, and the community, FTS recipes, foodservice/ hands-on trainings, classroom education materials (USDA, Keathley). Training should focus on these topics that are most highly valuable to other states' FTS programs.

There were also no survey questions regarding training of teachers or other school staff on FTS (only on the training of food safety for food prep staff). This information would help implement best training and it is recommended that future surveys include these questions.

Recommendation

Implement training to ensure that all staff are educated on FTS and basic nutrition: Train teachers on how to teach nutrition to students; train kitchen staff to prepare fresh produce; train school staff to implement school food activities and programs. Partner with state leadership and other stakeholder resources that can provide training to the school staff, because schools often do not have the capacity to do so entirely themselves.

Efforts should be focused on providing training to the 20 respondents that indicated interest in receiving training on food preparation and safety (Q38), and especially on the nine respondents that are interested in receiving this training and also do not currently (Q13) or do not

have the capacity (Q14) to process fresh produce. Include questions on training of teachers and other school staff in future surveys.

Best Practice - Assure Adequate Kitchen Facilities

It is important that school kitchens adapt to the needs of FTS, such as the increased processing of more fresh foods onsite. This may include in some cases making adaptations to the central kitchen (Chomitz, Vallianatos).

Twenty respondents' individual school kitchens (out of 82 total respondents) do not currently process fresh fruits and vegetables (Q13), and 17 (out of 82 total respondents) kitchens do not have the capacity to process fruits and vegetables (Q14).

This current lack of processing may be supported by the respondents' limited capacity to do minimal food processing, which 12 school respondents (out of 82 total respondents) did perceive as a barrier to minimally processing WA-grown foods (Q36). Some states (CO, IA, MN) identified the lack of facilities or need for extra equipment as barriers to purchasing locally (Bagdonis, Chomitz, Izumi).

Thirty-five respondents are not able to recruit additional processing help by renting out district kitchen space to farms or small food companies to process products after school hours; 25 are interested and would need to check (Q17). Positively however, central kitchens appear to be quite effective in their ability to process fresh produce, because out of the 46 schools that answered Q11, 36 central kitchens currently process fresh fruits and vegetables and only ten do not (Q11).

Recommendation

Focus efforts to adapt school kitchens to the needs of FTS on the 17 individual school site kitchens that do not currently have the capacity to process fresh produce (Q14), and the 20 that do not currently do so (Q13). Recommend that schools use central kitchens to process fresh produce, because these have proved successful at having high capacity to process fresh produce. Also connect farms, co-ops, and small food companies, with the 25 respondents that are interested in renting out school kitchen space after hours to these companies to process their product (Q17).

Best Practice – Recruit Farms that Supply the Most-Demanded Produce

The top ten whole fruits and vegetables *most frequently purchased* during 2009-2010 school year are (in order from most to least): apples, oranges, broccoli, carrots, bananas, cucumbers, potatoes, lettuce, pears, and grapes (Q6). The top ten fruits school respondents *would be willing* to purchase from a local source (in order from most to least): apples, strawberries, watermelon, grapes, pears, blueberries, melon, peaches, plum, kiwis (Q32). The top ten vegetables school respondents *would be willing* to purchase from a local source are (in order

from most to least): carrots, lettuce, broccoli, cucumber, tomatoes, salad mix, cauliflower, peppers, celery, onions (Q33).

Although availability is the most-identified barrier (45 respondents out of 82 total respondents identified the consistent availability of product as a barrier to buying local, Q36) 49 out of the 63 respondents that answered Q30 expressed an interest in working with farmers during the off-season to plan for the future season of crops for the schools. This is important because not all of the top-demanded types of produce are in season all year.

The table below shows the top-demanded produce items of other states. Although not highly relevant to the agricultural availability of Washington, they do show the types of produce that are successful in schools for other reasons, such as what students consume.

Top *whole* fruits/ vegetables purchased (Keathley, USDA, Chomitz):	
Colorado (2011)	Apples, lettuce, carrots, bananas, oranges (all but bananas & oranges purchased locally)
Iowa (2008-2009)	Apples, bananas, melon, grapes, salad mix, baby carrots, broccoli florets, corn, green beans, spinach
Minnesota (2011)	Apples, cucumbers, tomatoes, potatoes, winter squash (all purchased locally)
Missouri (2010)	Apples, melons, cucumbers, tomatoes and peppers
New Jersey	Apples, tomatoes, peppers, cantaloupe, watermelon purchased locally
Pennsylvania (2008)	Celery, lettuce, carrots, tomatoes, apples
Vermont	Apples, lettuce and tomatoes purchased locally

Recommendation

Recruit farms that supply the top ten produce items that schools wish to purchase as indicated by the survey. Use "matchmaking" tools, directories of farms, and other networks as appropriate to identify the farms that supply these top-demanded items, and connect them with schools.

Best Practice - Incorporate FTS into the School Wellness Policies

Incorporating FTS into wellness policies makes the commitment to serving healthier meals at schools and implementing nutrition activities and programs; it makes FTS a fundamental part of the systemic framework of the school's values, policies, and activities (Bagdonis, Chomitz).

Fifty-six out of the 82 total respondents to Q31 do not have wellness policies that address their ability to do local purchasing; four do, and 22 did not respond. This overwhelming current lack of incorporation of local purchasing in Wellness Policies is in great contrast to the fact that it is a best practice that emerged from the majority of the research (Bagdonis, Chomitz, Izumi). Implementing the following recommendation will help bridge this gap.

There is limited available information on if other states' schools Wellness Policies include content on local purchasing. However it is clear from reports and other publications that other states integrate nutrition education into the school curriculums and extracurricular activities, such as having cooking classes, school gardens, and composting.

Recommendation

Help the 56 respondents whose current school wellness policies do not address local purchasing and FTS to adapt their wellness policies to include the program. Only implement this recommendation along with implementing other recommendations regarding schools' ability to purchase local foods, including training their staff, updating their kitchens, and connecting with suppliers. This prevents making an unsupported mandate in the wellness policy that schools cannot possibly adhere to. Help schools adapt the document, including offering guidance on the language of the portions of the wellness policies regarding FTS.

Best Practice - Befriend Your Farmers

Forming reliable and positive connections between schools and farm suppliers is crucial because the availability of product was the top-indicated barrier and the top aspect on which respondents wish to receive guidance. The most successful FTS programs outlined in the research have strong farm-school relationships (Izumi).

The majority of perceived barriers to serving WA-grown food in schools can be addressed by working directly with farmers and having good relationships with them. These barriers include the consistent availability of product (indicated by 45 out of 82 total respondents), seasonality constraints (indicated by 35 out of 82 total respondents), finding growers in region (indicated by 30 out of 82 total respondents), and others (Q36).

To help overcome the top perceived barrier of availability of the product, guidance can be provided to the 57 respondents out of 82 total respondents that are interested in receiving guidance on availability of products (Q38). This is especially helpful because many of these 57 that are interested in receiving guidance on availability are also among the 47 respondents that did not indicate that they currently purchase food directly from a WA farms or producers (Q8).

Close relationships with farmers may also help take the first step to achieve the great positive response from purchasing locally thus far, and maintain these good experiences. Out of the 22 respondents that answered Q24, 22 respondents that purchased WA-grown produce directly from WA farms or producers, would do so again.

All states covered in the research indicated aspects of procurement as barriers to local purchasing (Bagdonis, Brockhouse, Izumi). Some states emphasized purchasing from a variety of suppliers rather than a single farm to overcome seasonality constraints, and benefited from co-ops formed among farmers (Brockhouse, Izumi).

Recommendation

Use farm directories, "matchmaking" tools, and other networks to link schools with farm suppliers.Help overcome seasonality constraints by encouraging FTS to source from a variety of

suppliers rather than a single farm, and/or the formation of co-ops between farmers (Izumi, Kish). Focus "matchmaking" on the many districts that are among *both* the 57 respondents interested in receiving guidance on product availability (Q38) and the 47 respondents that did not indicate that they currently purchase food directly from a WA farms or producers (Q8).

(Efforts must be made to differentiate this 47 into those that don't currently purchase locally, and those that simply did not answer the question, because there was no "do *not* currently purchase locally" option. In future surveys, include an option to indicate *not* currently purchasing locally to identify those schools that need this recommendation the most.)

Best Practice – Regularly Evaluate FTS

Once FTS has been strategically planned and implemented, it is very crucial that a surveillance system is established to catch early inefficiencies, evaluate program policies, and implement changes as needed. Extra time taken for assurance prevents the wastage of precious resources and prevents future problems rather than simply reacting to them (Bagdonis)

Surveillance was not addressed by the Washington survey questions, nor by other states' reports with the exception of Pennsylvania (discussed next). However, evaluation is one of the fundamental three functions of public health, and must be included in order to implement any successful public health initiative such as FTS (Keathley).

There appears to be great need for improved evaluation and surveillance of FTS in schools. For example, 46 respondents did not answer Q37 regarding if participation in school meals increased, decreased, or stayed the same after serving WA-grown foods, which likely indicates low awareness of the outcomes of the program. Also, although surveillance was not addressed in the survey, the top perceived barriers (the top three being availability, seasonality, and budget constraints) hint at the likely points where problems may occur (Q36).

Pennsylvania was the only state that mentioned evaluation. It distinctly mentioned in their 2008 FTS report the importance of evaluation and surveillance for FTS, and its value in creating positive policy changes regarding FTS (Schafft).

Recommendation

Evaluate FTS programs quarterly (four times per year) after implementing the programs. Focus evaluation on the procurement aspects initially, because these are the top-indicated barriers and are likely points where problems will occur in the initial phases of FTS. Partner with state leadership and other stakeholder resources (recommended) in order to implement this, because schools often do not have the capacity to do so entirely themselves.

There was little basis for identifying these key points for monitoring FTS' successes and shortcomings. Therefore future surveys should include questions on what aspects schools would most valuably use for evaluating FTS (such as participation in school meals, how FTS is fitting within its budget, attendance of events, etc.) in order to best construct a surveillance system.

Best Practice - Utilize State Leadership

Successful FTS programs make use of state leadership to form valuable partnerships of support and make use of their expertise and professional networks. These leadership entities include state departments of agriculture and education, universities, departments of health, and other entities (Brockhouse, Vallianatos).

Respondents indicated interest receiving services from state leadership. The aspects on which schools wish to receive services the most are, availability of products in region (57 out of 82 total respondents), seasonal recipes and menu planning (37 out of 82 total respondents), and supplemental funding opportunities and budgeting and cost management (both were indicated by 34 out of 82 total respondents)(Q38).

Beyond their role in connecting farmers and schools to supply fresh produce to schools, state leadership is vital in helping schools implement recommendations which they often do not have the capacity to implement entirely themselves. These include the Training recommendation to train school staff, and the Evaluation recommendation to monitor progress.

State leadership is also important in helping schools implement the Collaborative Education recommendation. For example, state leadership cooperates with schools to host events such as the 25 respondents that participated in Taste WA Day, 8 that invited a farmer to school, and 21 that took students to visit a farm or farmer's market (Q8).

The majority of perceived barriers to serving WA-grown foods can also be addressed by utilizing state leadership. These barriers include the consistent availability of product (indicated by 45 out of 82 total respondents), seasonality constraints (indicated by 35 out of 82 total respondents), finding growers in region (indicated by 30 out of 82 total respondents), and others (Q36).

Unfortunately there may be currently low current connection with state leadership. Only 15 out of 82 total respondents had visited the WSDA FTS website in the past three years (Q8).

In contrast, other states show strong use of state leadership resources (Kloppenburg). Examples include that North Carolina FTS is supported by NC Department of Agriculture; Cambridge Public Schools FTS is supported by Massachusetts Department of Public Health and the Cambridge Public Health Department; New York FTS is overseen by a New York State Farm to School Coordinating Committee; Pennsylvania FTS uses Penn State University programs and County Farm Bureaus; the Kentucky Department of Agriculture supports Kentucky FTS, and others (Brockhouse, Chomitz, Schafft, Vallianatos).

Recommendation

Link respondents FTS programs to state entities that may include WSDA, OSPI, Washington DOH, and University of Washington. In many cases, this recommendation will likely be achieved concurrently with the implementation of other recommendations that rely on utilizing state leadership to be successful, such as Provide Collaborative Education, Training, and Evaluation.

Farm-to-School

Best Practice - Provide Collaborative Education

Multisensory activities make nutrition education interesting and fun. Children may learn more when engaged in a multisensory way that reaches all types of student learners (visual, kinetic, etc.)(Schafft). Engaging students and involving parents may carry over healthy eating habits to the home (Schafft, Vallianatos).

The top three collaborative education programs currently offered are providing education on WA food and agriculture, planting school gardens, and participating in Taste WA day; the three programs currently initiated the least are hosting harvest events or farmers markets, inviting farmers to schools, and sharing information about local foods with families and the community (Q8).

Importantly, the three least-initiated collaborative education programs are also those activities that received the most interest. Respondents indicated either "interested" or "would be interested in future" to: nutrition education (27 responses out of 50 respondents that answered this question), and culinary arts and horticulture programs (22 responses out of 51 respondents that answered this question).

Although not also among the currently least-initiated activities, respondents also indicated the following interest: school gardens (23 responses out of 43 respondents that answered this question), cooking classes (19 responses out of 34 respondents that answered this question), sustainability program/club (17 responses out of 24 respondents that answered this question).

This recommendation is also based on awareness of the collaborative education activities that have been highly successful in other states according to the research (Bagdonis, Izumi, Vallianatos). These include school gardens, nutrition and cooking education inside or outside of class, involving parents in these activities, composting, local produce taste-testing activities, farmer's market or harvest events, and others.

Recommendation

Focus on implementing those activities that are currently the least initiated, but are also those that received the most interest: nutrition education, inviting farmers to schools, and hosting harvest or farmer's market events. Ensure Collaborative Education content in the Training recommendation: Teachers must be able to provide nutrition education to students, school staff must be able to host nutrition events, and others.

Best Practice - Involve Parents and the Community

What FTS teaches students and staff can transcend school walls into the public and community. Nutrition education at school can valuably carry over to students making healthy choices at homes, during summers, and possibly lasting throughout their lives (Keathley).

Involving parents in nutrition education beneficially relates to how research shows that parents' eating habits greatly influence their children's eating habits (Izumi)

Schools value this activity too, because supporting the local economy and local community is a top perceived benefit of serving WA-grown food in schools (48 out of 82 total respondents)(Q35), as well as resulting good community relations (45 out of 82 total respondents)(Q35). Other states perceive helping the community have healthier diets, and supporting the local community and economy, as top benefits of purchasing local (Izumi, Schafft).

Recommendation

Invite parents to all nutrition education activities and events to involve them in students' nutrition education; invite all community members to public, school-wide nutrition events.

Best Practice - Effectively Market the Program

Marketing is essential for building support and awareness for the FTS program (Allen, Brockhouse, Schafft). Schools wish to receive assistance on implementing this recommendation: Thirty-three respondents are interested in receiving guidance on networking within the school and community (Q38). Effectively marketing FTS will help the respondents achieve two of their top perceived benefits of serving WA food: good community relations, and supporting the local economy and community (indicated by 45 and 48 respectively out of 82 total respondents)(Q35).

Other state identified strategies for engaging students, teachers, and the community as tools needed to help implement FTS (Brockhouse, Izumi). Some states have experienced success with materials like cafeteria displays and e-newsletters to families.

Recommendation

Create and distribute FTS marketing materials especially to the 33 respondents interested in receiving guidance on local networking. Examples are fun and visual cafeteria displays and e-newsletters that have effectively marketed FTS in other states (Brockhouse, Izumi). Future surveys should include questions that address marketing to better create a marketing plan for Washington specifically.

Best Practice - Recruit Community Support and Advising

FTS is best supported by a network of community entities that rally for the program's success (Allen, Bagdonis, Kish). Community stakeholders (parents, community groups, nonprofit organizations, and others) can also provide valuable input that enables FTS to adapt to local community needs and culture, and for the community and FTS to connect in positive ways.

Some stakeholders (listed below) have strong expertise in supporting children's health, procurement, marketing, and other essential components of FTS. Community-based advising is best framed in a way that community members voluntarily advise FTS because they support FTS

and wish to see it succeed, rather than coming in from the outside and imposing additional rules or requirements (Izumi, Kloppenburg, Schafft).

Respondents are most interested in receiving guidance on (out of 82 total respondents): availability of products (57), seasonal recipes and menus (37), budgeting and cost management (34), supplemental funding opportunities (34), networking within school and community (33), policies and procedures (21), kitchen skills and food safety training (20)(Q38).

Receiving this guidance and recruiting community support will help the respondents achieve two of their top perceived benefits of serving WA food: good community relations, and supporting the local economy and community (indicated by 45 and 48 respectively out of 82 total respondents)(Q35). Other states have also used community-based advising to ensure the success of their program, and supporting the local community and economy is one of other states' top perceived benefits of purchasing local (Bagdonis, Izumi, Schafft).

Recommendation

Recruit stakeholders to support FTS by promoting and marketing the program, and to advise FTS programs on those aspects which respondents wish most to receive guidance. (The top three aspects which respondents wish to receive guidance on are the availability of products, seasonal recipes and menus, and budgeting and cost management (Q38).) Examples of stakeholders to potentially include are the University of Washington, WA Partners in Action, Food Corps, Within Reach, WA sustainable food and farming network, and others.

References for this section are in Appendix J.

CONCLUSION

Key findings of 2011 Farm-to-School (FTS) survey

Washington's Farmers Grow What Washington's Schools Want

- Two third of school districts would be willing to purchase fruits and vegetables from a local source.
- About Half (49%) of school districts reported having made a purchase directly from a local farm in 2011 as compared to only one third (33%) of districts made direct purchase in 2007.
- The majority (85%) of districts have positive experiences in purchasing Washington-grown food directly from farms.
- All school districts that said that they had purchased locally in the past responded stated that they would purchase Washington grown products directly from farmers/producers again.
- Four of the top 10 fruits and vegetables that were most frequently purchased by school districts were also part of the top 10 commodity crops grown in Washington.
- Over two third of school districts would be willing to work with farmers to ensure schools could obtain foods they need.

According to the Washington State Department of Agriculture, apples, potatoes, grapes, and pears are part of the top ten commodity crops produced in the state of Washington. Since these crops are grown abundantly throughout the Washington area, they are very conducive to being sourced and purchased from local farmers.

Most whole and minimally processed fruits and vegetables – blueberries, strawberries, lettuce, broccoli, carrots, salad mix, corn, cauliflower, apples, pears, grapes – that were purchased by schools in the 2009-2010 school year were also the top fruits and vegetables that schools would be willing to purchase from a local source. Therefore, there is a big overlap between what the schools are already buying and what they would be willing to purchase from a local source.

Most of the respondents expressed interest in working with local farmers in the offseason to ensure that the schools would be able to get the foods they need. Given the interest from most of the respondents, developing materials to facilitate communication between schools and farms would likely make it easier for schools to expand their produce orders and for farms to better accommodate schools' needs.

Respondents Identified Interests in Training, Technical Assistance and Materials to Support FTS.

- School districts showed strong interests in FTS information and events including:
  - Availability of farm products in their region
  - Seasonal recipes and menu planning
  - Budgeting and cost management
  - Supplemental funding opportunities

Fifty seven respondents reported they were interested in information about the availability of farm products in their regions. Respondents were also interested in seasonal recipes and menu planning information, budgeting and cost management information, as well as supplemental funding opportunities within the school and community. There was less interest expressed in kitchen skills and food safety training, and, surprisingly, policy and procedure information.

Food Service Staff are Interested in Reaching Beyond the Kitchen and Cafeteria

Most districts were either interested or indicated that they would be interested in connecting foodservice with the various school programs including culinary arts and horticulture programs, cooking classes, nutrition education, school gardens, and sustainability program/club. Very few districts responded that they were not interested in connecting to the various school programs. Connecting school programs to foodservice will allow for increased student awareness of farm-to-school programs and possibly create the desire for increased participation.

There are Barriers to Implementing FTS

- The main perceived barriers of FTS include consistent availability of the product, seasonality constraints, and budget constraints.

The greatest concern among the survey takers was the consistent availability of the product, followed by seasonality constraints and budget constraints. The least concerning aspects of serving Washington grown food in schools were that the volume requirements for buying were too small, that volume requirements were too large, and that the school district's ability to do minimal food processing was lacking.

The price of produce and the processing required to prepare these fruits and vegetables were also concerns that were expressed by the survey respondents. Therefore, even though many of the school directors are willing to purchase Washington produce, there are many other factors (ex. price, preparation) that must be factored into their decision. The results of this survey tend to show that even though the desire is there to purchase from local farmers, there are many other critical logistical factors that must be considered before purchasing produce from a local provider.

Districts Have Differences in Their Capacity for FTS

- The likelihood of a district's capacity to process fresh produce increases with % of students eligible for Free or Reduced Price Lunch (FRPL)..
- The likelihood of considering quality consistency to be a barrier to sourcing food locally increases with district size.
- The likelihood of considering large volume requirements to be a barrier to sourcing food locally increases with district size.

The ability to process fresh produce is important for the success of farm-to-school programs. These suggested associations imply that more success might be achieved by promoting farm-to-school programs to school districts with high participation in FRPL programs. Based on these suggested associations, large school districts seem concerned about quality consistency as well as the ability of local food sources to meet large volume requirements. Marketing efforts to large school districts should therefore attempt to address these concerns.

RECOMMENDATIONS

Farm-to-Cafeteria Recommendations

- **Train staff for FTS:** Implement training to ensure that all staff are educated on FTS and basic nutrition. Utilize state leadership resources to help train school staff on FTS because schools often do not have the capacity to do so entirely themselves.

- **Assure Adequate Kitchen Facilities:** Focus efforts to adapt school kitchens to the needs of FTS on the individual school site kitchens that do not currently have the capacity to process fresh produce, and school site kitchens that do not currently do so. Recommend that districts use central kitchens to process fresh produce, because these have proved successful at having high capacity to process fresh produce.

- **Recruit Farms that Supply the Most-Demanded Produce:** Recruit farms that supply the top ten produce items that schools wish to purchase as indicated by the survey. Use "matchmaking" tools, directories of farms, and other networks as appropriate to identify the farms that supply these top-demanded items, and connect them with schools.

- **Incorporate FTS into the School Wellness Policies:** Help school districts to adapt their wellness policies to include FTS program. Only implement this recommendation along with implementing other recommendations regarding schools' ability to purchase local foods, including training their staff, updating their kitchens, and connecting with suppliers. This prevents making an unsupported mandate in the wellness policy that schools cannot possibly adhere to. Help schools adapt the document, including offering guidance on the language of the portions of the wellness policies regarding FTS.