

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Iowa Youth Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	49.0	0.0	0.0	0.0
Actual	43.0	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
867883	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
867883	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2453224	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

4-H Afterschool

- 169 Extension staff, 372 after-school staff, and 745 volunteers were trained in youth development principles and practices and 4-H curricula

- 14,120 children and youth K-12 engaged in 4-H Afterschool programming
- 64 4-H Afterschool Clubs developed statewide
- 559 community entities partnered with 4-H Afterschool programs
- Provided technical assistance to afterschool professionals with the Iowa Afterschool Alliance
- Developed and launched updated Clover Kids (K-3) web pages on the Iowa 4-H website

Urban 4-H

- 4-H staff brought science programming into urban long-term youth development environments
- Through meaningful community partnerships, 4-H staff expanded programming to underserved urban youth populations

4-H Program Delivery

- 114 innovative 4-H clubs developed statewide
- Created and implemented a multi-state 4-H partnership development online course reaching 120 staff the first year
- As a result of ARRA funds, Iowa 4-H went through a strategic planning process that resulted in:
 - 4-H project areas were reorganized and curriculum material delivery was streamlined
 - 4-H "Project Hotsheets" were created to provide 4-H members information about educational resources, project activities, and exhibit ideas
 - Transition to 4-H Online database allowing for streamlined member enrollment processes.
 - More efficient online 4-H livestock paperwork process
 - Strengthened volunteer training and plans to create a Master Volunteer Program
 - Revamped state member recognition program

4-H Volunteer Development

- 3543 volunteers trained in youth development principles and practices
- 8540 adult volunteers assisted in the implementation of youth development programs
- 106 volunteers attended state level training planned and implemented by volunteers
- 84 staff participated in Everyone Ready; on-line volunteerism professional development program
- 16 volunteers and 11 staff members participated in the North Central Region Volunteer Forum

Program Evaluation/Research

- **Iowa 4-H Campus Census Survey: Anticipated Outcomes**
 - Demonstrate breadth of 4-H influence on ISU campus
 - Obtain contact information for campus-based 4-H alumni
 - Increase the 4-H Program's campus-based volunteer pool
 - Broaden 4-H partnerships in areas such as marketing, research, and subject area expertise
- **(Multi-state) 4-H Study of Positive Youth Development: Anticipated Outcomes**
 - Assist North Central Region (NCR) 4-H programs to plan, deliver, and evaluate a protocol for recruiting a stratified sample of youth
 - Demonstrate congruity between NCR and national data regarding the presence of the 5 C's of positive youth development in the lives of 4-H'ers

• **(Multi-state: NCERA215) Contribution of 4-H Participation to the Development of Social Capital within Communities Research Study: Anticipated Outcomes**

- Results benefit individual 4-H programs as they plan, deliver, and evaluate programs
- Findings demonstrate the importance of 4-H to the overall health of the community
- Extension specialists use results in facilitating successful community change efforts
- Identify 4-H program practices and structures that contribute to networking and the development of social capital

2. Brief description of the target audience

The target audience for Iowa 4-H youth programs are Iowa youth in grades K-12. Additional audiences are adult 4-H program volunteers, Extension educators, Iowa K-12 grade teachers, pre-service educators, youth workers in community and private organizations that serve youth audiences, and community and state youth development collaborations.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	4500	58000	90000	28000
Actual	10387	60685	94421	18228

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

Patent Applications Submitted

Year: 2010
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	2	2	
Actual	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth who retain membership in 4-H clubs after 1 year of membership

Year	Target	Actual
2010	3250	3741

Output #2

Output Measure

- Number of volunteers completing two trainings/yr
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of youth who participate in 4-H Afterschool

Year	Target	Actual
2010	12500	14120

Output #4

Output Measure

- Number of local partnerships initiated or strengthened
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of new clubs developed using innovative and emerging 4-H club models

Year	Target	Actual
2010	20	114

Output #6

Output Measure

- Number of 4-H livestock exhibitors certified in Food Safety and Quality Assurance (FSQA)

Year	Target	Actual
2010	{No Data Entered}	9353

Output #7

Output Measure

- Number of 4-H'ers enrolled in Foods, Nutrition, Physical Health, Fitness, and Sports project

areas.

Year	Target	Actual
2010	{No Data Entered}	40417

Output #8

Output Measure

- Number of pre-service teachers and educators trained in Connecting Learning and Living Curricula on connecting youth with MyPyramid concepts and understanding the origins of food.

Year	Target	Actual
2010	{No Data Entered}	628

Output #9

Output Measure

- Number of youth reached by educators trained in Connecting Learning and Living Curricula (agriculture, environmental, food, and nutrition emphasis).

Year	Target	Actual
2010	{No Data Entered}	12814

Output #10

Output Measure

- Number of youth and adults trained using climate curricula.

Year	Target	Actual
2010	{No Data Entered}	831

Output #11

Output Measure

- Number of youth and adults trained using sustainable energy curricula.

Year	Target	Actual
2010	{No Data Entered}	2534

Output #12

Output Measure

- Number of volunteers completing one training/yr

Year	Target	Actual
2010	{No Data Entered}	3543

Output #13

Output Measure

- Number of 4-H partnerships initiated or strengthened

Year	Target	Actual
2010	{No Data Entered}	3837

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Communication: Percentage of youth who participate in a 4-H experience will self-report a 1-point increase in skills or knowledge in the content areas of writing a speech/presentation, delivering a speech/presentation, developing supportive visuals, recognizing and utilizing active listening skills, asking clarifying questions, sharing ideas, communicating non-verbal messages and expressing feelings appropriately.
2	Communication: Percentage of youth who participate in a 4-H experience will self-report that they practice effective communication skills in sending and receiving written, visual and oral messages.
3	Citizenship: Percentage of youth who participate in a 4-H experience will self report a 1-point increase in skills or knowledge in the content areas of practicing good character, planning and organizing service learning events, and actively engaging in local, state and national issues.
4	Citizenship: Percentage of youth who participate in a 4-H experience will self-report that they demonstrate good character traits, service learning, planning and organizational skills, and engagement in community issues.
5	Leadership: Percentage of youth who participate in a 4-H experience will self report a 1 point increase in skills or knowledge in the content areas of setting goals, working cooperatively in a team, communication effectively, and making decisions based on data and the opinions of others, honoring individuals differences and handling conflict.
6	Leadership: Percentage of youth who participate in a 4-H experience will self report that they demonstrate the ability to influence and support others in a positive manner for a common goal.
7	As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge of the MyPyramid and making healthy food choices.
8	As reported by educators, percentage of youth participating in CLL lessons who made healthy food choices; tried new foods; and made healthier food choices during snacks, lunch, and class parties.
9	As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge regarding growing food from plants.
10	As reported by educators, percentage of youth gardeners participating in CLL lessons who improve their vegetable consumption and exercise habits.
11	Percentage of 4-H'ers ages 12-18 taking the FSQA certification test who self-report improved techniques and practices in livestock drug injections, record keeping, and food product safety and biosecurity.
12	Number of youth participating in 4-H programming and educational activities on sustainable energy to increase knowledge of what sustainable energy means, the importance of sustainable energy, and/or promising sustainable energy technologies.
13	Percentage of pre-service teachers and educators who participate in CLL training will self-report a 1 to 3-point increase in confidence/knowledge in teaching MyPyramid concepts and the origins of food.
14	Number of youth participating in 4-H programming and educational activities on climate change to increase their knowledge of the causes and/or consequences of climate change.

Outcome #1

1. Outcome Measures

Communication: Percentage of youth who participate in a 4-H experience will self-report a 1-point increase in skills or knowledge in the content areas of writing a speech/presentation, delivering a speech/presentation, developing supportive visuals, recognizing and utilizing active listening skills, asking clarifying questions, sharing ideas, communicating non-verbal messages and expressing feelings appropriately.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Communication: Percentage of youth who participate in a 4-H experience will self-report that they practice effective communication skills in sending and receiving written, visual and oral messages.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Citizenship: Percentage of youth who participate in a 4-H experience will self report a 1-point increase in skills or knowledge in the content areas of practicing good character, planning and organizing service learning events, and actively engaging in local, state and national issues.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Citizenship: Percentage of youth who participate in a 4-H experience will self-report that they demonstrate good character traits, service learning, planning and organizational skills, and engagement in community issues.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Leadership: Percentage of youth who participate in a 4-H experience will self report a 1 point increase in skills or knowledge in the content areas of setting goals, working cooperatively in a team, communication effectively, and making decisions based on data and the opinions of others, honoring individuals differences and handling conflict.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Leadership: Percentage of youth who participate in a 4-H experience will self report that they demonstrate the ability to influence and support others in a positive manner for a common goal.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge of the MyPyramid and making healthy food choices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	80

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood obesity has more than tripled in 30 years. One in five adolescents is obese. If children are overweight between the ages of 12 to 21, they are 7 times more likely to be obese adults. From spring 2006 to spring 2007, the percentage of overweight/obese Iowa elementary-aged boys went from 18.4% to 36.3% and from 20.7% to 37.8% for girls. In 2007, the percentage of Iowa adults who were overweight or obese was 64.7% (1.9 million Iowans). In 2007, Iowa ranked

15th highest in obesity/overweight prevalence among all 54 states and territories. Iowa rankings on risk factors are slightly higher than national averages. Poor nutrition, lack of physical activity, family history, psychological factors, and family factors such as poverty level, food insecurity, and lack of understanding about how food and exercise affects health are prevalent across Iowa. This leads to increased prevalence of type 2 diabetes, metabolic syndrome, high cholesterol, high blood pressure, asthma, sleep disorders, early puberty, low self-esteem, bullying, behavior and learning problems, and depression.

Childhood obesity is everyone's problem. Individuals and families do not understand that they are the first line of defense against childhood obesity when it comes to choices about food and physical activity. The medical and insurance communities are ill equipped to handle the education and financial aspects of helping people deal with the complications of obesity. Obesity rates are higher in Iowa schools with higher participation in the free and reduced lunch programs and these same schools are the same ones that are "at risk" for academic achievement of their students. Only half of Iowa youth are meeting current recommendations of physical activity. One out of four adults in a study reported no leisure time physical activity in a one-month period. Local communities to the President and First Lady are coming together to combat this serious problem.

What has been done

CLL training participants receive at least ten hours of nutrition lessons that they can use with the youth they serve. More than 7,000 educators have received CLL nutrition lessons during the past decade. They have the ability to teach important nutrition concepts to more than 120,000 youth each year. CLL contains six extensive lessons that are focused directly on understanding and using MyPyramid. Dozens of other lessons tie other food-related concepts and activities back to MyPyramid and making healthy choices. All references to MyPyramid include elements regarding eating a variety of foods from all food groups, increasing physical activity, drinking plenty of water, and going outdoors to breath fresh air and connect with the natural resources that provide us with the things we need in order to survive and thrive. There are many gardening lessons that enhance youth's understanding and application of what they are learning. A 2009-2010 CLL on-line evaluation survey revealed knowledge outcomes reported by 227 educators representing 12,814 youth that participated in CLL lessons during that time.

Results

The CLL evaluation survey revealed that 80% of the 12,814 youth participating in CLL lessons increased their knowledge of MyPyramid and healthy food choices. Survey respondents voluntarily shared 296 examples that indicated changes in youths' knowledge. These youth successfully completed the evaluation activities written into each of the lessons, they were observed sharing what they learned with others including family and friends, they applied what they learned during lunch and snacks at the youth program or at home, and they asked more questions. There were 114 comments about knowledge changes that were directly mentioned nutrition topics such as food categories, MyPyramid, and trying and choosing healthy foods (as compared to general comments such as "transferred knowledge to something else"). Knowledge is the first step to changing attitudes and behaviors regarding healthy choices. Survey responses also indicated youth shared their knowledge with others, including family and friends. The increased enthusiasm and ability to learn and apply what is learned has a private value to children and youth of becoming capable, caring, contributing, and healthy individuals (and adults later in life) and a significant public value of health conscience citizens and leaders. Increasing nutritional literacy of children, youth, and adults can lower overweight/obesity rates, lower food borne illness rates, decrease health care costs, decrease school and work absences due to illness, increase interest in health and wellness fields, and strengthen efforts to sustain natural resources that provide us with the food we need to survive.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #8

1. Outcome Measures

As reported by educators, percentage of youth participating in CLL lessons who made healthy food choices; tried new foods; and made healthier food choices during snacks, lunch, and class parties.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood obesity has more than tripled in 30 years. One in five adolescents is obese. If children are overweight between the ages of 12 to 21, they are 7 times more likely to be obese adults. From spring 2006 to spring 2007, the percentage of overweight/obese Iowa elementary-aged boys went from 18.4% to 36.3% and from 20.7% to 37.8% for girls. In 2007, the percentage of Iowa adults who were overweight or obese was 64.7% (1.9 million Iowans). In 2007, Iowa ranked 15th highest in obesity/overweight prevalence among all 54 states and territories. Iowa rankings on risk factors are slightly higher than national averages. Poor nutrition, lack of physical activity, family history, psychological factors, and family factors such as poverty level, food insecurity, and lack of understanding about how food and exercise affects health are prevalent across Iowa. This leads to increased prevalence of type 2 diabetes, metabolic syndrome, high cholesterol, high blood pressure, asthma, sleep disorders, early puberty, low self-esteem, bullying, behavior and learning problems, and depression.

Childhood obesity is everyone's problem. Individuals and families do not understand that they are the first line of defense against childhood obesity when it comes to choices about food and physical activity. The medical and insurance communities are ill equipped to handle the education and financial aspects of helping people deal with the complications of obesity. Obesity rates are higher in Iowa schools with higher participation in the free and reduced lunch programs and these same schools are the same ones that are "at risk" for academic achievement of their students.

Only half of Iowa youth are meeting current recommendations of physical activity. One out of four

adults in a study reported no leisure time physical activity in a one-month period. Local communities to the President and First Lady are coming together to combat this serious problem.

What has been done

CLL training participants receive at least ten hours of nutrition lessons that they can use with youth. More than 7,000 educators have received CLL nutrition lessons during the past decade. They have the ability to teach important nutrition concepts to more than 120,000 youth each year. CLL lessons provide dozens of opportunities for youth to try new, healthy, easy-to-prepare, fun foods in an effort to increase fruit and vegetable consumption and to eat a variety of foods from each of the MyPyramid food categories. If youth engage in gardening, they discover how sweet and wonderful fresh produce can be. Research indicates that kids are more likely to eat what they grow and/or prepare, try something new with peers rather than with parents, and eat tasty fruits and vegetables at the height of ripeness, all help to achieve this measured outcome. There are several CLL gardening lessons that enhance youths' understanding of their power to make healthy choices and promote healthy activities for their families and communities.

Results

In the 2009/2010 program year, 227 teachers and after school educators who completed an on-line survey indicated 26% of the youth who participated in CLL lessons tried new foods and made healthier food choices during lunch, snack breaks, and class parties. Specific healthier food choice changes included youth were more willing to try new foods (usually fruits and vegetables); chose healthy foods for meals, snacks, and parties; influenced others to choose healthy foods; and helped their parents shop for and plan meals around healthy foods. If the survey question had focused just on trying new foods, the actual percentage would have increased to over 75% because of the nature of the CLL curriculum that incorporates trying new foods within the lessons. In fact, 12,814 youth participants were reported to have tried the healthy food options incorporated within the CLL lessons and activities. Youths' positive experiences with healthy foods within CLL lessons translated into choosing to eat the same or similar healthy foods for lunch and snacks when meeting with friends at school and family members at home. The increased enthusiasm and ability to learn and apply what is learned has a private value to children and youth of becoming capable, caring, contributing, and healthy individuals (and adults later in life) and a significant public value of health conscience citizens and leaders. Increasing nutritional literacy of children, youth, and adults can lower overweight/obesity rates, lower food borne illness rates, decrease health care costs, decrease school and work absences due to illness, increase interest in health and wellness fields, and help reduce school lunchroom and home food waste.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #9

1. Outcome Measures

As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge regarding growing food from plants.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	94

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood obesity has more than tripled in 30 years. One in five adolescents is obese. If children are overweight between the ages of 12 to 21, they are 7 times more likely to be obese adults. From spring 2006 to spring 2007, the percentage of overweight/obese Iowa elementary-aged boys went from 18.4% to 36.3% and from 20.7% to 37.8% for girls. In 2007, the percentage of Iowa adults who were overweight or obese was 64.7% (1.9 million Iowans). In 2007, Iowa ranked 15th highest in obesity/overweight prevalence among all 54 states and territories. Iowa rankings on risk factors are slightly higher than national averages. Poor nutrition, lack of physical activity, family history, psychological factors, and family factors such as poverty level, food insecurity, and lack of understanding about how food and exercise affects health are prevalent across Iowa. This leads to increased prevalence of type 2 diabetes, metabolic syndrome, high cholesterol, high blood pressure, asthma, sleep disorders, early puberty, low self-esteem, bullying, behavior and learning problems, and depression.

Childhood obesity is everyone's problem. Individuals and families do not understand that they are the first line of defense against childhood obesity when it comes to choices about food and physical activity. The medical and insurance communities are ill equipped to handle the education and financial aspects of helping people deal with the complications of obesity. Obesity rates are higher in Iowa schools with higher participation in the free and reduced lunch programs and these same schools are the same ones that are "at risk" for academic achievement of their students. Only half of Iowa youth are meeting current recommendations of physical activity. One out of four adults in a study reported no leisure time physical activity in a one-month period. Local communities to the President and First Lady are coming together to combat this serious problem.

What has been done

More than 100 CLL lessons reflect garden-based learning and growing plants for food. CLL started from an extensive study (1,400 Iowans) that revealed the lack of understanding by children and adults regarding where food comes from and their part in food systems and choices. Growing food from plants is addressed in almost every way possible in the CLL lessons. The most effective lessons/activities to teach this concept are those where youth actually plant and grow plants, both inside and outside, that produce food what they eat. These garden-based activities attract community partners such as Master Gardeners, avid gardeners, nutrition experts, local foods groups, and anyone interested in helping youth understand the importance of making connections with how food is grown and how youth can make healthy food and physical activity

choices. A 2009-2010 CLL on-line evaluation survey revealed knowledge outcomes reported by 227 educators representing 12,814 youth that participated in CLL lessons during that time.

Results

In the 2009/2010 program year, 227 teachers and after school educators who completed an on-line survey indicated 94% of the youth who participated in CLL lessons and activities increase their knowledge regarding growing food from plants. Overwhelmingly, teach/educator responses to the on-line survey indicated youth were more engaged/participatory/attentive/excited during and after CLL lessons and activities as compare to prior health and food origin type lessons/activities. The CLL survey revealed that more than 3,000 youth planted gardens at 157 sites statewide. The CLL survey, along with other studies from Cornell, National Gardening Association, and garden programs across the U.S. and world reveal that gardening enhances children, youths', and adults' academic performance; physical activity; healthy eating; positive attitudes about environmental issues; social and moral development; vocational or subsistence skills; and life skills. Additionally, a \$70 investment in seeds and plants in a well-maintained garden will produce nearly \$600 worth of healthy foods making it a sustainable choice for families facing tough economic times. Shipping produce into Iowa uses 4 to 17 times more fuel and releases 5 to 17 times more CO₂ from the burning of the fuel compared to Iowa-based regional and local food systems. Gardening also provides opportunities for communities to dialogue; build capacity; develop partnerships; organize individuals for action; promote food security; link people to sustainable development; prepare individuals for careers, hobbies and civic engagement in agriculture, natural resource management, nutrition and science; transform schools and other public and private areas into attractive and productive learning centers for everyone. Between 2008 and 2009, there was a 19% rise in gardening in the United States. Gardening is the number one leisure activity in the U.S. In 2008 gardeners spent a total of \$2.5 billion to purchase gardening supplies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #10

1. Outcome Measures

As reported by educators, percentage of youth gardeners participating in CLL lessons who improve their vegetable consumption and exercise habits.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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What has been done

CLL includes a Growing in the Garden: Outdoor Classrooms for Young Gardeners guide, Leader's Guide, and Garden Journal. This is a Growing in the Garden curriculum supplement that includes more than 40 activities to work with a garden and young gardeners. The primary Growing in the Garden curriculum has six garden or outdoor classroom lessons. These lessons incorporate several strategies or activities that encourage youth to increase fruit and vegetable consumption and physical activity - beyond actually gardening and eating what they harvest. It would be nearly impossible to engage in these CLL gardening activities and not increase your vegetable consumption and physical activity. A 2009-2010 CLL on-line evaluation survey revealed knowledge outcomes reported by 227 educators representing 12,814 youth that participated in CLL lessons during that time.

Results

In the 2009/2010 program year, 172 teachers and after school educators who completed an on-line survey indicated 100% of the youth who participated in CLL lessons and activities and

engaged in outdoor or greenhouse gardening, improved their vegetable consumption and exercise habits. Survey responses indicated youth were filled with more excitement, were increasing vegetable consumption and physical activity, and were eager to share what they learned with family and others. Youth will eat what they grow or prepare, and the fresh, ready-to-eat garden vegetables taste extra sweet and delicious. This leads to youth and their families increasing their vegetable consumption. The act of gardening and getting outside provides a venue to increase physical activity. Observations and related studies reveal there is a slight decline in vegetable consumption after gardening activities conclude and the produce has been consumed. However, gardening excitement and eating foods fresh from the garden remain strong in youth until the next planting season. CLL evaluations support other research that indicates children are more likely to eat what they grow because of the satisfaction of growing it, home-grown food is fresher and tastes better, and trying new foods with friends is fun. Additionally, CLL evaluations reveal that parents often comment their children have never eaten vegetables and are now requesting them and helping to shop for them at the grocery store. Increasing fruit and vegetable consumption combined with the fact that gardening burns three times more energy than being sedentary leads to healthier children, youth, families, and communities. Reducing obesity, reducing risks of disease, lowering blood pressure and cholesterol levels, preventing diabetes and heart disease, and building stronger bodies is a win-win for children, youth, and adults. With 8- to 18-year-olds sitting in front of a screen on an average of 8 hours a day and spending less time outdoors, gardening is an excellent healthy and physical alternative. Economically, gardening directly saves on grocery bills, medical expenses, and makes people more active and productive citizens.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #11

1. Outcome Measures

Percentage of 4-H'ers ages 12-18 taking the FSQA certification test who self-report improved techniques and practices in livestock drug injections, record keeping, and food product safety and biosecurity.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	92

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Providing a safe and healthy food supply has always been a key issue to the American consumer, but in recent years this issue has become even more important to consumers, wholesale distributors, restaurant chains, and foreign export markets with the recall of various foods and the outbreak of food-borne illnesses. Not only details on treatments and/or medications given to animals, but also how animals have been raised and treated throughout their lives has become front page news both locally and nationally. Consequently, livestock producers continually strive to improve management practices to ensure American citizens have the safest food supply in the world.

What has been done

A comprehensive food safety and quality assurance curriculum program (FSQA) is conducted each year for 4-H'ers in grades 4-12. Through the use of a variety of educational materials including video tutorials and hands-on learning, youth learn about animal identification, source verification (when and where the animals are born and raised), biosecurity measures (cleanliness techniques, disease contamination, on-farm disease transmission), drug treatments and injections, quality record keeping, and appropriate animal handling and welfare requirements.

Results

In the 2009/2010 program year, 125 randomly selected 4-H youth were surveyed regarding how their FSQA techniques and practices were changed in the areas of record keeping, drug injections/feed additives, food product safety, and biosecurity. 91.8% of the youth responded they changed their food security practices and techniques a little, some, quite a bit, or a great deal after participating in food safety and quality assurance (FSQA) training. Each year, the meat industry spends over \$80 million nationally in meat inspection costs. Much of this cost could be reduced at the producer level by educating youth on how to appropriately treat and handle animals. Knowing that a single disease outbreak or a food recall can cause irreversible damage to the U.S. markets, it's imperative to continue educating youth on the important topics that are covered in the FSQA curriculum. For example, 4-H'ers and livestock producers are being rewarded for superior meat products and for raising animals in specific environmental conditions. 4-H'ers who sell beef animals with no antibiotic treatments can receive a premium increase of anywhere between \$.05 -\$.10/pound. Additionally, Iowa is the top state for both hog production and egg layer production producing more than \$10 billion in livestock value across all commodities, and also generates millions of dollars in agricultural jobs within the state economy. As Iowa's future farmers and livestock producers, Iowa 4-H youth play a vitally key role in increasing Iowa's agricultural job growth and economic prosperity, and as such, require top notch food safety and quality assurance (FSQA) training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #12

1. Outcome Measures

Number of youth participating in 4-H programming and educational activities on sustainable energy to increase knowledge of what sustainable energy means, the importance of sustainable energy, and/or promising sustainable energy technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	2426

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The renewable energy sector is a major focus for the development and expansion of Iowa's economic engine. Currently Iowa is a leader in research and development of renewable energy technologies. With manufacturing (20.8% of Iowa's GDP) and agriculture (6.4% of Iowa's GDP) as two of Iowa's largest economic sectors, there is great potential for shifting much of Iowa's land and resources to the production of renewable fuels such as biofuels, wind, geothermal, and solar energy. Given Iowa's position, as well as the increasing national and global call for energy independence and sustainable energy practices, it is imperative that Iowa's youth become familiar with the science, research, and technology behind renewable energy sources. As our future workforce members; entrepreneurs; local community leaders; and as citizens of an increasingly interconnected, global community; Iowa's youth also need to develop the reasoning skills that will allow them to evaluate claims, research, and the pros and cons of current and future renewable energy science and technologies.

What has been done

Through 4-H programming, 2426 Iowa youth were provided educational opportunities to increase their knowledge of sustainable energy science, resources, uses, and technologies through workshops, school enrichment activities, sustainable energy themed camps, and club and individual project work on sustainable energy topics such as wind power, hydroelectric power, and technologies which reduce electricity consumption. Programming utilized 4-H curriculum such as The Power of Wind, Extension resources such as value added agriculture materials, and other science education resources such as the National Energy Education Development kits.

Results

In the 2009/2010 program year, 108 Iowa adult 4-H staff and volunteers were trained to engage youth in renewable energy concepts such as the science and technology behind renewable energy and the use, sources, and social/environmental consequences of renewable energy. Trained adults reached 2,426 Iowa 4-H youth with renewable energy programming. Through Iowa 4-H programming and educational activities, youth gained knowledge and skills that will help them grow into responsible employees, citizens, and decision makers. As future Iowa employees and entrepreneurs, these 4-H youth can use the scientific reasoning, engineering design skills, and background knowledge on renewable energy technologies and issues to open more career doors and broaden the success of Iowa-based renewable energy technology companies. Currently Iowa is the second largest wind energy producing state in the nation and is a major producer of biofuels. As Iowa companies look to expand Iowa's green economy, it benefits both Iowa and the nation for youth to acquire the knowledge and skills necessary to contribute to green industries as employees, researchers, innovators, and entrepreneurs. As Iowa's upcoming workforce, youth benefit from the foundation built through 4-H programming in the growing field of renewable energy. Additionally, as citizens of Iowa's communities, local communities benefit from youth who are current, and the future, decision makers and leaders to be more scientifically literate and to have the reasoning skills necessary to evaluate claims, research, and the pros and cons of current and future renewable energy science and technologies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #13

1. Outcome Measures

Percentage of pre-service teachers and educators who participate in CLL training will self-report a 1 to 3-point increase in confidence/knowledge in teaching MyPyramid concepts and the origins of food.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	63

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood obesity has more than tripled in 30 years. One in five adolescents is obese. If children are overweight between the ages of 12 to 21, they are 7 times more likely to be obese adults. From spring 2006 to spring 2007, the percentage of overweight/obese Iowa elementary-aged boys went from 18.4% to 36.3% and from 20.7% to 37.8% for girls. In 2007, the percentage of Iowa adults who were overweight or obese was 64.7% (1.9 million Iowans). In 2007, Iowa ranked 15th highest in obesity/overweight prevalence among all 54 states and territories. Iowa rankings on risk factors are slightly higher than national averages. Poor nutrition, lack of physical activity, family history, psychological factors, and family factors such as poverty level, food insecurity, and lack of understanding about how food and exercise affects health are prevalent across Iowa. This leads to increased prevalence of type 2 diabetes, metabolic syndrome, high cholesterol, high blood pressure, asthma, sleep disorders, early puberty, low self-esteem, bullying, behavior and learning problems, and depression.

Childhood obesity is everyone's problem. Individuals and families do not understand that they are the first line of defense against childhood obesity when it comes to choices about food and physical activity. The medical and insurance communities are ill equipped to handle the education and financial aspects of helping people deal with the complications of obesity. Obesity rates are higher in Iowa schools with higher participation in the free and reduced lunch programs and these same schools are the same ones that are "at risk" for academic achievement of their students. Only half of Iowa youth are meeting current recommendations of physical activity. One out of four adults in a study reported no leisure time physical activity in a one-month period. Local communities to the President and First Lady are coming together to combat this serious problem.

What has been done

Connecting Learning and Living (CLL) lessons and training are responsive to agricultural, environmental, and nutritional needs to sustain food supply systems and to live healthy and productive lives. CLL connects school classroom and out-of-school learning with real life circumstances by engaging youth in lessons and activities about Iowa's and the nation's food systems - from natural resources to making choices about the food we eat. During CLL training, pre-service teachers from across the state learn about CLL topics by completing curriculum lessons. Participants received nutrition lessons based on MyPyramid.

Results

In the 2009/2010 program year, CLL trainings provided 628 educators with deeply aligned educational and youth development lessons, confidence, and inspiration to effectively teach MyPyramid and the origins of food concepts. Every training participant received a nutrition lesson to do in his/her youth program. More than 70% of participants actually did one of the lessons such as "MyPyramid Hop 'n Shop" or "MyPyramid Awesome Armed Forces" during the training session. Pre and post workshop surveys were completed by training participants. Of the 628 participants who completed the pre-post survey, 63% indicated a 1-point increase or greater in their confidence/knowledge in teaching MyPyramid and the origins of food concepts. The percentage increase is lower than expected due to the fact that some pre-service teachers in agriculture education and educators only interested in environmental lessons did not participate in nutrition lessons during the training. This is likely why the actual percentage turned out lower than expected.

The experiential method (hands-on) of CLL trainings combined with providing educators with life skill based, comprehensive, flexible, deeply aligned lessons that are easy to facilitate, translates into increased annual use of the lessons with children. Teachers are 90% more likely to use the lessons they have experienced themselves. When 628 training participants use the lessons, they will reach and empower more than 12,000 children and youth each year with the knowledge and skills to make healthier food and physical activity choices that can reduce the primary factors

causing childhood obesity.

Additionally, CLL training costs and curricula development expenses are covered by grants, donations, and curriculum sales; a savings of approximately \$94,000. Normally the cost of the training and curriculum would be incurred by educators, school districts, after school programs, communities, and nutrition and health partners.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #14

1. Outcome Measures

Number of youth participating in 4-H programming and educational activities on climate change to increase their knowledge of the causes and/or consequences of climate change.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	784

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In a recent collaborative report, including Iowa State contributors Gene Takle, professor of geological and atmospheric sciences and agronomy who directs ISU's Climate Science Program; Richard Cruse, professor of agronomy; Dave Swenson, associate scientist in economics; and Natalia Rogovska, a post-doctoral research associate in agronomy, scientists reported that global climate change is having significant detrimental effects on Iowa. More rainfall, higher temperatures, longer growing seasons, strengthened breeding conditions for agricultural pests, flooding, increased severe weather, and storm-induced property damage, have significantly impacted Iowa's largest economic sectors including: manufacturing (20.8% of Iowa's GDP - much of which is tied to Iowa's agricultural production), insurance (10.5% of Iowa's GDP), and agriculture (6.4% of Iowa's GDP). With issues surrounding climate change constantly in the news and significantly impacting Iowa's largest economic sectors, it is imperative to Iowa's economic growth that our youth become familiar with the science and research behind this field of study. Additionally, as Iowa's future workforce members, community leaders, and citizens of an

increasingly interconnected, global community in which decisions often have consequences felt across the globe, Iowa's youth need to develop a solid understanding of climate change concepts and reasoning skills that will allow them to evaluate climate change research and claims.

What has been done

Through 4-H programming, 784 Iowa youth were provided educational opportunities to increase their knowledge of climate change concepts such as environmental conditions that lead to climate change, the consequences of global warming, and the technologies used to collect climate data through workshops, school enrichment activities, climate themed camps, and club and individual project work. Programming provided during these in- and out-of-school opportunities utilized 4-H curriculum such as Antarctica's Climate Secrets, Extension resources such as environmental agriculture materials, and other science education resources such as those available through NASA and NOAA (National Oceanic and Atmospheric Administration).

Results

In the 2009/2010 program year, 47 Iowa adult 4-H staff and volunteers were trained to engage youth in the science of climate change research, consequences of climate change, sustainability practices, energy use reduction technologies and behaviors, and carbon footprint concepts. Trained adults reached 784 Iowa 4-H youth with climate change programming. Through Iowa 4-H programming and educational activities, youth gained knowledge and skills that will help them grow into responsible employees, citizens, and decision makers. As future employees and entrepreneurs, these 4-H youth can use the scientific reasoning skills and background knowledge on climate change issues to advance their careers and broaden the success of Iowa-based and national companies which must adapt to changing climate conditions, sustain limited resources, and reduce their environmental carbon footprint. As Iowa's upcoming workforce, youth benefit from the foundation built through 4-H programming in climate change fields of study. As Iowa companies look to protect and expand Iowa's largest economic sectors in manufacturing, agriculture, and insurance, it benefits both Iowa and the nation for youth to acquire the knowledge and skills necessary to contribute to climate change preventative sustainable practices and policies as employees, researchers, innovators, and entrepreneurs. Additionally, as citizens of Iowa's communities, local communities benefit from youth who are current, and the future, decision makers and leaders to be more scientifically literate and to have the reasoning skills necessary to evaluate climate change research and claims.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Severely declining budgets, especially state appropriations, continue to impact the ability to maintain a critical level of 4-H program staff for priority needs. State

appropriations for FY 2010 were reduced approximately 11% from FY 2009. While supplemented in part with ARRA funds, the budget reductions resulted in elimination of positions, hiring delays, and required furloughs for all staff. ARRA funds were used primarily on several Kaizen events to improve efficiencies and lean program efforts. However, when combined with the continuing efforts to realign our system as a result of reorganization in FY 2010 and the integration of the Iowa 4-H and Families extension units, more efforts have been spent on improving system efficiencies and structure than on youth and volunteer outcomes. The previous POW teams were dissolved which impacted outcome assessment processes on some previously identified outcomes. Staff program emphasis is being placed on long-term 4-H experiences with less attention given to short-term, indirect youth contact experiences. We believe these efforts will position our program for future success.

Moreover, the Iowa K-12 youth and adult populations are continuing to steadily decrease cross the state. Implementation of new and innovative programs to reach new youth audiences is dependent on the number of youth residing in a given county and developing relationships with potential volunteer citizen pools. Acceptance by current 4-H staff and volunteers of innovative and emerging 4-H club models is critical to implementing county expansion plans as is often challenging. Despite these challenges, there was an increase in FY 2010 in the number of new innovative 4-H club models developed across the state, along with significant changes identified and implemented to improve program efficiencies.

Unmet Climate Change and Sustainable Energy Outcomes -

Iowa 4-H has not historically collected data on program impact relating to climate change and sustainable energy. In order to gather data a survey was developed and distributed to both 4-H staff and youth involved in these two program areas. The survey response was limited and did not yield significant data. A major problem that could be causal in response rate was that nature of youth program events relating to these areas. The youth involved were largely participants in single events such as camps or school enrichment and these youth were problematic to reach with a post event survey. Methods to reach youth in these events are in the process of being developed to remedy this deficiency in the 4-H data gathering system.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Evaluation Results

Program Evaluation/Research

- **Iowa 4-H Campus Census Survey: Anticipated Outcomes**
 - Demonstrate breadth of 4-H influence on ISU campus
 - Obtain contact information for campus-based 4-H alumni
 - Increase the 4-H Program's campus-based volunteer pool

- Broaden 4-H partnerships in areas such as marketing, research, and subject area expertise

- **(Multi-state) 4-H Study of Positive Youth Development: Anticipated Outcomes**
 - Assist North Central Region (NCR) 4 H programs to plan, deliver, and evaluate a protocol for recruiting a stratified sample of youth
 - Demonstrate congruity between NCR and national data regarding the presence of the 5 C's of positive youth development in the lives of 4-H'ers

- **(Multi-state: NCERA215) Contribution of 4-H Participation to the Development of Social Capital within Communities Research Study: Anticipated Outcomes**
 - Results benefit individual 4 H programs as they plan, deliver, and evaluate programs
 - Findings demonstrate the importance of 4 H to the overall health of the community
 - Extension specialists use results in facilitating successful community change efforts
 - Identify 4 H program practices and structures that contribute to networking and the development of social capital

Key Items of Evaluation

CHILDHOOD OBESITY

Measure 1: Percentage of pre-service teachers and educators who participate in CLL training will self-report a 1 to 3-point increase in confidence/knowledge in teaching MyPyramid concepts and the origins of food.

Result:

In the 2009/2010 program year, CLL trainings provided 628 educators with deeply aligned educational and youth development lessons, confidence, and inspiration to effectively teach MyPyramid and the origins of food concepts. Every training participant received a nutrition lesson to do in his/her youth program. More than 70% of participants actually did one of the lessons such as "MyPyramid Hop 'n Shop" or "MyPyramid Awesome Armed Forces" during the training session. Pre and post workshop surveys were completed by training participants. Of the 628 participants who completed the pre-post survey, 63% indicated a 1-point increase or greater in their confidence/knowledge in teaching MyPyramid and the origins of food concepts. The percentage increase is lower than expected due to the fact that some pre-service teachers in agriculture education and educators only interested in environmental lessons did not participate in nutrition lessons during the training. This is likely why the actual percentage turned out lower than expected.

The experiential method (hands-on) of CLL trainings combined with providing educators with life skill based, comprehensive, flexible, deeply aligned lessons that are easy to facilitate, translates into increased annual use of the lessons with children. Teachers are 90% more likely to use the lessons they have experienced themselves. When 628 training participants use the lessons, they will reach and empower more than 12,000 children and youth each year with the knowledge and skills to make healthier food and physical activity choices that can reduce the primary factors causing childhood obesity.

Additionally, CLL training costs and curricula development expenses are covered by grants, donations, and curriculum sales; a savings of approximately \$94,000. Normally the cost of

the training and curriculum would be incurred by educators, school districts, after school programs, communities, and nutrition and health partners.

Measure 2: As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge of the MyPyramid and making healthy food choices.

Result:

The CLL evaluation survey revealed that 80% of the 12,814 youth participating in CLL lessons increased their knowledge of MyPyramid and healthy food choices. Survey respondents voluntarily shared 296 examples that indicated changes in youths' knowledge. These youth successfully completed the evaluation activities written into each of the lessons, they were observed sharing what they learned with others including family and friends, they applied what they learned during lunch and snacks at the youth program or at home, and they asked more questions. There were 114 comments about knowledge changes that were directly mentioned nutrition topics such as food categories, MyPyramid, and trying and choosing healthy foods (as compared to general comments such as "transferred knowledge to something else"). Knowledge is the first step to changing attitudes and behaviors regarding healthy choices. Survey responses also indicated youth shared their knowledge with others, including family and friends. The increased enthusiasm and ability to learn and apply what is learned has a private value to children and youth of becoming capable, caring, contributing, and healthy individuals (and adults later in life) and a significant public value of health conscience citizens and leaders. Increasing nutritional literacy of children, youth, and adults can lower overweight/obesity rates, lower food borne illness rates, decrease healthcare costs, decrease school and work absences due to illness, increase interest in health and wellness fields, and strengthen efforts to sustain natural resources that provide us with the food we need to survive.

Measure 3: As reported by educators, percentage of youth participating in CLL lessons who made healthy food choices; tried new foods; and made healthier food choices during snacks, lunch, and class parties.

Result:

In the 2009/2010 program year, 227 teachers and after school educators who completed an on-line survey indicated 26% of the youth who participated in CLL lessons tried new foods and made healthier food choices during lunch, snack breaks, and class parties. Specific healthier food choice changes included youth were more willing to try new foods (usually fruits and vegetables); chose healthy foods for meals, snacks, and parties; influenced others to choose healthy foods; and helped their parents shop for and plan meals around healthy foods. If the survey question had focused just on trying new foods, the actual percentage would have increased to over 75% because of the nature of the CLL curriculum that incorporates trying new foods within the lessons. In fact, 12,814 youth participants were reported to have tried the healthy food options incorporated within the CLL lessons and activities. Youths' positive experiences with healthy foods within CLL lessons translated into choosing to eat the same or similar healthy foods for lunch and snacks when meeting with friends at school and family members at home. The increased enthusiasm and ability to learn and apply what is learned has a private value to children and youth of becoming capable, caring, contributing, and healthy individuals (and adults later in life) and a significant public value of health conscience citizens and leaders. Increasing nutritional literacy of children, youth, and adults can lower overweight/obesity rates, lower food borne illness rates, decrease healthcare costs, decrease school and work absences due to illness, increase interest in health and wellness fields, and help reduce school lunchroom

and home food waste.

Measure 4: As reported by educators, percentage of youth participating in CLL lessons who increased their knowledge regarding growing food from plants.

Result:

In the 2009/2010 program year, 227 teachers and after school educators who completed an on-line survey indicated 94% of the youth who participated in CLL lessons and activities increase their knowledge regarding growing food from plants. Overwhelmingly, teach/educator responses to the on-line survey indicated youth were more engaged/participatory/attentive/excited during and after CLL lessons and activities as compare to prior health and food origin type lessons/activities. The CLL survey revealed that more than 3,000 youth planted gardens at 157 sites statewide. The CLL survey, along with other studies from Cornell, National Gardening Association, and garden programs across the U.S. and world reveal that gardening enhances children, youths', and adults' academic performance; physical activity; healthy eating; positive attitudes about environmental issues; social and moral development; vocational or subsistence skills; and life skills. Additionally, a \$70 investment in seeds and plants in a well-maintained garden will produce nearly \$600 worth of healthy foods making it a sustainable choice for families facing tough economic times. Shipping produce into Iowa uses 4 to 17 times more fuel and releases 5 to 17 times more CO₂ from the burning of the fuel compared to Iowa-based regional and local food systems. Gardening also provides opportunities for communities to dialogue; build capacity; develop partnerships; organize individuals for action; promote food security; link people to sustainable development; prepare individuals for careers, hobbies and civic engagement in agriculture, natural resource management, nutrition and science; transform schools and other public and private areas into attractive and productive learning centers for everyone. Between 2008 and 2009, there was a 19% rise in gardening in the United States. Gardening is the number one leisure activity in the U.S. In 2008 gardeners spent a total of \$2.5 billion to purchase gardening supplies.

Measure 5: As reported by educators, percentage of youth gardeners participating in CLL lessons who improve their vegetable consumption and exercise habits.

Result:

In the 2009/2010 program year, 172 teachers and after school educators who completed an on-line survey indicated 100% of the youth who participated in CLL lessons and activities and engaged in outdoor or greenhouse gardening, improved their vegetable consumption and exercise habits. Survey responses indicated youth were filled with more excitement, were increasing vegetable consumption and physical activity, and were eager to share what they learned with family and others. Youth will eat what they grow or prepare, and the fresh, ready-to-eat garden vegetables taste extra sweet and delicious. This leads to youth and their families increasing their vegetable consumption. The act of gardening and getting outside provides a venue to increase physical activity. Observations and related studies reveal there is a slight decline in vegetable consumption after gardening activities conclude and the produce has been consumed. However, gardening excitement and eating foods fresh from the garden remain strong in youth until the next planting season. CLL evaluations support other research that indicates children are more likely to eat what they grow because of the satisfaction of growing it, home-grown food is fresher and tastes better, and trying new foods with friends is fun. Additionally, CLL evaluations reveal that parents often comment their children have never eaten vegetables and are now requesting them and helping to shop for them at the grocery store. Increasing fruit and vegetable

consumption combined with the fact that gardening burns three times more energy than being sedentary leads to healthier children, youth, families, and communities. Reducing obesity, reducing risks of disease, lowering blood pressure and cholesterol levels, preventing diabetes and heart disease, and building stronger bodies is a win-win for children, youth, and adults. With 8 to 18 year-olds sitting in front of a screen on an average of 8 hours a day and spending less time outdoors, gardening is an excellent healthy and physical alternative. Economically, gardening directly saves on grocery bills, medical expenses, and makes people more active and productive citizens.

FOOD SAFETY

Measure 1: Percentage of 4-H'ers ages 12-18 taking the FSQA certification test who self-report improved techniques and practices in livestock drug injections, record keeping, and food product safety and biosecurity.

Result:

In the 2009/2010 program year, 125 randomly selected 4-H youth were surveyed regarding how their FSQA techniques and practices were changed in the areas of record keeping, drug injections/feed additives, food product safety, and biosecurity. 91.8% of the youth responded they changed their food security practices and techniques a little, some, quite a bit, or a great deal after participating in food safety and quality assurance (FSQA) training. Each year, the meat industry spends over \$80 million nationally in meat inspection costs. Much of this cost could be reduced at the producer level by educating youth on how to appropriately treat and handle animals. Knowing that a single disease outbreak or a food recall can cause irreversible damage to the U.S. markets, it's imperative to continue educating youth on the important topics that are covered in the FSQA curriculum. For example, 4-H'ers and livestock producers are being rewarded for superior meat products and for raising animals in specific environmental conditions. 4-H'ers who sell beef animals with no antibiotic treatments can receive a premium increase of anywhere between \$.05 -\$.10/pound. Additionally, Iowa is the top state for both hog production and egg layer production producing more than \$10 billion in livestock value across all commodities, and also generates millions of dollars in agricultural jobs within the state economy. As Iowa's future farmers and livestock producers, Iowa 4-H youth play a vitally key role in increasing Iowa's agricultural job growth and economic prosperity, and as such, require top notch food safety and quality assurance (FSQA) training.

SUSTAINABLE ENERGY

Measure 1: Percentage of youth participating in sustainable energy workshops who self-report increased knowledge of what sustainable energy means, the importance of sustainable energy, and/or promising sustainable energy technologies.

Result:

In the 2009/2010 program year, 108 Iowa adult 4-H staff and volunteers were trained to engage youth in renewable energy concepts such as the science and technology behind renewable energy and the use, sources, and social/environmental consequences of renewable energy. Trained adults reached 2,426 Iowa 4-H youth with renewable energy programming. Through Iowa 4-H programming and educational activities, youth gained knowledge and skills that will help them grow into responsible employees, citizens, and decision makers. As future Iowa employees and entrepreneurs, these 4-H youth can use the scientific reasoning, engineering design skills, and background knowledge on renewable energy technologies and issues to open more career doors and broaden the success of Iowa-based renewable energy technology companies. Currently Iowa is the second largest

wind energy producing state in the nation and is a major producer of biofuels. As Iowa companies look to expand Iowa's green economy, it benefits both Iowa and the nation for youth to acquire the knowledge and skills necessary to contribute to green industries as employees, researchers, innovators, and entrepreneurs. As Iowa's upcoming workforce, youth benefit from the foundation built through 4-H programming in the growing field of renewable energy. Additionally, as citizens of Iowa's communities, local communities benefit from youth who are current, and the future, decision makers and leaders to be more scientifically literate and to have the reasoning skills necessary to evaluate claims, research, and the pros and cons of current and future renewable energy science and technologies.

CLIMATE CHANGE

Measure 1: Percentage of youth participating in climate change workshops who self-report increased knowledge of the causes and/or consequences of climate change.

Result:

In the 2009/2010 program year, 47 Iowa adult 4-H staff and volunteers were trained to engage youth in the science of climate change research, consequences of climate change, sustainability practices, energy use reduction technologies and behaviors, and carbon footprint concepts. Trained adults reached 784 Iowa 4-H youth with climate change programming. Through Iowa 4-H programming and educational activities, youth gained knowledge and skills that will help them grow into responsible employees, citizens, and decision makers. As future employees and entrepreneurs, these 4-H youth can use the scientific reasoning skills and background knowledge on climate change issues to advance their careers and broaden the success of Iowa-based and national companies which must adapt to changing climate conditions, sustain limited resources, and reduce their environmental carbon footprint. As Iowa's upcoming workforce, youth benefit from the foundation built through 4-H programming in climate change fields of study. As Iowa companies look to protect and expand Iowa's largest economic sectors in manufacturing, agriculture, and insurance, it benefits both Iowa and the nation for youth to acquire the knowledge and skills necessary to contribute to climate change preventative sustainable practices and policies as employees, researchers, innovators, and entrepreneurs. Additionally, as citizens of Iowa's communities, local communities benefit from youth who are current, and the future, decision makers and leaders to be more scientifically literate and to have the reasoning skills necessary to evaluate climate change research and claims.