

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Economics, Marketing and Policy

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
601	Economics of Agricultural Production and Farm Management	25%		20%	
602	Business Management, Finance, and Taxation	22%		12%	
603	Market Economics	20%		8%	
604	Marketing and Distribution Practices	5%		5%	
605	Natural Resource and Environmental Economics	5%		14%	
606	International Trade and Development	0%		11%	
608	Community Resource Planning and Development	15%		10%	
609	Economic Theory and Methods	0%		9%	
610	Domestic Policy Analysis	3%		6%	
611	Foreign Policy and Programs	0%		5%	
806	Youth Development	5%		0%	
	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	18.2	0.0	4.0	0.0
Actual Paid Professional	20.7	0.0	7.0	0.0
Actual Volunteer	0.0	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
1125175	0	775304	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1125175	0	707897	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	3152038	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research programs to:

- Identify current and emerging key public policy issues on trade, environmental, agricultural and food issues important to Michigan and analyze responses.
- Conduct research and education to improve the operations, business and financial management skills of Michigan producers so they can make decisions that are more sound financially and environmentally.
- Evaluate the competitiveness and marketing strategies of Michigan farm markets, greenhouses and other green industry retailers.
- Develop a framework to understand and analyze domestic and international trade policies and assess their impact on Michigan.
- Evaluate how Michigan citizens use the Internet when searching for information about a vacation destination or planning a vacation.
- Determine rationale for farmland preservation choices and how changes will affect the Michigan tax base.
- Develop models to estimate the demand for and value of recreational fisheries and wildlife resources.
- Identify and evaluate the policy, technology and marketing issues faced by Michigan organic growers and develop responses.

Extension program activities to:

- Teach financial management skills, business organization, estate planning, management information systems, strategic management, alternative sustainable production and marketing systems to agriculture and natural resources producers and businesses.
- Assist agencies, organizations, local governmental units and individuals in pursuing a cultural economic development strategy.
- Offer business retention and expansion support.
- Help people recognize, understand and appreciate multicultural differences.
- Provide entrepreneurship education to a broad audience, including individuals, business owners, youth and communities.
- Offer communities consultative, diagnostic and educational assistance in planning and zoning to meet community land use goals.

2. Brief description of the target audience

Agriculture and natural resources producers and industry representatives; tourism industry

representatives; state agency representatives; private citizens; school administrators; local, state and federal elected officials and policymakers.

3. How was eXtension used?

eXtension was one of the major components in 2012 for multi-state and integrated activities. Members and contributors consisted of both AgBioResearch and Extension staff (119 people contributed in 2012). The public website had 68,139 site visits (a 28% increase) and 151,906 pageviews (a 15% increase) in 2012. The Ask an Expert component had 2,072 questions answered for Michigan residents with 252 questions answered by other state experts and Michigan answering 261 questions from other states.

Ask an Expert statistics were analyzed for our program areas and found for Economics, Marketing and Policy there were 19 staff paid by formula funds (4 fte). A few examples were:

Question: Can a Council person serve on the PC as chairman when no other member agrees to take the position?

Answer: A village or city planning commission shall have 5, 7, or 9 members (MCL 125.3815(2)). They have three year staggered terms, except the ex officio(s) members (MCL 125.3815(2)). Each member is to represent important segments of the city or village . . . (MCL 125.3815(3)) Members shall be qualified electors, (with some exceptions . . . (MCL 125.3815(4))

And in a City or Village the ex officio can be:

1. Chief administrative official [e.g., Village Manager], if any, or
2. Person designated by the chief administrative official, if any, or
3. Chief elected official [e.g., village president], or
4. One or more members of the legislative body [e.g., village council], or
5. Any combination of #1 - #4. So long as not more than 1/3 of the total membership of the planning commission are ex officio members, and not prohibited by [village or city] charter, if any. (MCL 125.3815(5))

Elected officer, employee, of the local unit of government [e.g., village or city] is not eligible to be a member of the planning commission (MCL 125.3815(5))

Ex officio have full voting powers, etc. on a planning commission.

The city or village ordinance creating the planning commission should have this detail spelled out: Statute presents a range of options so that a village one can choose to have none, one, or up to 1/3 of the total membership as ex officio members. One of the purposes of the city/village ordinance creating the planning commission is to make that policy decision, so that the Planning Commission Ordinance specifies if, and how many ex officio members shall be on the planning commission, whom they are and how appointed. The idea is that composition of membership of a planning commission does not arbitrarily change from time to time, but is a constant.

So the answer to your question for your local government should be found in the Planning Commission Ordinance which should set up the membership with the mandatory directive "shall" to specify which is

being done in that local government. If it does not, or if it just reiterates statutory language, then that would be a bigger problem that needs to be addressed. Also another option that should be specified in the planning ordinance would be whom the ex officio member(s) would be among the choices 1-5 given above (MCL 125.3815(5)). Again the Planning Commission Ordinance ought to specify whom with the mandatory directive "shall." If it does not, or if it just reiterates statutory language, then that would be a bigger problem.

Michigan Association of Planning's (MAP) best practice guidelines suggests that there should be an ex officio member(s), so that those with the fiscal purse strings are sitting on the planning commission (for CIP coordination, plan implementation coordination, etc.).

Question: If one of the use mentioned in the title are issued, does it go with the land forever

Answer: Zoning administrative decisions and zoning permits (such as special land use, planned unit developments handled like a special use, zoning permit, variance, site plan review) are issued to the parcel of land, and run with that land forever.

Other zoning decisions (such as zoning amendment, conditional zoning amendment, rezoning) are changes to the zoning ordinance, and not specific to a single parcel of land. Those types of legislative decisions can be changed by additional zoning amendments, conditional zoning amendments, and rezonings.

Nonconformities is a "status" (which is a land use established legally when it was first created, but due to zoning amendment, etc., becomes a type of land use which could not be established today. That status runs with the land, but it can be changed by (1) an amendment which again makes it legal, or (2) the owner of the parcel voluntarily stops the nonconformity (it can not be stated up again), or (3) the local government buys the nonconformity from the parcel owner.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	5483	16449	168	300

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

Patent Applications Submitted

Year: 2012

Actual: 8

Patents listed

MICL02184 - Regional Biomass Processing Centers for Sustainable Biofuels and Animal Feeds - 13/458,830, 4/27/2012; 13,202,011, 8/17/2011; 61,641666, 5/2/2012; 61,606,139, 3/2/2012; 61/547,569, 10/14/2011; 61/623,408, 4/12/2012; 61/640,536, 4/30/2012. MICL02249 - Microbial Processes for Bioproducts and Biofuels Production - 61/531,304, 9/6/2011.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	30	31

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research programs on economics, marketing and policy.

Year	Actual
2012	29

Output #2

Output Measure

- Number of adult participants trained in economics of agricultural production and farm management.

Year	Actual
2012	1229

Output #3

Output Measure

- Number of adult participants trained in business management, finance and taxation.
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of adult participants trained in natural resource and environmental economics.

Year	Actual
2012	2797

Output #5

Output Measure

- Number of adult participants trained in community resource planning and development.

Year	Actual
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2012 1527

Output #6

Output Measure

- Number of youth participants trained in entrepreneurial skills

Year	Actual
2012	178

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of adult participants with increased knowledge in economics of agricultural production and farm management.
2	Number of adult participants with increased knowledge in business management, finance and taxation.
3	Number of adult participants with increased knowledge in natural resource and environmental economics.
4	Number of adult participants with increased knowledge in community resource planning and development.
5	Number of research programs to identify current and emerging key public policy issues on trade, environmental, agricultural and food issues important to Michigan and analyze responses.
6	Number of research programs to improve the operations, business and financial management skills for Michigan producers so they can make decisions that are more sound financially and environmentally.
7	Number of research programs to evaluate the competitiveness and marketing strategies and human resources management practices of Michigan farm markets, greenhouses and other green industry retailers.
8	Number of research programs to develop a framework to understand and analyze domestic and international trade policies and assess their impact on Michigan.
9	Number of research programs to develop models to estimate the demand for and value of recreational fisheries and wildlife resources.
10	Number of youth that develop an understanding of starting a business

Outcome #1

1. Outcome Measures

Number of adult participants with increased knowledge in economics of agricultural production and farm management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1020

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Creation of new businesses, especially in the food/agriculture sector, has become important to the economic development of the State. Policy makers, administrators, and economic development personnel support organizations that can help expand this sector.

What has been done

MSUE is a critical partner with the MSU Product Center to develop programs to foster entrepreneurial development in the food, agriculture, and bioeconomy.

Results

From one educator in 2012 there were:

193 Venture start-ups (based on a commencement and continuation of planning for a new business or an expansion for an existing business)

169 Specialized services (including product testing, market analysis, and feasibility studies)

25 venture launches (commencement of economic activity for new or existing businesses through new sales, investment, or employment)

\$ 12,004,990 Increased annual sales (cumulative first year sales only)

\$ 6,259,448 Value of increased investment

78Jobs created

53Jobs retained

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

Outcome #2

1. Outcome Measures

Number of adult participants with increased knowledge in business management, finance and taxation.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

Outcome #3

1. Outcome Measures

Number of adult participants with increased knowledge in natural resource and environmental economics.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #4

1. Outcome Measures

Number of adult participants with increased knowledge in community resource planning and development.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

Number of research programs to identify current and emerging key public policy issues on trade, environmental, agricultural and food issues important to Michigan and analyze responses.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Public policy has taken on considerable importance to the future of agriculture. The farmer's historic struggle was with the forces of nature and the marketplace, and government policy played a minor role. Government policy at all levels now is a major player in agriculture, especially related to agriculture as an important economic asset - the sustainability of a productive agricultural sector balanced with the preservation of environmental quality and the importance of prime farmland with respect to the continued viability of the rural economy and of rural lifestyles.

What has been done

Research to: develop a dynamic model to analyze the long-run impacts of renewable energy development on fossil fuel supply; provide a more comprehensive understanding of tourist preferences for tourism management and development; provide information that can contribute to better design and better use incentive-based conservation; develop rural Latino communities in Michigan; develop environmentally benign bioprocesses to effectively utilize various renewable resources; visually characterize changes in food and agricultural systems examine the implications of sustainability principles for U.S. agriculture; elucidate the role of economics and law on environmental management; develop, extend and apply economic and ecological theory to analyze economic and ecological trade-offs associated with ecological problems; and to better understand what forces spark Michigan food system conflict and how these conflicts can be transformed into opportunities for citizenship.

Results

A database was developed to assess the financial condition of 1,800 units of government in Michigan. The data is being employed to conduct research on the financial outlook for Michigan units of government, factors contributing to financial stress in Michigan units of government, policy alternatives for addressing fiscal stress and consequences of these policy alternatives for stakeholders in the units of government.

A series of decision-support tools were developed to assist farmers deal with market volatility and decisions framed in the context of the 2012 United States drought. Software and papers were made available via university outreach facilitation.

By looking at historical data, including land characteristics, weather data and potential factors that drive farmers to adopt a crop in a local region, AgBioResearch economists have developed sophisticated models to help predict cropping patterns for U.S. agriculture to deal with the warming climate trend. In these models, the availability of irrigation water is critically important in determining what crops are grown.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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601	Economics of Agricultural Production and Farm Management
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
610	Domestic Policy Analysis

Outcome #6

1. Outcome Measures

Number of research programs to improve the operations, business and financial management skills for Michigan producers so they can make decisions that are more sound financially and environmentally.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Research that enhances knowledge and informs risk analysis and management strategies and tactics related to the causes and effects of price, yield, and revenue risk in production agriculture and the costs of alternative strategies is critical to the long-term sustainability of the agrifood industry.

What has been done

Research to: explore, analyze and evaluate the dynamics and economic impact of entrepreneurial activity within the context of MI and global agrifood systems; further the understanding of coupled human and natural systems and sustainability; more broadly develop conceptual and analytically frameworks for understanding, assessing and empirically studying effective innovation in the agriculture, food and natural resource sectors; examine the causes and consequences of Michigan state and local government fiscal challenges; and to discern the relationship between entrepreneurship and the Michigan agrifood sector.

Results

The Michigan local government database management system was enhanced so that local authorities could pull data from the database into an Excel file, which enables them to generate a basic forecast of revenues and expenditures.

Research evaluating alternative configuration of biomass supply chains for future biorefineries has identified a concept of distributed biomass processing using a network of regional biomass pretreatment centers (RBPC) that feed into a central biorefinery as opposed to the conventional supply chain structure consisting of a single central integrated biorefinery. The RBPC structure has the potential to address many challenges faced by the conventional structure, including issues related to market power, transaction costs of contracting, hold up and food vs. fuel issues.

In research on thermochemical conversion of woody biomass to fuels and chemicals, several different biomass feedstocks were pyrolyzed using a screw-conveyor reactor at MSU, including poplar and a waste product from an industrial partner. Bio-oil yields in excess of 60 percent, along with biochar yields of 20 percent were observed on a mass basis. Electrocatalysis was then used to stabilize the bio-oil product of pyrolysis and reduce its reactivity and corrosiveness. Pyrolysis followed by electrocatalysis is a novel coupling of these technologies that may enable the decentralization of future bioenergy systems.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices

Outcome #7

1. Outcome Measures

Number of research programs to evaluate the competitiveness and marketing strategies and human resources management practices of Michigan farm markets, greenhouses and other green industry retailers.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Management of personnel and human resources has changed over the past three decades, partially due to increasing employment legislation, education issues, employee awareness and changes in demographics. As competitors strive to win the war for talent, effective human resource management is necessary to gain true competitive advantage in the marketplace.

What has been done

Research to: study issues related to the management of human resources and "green" business practices in commercial recreation and tourism; profile and characterize consumers and markets for eco-friendly products.

Results

Recent research on horticultural consumer buying behavior found that purchase odds increase when the price, plant material and other relevant information are packaged together. It was also found that half of Americans will search online for information about plants and gardening and, of those who do search, 19 percent are more likely to make a plant purchase. These findings are essential to horticulture retailers, many of whom operate on less than 10 acres and generate less than \$500,000 in revenue.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics
608	Community Resource Planning and Development

Outcome #8

1. Outcome Measures

Number of research programs to develop a framework to understand and analyze domestic and international trade policies and assess their impact on Michigan.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The ability to understand the economic, cultural and political factors of domestic and international trade policies in order to determine the likely changes in these policies and their consequent market is essential to a competitive, sustainable Michigan economy. Research in this arena will provide information and resources that are critical to Michigan businesses, either directly or indirectly, as the balance of power within the marketplace shifts. As globalization of food industries continues, an assessment of such power requires analysis of world trends and the institutional structures that govern national and international actions.

What has been done

Research to: provide economic analysis of agricultural production technologies and management practices related to the many agricultural enterprises important to Michigan farmers; and better understand the supply chains of various horticultural products.

Results

In research to investigate why farmers aren't adopting some of the environmentally beneficial row crop practices such as cover crop planting, small grain rotation and reduced fertilizer rates, a survey of 3,000 Michigan farmers and focus group sessions revealed that farmers are well aware of low-input technologies, but they see implementing these practices as adding to their costs. However, large numbers of growers said that they would adopt these practices if provided an incentive. Based on these findings, researchers developed supply curves, which show how much land Michigan farmers would be willing to put into these practices for various levels of payment.

Another survey asking Michigan residents if they would be willing to pay for the kinds of ecosystem services that these changed farm practices would require revealed that they would be willing to pay for reduced numbers of eutrophic lakes and reductions in greenhouse gas emissions. That payment could support potentially 20 to 50 percent of Michigan corn-soybean land going into low-input practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
605	Natural Resource and Environmental Economics
606	International Trade and Development
610	Domestic Policy Analysis
611	Foreign Policy and Programs

Outcome #9

1. Outcome Measures

Number of research programs to develop models to estimate the demand for and value of recreational fisheries and wildlife resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The natural beauty and outstanding recreational opportunities provided by Michigan draw more than one million visitors a year. Improving ecological conditions and fisheries has the potential to enhance economic and recreational benefits. For this reason, it is important for natural resources and wildlife managers to understand the recreational demands and economic benefits stemming from these important resources in order to wisely protect, sustain and market them.

What has been done

Research to: develop and extend economic models for estimating consumer preferences and the demand for, and value of, recreational fisheries and wildlife resources; and to study issues related to the management of human resources in a commercial recreation and tourism context.

Results

A multi-year survey to determine the demographic profile of Michigan anglers and recreational users has resulted in the collection of comprehensive data on public participation in hunting, fishing, ORV use and camping that is being used by the Michigan Department of Natural Resources to identify ways to get more people involved in outdoor activities and purchasing hunting and fishing licenses, ORV stickers and camping and parking permits to help support and maintain the state's natural resources. Access to this data not only provides resource managers with a sound basis for decision making, but helps in interactions with interest groups because the decisions are being driven by systematic, representative data collection, not opinions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics
605	Natural Resource and Environmental Economics

Outcome #10

1. Outcome Measures

Number of youth that develop an understanding of starting a business

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	151

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

It is important to provide youth opportunities to learn entrepreneurial skills and how to start a business.

What has been done

One example is a 4-H club in the Upper Peninsula called the "Loop" that was a series of entrepreneurial youth experiences that connected Delta County youth with seven local businesses. The series brought adult entrepreneurs and 4-H youth together to discuss what it takes to run a business.

Results

Ninety one youth participated with 61 youth completing evaluation surveys. Results found:

- 71% of the youth have a better understanding of the realities and barriers of starting their own business
- 66% of the youth were confident that they could start their own business
- 72% of the youth understood the importance of a business plan
- 31% of the youth understood the importance of diversifying their income stream to have a successful business and make a profit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
806	Youth Development

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 ongoing economic challenges being faced by Michigan -- including the recent federal funding sequestration process -- continue to affect this planned program area. Consequences have included fewer new hires, delaying the award of new financial obligations, reducing levels of continued funding, and renegotiating or reducing the current scope of assistance through formula funds or block grants. Although overall research FTEs only decreased by one -- from 65 FTEs to 64 FTEs this past year, we are down from 77.1 FTEs just two years ago. Attrition and faculty departures also continue to have an impact on program outcomes.

The extreme weather conditions during last year's growing season also delayed or greatly diminished some of the research projects being conducted at our various research centers both on- and off-campus, particularly related to plant research around food and biofuel crops.

We also opted in this year's annual reporting to revert back to our original 6 planned program areas for ease of reporting and better integration of research and Extension efforts. This has, once again, resulted in some instances in skewed results for some planned programs and outcome measures. This should be rectified after this year's reporting cycle.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

As Hatch dollars are base funding for faculty salaries, there is a built-in evaluation mechanism through annual reviews of overall performance, research productivity and the leveraging of additional research dollars. In addition, many of the research projects have an evaluative element that is required by state and federal-level funding sources that provides documentation related to project assumptions, goals and outcomes. This information is used to determine the overall success of research initiatives; their contribution to providing practical, real-world solutions and resources to address challenges and problems; and whether continuation funding and/or new dollars are appropriate and necessary as funds are available.

That said, the most notable qualitative impacts realized in this program were:

- Research conducted by MSU AgBioResearch scientists on consumer behavior related to plant purchases found that purchase odds increase when the price, plant material and other relevant information are packaged together. It was also found that up to half of Americans will search online for information about plants and gardening and, of those, who do search, 19 percent are more likely to make a plant purchase. These findings are essential to horticulture retailers, many of whom operate on less than 10 acres and generate less than \$500,000 in revenue.
- In research that evaluated why farmers weren't adopting some of the environmentally beneficial row crop practices such as cover crop planting, small grain rotation and reduced fertilizer rates, a survey of 3,000 Michigan farmers and focus group sessions revealed that farmers are well aware of low-input technologies, but they see implementing these practices as adding to their costs. However, large numbers of growers said that they would adopt these practices if provided an incentive. In a second survey asking Michigan residents if they would be willing to pay for the kinds of ecosystem services that these changed farm practices would require revealed that they would be willing to pay for reduced numbers of eutrophic lakes and reductions in greenhouse gas emissions. That payment could support potentially 20 to 50 percent of Michigan corn-soybean landing going into low-input practices.
- Research evaluating alternative configuration of biomass supply chains for future biorefineries has identified a concept of distributed biomass processing using a network of regional biomass pretreatment centers (RBPC) that feed into a central biorefinery as opposed to the conventional supply chain structure consisting of a single central integrated biorefinery. The RBPC structure has the potential to address many challenges faced by the conventional structure, including issues related to market power, transaction costs of contracting, hold up and food vs. fuel issues.

Other Examples Of MSUE Evaluation Results Not Previously Reported For This Area:

Farm Business Analysis

Issue (who cares and why)?

Health of the Agricultural Industry plays a significant role in the economic health of the state of Michigan. The agricultural industry is a major source of the state's overall economy. While other sectors continue to decrease or stay stagnant while the agricultural industry has steadily continued to show growth.

What has been done?

Farm Management educators have continued to work with agricultural producers through group programs and one-on-one consultations to provide education and information on the farm business analysis. Having "good" numbers from the farm allows a producer to have greater knowledge on what is happening on the farm and how various aspects of the farm play a role in its expenses and revenue generations. This allows the

producer to make better management decisions on how to move the farm forward. Note that this was not reported in the output numbers because of the shift from more formal training with lesson plans to technical assistance and working one on one.

Results/Impact

From sampling 33 farms that have completed a thorough financial analysis these farms have contributed to the economy in the following manner: 1) They produced over \$63 Million in sales; There is a combined change in their earned network of almost \$9 Million, and between these 33 farms they have provided 427.9 FTE's.

Michigan Garden Plant Tour 2012

Issue (who cares and why)?

Growers need information on new plants to continue to develop greenhouse businesses.

What has been done?

MSUE conducted Michigan Garden Plant Tour during 2012.

Results/Impact

129 growers reported increased income from new plants they saw at the Michigan Garden Plant Tour.

Over \$431,000 in new plant sales for Michigan propagation greenhouses as a direct result of being a host site for the Michigan Garden plant tour based on evaluation summary.

Extrapolated out to the total attendance for the tour it results in potential increased sales of \$4.3 million dollars to Michigan based businesses.

Agriculture for Tomorrow in the Upper Peninsula

Issue (who cares and why)?

Farmers and residents of the Upper Peninsula care because they want their industry and individual businesses to prosper.

What has been done?

121 paid participants (farmers and others) attended the full-day, multi-session "Agriculture for Tomorrow" MSUE conference in Escanaba on March 6, 2012

Results/Impact

Results from the conference evaluation found:

77% of the crop and 68% of the livestock respondents reported adopted production practices recommended at the conference. Among these included crop yield increased by 84% and 79% for crop quality as reported by the respondents. Livestock production was increased by 52% and quality increased by 61% for these respondents. 50% of the

respondents reported increased net farm income as a result of participation in the Agriculture for Tomorrow Conference. 28% of the participants used information from the conference to create a new business and 25% used the information to expand their businesses.

Key Items of Evaluation

Key research results in this area are:

- The development of a database to assess the financial condition of 1,800 units of government in Michigan. The data is being employed to conduct research on the financial outlook for Michigan units of government, factors contributing to financial stress in Michigan units of government, policy alternatives for addressing fiscal stress and consequences of these policy alternatives for stakeholders in the units of government.
- The development of supply curves, which show how much land Michigan farmers would be willing to put into environmentally friendly row crop practices such as cover crop planting, small grain rotation and reduced fertilizer rates. Consumers surveyed indicated that they would be willing to pay for reduced numbers of eutrophic lakes and reduction in greenhouse gas emissions - that payment could support potentially 20 to 50 percent of Michigan corn-soybean landing going into low-input practices.
- In experiments with thermochemical conversion of woody biomass to fuels and chemicals, several different biomass feedstocks were pyrolyzed using a screw-conveyor reactor at MSU, including poplar and a waste product from an industrial partner. Bio-oil yields in excess of 60 percent, along with biochar yields of 20 percent were observed on a mass basis. Electrocatalysis was then used to stabilize the bio-oil product of pyrolysis and reduce its reactivity and corrosiveness. Pyrolysis followed by electrocatalysis is a novel coupling of these technologies that may enable the decentralization of future bioenergy systems.
- The identification of a concept of distributed biomass processing using a network of regional biomass pretreatment centers (RBPC) that feed into a central biorefinery as opposed to the conventional supply chain structure consisting of a single central integrated biorefinery. The RBPC structure has the potential to address many challenges faced by the conventional structure, including issues related to market power, transaction costs of contracting, hold up and food vs. fuel issues.

Results from MSUE Institute Workteams relevant to this area:

Agriculture and Agribusiness Institute

- 5,429 jobs retained during this time
- \$1,736,408,717 in sales, new or retained
- 45 new business plans created
- 72 new businesses
- 184 new business expansions

Children and Youth Institute

- 71% of the youth participants gained knowledge of entrepreneurial concepts.
- 94% of adult volunteers learned how to teach youth entrepreneurial

concepts

Greening Michigan Institute

- 53 new business start-ups including businesses in the green economy [note there is a separate indicator for new green economy business start-ups as well]
- 40 businesses expanded
- 139 jobs created
- 15 communities involved in CEC-related activities, asset mapping, Business Resource Centers, awards/recognition programs for entrepreneurs and green entrepreneurs, other activities
- 20 new regional economic development collaborations
- 10 regional economic development collaborations strengthened
- 222 community leaders demonstrated increased awareness of the value of entrepreneurship
- 87 community stakeholders reported an increased awareness of individual entrepreneurs, their needs and assets, and possible strategies including strategies related to entrepreneurship in the green economy
 - 83 community stakeholders reported an increased awareness of regionalism as a sustainable community prosperity opportunity
 - 182 emerging entrepreneurs reported an increase in business knowledge, tools, skills and technical expertise.