

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Childhood Obesity - Youth/Adult Obesity

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	10%		10%	
702	Requirements and Function of Nutrients and Other Food Components	10%		10%	
703	Nutrition Education and Behavior	25%		25%	
704	Nutrition and Hunger in the Population	15%		15%	
724	Healthy Lifestyle	40%		40%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	6.0	0.0	5.0	0.0
Actual Paid Professional	24.9	0.0	7.7	0.0
Actual Volunteer	218.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
664033	0	345457	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1425801	0	1772672	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
457738	0	2593127	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- To identify the factors that promote excessive weight gain as well as protect against childhood obesity
- Measure how children born small for age are different with respect to body composition and risk for diabetes prior to developing diabetes or obesity.
- Investigate how perilipin A works in adipocytes to control fat storage and fat breakdown.
- Collect and analyze data on obesity-related measures (i.e., BMI) in adults and children
- Examine how weight loss affects calcium absorption and bone mass
- Create a multidisciplinary program comprising of faculty, staff, the medical community, industry partners and government officials
- Conduct adult/youth education and deliver targeted messages on healthy food choices and increased physical activity education using the following strategies:

Direct Methods:

- Educate Youth
- Educate Parents
- Educate Volunteers
- Food and Fitness Ambassadors
- Educate Child Health Summit Professionals
- Educate Teachers/School Nurses
- Educate Communities

Indirect Methods:

- Website
- Social Marketing

2. Brief description of the target audience

- Clinicians, Physicians and Nurses
- Health Care Professionals
- Hospitals (including teaching hospitals)
- Staff and students who gain valuable scientific experience
- Industry partners that benefit from fundamental and applied research in obesity and related chronic diseases
- Communities that benefit from increased knowledge about the mechanisms involved in obesity
- Other faculty and staff working on similar research
- Health-related organizations and foundations interested in obesity/nutrition issues
- School Age Youth
- Teens
- Teachers
- After School Providers
- Parents
- Volunteers
- Extension Professionals
- State and County Agencies and Organizations
- Schools

3. How was eXtension used?

Faculty and staff utilized the Families, Food and Fitness
 Financial Security for All
 Diabetes
 Faculty answered frequently asked questions and developed collaborative educational products.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	32799	12182	0	1346

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2012
 Actual: 2

Patents listed

61-636,254
 PCT/US2011/064633

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	57	57

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- A variety of strategies will be implemented to reach target audiences. This will include and not be limited to workshops, field visits, classes, newsletters, media releases, electronic communications, publications. In addition a trained volunteer teaching base will be developed. Quantitative reports of participation will be collected

Year	Actual
2012	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Short Term - Individuals gain awareness, knowledge, skills related to: Attitudes about healthy eating for adults/youth. Healthy food choices for adults/youth. Selection of healthy foods for adults/youth. Benefits of physical activity (reduced overweight and obesity, reduced risk of diabetes, heart disease and cancer.) Physical activity recommendations for health for adults/youth. Identify factors that promote excessive weight gain and protect against childhood obesity. Understand the molecular mechanisms of lipid transport in the intestinal cell. Demonstrate the affects on calcium absorbtion and bone mass by weight loss
2	Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.
3	Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.
4	Get Moving ? Get Healthy: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.
5	Promotion of Nutrition, Healthy Lifestyles and Adolescent/Youth Life Skills: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.
6	Family Economics: Steps to Health and Wealth: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-

	<p>related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
7	<p>Postharvest Biology of Fruits: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
8	<p>Introducing New Crops, Nutraceuticals and other Value-Added Products: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
9	<p>Assessing and Addressing Individual and Environmental Factors That Influence Eating Behavior of Young Adults: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
10	<p>Evaluation and Characterization of Novel Botanical Extracts for the Prevention and Treatment of Metabolics Syndrome and Diabetes: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.</p>
11	<p>Taste Genetics, Food Choice and Obesity: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-</p>

	related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.
12	Sustainable Me: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.
13	Seeds to Success Youth Farmstand: Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

Outcome #1

1. Outcome Measures

Short Term - Individuals gain awareness, knowledge, skills related to: Attitudes about healthy eating for adults/youth. Healthy food choices for adults/youth. Selection of healthy foods for adults/youth. Benefits of physical activity (reduced overweight and obesity, reduced risk of diabetes, heart disease and cancer.) Physical activity recommendations for health for adults/youth. Identify factors that promote excessive weight gain and protect against childhood obesity. Understand the molecular mechanisms of lipid transport in the intestinal cell. Demonstrate the affects on calcium absorbtion and bone mass by weight loss

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Healthier Family Meals

Research indicates those families who eat healthy meals together have a stronger family unit and are healthier socially, emotionally and physically.

What has been done

Family and Community Health Sciences Educators have conducted educational programs spanning the state and reaching residents across the life span to promote better health and well-being. The Building Healthy Kids Coalition (BHKC) continues to engage representatives from a variety of agencies and organizations to address the issues related to childhood obesity.

The 2012 Children's Health Summit (CHS), a collaborative initiative with the NJ Department of Health and Senior Services and the Partnership for Healthy Kids/YMCA emphasized a systems approach to obesity prevention.

Educational programs were conducted so that individuals and families adopt recommended food safety practices in the home including hand washing, cross contamination, time and temperature controls and food preservation procedures.

Results

Participants reported that they would serve more healthy meals to their families, make water and low-fat milk the beverage choice, eat a diet rich in fruits and vegetables. Ninety-nine percent support healthy school lunches for kids, 98% will make family mealtimes a priority, 92% are ready to change their behavior to eat more whole grains, fruit, veggies and non-fat dairy products, and 90% will follow the nutrition recommendations of MyPlate.

A participant in a food preservation canning and freezing workshop noted, "Great class from start to finish. Good resource list and nice show of products to help my "hands on brain" to really help myself to pursue this healthier and more self-sustaining lifestyle!"

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Grow Healthy School Wellness Programs/Promotion of Nutrition, Childhood Obesity Prevention, and Healthy Lifestyles

The prevalence of chronic disease is largely attributed to preventable lifestyle behaviors that include, poor nutritional balance with physical activity, obesity in children and adults, and fewer opportunities during the day, especially among school aged children to learn about food.

What has been done

To promote better health and wellbeing, Rutgers Cooperative Extension Family and Community Health Sciences (FCHS) educators taught elementary school children in nine New Jersey schools how to grow vegetables and fruits through the Grow Healthy Team Nutrition educational program. The schools created wellness councils to engage families in volunteerism. Taste tests introduced students to new foods and highlighted Farm to School initiatives such as school gardens and

purchasing locally-grown produce. A key component of the Grow Healthy Team Nutrition program encouraged walking, activity throughout the day.

Results

As a result, In Gloucester County the Grow Healthy programming yielded a number of conditional changes: created two new and one expanded edible school gardens, expanded use of the school garden, by involving more teachers and school nutrition professionals, increased access to healthier foods via new offerings on the cafeteria's lunch menu, created sustainable nutrition education initiative by training FCHS Wellness Champions to support school wellness and nutrition education, created stronger, more active wellness councils in 2 schools, and one school created a special program (Grow Healthy Wellness Champions) that recognizes students who select and eat more fruits and vegetables, resulting in a list of 50+ children with documented increased fruit/vegetable consumption as a result of the project. In Hunterdon County, commitment demonstrated to a healthier school food environment school-wide resulted in achievement of the Bronze level status of USDA's Healthy US School Challenge.

Results of the Podometer Program showed that: average weekly steps between week 1 and week 5 in experimental schools remained steady while steps in control schools showed a statistically significant decrease ($p < 0.001$), and male students in experimental schools had a higher number of steps than female students in every week, including the average of the last 4 weeks.

Data indicated that students were willing to participate in taste testing's in the classroom setting, and that the majority were willing to eat the foods again. Of the students who completed the tasting cards, 83% were either 'willing' or 'very willing' to taste the food and 62% were willing to eat the food again.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Get Moving ? Get Healthy: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Get Moving ? Get Healthy

Obesity prevention and improving the health of youth and adults is a national priority. Changes to the national school lunch program have also brought healthy eating to the forefront of attention. Youth and adults need education and help make behavior changes for themselves, their families, schools and communities to improve health.

What has been done

The 4-H Youth Development program used the GMGH program to train teens who reached 2,000 underserved youth in suburban and urban areas including, but not limited to Camden, Paterson, Newark, and Trenton.

Get Moving Get Healthy NJ Workforce engaged County employees in a walking program. Participants increased awareness of the importance of sustaining good health with proper nutrition and physical activity, physical activity as a component of healthy lifestyle, and the effect of healthy eating habits, physical activity and stress reduction.

Results

Youth learn ways to make healthy eating and physical activity a part of their daily lives, change eating habits by making healthy food choices and now understand the importance of proper nutrition and increasing physical activity. A school nurse from one of the schools where the program was done reported the following, "Thank you very much for your excellent presentation of "Get Moving-Get Healthy." Based on calculated BMI's, 50% of my 5th grade class is overweight/obese. Many of the students are coming to me and telling me about reading labels and changes they are making regarding nutrition. Again, thank you!"

As a result of the Workforce Wellness Program 53% of participants reported improved physical condition, 68% reported increased consumption of fruit and 63% reported increased consumption of vegetables.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

Promotion of Nutrition, Healthy Lifestyles and Adolescent/Youth Life Skills: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Promotion of Nutrition, Healthy Lifestyles and Adolescent/Youth Life Skills

Obesity in urban communities particularly in children has become a significant public health concern in the United States. The number of adolescents who are overweight has tripled since 1980 and the prevalence among younger children has more than doubled. According to the 1999-2002 NHANES survey, 16 percent of children age 6-19 years are overweight (U.S. Department of Health & Human Services). In 2012 New Jersey reported over 60% of adults were overweight and over 20% were obese while 14% of adolescents (under age 18) were overweight and 10% were

obese. Less than a quarter (21%) of our youth is getting the daily recommended amount of physical activity each day, but over 30% are watching three or more hours of television each day.

What has been done

Students in grades 4-8 and their families who participated in Keansburg Afterschool Program (KAP) at Bolger Middle School in Keansburg, NJ were involved in several educational programs and activities during the course of the academic year and summer programs. Eighty-eight (88) students were enrolled in the KAP. A series of interactive programs, led by FCHS educators who instructed students on the health benefits of including a variety of colorful fruits and vegetables to their daily diet. Taste testing and preparation of various familiar and less commonly known fruits and vegetables were part of activities on healthy snacks. A culminating event, "Jersey Fresh Day" was created in a joint effort between three other Cooperative Extension Departments. Families were provided with educational workshops on locally grown fruits and vegetables as part of a "Jersey Fresh? event.

A ?Community Nutrition and Physical Activity Education and Fun Fair (CNPAEFF)? was held in conjunction with Nickelodeon?s annual Worldwide Day of Play which promotes outdoor physical activity in families.

A 12-week hip hop dance and nutrition program taught youth about healthy living through dance and nutrition. It utilized curriculum from Get Moving-Get Healthy, CANFit, and SNAP-Ed to teach youth about nutrition and physical activity. The youth are responsible for choreographing and presenting dances to an audience comprised of students and their families, afterschool staff, and collaborators.

Results

As a result of participating in the KAP program, 51% of students said they would share what they learned with other family members, 69% of students said they would try eating fruit or vegetables prepared in a different way than how they normally consume that item.

Families who participated in the CNPAEFF, reported to 4-H staff and volunteers that they learned a lot of new information throughout the day while participating in the various educational stations. Children seemed to enjoy spending time outdoors not only with one another but with other members of their family. Many families were interested in learning if this event would be held again next year. Several educators and parents of school age children inquired with 4-H staff on ways to implement something similar in their schools. The 4-H office received a couple of e-mails/calls from families who heard about the event afterwards and were interested in additional information.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #6

1. Outcome Measures

Family Economics: Steps to Health and Wealth: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Family Economics: Steps to Health and Wealth

With passage of the 2010 health care law and high unemployment rates during 2012, much attention was paid to health and personal finances and relationships between both aspects of people's lives. Many Americans have health and personal finance issues. Major societal problems that have been widely reported in recent years include an increasing incidence of diabetes, more overweight and obese adults and children, low household savings rates, and high household debt and bankruptcy rates. There are also many ways that health affects personal finances (e.g., the high cost of unhealthy habits (e.g., smoking) and medical expenses) and personal finances affect health (e.g., physical symptoms and poor health care associated with financial distress). A need exists to teach consumers about health finance topics (e.g., health insurance, long-term care, the financial cost of unhealthy behaviors) and behavior change strategies that can be simultaneously applied to improve health and increase wealth.

What has been done

The Small Steps to Health and Wealth (SSHW) program, created by Rutgers Cooperative Extension, increased its outreach across the U.S. during 2012. Almost a dozen states are in

various phases of SSHW program implementation. Each state is collecting and reporting its own impact evaluation data. Among the most actively involved states currently using the SSHW program are Colorado and Kentucky. Rutgers Cooperative Extension was able to leverage its program outreach significantly by collaborating with program partners in these states.

Sixteen audio podcasts and videos about SSHW content were prepared by Colorado State University and are available on their Web site: <http://www.ext.colostate.edu/smallsteps/> Colorado Extension also launched an active SSHW social media campaign with tweets and Facebook messages about making health and financial behavior changes.

The University of Kentucky developed the SSHW youth curriculum, Building a Healthy, Wealthy Future, which became available to Extension educators nationwide. This provides adaptation of SSHW content and behavior change strategies for youth audiences with an accompanying fact sheet for parents, available on the SSHW Internal Web site at <http://njaes.rutgers.edu/sshw/internal/>.

A three-hour SSHW workshop was presented to USDA employees. NIFA-USDA has selected SSHW to be a "signature" program and is encouraging Extension agents nationwide to implement and evaluate this program. Almost a dozen states are actively replicating this Rutgers-based program.

Results

Behavior changes reported by participants who completed follow-up evaluation forms included, eating healthier foods and increased physical activity.

Over a quarter of respondents from both challenges reported improved spending habits, weight loss, and money saved. Reported weight loss was appropriate for the six-week Challenge with most respondents losing 1-5 pounds. 14% of respondents in both challenges lost 11-16 pounds. Savings accumulations were proportionate to the time period with more than 2/3 of respondents saving under \$300. One in five respondents in both challenges saved over \$500. For both health and financial practices, these initial reported behaviors have the potential for significant impact over time.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #7

1. Outcome Measures

Postharvest Biology of Fruits: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased

use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Postharvest Biology of Fruits

Alternative strategies for management of human and agricultural crop diseases is a high priority in research because resistance to standard chemical controls (antibiotics for humans and pesticides for crops) is increasing at an alarming rate, and cost of implementing these control procedures (both in terms of human health care and crop management) is skyrocketing.

What has been done

Fruit-rotting fungi can cause significant reductions in both pre and post-harvest fruit quality in cranberries and blueberries. NJAES researchers have isolated levels of anthocyanins, flavonol glycosides and proanthocyanidins over the growing season from each variety of blueberry and cranberry, to determine the differences in the levels of these compounds in the specific varieties that we are testing. NJAES is attempting to target the specific levels of the active compounds that confer anti-fungal activity and relate these levels to those needed for human health promotion.

Results

Plants manufacture their own natural defense compounds to help them ward off diseases and pests, giving researchers the opportunity to screen and select certain plants compounds for their disease-prevention and health-promoting properties. Cranberries and blueberries are known to contain certain compounds with antifungal and antibacterial activities (i.e. prevention of urinary tract infections). An active NJAES research project is underway to determine which cranberry and blueberry cultivars contain the highest levels of these compounds at various time-points in the growing season. These levels are being correlated, not only with resistance to costly damage from both pre- and post-harvest fruit-rotting fungi, but also to those levels needed for natural human health promotion. These could serve as targets levels and markers for breeding blueberries and cranberries for enhanced fungal resistance and ultimately improved health

benefits and fruit quality, if cultivars with higher levels of these phytochemicals are targeted. Research results will provide updated information to growers on the most suitable fruit cultivars for postharvest quality, in combination with sensory and health benefit information. Overall results have the potential to be used for reducing pesticide applications on these crops, lowering resistance rates, and providing rich sources of fruit with high levels of active compounds for safer alternatives to health promotion in humans and improved human health as a result of increased consumption of phytochemical-rich fruit.

Another potential outcome is an increase in fruit quality with reduced post-harvest decay in retail store packages.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #8

1. Outcome Measures

Introducing New Crops, Nutraceuticals and other Value-Added Products: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Introducing New Crops, Nutraceuticals and other Value-Added Products

More than 20% of the American population harbor the risk factors defined for metabolic syndrome, a condition that is highly correlated with the development of type-2 diabetes and coronary heart disease.

Additionally, cancer is a major disease affecting a larger portion of the American population resulting in high mortality rates for both men and women.

What has been done

NJAES conducted greenhouse, field and laboratory research studies in new and specialty crops, natural products chemistry, crop improvement, quality control systems; identifying plant products that provide health and nutritional benefit, mentoring graduate students; in teaching Medicinal Plants and Plants and Human Health; and in giving Extension presentations in New Jersey, other states and internationally. Events in which results of research activities were shown and demonstrated included field days at the NJAES research center, Pittstown, NJ, presentations domestically, and internationally. NJAES Researcher continues work with new products research continuing, testing or making advanced selection and breeding lines of improved basil, catnips, and oregano and ethnic crops for health and nutrition and custom designing new aromas.

Results

NJAES researchers also continued to evaluate the nutritional composition and natural products chemistry profile of a wide range of vegetables and herbs. Impact continues to be in the improved quality control of botanicals used for human health and nutrition through a robust focus on natural products chemistry and in identifying the specific natural products that lead to the bioactivity. We made new crosses and created hybrids for disease resistance and chilling tolerance in basil and were successful in making intraspecific crosses. We field tested our high oil and nepetalactone bearing catnip lines as sources of natural pest control agents and completed the development of two new oregano varieties. Internationally, our market-first and scientific-driven models of international development and commercialization have significantly grown and expanded into Liberia, Kenya, Namibia, Tanzania and Zambia. Implemented in sub-Sahara Africa, with the Agri-Business in Sustainable Natural African Plant Products network and others in concert with leadership from Rutgers University and with strong public and private sector partnerships as a catalyst for market development, this program impacted over 10,000 farmers in Ghana, Liberia, Senegal, and Zambia, with focus on African women.

A provisional patent application was filed in 2012 for a natural plant-based extract with anti-Hepatitis C virus activity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #9

1. Outcome Measures

Assessing and Addressing Individual and Environmental Factors That Influence Eating Behavior of Young Adults: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Assessing and Addressing Individual and Environmental Factors That Influence Eating Behavior of Young Adults

Overweight and obesity are serious problems in the U.S. During the past 20 years, there has been a dramatic increase in obesity in the United States and rates remain high. According to the CDC, in 2010, no state had a prevalence of obesity less than 20%. In 2011, New Jersey had an obesity rate of 31.3% (ref.: <http://www.cdc.gov/obesity/data/trends>).

These are serious health problems that must be addressed. Many of today's health problems--obesity, heart disease, diabetes, and cancer--can be reduced through good nutrition and a healthy life style.

What has been done

This project is built on an integrated set of research activities designed to form the basis of a community-based participatory research (CBPR) intervention to prevent unhealthy weight gain in young adults. This project is part of the multi-state project NC1193 that includes 15 other universities. The long-term project goal of NC1193 is to develop tailored, sustainable

interventions that incorporate environmental supports and recommended campus/local policies to promote healthful eating-behavior of young adult and to reduce the risk of obesity in young adults using CBPR guided by the PRECEDE-PROCEED model. Involving the community directly in the research process helps the community gain awareness of, and interest in the issues that must be addressed to successfully prevent obesity in young adults. This project aims to refine and validate assessment tools and develop a prototype Healthy Campus Index that can be used for planning and evaluation at both the personal and environmental levels of the socio-ecological model. NJ activities completed during the timeframe noted above that contributed to the long-term goals of this project include the following. -Full-scale implementation of the 18-month online intervention (Young Adults Eating and Active for Health [Y.E.A.H] project along with 14 other universities (collection of baseline data, implementation of the intervention, collection of post data). -Trained 11 undergraduate, 2 graduate research assistants, and 1 post doctoral associate to collect study data, conduct anthropometric (height, weight, waist circumference) measurements, take blood pressures, and/or conduct biochemical measurements (blood glucose and lipids). Development and submission of manuscripts and research presentations.

Results

The Y.E.A.H. project is the first to systematically develop and test a tailored, web-based program to prevent excessive weight gain in the 18-24 year old population using the community based research process of PRECEDE-PROCEED. Preliminary analyses indicate that this intervention is on track to promote healthy weights in the target population. Involving the community directly in the assessment of the physical environment in terms of how it advocates and supports physical activity, consumption of healthful foods, and overall health helps the community gain awareness of, and interest in the issues that must be addressed to prevent obesity in young adults.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #10

1. Outcome Measures

Evaluation and Characterization of Novel Botanical Extracts for the Prevention and Treatment of Metabolics Syndrome and Diabetes: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Evaluation and Characterization of Novel Botanical Extracts for the Prevention and Treatment of Metabolic Syndrome and Diabetes

Botanicals have been used for thousands of years as therapeutic agents for many diseases and human conditions. "Metabolic syndrome" is currently defined as a condition whose major features consist of obesity, insulin resistance, development of Type 2 diabetes and accelerated cardiovascular disease and continues to grow at epidemic proportions.

What has been done

NJAES BRC (Botanical Research Center) focuses on botanicals that can be used for the prevention/treatment of metabolic syndrome. Primary research objectives of the BRC as a whole focuses on how the constituents of botanicals affect insulin signaling pathways and improve insulin resistance, the underlying metabolic dysregulation associated with metabolic syndrome. While select species of *Artemisia* are under current evaluation by the BRC, the extract of *Artemisia dracuncululus* L. (PMI-5011) is the most characterized both in terms of its biological activity and its composition of 6 compounds identified as having antidiabetic activity. PMI 5011, has been shown to improve insulin action in vitro and in vivo, but the cellular mechanisms remain elusive. Using differential proteomics, we have studied mechanisms by which PMI 5011 enhances insulin action in primary human skeletal muscle culture. Bioinformatics analyses determined that several metabolic pathways related to glycolysis, glucose transport and cell signaling were highly represented and differentially regulated in the presence of PMI 5011 indicating that this extract affects several pathways modulating carbohydrate metabolism, including translocation of GLUT4 to the plasma membrane.

Results

Plants have served as a source of medicinal compounds for thousands of years and the research that we conduct helps to determine how the compounds from medicinal plants are able to provide a biological activity in animals or people. This biological would be considered the medical benefit of the medicinal plant. The research conducted with the gastrointestinal model is providing a way for us to determine the proper dose that should be used for upcoming clinical studies and the formulation that will deliver the maximum amount of the medicinal compounds needed for the

medicinal benefit. This research will lead to new alternative strategies for the prevention and treatment of diabetes and should save in health-care expenditures for the State. In addition, the identification of novel plant based preparations for the prevention and treatment of diabetes and metabolic syndrome will be essential for the battle against this growing epidemic. A better understanding of how they work will provide consumers and researchers with information for their most effective use. These efforts contribute to value added agriculture of New Jersey, as well as provide significant benefits to the biotechnology and pharmaceutical industries in the State.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #11

1. Outcome Measures

Taste Genetics, Food Choice and Obesity: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Taste Genetics, Food Choice and Obesity

Obesity is a serious problem in the U.S. within NJ, the obesity rate is over 30%. Good nutrition and healthy lifestyles can impact health status and weight gain.

What has been done

NJAES research on human food selection links genetic variation in bitter taste perception to food preferences, dietary habits and body weight. The long-term goals of this project are to better identify individuals, especially women, who may be at risk for excess weight gain and obesity due to dietary causes. Taste blindness to the bitterness of 6-n-propylthiouracil (PROP) is a recessive trait that is controlled, in part, by the bitter receptor gene, TAS2R38. Those with the non-taster phenotype are less responsive to a range of oral sensations (fats, alcohol, bitterness and pungency) and have increased preferences for foods with these qualities, whereas those with the taster phenotype (medium- or super-tasters) show the opposite responses. Some studies suggest that PROP non-tasters habitually consume more added fats, and energy as compared to PROP tasters. This dietary pattern could contribute to greater BMI, which we have observed among middle-aged, PROP non-taster women. It is known that exposure to a variety of high-fat/energy-dense, foods increases energy intake by 14-25% and could be a precursor to weight gain. In a 3-day buffet feeding experiment we previously showed that non-taster and medium taster women consumed more daily energy, more saturated fat and cholesterol and more servings/day of added fats and pastries. These data imply that differences in the selection of dietary fats may contribute to body weight differences among PROP taster groups. However, no studies have investigated caloric compensation in women classified by PROP status. Therefore, we investigated if non-taster women would compensate less accurately for the calories in a high-fat soup preload in a subsequent test meal compared to super-taster women. Energy intake from a test meal was measured in 75 healthy non-diet-restrained, lean women 30 min after the ingestion of a high-fat soup preload (0.8 Kcal/g), calculated to represent 10% of resting energy expenditure for each subject, or the same volume of water. Subjects ate an ad-libitum buffet lunch in the lab on two occasions (6 washout days). There were no differences in energy intake or macronutrient selection among taster groups in the water condition. After soup, non-tasters consumed more energy and fat, and less carbohydrate from the test meal than ST. Caloric compensation in the test meal was somewhat less precise ($p < 0.08$) in non-tasters (86%) compared to medium tasters (99%) and super-tasters (104%).

Results

These data suggest that a modest overconsumption of fat coupled with a modest decrement in short-term energy compensation for fat may both contribute to positive energy balance and increased adiposity in non-taster women. Future studies will address the regulatory mechanisms involved.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #12

1. Outcome Measures

Sustainable Me: Medium Term - Individuals incorporate skills/change behaviors related to: Increased adoption of healthy food practices. Increased consumption of fruits, vegetables, whole grains and low-fat dairy. Increased participation in family meals. Increased participation in physical activity. Increased participation in family-related physical activity. Increased use of new 'campaign' website. Improved understanding of the relationship between early nutrition and later risk for chronic disease. Understanding the process by which perilipins at the surface of lipid droplets control how much energy is released from the adipocyte at times of need. Understanding how the intestines and body uptake and process dairy fat. Identify genes, their protein product and how the proteins influence the way the body processes fat.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sustainable Me

According to the Centers for Disease Control (CDC), more than one third of U.S. adults, more than 72 million people, and 17% of children are obese. From 1980 through 2008, obesity rates for adults have doubled and rates for children have tripled. The obesity rates for all groups in our society, regardless of age, sex, race, ethnicity, socioeconomic status, education level or geographic region, have increased. The CDC further states that the health consequences of obesity are numerous, including heart disease, Type 2 diabetes, various cancers, high blood pressure, high cholesterol and other conditions.

What has been done

Sustainable Me was created as a means of engaging middle and high school students in a school-based event that takes existing knowledge of healthy lifestyle and physical activity and improves the retention of learning after the event. The event is used to enhance the existing school wellness program. Sustainable Me is a highly interactive wellness event that can be held during school hours, or as part of after-school program. Students are the participants in this healthy lifestyle activity that features a series of highly interactive mini-lessons (for 60 minutes).

Results

1,117 students who completed the two-week follow-up survey reported : 37% increased consumption of fruits and vegetables, 36% controlled portion sizes, 53% increased physical activity to 60 minutes per day, 50% decreased screen time on TV/computers/video games, 54% said - I changed my behavior because I know that disease prevention is important to living a healthy lifestyle, I drink sugar-sweetened beverages 44% less than 2 weeks ago.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #13

1. Outcome Measures

Seeds to Success Youth Farmstand: Long Term - Individuals experience: Decreased overweight and obesity for youth/adults. Decreased risk factors for nutrition-related health problems and chronic diseases that are affected by diet and physical activity for youth/adults. A clear and comprehensive understanding of the genetic and physiological mechanisms of obesity and related chronic diseases. Pharmacological and/or medical treatments to alleviate the effects of obesity and related diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Seeds to Success Youth Farmstand

Special needs and at-risk youth live in communities facing generational poverty and the concurrent challenges of such poverty. Research shows that supportive, community based educational programs offer a means of reaching at-risk youth, and that establishing programs for youth at an early age increases the likelihood of significant positive impact on the skills, attitudes, and experiences of young people, (Villarruel, Perkins, Borden, & Keith, 2003).

What has been done

Seeds to Success prepares at-risk, special needs youth for the workforce and life through classroom and on-the-job training. During the school year, youth participate in nutrition, food safety, money management and banking education. During the summer, students work at youth farmstands. Three farmers were able to expand their market by selling approximately \$7,000 of produce to the farmstand. One urban-aid community benefitted, by gaining access to locally grown, nutritious produce. Low-income residents and seniors can purchase this produce with their WIC and Senior farmstand vouchers, which accounts for 11% of summer farmstand sales.

Results

As a result, of the 243 students who completed both pre- and post-testing, the following outcomes were achieved: 1) the percentage of students who could identify the healthier food among five sets of 2 food labels increased from 58% (pre-test) to 79% (post-test). 2) the percentage of students who could identify which of 6 fruits did not grow in New Jersey increased from 32% (pre-test) to 71% (post-test). 3) the percentage of youth who were able to identify which fruits and vegetables were grown locally increased from 56% (fruits) and 52% (vegetables) to 81% (fruits) and 77% (vegetables).

Extensive evaluation was conducted with youth. Statistical analysis revealed that there were significant improvements ($p < .05$) in youth's ability to apply USDA recommendations to use color as a guide to increase variety in the diet by identifying the types of fruits and vegetables that were better sources of key nutrients. Significant improvements ($p < .05$) also noted in youth's ability to practice safe food handling practices.

When asked how this program impacted their health lifestyles, youth responded that, as a result of this program: 85% of participants indicated that they will do something new or different; 75% of participants indicated that they plan to use or share what they learned; 68% indicated that they are more interested in nutrition; 64% of participants indicated that they will change the way they think, act or behave.

Seeds to Success yielded a number of conditional changes: created one retail outlet and economic development in an urban-aid community (Glassboro); created 5.24 FTEs in one urban-aid community, resulting in improved quality of life; enabled 8 special needs youth to acquire permanent jobs outside of the farmstands; improved food security and nutritional wellbeing for Seniors, WIC clients and SNAP recipients by increasing access to fresh produce that could be purchased via WIC Farmers' Market Nutrition Program (FMNP) vouchers and Supplemental Nutrition Assistance Program (SNAP) benefits.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

See Qualitative Outcomes.

Key Items of Evaluation

See Qualitative Outcomes.