

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Health and Nutrition: Childhood Obesity

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	0%		40%	
701	Nutrient Composition of Food	0%		40%	
703	Nutrition Education and Behavior	100%		10%	
704	Nutrition and Hunger in the Population	0%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	10.8	0.0	34.7	0.0
Actual Paid Professional	22.0	0.0	31.1	0.0
Actual Volunteer	7.4	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
254911	0	444063	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
969999	0	1749438	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
9937050	0	2949217	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

MAES research into health and nutrition in 2012 aided better understanding of the nutritional content and health benefits of various foods, and studied processes to improve food industries' ability to increase food quality. Several studies looked at food consumption of segments of consumers, including ethnic, aging and low-income groups

- A study of food prices and low-income households revealed that household experience higher rates of food insecurity at times when energy prices are high. This provides evidence that current programs to help low income households with energy costs are insufficient.
- Research showed that, at least according to the Healthy Eating Index, the nutritional quality of the nation's diet has been increasing over the last 20 years. The increase is small but significant and occurs over all diet levels.
- Researchers created a process to improve whey protein solubility and heat stability. Finding of this work will allow manufacturers to increase whey protein concentration in beverages, thus providing more nutritious products. The industry has shown interest in commercializing the process.
- Food scientists studying ease or difficulty of swallowing thickened liquids determined that agar or tara gum were easiest to swallow and resulted in the least amount of post-swallow residue. This means that hospital patients would be at less risk for aspirating after the swallow. The research provided helpful information to develop food-support beverages that weaker, more disabled patients would be able to swallow more safely than other thickened fluids.
- A multi-state effort to find motivating factors to promote the consumption of calcium-rich foods among early adolescents completed a focus group study and has developed motivational strategies identified by the study. This year they are working with marketing specialists to develop motivational images, messages and tag lines to be used in message testing.
- A study of soy isoflavones showed that they have a positive effect on reducing hot flashes in menopausal women. Genestein was the soy isoflavone that was shown in particular to be responsible for a significant lowering of hot flashes, helping to clarify what has been mixed reports of soy effects.
- In 2012, food science researchers completed studies on the satiety effects of different bran fibers and brown and white rice and found that whole foods are more satiating than a glucose beverage, suggesting that food structure is important in determining physiological effect. The findings are useful for creating and maintaining a sustainable diet plan.

Smith-Lever funds provide administrative structures that allow **Extension** to leverage a host of resources to deliver programs so that individuals, families, schools and communities receive education they need when they need it to make smart food choices, promote active lifestyles and build environments that support healthy habits. Programs and resources include hands-on nutrition education classes, promotion of healthy school environments, and continuing education for community professionals.

Outcome measures described for 2012 are the result of comprehensive evaluation activities conducted with those grants. Another standout activity in 2012 was the development of a television program developed with Twin Cities Public Television (tpt). This 30-minute program discusses the importance of an active and healthy lifestyle and provides useful tips. "Active Living and Healthy Eating on a Budget" was broadcast on tpt in four languages in November 2012. This program was produced by the University of Minnesota Extension and Emergency & Community Health Outreach (ECHO), in collaboration with the Minnesota Chippewa Tribe, Minnesota Department of Human Services-Office of Economic Opportunity, West Central Minnesota Communities Action, Inc., and the United States Department of Agriculture.

Beyond evaluation outcomes described in State Defined Outcomes, the program team closely

examined the use of cooking classes in communities to deliver nutrition education. Funds to develop and disseminate "Let's Cook! Minnesota" came from the USDA Rural Health and Safety Education Grant. A final examination of this alternative method of delivering education showed that hands-on demonstrations with local chefs were extremely successful in recruiting and retaining low-income rural parents in programming that helps them effectively use their resources to improve their families' nutritional intake.

2. Brief description of the target audience

In 2012, 29 percent of program participants were persons of color, and 36 percent of youth were persons of color. The program reaches:

- Children, parents and other adults from low-income families.
- Professionals who work with low-income families.
- Members of Minnesota's ethnic minority groups who bring with them a history of food and nutrition based on culture and lifestyle.
- School personnel seeking assistance in implementing federal regulations and improving healthful food choices of children.

The target audiences for MAES research include all of the above, and also: researchers in diet, nutrition, and health, health practitioners such as dietitians, nurses and physicians, food industries, and the public.

3. How was eXtension used?

A Rural Health and Safety education grant acquired by the program team in 2012 requires that findings of research studies about Let's Cook (See activity, above.) will be shared through eXtension.

An eXtension website that provides dietary and disease-related information regarding the benefits of omega-3 fatty acids was completed and launched in 2012. Including MAES research, hundreds of pages of content have been added to the website and experts were recruited from around the country to add additional information and answer omega-3 related questions.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	26420	801549	46895	81670

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	27	28

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Classes will be provided in individual and group settings that teach about diet quality, food safety, food resource management and food security. (Target expressed as number of workshops/classes taught.)

Year	Actual
2012	4331

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Program participants will increase human nutrition knowledge. (Target expressed as percentage of participants who report knowledge change.)
2	Program participants will increase their skills in selecting and buying food that satisfies nutritional needs, managing food budgets and preparing affordable foods within the food groups. (Target expressed as percentage of participants who reported learning those skills.)
3	An increased number of program participants will use research-based information from Extension to improve their intake of healthful foods and engagement in physical activity. (Target expressed as a percentage of participants who self-report change.)
4	Research will provide information on health benefits of whole grains that will support new food industry processes.
5	Research will support improving food and health through cross-cultural engagement.

Outcome #1

1. Outcome Measures

Program participants will increase human nutrition knowledge. (Target expressed as percentage of participants who report knowledge change.)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	85

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood obesity and its negative effects threaten low-income families disproportionately because of the cost structures of food, the availability of healthy foods and poor choices that result from lack of information or a history of poor nutrition in the family.

What has been done

Classes, workshops and hands-on demonstrations are offered to people on limited incomes with nutrition and food budgeting challenges.

Results

Retrospective pre-post, end-of-session evaluations demonstrated that 85 percent of individuals reported increased knowledge of human nutrition.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #2

1. Outcome Measures

Program participants will increase their skills in selecting and buying food that satisfies nutritional needs, managing food budgets and preparing affordable foods within the food groups. (Target expressed as percentage of participants who reported learning those skills.)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	76

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Household budget managers can make a significant difference in household diets by selecting and buying food that satisfies nutritional needs. This is difficult when budgets are tight, limited food is available and there is a familial history of poor diet choices.

What has been done

Nutrition education programs of all kinds blend nutrition education and family resource management education to help household food buyers manage their food-buying budgets.

Results

Among participants who attended nutrition education sessions, 75.75 percent of adults said they had learned skills in food budget management in a post-series evaluation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #3

1. Outcome Measures

An increased number of program participants will use research-based information from Extension to improve their intake of healthful foods and engagement in physical activity. (Target expressed as a percentage of participants who self-report change.)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	78

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Changes in diets require knowledge and skill changes, as described in outcome measures number one and two. When participants are engaged in a greater number of educational opportunities, new knowledge and skills can come together to result in actual behavior change.

What has been done

Extension SNAP-Ed courses included more than 67,000 attendees in FY2012. The evaluation system captured data from 16,445 attendees who attended a minimum of six hours of education. A picture-based survey item was used to measure fruit and vegetable intake as a result of the program.

Results

Results are promising and indicate increased fruit and vegetable intake by the end of an Extension SNAP-Ed course. Based on preliminary tests, including paired t-tests, statistically significant improvements were noted in reported fruit and vegetable intake. In FY2012, correlations between measured outcomes (mean change scores pre-post) and length of time (minutes) were analyzed. Improvements in fruit and vegetable intake were associated with greater lengths of time that a participant was in a course.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #4

1. Outcome Measures

Research will provide information on health benefits of whole grains that will support new food industry processes.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2012

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The prevalence of type 2 diabetes has dramatically increased over the last several decades throughout the world, creating an urgent need for interventions that prevent or delay the development of type 2 Diabetes and ameliorate its complications. Previous U of M food research had found only a slight effect of whole grain consumption on slowing the progression of the disease. Researchers hypothesized this may be due to poor bioavailability of nutrients and phytochemicals.

What has been done

Researchers investigated whether consuming processed whole grain ingredient with increased bioavailability of nutrients and phytochemicals might improve the diabetic state. They tested that hypothesis by examining the effect of consuming processed wheat bran and fractions from it on an animal model, the Zucker diabetic fatty (ZDF) rat.

Results

They found consuming of processed wheat bran had highly beneficial effects on the diabetic state, including decreasing the insulin response after a meal and decreasing insulin resistance. Findings from the study have led to the funding of a follow-up project in which the processed wheat bran to be used will be provided by a commercial miller. This product will be one that can directly be used by the food industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
701	Nutrient Composition of Food

Outcome #5

1. Outcome Measures

Research will support improving food and health through cross-cultural engagement.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2012

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Training in food and nutrition sciences can leave professionals holding so tightly to western/biomedical models that they fail to notice the knowledge and understandings held by cultural communities. American Indian tribes have a strong heritage of indigenous food health knowledge, though the modern diet has had negative effects such as an expansion of diabetes and obesity within tribal communities

What has been done

U of M food science researchers have studied the native food health benefits to the Minnesota American Indian population and forged connections with tribal communities. In 2012 they developed a participatory action research initiative with the urban American Indian community in the Twin Cities. Community meetings created a community board which bring indigenous knowledge to the initiative. A food experience questionnaire was tested on participants. At the same time, perennial foods with significance and meaning for the Anishinaabeg continued to be planted and maintained in 12 test sites across the White Earth Indian Reservation. These plants provide community access to 10 varieties of berries, hazelnuts and five species of plant medicines once common to the area but now scarce or absent.

Results

The researchers helped close the circle with this research by bringing it back to the research community. At the U of M, a cross-cultural symposium was held entitled Landscape Health: A Dialogue with Diverse Knowledge Traditions. Other presentations such as a Grains for Health Symposium exposed professionals to culturally different ways of knowing. Meanwhile, the urban and rural American Indian community-based projects are developing capacity to preserve, protect

and revitalize cultural food traditions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes
- Other (Leveraging of additional funds)

Brief Explanation

Funding from Smith-Lever, as well as SNAP-Ed, has encouraged Extension to seek new funding to study nutrition program successes, to examine community action, and to diversify the type of nutrition education available in communities. All in all, childhood obesity programs and food security programs have leveraged almost \$1,000,000 in funding for outreach, education and research related to improving nutritional outcomes in Minnesota. What we have learned will be disseminated other states through eXtension, peer-reviewed scholarship and community supports.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Extension uses funds from a myriad of sources to closely examine the knowledge, skill and behavior changes resulting from six hours or more of nutrition education. The knowledge, skill and behavior changes assessed in this planned program were found from a study of more than 67,000 attendees who attended a minimum of six hours of education. Results found knowledge change related to key messages being taught, and the study followed through to learn whether the new knowledge resulted in a behavior change.

The study found that youth (aged 8 - 12) increased the servings of fruit consumed from 1.08 to 1.54 cups per day. They increased their vegetable intake from .90 cups to 1.29 cups per day. Teens (aged 13 - 19) increased their fruit intake from .87 to 1.35 cups per day, and increased their vegetable intake from .78 to 1.21 cups per day. Adults (aged twenty and up) increased fruit intake from .93 to 1.3 cups per day and increased their vegetable intake from 1.02 to 1.36 cups per day.

In 2013, results from another ongoing study will be available, examining youth in Minnesota schools that collaborate with the SNAP-Ed program, as well as their families. This new study experienced unusually high response rates of 90 percent or more of families engaged in the study.

Key Items of Evaluation

When over six hours of nutrition education is delivered to low-income program

participants, significant changes in fruit and vegetable consumption result. A study of over 67,000 program participants found the greatest gains in fruit consumption among teens and youth, who increased their fruit intake by almost a half a cup a day. Teens and youth also increased their vegetable intake by almost about .4 of a cup a day. Adults also increased their vegetable and fruit intake -- by about .35 cups per day. Nutrition education is making a difference in Minnesota.