Plate it Up! Kentucky Proud: Promoting local food sustainability through classroom/community interaction
Community Development Society Conference
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Agriculture
Marketing Division
Background

The majority of Americans fail to consume the recommended five to nine servings of fruits and vegetables per day for optimal health.

According to the CDC State Indicator Report, only 14% of adults in the United States eat two or more servings of fruits and vegetables per day.
Potential Solutions

Provide recipes and menu ideas for the purchase and preparation of simple and appetizing meals that feature fruits and vegetables.

Increase promotion of locally accessible, affordable, high-quality produce available for purchase within communities.
University of Kentucky: Extension Professionals in All 120 Counties
Response to Needs Assessment

Engage University of Kentucky Nutrition and Food Science faculty, students, Kentucky Department of Agriculture and Extension agents in a community-based student experiential learning project to create recipes focused on Kentucky food products to encourage good nutritious meal planning and local purchase.
Project Goals:

Increase consumer purchase and preparation of KY grown produce.

Improve health of Kentuckians by increasing consumption of fruits & veggies in healthy recipes.

Develop UK copyrighted culturally palatable recipes for agents and producers use in promoting healthy eating.

Fully funded by the Kentucky Department of Agriculture.
Project Activities

1. Develop a data-base of recipes featuring Kentucky fruit, vegetable and herb crops testing and development procedures in NFS 304, Experimental Foods

2. Engage Cooperative Extension agents, consumers and producers to taste test and disseminate culturally appropriate recipes to Kentucky

3. Develop a social marketing campaign message to encourage increased fruit and vegetable consumption in the context of local food systems.
Activity 1: Recipe Data Base

Agents submit original recipes focusing on selected seasonal commodities

NFS 304: Experimental Foods students select recipes for modification from recipe pool

Modifications done in class to increase nutritional value

Agent taste test panel critiques and compares each modified recipe to original

Agents re-test recipe
Activity 2: Recipe Educational Resource Development

Recipe cards, media scripts, and demonstration guides were developed to share the facts about nutrition, selection, storage, preparation and preservation of the specialty crops.
Activity 3: Social Marketing Campaign

Identified by Cooperative Extension agents, Kentucky Department of Agriculture and University of Kentucky Nutrition and Food Sciences faculty as a tool for reaching project goals.
NFS 304

From classroom testing
To Local Distribution

**Watermelon Tomato Salad**

- 5 cups seeded watermelon cubes (¼ inch)
- 3 cups of cubed tomatoes (¼ inch)
- ¼ teaspoon salt
- 1 small red onion, quartered and thinly sliced
- ½ cup red wine vinegar
- 2 tablespoons extra virgin olive oil
- 6 lettuce leaves
- 1 teaspoon black pepper
- 6 lettuce leaves

**Directions:**
Combine watermelon and tomatoes in a large bowl. Sprinkle with salt; toss to coat. Let stand 15 minutes. Stir in onion, vinegar, and oil. Cover and chill 2 hours. Serve chilled on lettuce leaves, if desired.

**Nutritional Analysis:**
- 100 calories
- 5 g fat, 2 g protein, 18 g carbohydrate,
- 0 mg cholesterol, 105 mg sodium.

**Buying Kentucky Proud is easy. Look for the label at your grocery store, farmers’ market, or roadside stand.**

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**Kentucky Watermelon**

**SEASON:** July to September.

**NUTRITION FACTS:** Watermelons are low in calories (92 calories for one two-thirds cup serving) and very nutritious. They are high in lycopene, a powerful antioxidant. They are also high in vitamin C, vitamin A, and potassium.

**SELECTION:** Choose melons with a well-rounded shape and smooth surface. The underside should be creamy yellow. The flesh should be deep red with mature, dark seeds. Also look for yellow-fleshed and seedless melons.

**STORAGE:** Cut melon should be stored in the refrigerator and covered with plastic for two to three days. Uncut melon will keep in a cool place for up to two weeks.

**PREPARATION:** Melons should be washed with soap and water before cutting. The flavor of a watermelon is best when served cold and raw.
To Statewide Events and Media
To Statewide Web Access

www.kyproud.com
To Social Media
Facebook
What is the future of this project?

Funded for 2 more years.

Assessment of value of recipe cards.

- Do they make consumers want to buy more locally grown produce?
- Are consumers preparing the recipes?
- FCS Extension use of recipe cards in programming.
- How do producers use the recipe cards to promote the product and healthy eating?

Addition of specialty recipes (e.g. children, diabetes)
Evaluation Methods

Number of Kentucky specialty crop recipes tested over the course of five semesters n = 107

Number of tested recipes developed and published as recipe cards n = 37

Number of agents n = 121 disseminated 617,100 recipe cards to Kentucky consumers

Agent report dissemination strategies to consumers – health fairs, nutrition displays, farmers’ market/grocery demonstrations and cooking schools n = 121

Survey of Student perspective of project goals and outcomes n = 65

Survey of Extension agent perspective of project goals and outcomes n = 10

Survey of consumers at Farmer’s markets n = 1048 after receiving recipe card and sampling recipe
Results of student survey

Anonymous survey of students taking NFS 304 in Fall 2010 & Spring 2011 (Year 2 of the project)

65 students (55 female: 10 male)
Age: 22.0 ± 2.5 years
Year in school
  2% sophomore
  17% junior
  81% senior
Cumulative GPA: 3.39 ± 0.36
Student Comments

This was a great application of nutritional skills. I enjoyed enhancing the overall nutritional quality of our product as well as the trials, errors, and science involved in recipe development.

[The project] was a fun and practical way to use what we had learned in class.

[The project] was fun and educational at the same time. I learned how widespread the effects of our projects are to the community and what is important to include in a recipe (e.g. number of ingredients and easy access to ingredients in all parts of the state).

It was neat creating alternatives to a recipe that people will actually utilize.

It was very beneficial to take this course to help become involved in the community. I also learned about the goals and objectives of FCS Extension.

[The project] was great way to learn while getting involved in the community!

I enjoyed this project because it was something different. I learned it is possible to make a tasty recipe using healthy substitutions.
## Student Survey Results

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>On a scale of 1-7 (7=incredibly interested), how would you rate your overall interest in the recipe project at the beginning of the semester?</td>
<td>5.11 ± 1.46</td>
</tr>
<tr>
<td>On a scale of 1-7 (7=incredibly interested), how would you rate your overall interest in the recipe project at the end of the semester?</td>
<td>5.51 ± 1.20 *P&lt;0.05</td>
</tr>
<tr>
<td>On a scale of 1-7 (7=incredibly knowledgeable), how would you rate your knowledge of FCS Extension at the beginning of the semester?</td>
<td>2.32 ± 1.40</td>
</tr>
<tr>
<td>On a scale of 1-7 (7=incredibly knowledgeable), how would you rate your knowledge of FCS Extension at the end of the semester?</td>
<td>5.16 ± 1.11 *P&lt;0.01</td>
</tr>
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# Student Survey Results

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<tr>
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<tr>
<td>On a scale of 1-7 (7=incredibly important), how important was interacting with FCS Extension agents for this project?</td>
<td><em>Mean ± S.D:</em> 4.46 ± 1.54</td>
</tr>
<tr>
<td><strong>On a scale of 1-7 (7=incredibly important), how important do you think real-life applications are in your college coursework?</strong></td>
<td><em>Mean ± S.D:</em> 6.31 ± 0.97</td>
</tr>
<tr>
<td>On a scale of 1-7 (7=incredibly important), how important was critical thinking in this project?</td>
<td><em>Mean ± S.D:</em> 5.03 ± 1.04</td>
</tr>
<tr>
<td><strong>If given a choice, would you take a section of a course just because it incorporates real-life applications?</strong></td>
<td>Yes: 35%</td>
</tr>
<tr>
<td>How many of your other classes have involved real-life service learning activities?</td>
<td>0 classes: n=21</td>
</tr>
<tr>
<td></td>
<td>1 class: n=13</td>
</tr>
<tr>
<td></td>
<td>2 classes: n=17</td>
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<tr>
<td></td>
<td>3 classes: n=8</td>
</tr>
<tr>
<td></td>
<td>4 or more classes: n= 6</td>
</tr>
<tr>
<td><strong>Would you recommend this project to a peer?</strong></td>
<td>Yes: 99%</td>
</tr>
</tbody>
</table>
Agent Perspective

Anonymous survey of FCS Plate It Up Committee agents

10 agents (10 female: 0 male)

Years of experience ranged from 1-33 years.

Age ranged from 23-57 years.

Background Degree:
  50% FCS Education
  10% Family Studies
  20% Dietetics or Human Nutrition
  20% Other
## Agent Survey Results

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<tr>
<td>On a scale of 1-7 (7=incredibly interested), how would you rate your <strong>overall interest</strong> in the recipe development project?</td>
<td>6.40 ± 0.52</td>
</tr>
<tr>
<td>On a scale of 1-7 (7=incredibly important), how important do you think <strong>copyrighted recipe development</strong> is to FCS Extension?</td>
<td>6.30 ± 0.95</td>
</tr>
<tr>
<td>On a scale of 1-7 (7=incredibly important), how important is it for agents to <strong>participate in the classroom recipe testing</strong>?</td>
<td>6.00 ± 0.94</td>
</tr>
<tr>
<td>Why do you participate in the classroom recipe testing? (Check all that apply)</td>
<td>% selecting each option</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>To interact with students: 67%</td>
<td></td>
</tr>
<tr>
<td>To engage with faculty and administrators on campus: 50%</td>
<td></td>
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<tr>
<td>To ensure quality control in recipes: 82%</td>
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<tr>
<td>To learn more about the recipe testing process: 33%</td>
<td></td>
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<tr>
<td>To interact with other FCS agents interested in this project: 50%</td>
<td></td>
</tr>
<tr>
<td>Do you see a benefit of this recipe project to FCS Extension programming?</td>
<td><strong>Yes: 100%</strong></td>
</tr>
</tbody>
</table>
Summary of Value of Recipe Development Project

For Students

Better understanding of KY grown produce.

Can modify a recipe to make it more health promoting.

Are making a REAL difference in the lives of Kentuckians.

Learn more about Extension and enjoy the interaction with agents.

For Agents

Copyrighted and tested innovative recipes.

Students IRB-trained for survey work.

Enjoy the interaction with students.
Agent Comments

Great experience-wonderful to see the labs and to see the students in action. Great to see interest in newly discovered foods and recipes.

I did not know what extent the students went to in preparing the recipe (the knowledge in changing the recipes). I went into this process thinking that I wouldn't like some of the recipes but they all ended up very tasty.

Good way to show students what Extension is. Also, a good way for students to do a real project that relates to the residents of KY.

Excellent experience to demonstrate the campus/extension partnership benefits.

I would highly encourage other agents to participate in the on-campus taste testing panel.
Farmers Market Survey of Consumers
Results of Point of Purchase Consumer Survey
n=1074

Most common reasons given for shopping at farmers market versus grocery store:

70.8% said quality/freshness

57.3% said local produce/supporting local farmers

13.5% said personal interaction with farmers
Results of Consumer Point of Purchase Survey

$n=1074$

On a scale from 1 to 10, what was the overall impression of the recipes?

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<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Overall</td>
<td>8.3 ± 1.9</td>
</tr>
<tr>
<td>Cucumber</td>
<td>8.4 ± 1.9</td>
</tr>
<tr>
<td>Apple</td>
<td>8.2 ± 2.1</td>
</tr>
<tr>
<td>Asparagus</td>
<td>8.2 ± 1.7</td>
</tr>
</tbody>
</table>
Results of Point of Purchase Consumer Survey  
n=508

On a Scale of 1 = Highly unlikely to 10 = Highly likely

<table>
<thead>
<tr>
<th></th>
<th>Likelihood to purchase cucumber that day at the market after trying the sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those who did not plan to purchase cucumber before arriving at the market.</td>
<td>5.9 ± 3.0</td>
</tr>
<tr>
<td>Those who did plan to purchase cucumber before arriving at the market.</td>
<td>7.6 ± 3.2</td>
</tr>
</tbody>
</table>
Results of Point of Purchase Consumer Survey
n=508

On a Scale of 1 = Highly unlikely to 10 = Highly likely

<table>
<thead>
<tr>
<th></th>
<th>Likelihood to purchase cucumber later after trying the sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those who did not plan to purchase cucumber before arriving at the market.</td>
<td>6.8 ± 3.0</td>
</tr>
<tr>
<td>Those who did plan to purchase cucumber before arriving at the market.</td>
<td>8.2 ± 2.4</td>
</tr>
</tbody>
</table>
Results of Point of Purchase Consumer Survey

Cucumber n = 508    Asparagus n = 306

On a scale from 1 = Highly unlikely to 10 = Highly likely, which impacted trying the recipe at home—sampling or recipe card?

<table>
<thead>
<tr>
<th>Sample</th>
<th>Overall</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.8 ± 2.5</td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cucumber</td>
<td>8.1 ± 2.3</td>
<td></td>
</tr>
<tr>
<td>Asparagus</td>
<td>7.8 ± 2.5</td>
<td></td>
</tr>
<tr>
<td>Recipe Card</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>7.9 ± 2.6</td>
<td></td>
</tr>
<tr>
<td>Cucumber</td>
<td>7.9 ± 2.5</td>
<td></td>
</tr>
<tr>
<td>Asparagus</td>
<td>7.7 ± 2.6</td>
<td></td>
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</tbody>
</table>
Results of Follow-up E-Mail Survey

N = 362

Two-weeks following the sampling/recipe card experience, 36% of those surveyed had prepared the recipe at home and average of:

<table>
<thead>
<tr>
<th>Recipe</th>
<th>Average Preparation Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cucumber, Corn, Bean Salsa</td>
<td>1.3 ± 1.9 times</td>
</tr>
<tr>
<td>Apples and Sweet Potatoes</td>
<td>0.3 ± 0.6 times</td>
</tr>
<tr>
<td>Asian Asparagus Salad</td>
<td>0.8 ± 1.5 times</td>
</tr>
</tbody>
</table>
Results of Follow-up E-Mail Survey

N = 362

For those who had not prepared the recipe, the key reasons were:

* not enough time (44.8%),
* not having the commodity on hand (19.8%),
* did not like the recipe or ever plan on making it (18.8%),
* waiting for the right occasion/holiday (15.6%), or
* not involved in food preparation at home (14.6%).
Results of Follow-up Survey

Participants were asked if having recipe cards at the farmers market would influence their market habits.

On a scale of 1 = Rarely impact, 4 = Always impact, participants felt that recipe cards would

<table>
<thead>
<tr>
<th>Activity</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Help me feel more comfortable trying unusual products</td>
<td>2.8 ± 1.0</td>
</tr>
<tr>
<td>Help me evaluate my nutritional needs</td>
<td>2.6 ± 1.1</td>
</tr>
<tr>
<td>Help me decide how much of a product to purchase</td>
<td>2.8 ± 1.0</td>
</tr>
<tr>
<td>Help me know what questions to ask producers about their product</td>
<td>2.4 ± 1.0</td>
</tr>
<tr>
<td>Help me plan my future purchases the farmers market or supermarket</td>
<td>2.6 ± 1.0</td>
</tr>
</tbody>
</table>
Discussion

Initial results indicate

1. The project student learning/community outreach strategy has been successful in the development of Kentucky specialty crop recipes for dissemination and distribution via Extension agents to consumers.

2. The recipe cards and Facebook/web posts have had widespread distribution to consumers throughout all 120 counties within the state.
Discussion

3. The formative data results of the students perceptions and attitudes toward the project indicate they have a better understanding of the importance of “real life” service learning projects.

4. The formative data results of farmers’ market sampling and recipe card distribution indicate that distributing the recipe cards at point of purchase does positively impact consumer buying of fruits and vegetables in the local community.
Next Steps

Formative Evaluation of Producers use of cards:

Evaluate producers’ perceptions of use of the recipe card as a marketing strategy to interest consumer in purchase of specialty crops

Evaluate producers’ perception of recipe card effect on consumer purchase of specialty crops
Questions?

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