

**V(A). Planned Program (Summary)**

**Program # 1**

**1. Name of the Planned Program**

Human Health, Environment, Family, Youth, Society and Community

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	0%		2%	
703	Nutrition Education and Behavior	10%		3%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	0%		5%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%		5%	
721	Insects and Other Pests Affecting Humans	0%		1%	
723	Hazards to Human Health and Safety	10%		10%	
724	Healthy Lifestyle	25%		25%	
802	Human Development and Family Well-Being	10%		14%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		10%	
805	Community Institutions, Health, and Social Services	5%		15%	
806	Youth Development	40%		10%	
	<b>Total</b>	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	70.0	0.0	10.0	0.0
Actual	71.4	0.0	11.0	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
3340724	0	838222	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
3340724	0	837408	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	6798551	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

Research programs to:

- Develop an understanding of how n-3 polyunsaturated fatty acids affect human health and disease, especially cardiovascular disease and inflammation.
- Determine the relationships between obesity and family meals/lifestyle factors; family lifestyle factors/education and food choices and general health; and environmental influences and obesity/general health/physical activity.
- Increase understanding about how environmental pollutants, especially ozone and endocrine disruptors affect human health.
- Identify the nutritional determinants of allergic immune disorders.
- Establish new programs and policies to help young people move successfully from foster care to independent living after they are too old for foster care.
- Analyze the relationships among social support, public policy and family characteristics and how they affect the function and well-being of rural low-income families.
- Increase understanding and develop more effective environmental management systems.
- Develop better models for the human health and human services sectors.

Educational programs to:

- Teach how to choose healthful food, physically active lifestyles and behaviors consistent with dietary guidelines.
- Teach consumers to keep their food safe by offering programs on food safety, home food preservation and healthy, hygienic food-handling practices.
- Teach people living with chronic medical conditions to manage their condition effectively.
- Teach financial literacy and prepare individuals to manage their finances in anticipation of retirement.
- Teach caregivers and parents how to prepare children for school.
- Increase access to affordable, high-quality childcare.
- Prepare communities for the health care, housing and transportation needs of seniors.
- Educate citizens and public officials about funding methods, service provision and intergovernmental cooperation.
- Provide counties and municipalities with technical assistance related to intergovernmental contracting, consolidating services and financial and strategic planning.
- Assist government officials in leadership, conflict management, communication and engaging the public in policy development.
- Prepare youth with knowledge and skills needed for life and employment.
- Enhance the physical, social, emotional and cognitive health and well-being of youth.

- Improve better tribal governance in Michigan.

**2. Brief description of the target audience**

Michigan private citizens, state agencies, farmers, food processors, commodity groups and agricultural industry representatives are targets of research programs. Individuals of all ages and life stages are targeted for healthy lifestyle and food-safety education programs. Human development and family well-being programs target parents and caregivers of preschool children, people living with chronic medical conditions and senior citizens. Community institutions, health and social services programs target citizens and public/government officials. Youth age 9 to 18 are targets of youth development programs. Tribal members in Michigan.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	3800	7600	4400	6600
<b>Actual</b>	5832	11664	15173	15173

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

**Patent Applications Submitted**

Year: 2010  
 Plan: 1  
 Actual: 1

**Patents listed**

MICL01680-Value-added products for improving human, animal and plant health-PTEC1998-0034-01BR;PI9906950-4; 1/12/2010

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Plan</b>	1	30	
<b>Actual</b>	1	41	42

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of research programs on human health, environment, family, youth, society and community.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	31	39

**Output #2**

**Output Measure**

- Number of adult participants trained in healthy lifestyles.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	1400	1960

**Output #3**

**Output Measure**

- Number of youth participants trained in healthy lifestyles.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	2500	3811

**Output #4**

**Output Measure**

- Number of adult participants trained in human development and family well-being.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	2500	1960

**Output #5**

**Output Measure**

- Number of youth participants trained in human development and family well-being.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	2500	2505

**Output #6**

**Output Measure**

- Number of adult participants trained in community institutions, health and social services.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
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2010 100 148

**Output #7**

**Output Measure**

- Number of adult participants trained in youth development.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	1500	2359

**Output #8**

**Output Measure**

- Number of youth participants trained in youth development.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	2200	8857

**Output #9**

**Output Measure**

- Number of adults trained in topics that support tribal governance.

<b>Year</b>	<b>Target</b>	<b>Actual</b>
2010	30	72

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of research programs to determine the relationship between family lifestyle factors/education and food choices/environmental influences/physical activity and general health and well-being.
2	Number of research programs to understand how environmental pollutants, especially ozone and endocrine disruptors, affect human health.
3	Number of research programs to analyze the relationships among social support, public policy and family characteristics and/or develop better models for the human health and human services sector.
4	Number of adult participants with increased knowledge about healthy lifestyles.
5	Number of youth participants with increased knowledge about healthy lifestyles.
6	Number of adult participants with increased knowledge of human development and family well-being.
7	Number of youth participants with increased knowledge of human development and family well-being.
8	Number of adult participants with increased knowledge of community insititutions, health and social services.
9	Number of adult participants with increased knowledge of youth development.
10	Number of youth participants with increased knowledge of youth development.
11	Number of native american adults with improved knowledge and skills in tribal governance.
12	Number of research programs to develop more effective environmental/natural resources management systems.
13	Number of research programs that study the function of nutrients and other food components related to human health.

## **Outcome #1**

### **1. Outcome Measures**

Number of research programs to determine the relationship between family lifestyle factors/education and food choices/environmental influences/physical activity and general health and well-being.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	12	10

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Overweight people are at serious risk for cardiovascular disease, diabetes and some forms of cancer, and the risk is lifelong. The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity reports that overweight adolescents have a 70 percent chance of becoming overweight or obese adults, and this risk increases to 80 percent if a parent is overweight or obese. Further, obesity-associated coronary heart disease is now the No. 1 cause of mortality in the U.S. Parents can significantly improve the health of their children by initiating family lifestyle changes in activity and eating behavior.

#### **What has been done**

Research to: discover health beneficial constituents in fruits, vegetables and generally regarded safe plants; determine the impact of phytonutrients on the absorptions, metabolism and elimination of essential nutrients; determine which foods protect against disease; identify and assess opportunities for farmers to pursue organic and place-based production and marketing strategies; generate information to make it easier for citizens to eat healthier and be physically active; provide resources, education and technical assistance to low-income households who wish to grow food in their backyards or community gardens to increase household food security and consumption of vegetables; and increase the safety of women and children who have undergone divorce in the context of domestic violence.

#### **Results**

Advice was provided to the Heinz Company Foundation regarding the development of a bean paste for the rehabilitation of severely malnourished children.

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Red lettuce shows higher antioxidant and anti-inflammatory activities than green lettuce, and also

contained anthocyanin, which can act as a powerful antioxidant.

The water extracts of hot peppers contained a number of compounds with activity similar to aspirin, ibuprofen and naproxen. Further, one of the compounds showed higher cyclooxygenase-2 enzyme inhibition similar to Celebrex, a prescription non-steroidal anti-inflammatory drug.

Following the investigation of several raspberry species and their antioxidant properties, an antioxidant assay was developed. This simple, fast and inexpensive assay is comparable to the lipid peroxidation inhibitory assay and can be mechanized to achieve high throughput.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
802	Human Development and Family Well-Being
806	Youth Development

#### Outcome #2

##### 1. Outcome Measures

Number of research programs to understand how environmental pollutants, especially ozone and endocrine disruptors, affect human health.

##### 2. Associated Institution Types

- 1862 Research

##### 3a. Outcome Type:

Change in Condition Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	3	7

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Michigan residents are exceptionally vulnerable due to chronic exposure to complex mixtures of endocrine disruptors that include legacy environmental contaminants within the Great Lakes basin (e.g. dioxin, PCBs, DDT), numerous pesticides and herbicides from the diverse and intense agricultural activities within the state, and the broad range of industrial activities that contribute to the overall pollution burden.

### **What has been done**

Research to: study chronic respiratory diseases caused by air pollutants to better understand how nasal tissues and cells may respond to inhaled toxicants; explore the mechanistic linkages between molecular phenotype and toxicity outcomes; assess the toxicity of endocrine disruptor mixtures; close the gap that exists regarding the specific components of air pollution that influence pulmonary neoplasia; and evaluate the potential role of migrating waterfowl and shorebirds in the dispersal of highly pathogenic and low pathogenic avian influenza.

### **Results**

Diabetic retinopathy is a common side effect of diabetes and the leading cause of blindness in young adults in the United States.

An AgBioResearch scientist has discovered the process that causes retinal cells to die, which could lead to new treatments that halt the damage.

In research studying the cancer-causing potential of vanadium oxide (an alloy additive to metal and steel) using three strains of mice, results showed that the most sensitive strain had highly significant amounts of inflammation and other early signaling events that appeared to correlate with high numbers of tumors in these mice. This research could provide a better understanding of how to intervene in and control carcinogenesis and other disease processes.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
723	Hazards to Human Health and Safety
805	Community Institutions, Health, and Social Services

### **Outcome #3**

#### **1. Outcome Measures**

Number of research programs to analyze the relationships among social support, public policy and family characteristics and/or develop better models for the human health and human services sector.

#### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

#### **3a. Outcome Type:**

Change in Condition Outcome Measure

#### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
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2010

6

11

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Healthy, vital communities with active citizenry are better equipped to address the challenges facing many of today's families. Whether the issue is economic development, youth aging, family dynamics, demographics, or rural and urban security, better models for the human health and human services sector are critical to human development and overall well-being.

#### What has been done

Research to: develop models and family-based interventions that advance the adjustment and well-being of National Guard soldiers and families post deployment to a combat zone; develop healthcare packaging that is easier to access, particularly for aging consumers and people with disabilities; build one or more models of preventive and early intervention for children living with a family member with a serious mental illness; examine the relationship between the number of foster home placements for a youth and the number of community connections as emancipated adults; develop a curriculum model for ANR education that encourages Michigan's secondary schools to become more rigorous and relevant; and better understand the factors leading to well-regulated stress responses in young children

#### Results

A unique reintegration program was developed for returning National Guard soldiers and their families that uses other veterans to link the returning soldiers to counselors and other professional treatment. Additionally, the Buddy-to-Buddy program was created for returning Michigan National Guard members to offer these soldiers the opportunity to be paired with another veteran to confidentially discuss problems and issues.

Based on research findings, the Knowledge of Mental Illness and Recovery Scale was revised to be more consistent with public mental health conceptualizations of consumer recovery (e.g., consumer support, community involvement, work, stress management).

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services
806	Youth Development

#### Outcome #4

##### 1. Outcome Measures

Number of adult participants with increased knowledge about healthy lifestyles.

##### 2. Associated Institution Types

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	1100	1724

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The number of people with diabetes is growing so rapidly that it is now considered by many to be an epidemic. Seventeen million people in the U.S. have this disease, and 16 million are thought to have pre-diabetes. Over the past decade, the number of Americans who have been diagnosed with diabetes has increased 61% and is expected to more than double by 2050. The Centers for Disease Control reported last year that one out of three children born in the U.S. will be diagnosed with diabetes during their lifetime. In one county, Berrien County's poverty rate is estimated at 13.8% (over 22,000), however there are communities, predominantly African American where the poverty rate is as high as 47%, with a school district with an average of 82% for free and reduced lunch/breakfast. Also more than 1/4 (over 8000) of Berrien Counties children live in poverty, and the well-being of these children is getting worse (Kids Count in Michigan).

**What has been done**

In Berrien County, programs were developed in collaboration with The Department of Human Services (DHS), Berrien County Health Department (BCHD), Lakeland Regional Health Systems (LRHS), the Capstone Family Center(CFC), Benton Harbor Area Schools (BHAS), Berrien County Intermediate School District(BCISD). Through these partnerships the program was promoted regularly through a variety of settings serving low-income families. Specific populations are from WIC, DHS and agencies and organizations with Spanish-speaking audiences.

**Results**

To date 98% made a positive nutrition/dietary change, 81% practiced better food safety, 80% showed improved resource management, 52% started reading food labels, 51% more often planned meals ahead, 48% tracked their expenses, 44% more began using a grocery list, 40% increased their awareness of healthy food choices, 35% worried less about food, 32% practiced comparison shopping, 30% less often ran out of food by the end of the month, 30% more reported their kids ate breakfast daily and 28% improved their physical activity, while 16% reached the USDA goal for physical activity by exercising 60 minutes or more for more days of the week.

**4. Associated Knowledge Areas**

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**KA Code    Knowledge Area**

724 Healthy Lifestyle

### **Outcome #5**

#### **1. Outcome Measures**

Number of youth participants with increased knowledge about healthy lifestyles.

#### **2. Associated Institution Types**

- 1862 Extension

#### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

#### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	2125	3354

#### **3c. Qualitative Outcome or Impact Statement**

##### **Issue (Who cares and Why)**

The top three causes of death as reported by Michigan Department of Community Health are heart disease, stroke and cancer. According to the Department of Community Health, 'The risk of stroke can be greatly reduced by making healthy lifestyle choices.' An overwhelming amount of research shows a correlation between lifestyle choices and reduction in heart disease and certain cancers as well. Obesity is also at epidemic levels in these counties as well as the rest of the state of Michigan. This condition can also be affected by making healthy lifestyle choices.

##### **What has been done**

4-H programs across the state educate youth on healthy lifestyle approaches. Training ranges from health and nutrition/physical exercise to social and emotional health.

##### **Results**

In one evaluation during 2009, analysis using Independent Sample T-Test found significant improvements of 175 youth in: Youth reported washing their hands more frequently before eating or preparing food; More youth read the nutritional information on food labels; Youth said they more frequently ate breakfast everyday; More youth chose healthy snacks when they had a choice; and youth reported they think more about which foods are good for them when choosing what to eat.

#### **4. Associated Knowledge Areas**

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<b>KA Code</b>	<b>Knowledge Area</b>
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724 Healthy Lifestyle  
806 Youth Development

## **Outcome #6**

### **1. Outcome Measures**

Number of adult participants with increased knowledge of human development and family well-being.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	1494	1587

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

In one example in Kalkaska County, over the last ten years, the county has consistently had rates of children involved in the Child Protective Service system that were higher than the Michigan average. In Kalkaska County 23.4% of children are confirmed victims of child abuse and neglect, as compared to the Michigan average of 11.4%. In addition, 7.7% of children in Kalkaska County are in out-of home care for abuse and neglect as compared to the state average of 6.6%. Overall, Kalkaska County ranks 79 out of 82 counties for substantiated reports of child abuse and neglect per capita.

#### **What has been done**

MSUE implemented a parenting program to bring developmental information and provide parent coaching at every home visit using the Parents as Teachers Born to Learn curriculum. Parenting capacity was measured through the Parent Knowledge Survey. The home visit is the key feature of the Parents as Teachers Born to Learn model. During the home visit the parent and parent educator build a relationship which is key to positive outcomes for children and families. Home visits start with rapport-building, a chance to catch up on what has happened since the last visit and to ?check-in? with the parent on any unmet current needs. Home visits progress to discussion of child development and a chance for the parent to participate in a developmentally appropriate activity. Throughout the visit, the parent and parent educator are observing the child and the parent educator is coaching the parent in how to become a more skilled observer of their child?s developing needs.

#### **Results**

Evaluation results found Annually, 80% of the parents indicated an improvement in parenting skills as a result of Parents as Teachers home visits. 87% of parents increased their knowledge of child development and parenting skills. curriculum. 78% of the parents reported improved parent-child interactions.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

#### Outcome #7

##### 1. Outcome Measures

Number of youth participants with increased knowledge of human development and family well-being.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2125	2129

##### 3c. Qualitative Outcome or Impact Statement

###### Issue (Who cares and Why)

In one example, a needs assessment using the Search Institute survey of youth assets was conducted with teens in Leelanau County where they reported: \* Only 28% report having positive family communication \* Only 26% report a caring school climate \* Only 42% report being able to resist negative peer pressure.

###### What has been done

In response to this need, MSUE in Leelanau County developed the Natural's Helpers program. The Natural Helpers program is based on the premise that within every school there is an existing network of people that naturally help others. Through the program, this network identified youth and adults to receive intensive training about how to help others with problems. The volunteers practiced listening skills, learned not to give advice, help in assessing what problems require professional help as well as informed them of what help is available in the community and how to not get personally involved in your friend's problem. Seven high schools in the county were involved.

###### Results

Several examples demonstrate how important the program is in Leelanau County: \* The schools feel the program is important enough that each year they have asked MSUE to create certificates to present to their graduating seniors at the June graduation ceremony (not many out-of-school programs get that kind of endorsement!). \* Surveys show many teens feel empowered to make a difference in their school and have chosen to get more involved. In some of the schools, the Natural Helper teens have set up annual Health Days or an Awareness Day to encourage their fellow classmates to make healthy choices. These events are planned and facilitated by the Natural Helper students. Topics have included diversity, positive responsibility, personal wellness, healthy relationships, stress reduction, etc. \* Each year the refresher teens have the opportunity to apply to be a Teen Trainer for the new participants. There is a competitive application and four teens are selected to work as part of the training team. We have plenty of applicants and the Teen Trainers comment that they learn the skills even better after being in the teaching role. \* The counselors have appreciated that Natural Helpers is one program that brings together teens from all seven schools in a non-competitive event. In fact, they say that no one school could/would facilitate this program for all of the schools and they appreciate that MSUE takes on that role.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

#### Outcome #8

##### 1. Outcome Measures

Number of adult participants with increased knowledge of community insititutions, health and social services.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	100	123

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

After hosting a CAT, it was determined that Newaygo County had a greatly under-developed tourism industry. MSUE then began investigating the possibility of hosting and facilitating leaders

from a five-county collaborative to work together.

**What has been done**

Newaygo County MSUE facilitated a representative group of tourism and economic development professionals from Lake, Manistee, Mason, Newaygo and Oceana Counties that surveyed visitors, residents and tourism businesses to create a baseline as well as provide information on issues and opportunities. An annual conference was initiated in 2005 and has continued every year since to update and keep local tourism businesses involved.

**Results**

The outcome has been a well-functioning regional collaborative group with active committees, by-laws, and a strategic plan, who have been invested in helping each other to increase visibility of the region and thereby improve tourism business for all. 60-80 business have been reached each year through the conferences and through expansion the group has joined a major effort "Pure Michigan" campaign in helping the local communities. It developed a web-site at:

<http://www.michigansgreatoutdoors.org/>

This site has helped in both communication as well as marketing.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
805	Community Institutions, Health, and Social Services

**Outcome #9**

**1. Outcome Measures**

Number of adult participants with increased knowledge of youth development.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	1275	2123

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Each year, Michigan 4-H Youth Development involves more than 25,000 adults in providing fun, hands-on learning opportunities to more than 200,000 Michigan young people. 4-H also provides volunteer training opportunities to foster and support positive youth development. It is critical that volunteers have a strong knowledge of youth development.

**What has been done**

Trainings have been conducted to further develop adult volunteers' knowledge of youth development (especially new volunteers), as well as create safe environments for young people to learn, have fun and develop socially, and ensure that the adults we entrust to work with young people only have the best interests of youth at heart. The Michigan State University Extension Volunteer Selection Process is a tool used to recruit and orient volunteers who will be involved with young people for long-term, overnight or extended involvement.

**Results**

Approximately 95% of the new adult volunteers trained showed competent levels of youth development at the end of the training.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
802	Human Development and Family Well-Being
806	Youth Development

**Outcome #10**

**1. Outcome Measures**

Number of youth participants with increased knowledge of youth development.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	1800	7971

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Each year, Michigan 4-H Youth Development involves more than 10,000 teens in providing fun, hands-on learning opportunities to more than 200,000 Michigan young people. 4-H also provides volunteer training opportunities to foster and support positive youth development. It is critical that all (teen and adult) volunteers have a strong knowledge base of youth development.

**What has been done**

Trainings have been conducted to further develop teen volunteers' knowledge of youth development as well as create safe environments for young people to learn, have fun and develop socially, and ensure that the teens we entrust to work with young people only have the best interests of youth at heart.

**Results**

Approximately 96% of the teen volunteers demonstrated competency in youth development and club management. Over 50% of the youth volunteers were involved in community service projects.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
802	Human Development and Family Well-Being
806	Youth Development

**Outcome #11**

**1. Outcome Measures**

Number of native american adults with improved knowledge and skills in tribal governance.

Not Reporting on this Outcome Measure

**Outcome #12**

**1. Outcome Measures**

Number of research programs to develop more effective environmental/natural resources management systems.

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	4	8

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

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The need to develop economically and environmentally sound approaches to address environmental and natural resources challenges is increasingly important. Policies, practices and science-based knowledge must constantly evolve to promote stewardship and sustainability in light of new opportunities for increased productivity, resource-saving technologies, and threats to biodiversity. Research is needed to ensure that practices and policies have a strong, science-based foundation.

#### **What has been done**

Research to: evaluate the anticipated socioeconomic benefits and costs associated with appropriate land use alternatives, including their anticipated environmental impacts; explore information technology in planning vacations, nonmotorized transportation and consideration of wildlife risks by homeowners; answer questions posed to researchers by industry and government agencies; assess the distributions and benefits of public parks and open spaces in various communities throughout Michigan and beyond; and better understand community capacity in the management and decisionmaking around natural resources, especially water and sanitation.

#### **Results**

Development of Soil Water Retention Technologies to enhance production potential of marginal agro-ecological zones for use in environmental planning and public policy formulation.

Dengue fever ? caused by a virus transmitted by mosquitoes ? threatens 2.5 billion people each year, and there is no vaccine or treatment. New research has found that a bacterium can stop dengue viruses from replicating in the mosquitoes. If there is no virus in the mosquito, it can't spread to people, so disease transmission can be blocked. Researchers are now working to understand how the Wolbachia bacterium stops the dengue virus from replicating in mosquitoes.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
723	Hazards to Human Health and Safety
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

#### **Outcome #13**

##### **1. Outcome Measures**

Number of research programs that study the function of nutrients and other food components related to human health.

##### **2. Associated Institution Types**

- 1862 Research

##### **3a. Outcome Type:**

Change in Condition Outcome Measure

### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	3

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

As we begin the second decade of the new millenium, paradigms of an unfolding nutrition transition in many countries; an uncontrolled obesity epidemic gripping America; a double burden of malnutrition with hidden hunger; global acute malnutrition; prolonged food insecurity in many low-income countries; and changes to prevent childhood stunting compel us to more fully understand the developmental (nutritional) origins of health and chronic disease that dominate the global public health nutrition agenda. By studying hoe individual food components are digested, absorbed, metabolized and utilized -- and their effects on genes, cells and organs -- the whole person can be understood. Deliberate manipulation of these food interactions can lead to improved health.

#### What has been done

Research to: Determine the effects of selected nutrients and food components on the development of allergic airway diseases; help guide public health recommendations for dietary intakes of specific micronutrients and bioactive food components in order to prevent the development of allergic disorders, especially in the context of airway disease; and identify more effective, efficient and greener plant-based processes to produce pharmaceuticals.

#### Results

Research has shown that energy restriction (vis a vis caloric intake) prior to influenza infaction has negative impacts on the ability to recover from infection. Findings also show that restoration in body fat and body weight can improve the outcome to influenza infection. These findings are highly relevant to the lay population because they indicate that there is a distinct relationship between energy intake and recovery from a primary infection with influenza.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
723	Hazards to Human Health and Safety

## **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**

The economic challenges being faced by Michigan continue to affect these programs, particularly related to funding and staffing levels due to budget cuts, funding reallocations, appropriations changes and competing public priorities. Attrition and faculty departures have also had an impact on outcomes. For example, in the last reporting year, we have gone from 135 Hatch-funded faculty (representing 89.5 FTEs) to 108 Hatch-funded faculty (representing 77.1 FTEs). Further, because of the inclusion of the five new national priorities in this year's reporting, many of the projected numbers in our original planned programs had to be revised and, as a result, are skewed, significantly so in some cases. Five out of six of the original planned programs are included in the report, but a significant number (about 35 percent) were migrated into the new planned programs.

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

### **1. Evaluation Studies Planned**

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

### **Evaluation Results**

### **Key Items of Evaluation**

