

2014 West Virginia State University Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 06/04/2015

I. Report Overview

1. Executive Summary

West Virginia State University (WVSU), via the Gus R. Douglass Institute's (GRDI) Agricultural and Environmental Research Station (AERS) and Extension Service (ES), entered its 14th year of programming in 2014. Research and Extension programs continued working toward an integrated programming effort responsive to the needs of University, State, and national stakeholders. GRDI has undergone organizational restructuring, due to changes in University administration, programming needs and decreasing federal and state appropriations. Despite this organizational evolution, the mission of the Institute continues to be one of delivering educational and life-long learning opportunities by conducting research, teaching and outreach services to improve the well-being of West Virginia citizens with particularly emphasis on traditionally underserved populations.

Research and extension efforts continue to expand and integrate programs. As the University builds infrastructure and capacity, and is able to secure additional funding sources, existing research and extension programs are further strengthened and new programming is being developed to better serve the needs of our stakeholders. To further work toward integration, the 2014 Research and Extension Advisory Council Meeting included attendance by representatives from West Virginia University's (WVU) research and extension programs. This event marked the second year of WVU participation in this meeting and is indicative of the collaboration that has formed between our two institutions to address our combined federal reporting requirements.

The Masters of Science in Biotechnology program, within the College of Natural Sciences and Mathematics, continues to benefit from the development and maturation of research programs. Split appointments of graduate research faculty within GRDI have permitted the increased participation of undergraduate and graduate students in agricultural and environmental research.

Federal support continues to be a key success factor for the Institute. Delay's in receiving FY2014 funding had significant impact in program delivery in all areas. As additional state appropriations and other resources continue to be attained, the University carries on efforts to strengthen and extend its research and extension programming capacity and programs. The following report provides details of the programs supported by Evans-Allen, Section 1444 Program and McIntire-Stennis formula funds appropriated to 1890 Institutions and matching funds provided by the State of West Virginia. WVSU Land-Grant programs use the five NIFA Priority Areas as our planned programs, along with two additional programs (Resilient Youth and Families, and Community Vitality). These two additional programs are in response to expressed needs of the citizens of West Virginia. Aligning our research and extension programs within the priority areas has also provided the opportunity to see where our research and extension programs complement each other and where there is opportunity to build greater collaboration. Having the research and extension efforts laid out side by side in same plan allows the programs to more easily identify pathways for new integrated efforts. Integration efforts have evolved faster in some programs more than others.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	25.0	0.0	17.0
Actual	0.0	27.0	0.0	12.5

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- External University Panel
- External Non-University Panel
- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel

2. Brief Explanation

WVSU utilizes a multi-faceted merit review process that includes faculty, staff, and stakeholders that are both internal and external to the Gus R. Douglass Land-Grant Institute. Merit reviews are performed annually by the joint Research and Extension Advisory Council (REAC). This group of stakeholders is comprised of WVSU faculty and staff, external stakeholders, and administrators and faculty from other land-grant institutions. This meeting is held in the Fall of each year. Council members participate in Plan of Work development with Extension and Research faculty and staff.

The REAC also conducts the external program evaluations. The Council consists of local stakeholders with a wide variety of backgrounds, business leaders and other community members considered as suitable stakeholders for Extension and Research efforts. The evaluations from all these groups are utilized to help administrators prioritize and allocate funds to specific land-grant programs. Program direction specific to each area is developed through round-table discussions with faculty & staff members alongside the groups of the Council members. Each member of the Council is given background information and provided with the opportunity to assess and provide direct input into program development.

In addition, internal merit review of all programs and personnel occurs annually by the Associate Deans for Extension and Research. The review consists of technical reports, student involvement, publications and presentations, collaborations, and stakeholder involvement.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals

Brief explanation.

Potential stakeholders are identified and invited to participate on the review panel to evaluate land-grant programs at WVSU. The invitation is for a two year commitment and stresses the importance and requirement of research and extension programs to have both basic and applied relevance, collaboration, student involvement and a regular evaluation and assessment process by a diverse stakeholder group. At the end of the two years, members have the option of remaining or appointing another from within their organization.

Extension program leaders, specialists, research administrators and scientists seek individuals and groups within a specific area of expertise or understanding to provide input and guide the direction of the programs in order to better address the needs of those individuals and groups. Several collaborations have been formed as a result of these activities. Traditional stakeholder groups include representatives of university research, industry, state departments of agriculture, federal agencies, and lay people, including small farmers and entrepreneurs.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use External Focus Groups
- Open Listening Sessions
- Other (Researcher Interactions)

Brief explanation.

Potential stakeholders are identified and invited to participate on the review panel to evaluate land-grant programs at WVSU. The invitation is for a two year commitment and stresses the importance and requirement of research and extension programs to have both basic and applied relevance, collaboration, student involvement and a regular evaluation and assessment process by a diverse stakeholder group. At the end of the two years, members have the option of remaining or appointing another from within their organization.

Extension program leaders, specialists, research administrators and scientists seek individuals and groups within a specific area of expertise or understanding to provide input and guide the direction of the programs in order to better address the needs of those individuals and groups. Several collaborations have been formed as a result of these activities. Traditional stakeholder groups include representatives of university research, industry, state departments of agriculture, federal agencies, and lay people, including small farmers and entrepreneurs.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Meeting specifically with non-traditional groups

Brief explanation.

The goal of the WVSU Research and Extension Advisory Council is to have a minimum of three representatives for each program who can provide analysis and feedback on each of the planned programs. Potential council members are recommended each year by administrators, faculty, program leaders, specialists, and researchers. Non-participating members are dropped to maintain a functioning council.

The 2014 REAC Meeting continued with the new integrated discussion and reporting format introduced at the 2013 REAC. Each group was given questions regarding priority issues, program strengths and weaknesses, as well as possible threats to the programs to answer. Groups then presented findings to the others.

Group and individual responses to questions were collected to document all discussions that took place during the meeting from committee participants and analyzed to assist in guiding the programming process. This format has been well received as a welcome change to the former meeting style by staff, faculty and council members alike. Suggestions for improvement to the format were solicited from all participants and will be taken under consideration for the 2015 meeting.

3. A statement of how the input will be considered

- To Identify Emerging Issues
- Redirect Research Programs
- In the Staff Hiring Process
- To Set Priorities

Brief explanation.

To identify emerging issues, redirect some research effort, establish new partnerships with industry and WVU, explore ways to improve collaboration between research and extension.

Brief Explanation of what you learned from your Stakeholders

Stakeholders are very interested in research and extension programs, marketing of programs needs to be improved to make more of the public aware of ongoing efforts, REAC members would like periodic updates on program progress.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	1388168	0	1529203

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	0	1384182	0	1405104
Actual Matching	0	1040822	0	1310054
Actual All Other	0	0	0	66960
Total Actual Expended	0	2425004	0	2782118

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	0	0	0	0

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger
2	Climate Change
3	Sustainable Energy
4	Childhood Obesity
5	Food Safety
6	Resilient Youth and Families
7	Community Vitality

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

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
101	Appraisal of Soil Resources		2%		0%
102	Soil, Plant, Water, Nutrient Relationships		3%		0%
111	Conservation and Efficient Use of Water		10%		0%
131	Alternative Uses of Land		10%		0%
201	Plant Genome, Genetics, and Genetic Mechanisms		0%		30%
202	Plant Genetic Resources		0%		26%
204	Plant Product Quality and Utility (Preharvest)		5%		2%
205	Plant Management Systems		5%		11%
206	Basic Plant Biology		10%		2%
302	Nutrient Utilization in Animals		0%		29%
403	Waste Disposal, Recycling, and Reuse		10%		0%
405	Drainage and Irrigation Systems and Facilities		3%		0%
721	Insects and Other Pests Affecting Humans		2%		0%
806	Youth Development		25%		0%
902	Administration of Projects and Programs		10%		0%
903	Communication, Education, and Information Delivery		5%		0%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	2.5	0.0	7.8
Actual Paid	0.0	3.5	0.0	6.0
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
0	179431	0	992828
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	134921	0	878354
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

WVSU Agricultural and Environmental Research Station research efforts are focused on developing vegetable varieties suitable to small farm environments, developing improved feed for rainbow trout and reducing aquaculture pollution, and developing value added and disease resistant cultivars of melons, watermelons and peppers.

WVSU Extension personnel will assist in the development of alternative agricultural endeavors to assist farmers increasing their revenues. Additionally, there is an emerging interest in the development of green spaces in our urban centers and municipalities. WVSU will work with these entities to maximize utilization of best practices in the field of cultivation, selection, and maintenance. WVSU Extension will continue to target small-scale producers with education to increase knowledge levels in alternative enterprises that may expand profits for small farm operators. Home landscape beautification and vegetable gardening are at the center of this heightened resurgence of interest in horticulture.

Commercial growers in the areas of greenhouse and nursery management, cut flower production, and fruit and vegetable production are also seeking marketing and production related advice in order to satisfy growing consumer demands. Some of the projects that are the most often asked about are the identification and/or eradication of plants and pests, the growing cycles of plants, plant maintenance, and alternative gardening techniques. WVSU will offer youth from pre-k to age 18, a variety of opportunities to be exposed to plant and animal education. Program emphasis will focus on the Junior Master Gardener program.

A Research and Extension integrated goal will be to identify funds to create an Extension position to better support the research efforts in this area.

2. Brief description of the target audience

- Fish feed manufacturers, federal agencies (ARS) involved in rainbow trout breeding, fish farmers
- Horticulturalists, plant breeders, farmers/growers, small-farm operators, minority farmers and landowners, underserved rural communities, state and federal agencies, and students.
- Homeowners, consumers, volunteer organizations, various segments of the youth population, and other agricultural and natural resource focused entities.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3300	7250	2492	2221

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	1	17	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Identify breed of rainbow trout that has genetic potential for improved nutrient utilization

Year	Actual
2014	0

Output #2

Output Measure

- Train undergraduate and graduate students in biotechnology, plant genomics and agricultural related fields
 Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Identification of DNA markers, fruit related genes, association panels, and value-added progenies

Year	Actual
2014	0

Output #4

Output Measure

- Develop vegetable varieties for small farm production

Year	Actual
2014	0

Output #5

Output Measure

- Both urban/rural clientele will receive information on research-based horticultural management.

Year	Actual
2014	336

Output #6

Output Measure

- Adult volunteers and youth will receive training in horticulture and agriculture through JMG and other training opportunities.

Year	Actual
2014	3152

Output #7

Output Measure

- Workshops targeted at alternative agriculture endeavors will be held in targeted counties.

Year	Actual
2014	31

Output #8

Output Measure

- WVSVU Extension Service staff will generate media articles and stories related to alternative agriculture.

Year	Actual
2014	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	New diet formulation for rainbow trout
2	Development of improved feed for rainbow trout will lead to reduction in aquaculture pollution
3	Development of value-added, disease resistant cultivars
4	Development of vegetable varieties suitable to small farm environment.
5	Volunteers will exhibit increased knowledge of providing age-appropriate horticulture and agriculture programs to youth.
6	Extension clientele will implement best practices in agriculture and natural resources based on research-based knowledge.
7	Farmers/growers will utilize best practices with alternative agricultural enterprises to diversify their income portfolio.
8	Through the Agritourism initiative participants will create new or develop existing enterprises to increase their sustainability.

Outcome #1

1. Outcome Measures

New diet formulation for rainbow trout

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

High feed cost in aquaculture is a major problem, and reducing the cost through optimal dietary composition will increase profitability to the farmers. If changes in dietary composition lead to improvement in nutrient utilization efficiencies, pollution from unused nutrients in effluent discharges from aquaculture production facility will be reduced.

What has been done

A 2 x 3 factorial experiment was conducted to determine effect of trout families (designated as low FE and high FE) and diets (45/10 or 45/20 or 45/30 percent crude protein/fat) on the growth performance characteristics, mitochondrial respiratory enzymatic activities and gene expression in the liver, muscle and intestine. Analyses of growth performance characteristics have been completed and analyses of mitochondrial respiratory enzymatic activities and gene expression in the liver, muscle and intestine are ongoing for diets containing 45/10, 45/20, and 45/30 percent crude protein/fat.

Results

Dietary composition and fish family did not significantly affect weight gain, feed efficiency, condition factor, and specific growth rate. The rainbow trout family significantly affected hepatosomatic index while dietary composition significantly affected viscerosomatic index, visceral fat content, and respiratory control ratio using succinate and pyruvate as substrates. There was significant interactive effect between diet and family for respiratory control ratio using succinate as a substrate.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #2

1. Outcome Measures

Development of improved feed for rainbow trout will lead to reduction in aquaculture pollution

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rainbow trout with improved nutrient utilization will reach market-size in less time with less nutrient input. Less nutrient input and higher nutrient retention have environmental implications by reducing pollution from aquaculture discharge.

What has been done

A 2 x 3 factorial experiment was conducted to determine effect of trout families (designated as low FE and high FE) and diets (45/10 or 45/20 or 45/30 percent crude protein/fat) on the growth performance characteristics, mitochondrial respiratory enzymatic activities, and gene expression in the liver, muscle and intestine. Analyses of growth performance characteristics have been completed and analyses of mitochondrial respiratory enzymatic activities and gene expression in the liver, muscle and intestine are ongoing for diets containing 45/10, 45/20, and 45/30 percent crude protein/fat.

Results

Dietary composition and fish family did not significantly affect weight gain, feed efficiency, condition factor, and specific growth rate. The rainbow trout family significantly affected hepatosomatic index, while dietary composition significantly affected viscerosomatic index, visceral fat content, and respiratory control ratio using succinate and pyruvate as substrates. There was significant interactive effect between diet and family for respiratory control ratio using succinate as a substrate.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #3

1. Outcome Measures

Development of value-added, disease resistant cultivars

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Because of narrow genetic diversity, cultivars in watermelon, melon and pumpkin have been vulnerable for various diseases and pests. This research will facilitate developing nutraceutically-enriched cultivars, and help plant breeders to select important parental material for breeding valuable cultivars.

What has been done

We performed genome analysis to classify diversity groups for widening genetic diversity among the cultivars. Nutraceutical compounds are quantified and genes responsible for various compounds are identified, using the following techniques and objectives: high resolution genetic maps are with 10,000 SNPs for melon, watermelon and pumpkin, QTLs and linked markers for various traits have been identified, domestication process is elucidated for watermelon and pepper, genetic passport information is generated for melon, pumpkin, watermelon and peppers, value added vegetable cultivars are identified, advanced breeding lines have been evaluated in farmers' field, and whole genome sequence is completed for watermelon and pumpkin.

Results

Genomewide association mapping was performed to identify genes and markers for various cultivars. In addition, valuable genomic information is developed pertaining to chromosome wide nucleotide diversity, recombination hot spots, selection sweeps, the genes that are important for cultivar domestication, genes linked to various fruit and nutraceutical traits and insect resistance. Graduate students and undergraduate students associated with the research activities of this program have been exposed to various field and lab techniques like selfing, crossing, molecular marker development and marker analysis etc.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
206	Basic Plant Biology

Outcome #4

1. Outcome Measures

Development of vegetable varieties suitable to small farm environment.

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Protected culture production of tomatoes has more than doubled in the last five year in West Virginia, while at the same time the number and size of vegetable farms has been static. Production in a greenhouse or high tunnel generates higher yields than field production when using varieties bred for these environmental conditions. Unfortunately, most of the varieties bred in the US are for field production and no public tomato breeder is focused on protected culture tomato varieties. We are focusing on selecting lines with superior organoleptic and pest resistance traits for developing varieties for this market. Trials will also be done to verify the insect resistant trait, acylsugar production, which will not interfere with the existing biological control agents used in IPM before using marker-assisted selection.

What has been done

Current focus is on identifying verified molecular markers that can be used to transfer and maintain the necessary genotypes, and determining a synthesis method for acylsugars to use in trialing with beneficial insects. Standard tomato varieties, advanced breeding lines, and germplasm have been grown in a hydroponic system within a greenhouse. These lines have been selected for superior plant and fruit traits as well as having seed and leaf tissue collected for marker analysis. Markers for three diseases (late blight, tobacco mosaic virus, and Verticillium wilt) were identified from the literature or developing labs. We have incorporated the QIAXcel Advanced system, used to determine DNA fragment sizes, into our verification methods along

with gel electrophoresis and sequencing techniques. A plan for retrosynthesis of an acylsugar (triesterified monosaccharide, 2-hydroxy-6-(hydroxymethyl) tetrahydro-2H-pyran-3,4,5-triyl triundecanoate) was undertaken and modified to produce the compound for trialing on beneficial insects used in IPM.

Results

Verifying published marker sizes continues to be problematic as some markers are not in the gene of interest, sizes for the amplicon or restricted products do not agree with published reports and others do not amplify. Seventeen markers have been used (five late blight, five tobacco mosaic virus, three Verticillium wilt and one each for Asc1, Bs4, Hero and self-pruning). In the past estimating the size of amplicons and restricted products has been difficult but the addition of new equipment and software we are able to reliably call band sizes within 3-5 bp. We still find that the published sizes of amplicons and restricted products do not agree with our results, but believe that this is due to the method that was used to ?call? the size. Use of software to virtually identify the sizes has generally agreed with our results. Sequencing of amplicons has also been undertaken to verify that the fragment obtained is the same as that found virtually. Work with the Tm-2 markers can illustrate our results. Amplification of the five markers with the three known genotypes of Tm-2 produced amplicons expected from published literature. Digested products were found for three of the five Tm-2 markers. Amplicons from one marker that did not digest had sequence data that lacked the published restriction site, which agreed with the published genome. Further it was found that this marker does not amplify within or near the Tm-2 gene but over 32 Mbp away. A second marker, which did digest, was also found in this region. Another undigested amplicon marker also did not align to the published location but was found over 6 Mbp away. Sequences of two remaining Tm-2 markers aligned with the reference genome and known sequences of Tm-2 and produced restriction sizes as predicted. A five step method for the retrosynthesis of an acylsugar (triesterified monosaccharide, 2-hydroxy-6-(hydroxymethyl) tetrahydro-2H-pyran-3,4,5-triyl triundecanoate) successfully created the compound. Work is currently underway to verify the final product, synthesize other acylsugar moieties and produce sufficient quantities necessary for trials on beneficial insects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources

Outcome #5

1. Outcome Measures

Volunteers will exhibit increased knowledge of providing age-appropriate horticulture and agriculture programs to youth.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	674

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

As focus turns towards local foods and urban agricultural efforts, it has become even more important to provide information to adults on how to engage youth on these topics. Youth in both rural and urban areas of WV have shown interest in growing their own fruits and vegetables for consumption at home or at school. Providing trainings to increase the knowledge base of adults on horticultural and agricultural topics geared toward the preschool, elementary to middle school age groups has provided the ability to transfer this information from one generation to the next. Through the National Junior Master Gardener Program, West Virginia State University serves as the State Coordinator of the West Virginia based program conducting presentations and trainings on the program to meet these needs within the state. WV State University Extension Service has also developed an urban youth garden program entitled SCRATCH to serve as a pilot program and illustrate how the Junior Master Gardener Program can be used in conjunction with after school program efforts. The preschool based JMG pilot program PLANTERS was also initiated this year.

What has been done

Presentations were conducted on eleven different occasions around the state and out of state to increase the awareness of the Junior Master Gardener Program. Four Junior Master Gardener Trainings were conducted at 4 hours each and trained the participants on the program through conducting hands-on activities from the curriculum. In order to increase program exposure, a Junior Master Gardener Program Interactive Display was set up at thirteen events within the state where youth are able to come through and interact in the exhibit and get a feel for the programmatic efforts. It is also a way for parents and teachers to become engaged in the program concept. Through the pilot Junior Master Gardener based SCRATCH Program, youth interactions occur at three afterschool sites weekly while production gardens are built and maintained by the program youth. These sites serve as a demonstration of what can be created in an urban setting. An additional youth based art garden was created to serve as a demonstration for garden creation. The preschool JMG based pilot program PLANTERS was established this year and interacts in 4 preschools within the state adapting the JMG curriculum to this age level.

Results

Presentations were attended by 285 adults interested in youth gardening opportunities, while an additional 60 participants attended scheduled half day trainings to increase their knowledge of program delivery and activities. Over 1700 youth and countless parents engaged with the JMG Interactive displays set up on thirteen occasions around the state to increase awareness of the program offerings. Fourteen volunteers assisted with these efforts. A demonstration youth art garden was built in conjunction with a community partner. This garden indirectly impacts 100 youth at the School of Harmony. The Scratch Project engages youth on a weekly basis and has three functional garden spaces that are worked by the youth. Over the course of the year the

youth met 103 times totaling direct contact with 1042 kids. The program is also using evaluation measures such as a Fruit and Vegetable ID and Preference Questionnaire to determine a change in behavior of the youth. These results have proved that even our youngest participants are starting to increase their baseline levels of knowledge. In one year 247 volunteers gave their time to the project, mainly students from Marshall University in conjunction with the SCRATCH Project site interactions as well as garden builds. The PLANTERS program works with youth from 4 local preschools on a weekly basis and in its first year met with 1450 youth over the course of 56 interactions. In one year 68 volunteers gave their time to the project during the activities as well as for the garden builds.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
206	Basic Plant Biology
403	Waste Disposal, Recycling, and Reuse
721	Insects and Other Pests Affecting Humans
806	Youth Development
902	Administration of Projects and Programs
903	Communication, Education, and Information Delivery

Outcome #6

1. Outcome Measures

Extension clientele will implement best practices in agriculture and natural resources based on research-based knowledge.

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	662

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

As a change occurs in the realm of agricultural production, a focus on sustainable agricultural production has become more desirable. Based on this demand, Extension based agricultural program efforts out of WVSU have focused on implementing workshops to illustrate best management practices in agriculture and natural resources to extend the knowledge of the University out to the greater community. Workshops, garden builds, and presentations have been delivered on numerous topics to help ensure that the general public is well educated on these topics.

What has been done

Workshops were delivered on the topics of mushroom production, hydroponic/aeroponic production, raised bed production, community and adaptive garden creation, hops and small fruit production around the state. Community, youth and adaptive gardens were built in collaboration with program partners to provide an outlet for healthy food production. Work days were conducted at garden sites for hands on experiences. Presentations at conferences and at local meetings were given about program offerings. Articles were written as well as poster presentations displayed at conferences.

Results

Sixteen workshops were delivered on the topics of raised bed production and community and adaptive garden creation. A raised bed workshop was offered during our Urban Ag Conference to 103 participants and was the most sought after class on the schedule. Community and adaptive gardens were assisted in five communities around the state involving over 120 participants. Work days at local garden sites and were offered and attended by over 50 people increasing the visibility of our program outreach efforts. Presentations on our community garden program efforts were delivered on fifteen occasions to audiences totaling 389 people.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
721	Insects and Other Pests Affecting Humans
902	Administration of Projects and Programs
903	Communication, Education, and Information Delivery

Outcome #7

1. Outcome Measures

Farmers/growers will utilize best practices with alternative agricultural enterprises to diversify their income portfolio.

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	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
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
205	Plant Management Systems
206	Basic Plant Biology
302	Nutrient Utilization in Animals
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities

- 721 Insects and Other Pests Affecting Humans
- 806 Youth Development
- 902 Administration of Projects and Programs
- 903 Communication, Education, and Information Delivery

Outcome #8

1. Outcome Measures

Through the Agritourism initiative participants will create new or develop existing enterprises to increase their sustainability.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	301

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

As tourism in WV has an increasing push toward the natural beauty of the state, it is only natural that our agricultural production sector takes advantage of this as well to move more towards the agritourism side of the industry. Through the development of niche markets, unique production methodology as well as unique marketing strategies the potential for expansion is incalculable.

What has been done

Workshops were delivered on the topics of specialty crop production of oyster, chicken of the woods and shitake mushroom and hydroponic/aeroponic production technologies. Grants were written to expand on the education on specialty mushroom production around the state through development of urban and rural demonstration sites, with new projects proposed for reuse of preexisting structures that provide the appropriate climate for mushroom production. Additional grants were funded to conduct applied research on the potential for hops production in the state as a viable agritourism industry in conjunction with local brewery operations as well as to develop pecan groves back in areas of the state where the trees once stood. Meetings were conducted to discuss the potential for production expansion on to abandoned mine lands sites as well as with industry professional to illustrate the potential for growth of the agritourism industry in the state.

Results

Fifteen workshops were delivered on the topics of mushroom production, hydroponic/aeroponic production, hops and small fruit production to participants around the state. Mushroom production workshops focusing cultivation of shitake, chicken of the woods and button varieties were offered

on 8 occasions for 151 participants. Hydroponic production (vertical aeroponic technology) methods were presented twice throughout the year to 34 participants and a demonstration production range is under development utilizing solar power to run the systems on an abandoned mine site. A hops production trial was funded this year involving 40 growers around the state who have been engaged in discussions on several occasions along with plant material and advice. As part of our small fruits program, 4 workshops were provided to 76 participants and a small fruit garden established in McDowell County. Several other workshops we on the schedule but were delayed until the beginning of this year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
403	Waste Disposal, Recycling, and Reuse
902	Administration of Projects and Programs
903	Communication, Education, and Information Delivery

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Weather continued to affect the outcomes of our program efforts due to the nature of horticulture and gardening. Workshops and training all were delayed or cancelled throughout the year due to weather. Changes in site locations and scheduling issues also came in to play. Program budget cuts and delays affected many projects. Finally, changes in staff and personnel has been one of the biggest hurdles in the past year, working to fulfill the same work load requirements with less staff in place.

All research programs have been impacted by the delay in receiving federal funds and a decrease in State matching.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Of the 60 participants of the half day JMG Trainings, 100% illustrated at increase in knowledge about the program and their ability to deliver the activities to youth. For the SCRATCH Project in general, fruits are easier for children to recognize than vegetables, and they prefer fruits to vegetables. Many items are ones that children recognize but cannot name. When children are unable to name the item, they are less likely to have ever tasted the item and less likely to report liking it. These results may pave the way for a fruits and vegetables identification and preference test that others can use. Preliminary data was

presented at the Midwestern Psychological Association meeting in May, 2014 as a poster.

Key Items of Evaluation

Of the **60** participants of the half day JMG Trainings, 100% illustrated an increase in knowledge about the program and their ability to deliver the activities to youth. The mushroom production workshop evaluations illustrated that of the **151** participants there was an average of **85%** increase of knowledge about the topic. The Community and Adaptive gardening presentations targeted several topics but overall evaluations illustrated that of the **359** participants there was an average of **85%** increase of knowledge about the various topics covered, including raised bed construction. Hydroponic and aeroponic production workshops were attended by **34** participants and also indicated a **100%** increase in knowledge on the topic. The 4 Small Fruits workshops attended by **76** participants saw an average of an **88%** increase of knowledge gained. The Carroll Terrace Community Garden celebrated its 10th growing season in 2014 and consistently produces over 2000lbs of produce that goes back to the 40 participants at the low income garden site, allowing them to not choose between eating or purchasing their medications. At the Adaptive Garden at the Five Loaves and Two Fishes Food Bank in McDowell County, over 250lbs of produce was grown in the second season going directly back for distribution and feeding the hungry in the area.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

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
101	Appraisal of Soil Resources		3%		10%
102	Soil, Plant, Water, Nutrient Relationships		2%		5%
111	Conservation and Efficient Use of Water		10%		0%
124	Urban Forestry		60%		0%
131	Alternative Uses of Land		10%		5%
211	Insects, Mites, and Other Arthropods Affecting Plants		0%		35%
212	Diseases and Nematodes Affecting Plants		0%		25%
403	Waste Disposal, Recycling, and Reuse		5%		20%
902	Administration of Projects and Programs		5%		0%
903	Communication, Education, and Information Delivery		5%		0%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.5	0.0	1.0
Actual Paid	0.0	0.5	0.0	2.0
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
0	25633	0	168276
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	19274	0	182353
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	33480

V(D). Planned Program (Activity)

1. Brief description of the Activity

WVSU Agricultural and Environmental Research Station research efforts are focused on small farmers adopting new varieties and growing techniques to adapt to changing environmental conditions, developing soil ratings for mitigation of runoff, and improving the use of biochar and other byproducts as soil amendments.

WVSU Extension Service will continue to target small-scale producers with education to increase knowledge levels in alternative enterprises that may expand profits for small farm operations in open cropland and forested urban acreage. Home landscape beautification and vegetable gardening are at the center of this heightened resurgence of interest in horticulture.

Commercial growers in the areas of greenhouse and nursery management, cut flower production, and fruit and vegetable production are also seeking marketing and production related advice in order to satisfy growing consumer demands. Some of the projects that are the most often asked about are the identification and/or eradication of plants and pests, the growing cycles of plants, plant maintenance, and alternative gardening techniques.

2. Brief description of the target audience

Homeowners, small-farm operators, volunteer organizations, various city, county and municipalities, state government, underserved and minority farmers/landowners, WVDA staff, USDA staff and other agricultural and natural resource focused agencies, undergraduate and graduate students, Bioenergy industry; MS4's municipalities, contractors and landscape architects and designers, private land owners.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	119	200	3	0

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

Patent Applications Submitted

Year: 2014

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	4	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Workshops on new varieties and growing techniques for small farmers to adapt to changing environmental conditions

Year	Actual
2014	2

Output #2

Output Measure

- Workshops targeted at alternative agriculture endeavors will be held in targeted counties.

Year	Actual
2014	3

Output #3

Output Measure

- WV SU Extension staff will generate media articles and stories related to alternative agriculture.

Year	Actual
2014	4

Output #4

Output Measure

- Urban clientele, municipalities and government organizations will receive information on the Urban Forestry initiative.

Year	Actual
2014	119

Output #5

Output Measure

- Work with bio-energy industry to identify need and evaluate properties and use of co-product biochar in soil.

Year	Actual
2014	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of small farmers adopting new varieties and growing techniques to adapt to changing environmental conditions
2	Extension clientele will implement best practices in agriculture and natural resources based on research-based knowledge.
3	Farmers/growers will utilize best practices with alternative agricultural enterprises to diversify their income portfolio.
4	Develop value-added product to pyrolysis process of biomass-to-energy conversion.

Outcome #1

1. Outcome Measures

Number of small farmers adopting new varieties and growing techniques to adapt to changing environmental conditions

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of vegetable farms in West Virginia has doubled in the last ten years, with the majority being owned by a family or individual, but the average size is small. This suggests that new WV farms are on the increase, focusing on high-density production of specialty crops, such as vegetables. Crop and variety choices for growers can be overwhelming, leaving many of them to choose the same ones due to lack of information or exposure. This limits their ability to produce the best crops and maximize profitability. Recommendations that are based on local research trials, evaluating production and production costs, will provide the most information for a grower to make informed decisions for their farming operation.

What has been done

A two-year trial of herbaceous ornamentals, organized by the University of Minnesota, finished in the late spring of 2014 with data collected on 44 lines: 24 Chrysanthemum, 4 Monarda, 2 Lamium and 14 Gladiolus. Two new garden mum lines were released in 2014 and were published in HortScience ? Mammoth™ Dark Pink Daisy and Mammoth™ Lavender Daisy. New collaborations with West Virginia University and Kentucky State University faculty/staff were initiated to study productivity and profitability for small growers using high tunnels. An extension faculty at WVU brought WVSU and West Virginia Department of Agriculture together to conceive the WV Agritourism Initiative. IPM faculty at WVU included WVSU in a proposal to the Extension Implementation Program to cover greenhouse and high tunnel IPM. NE SARE funding for the Professional Development Program (PDP) was re-established in 2013. In 2014, technical assistance was provided in the areas of sustainable agriculture and specialty crops. In addition, programming on the topic of the use of social media and marketing was also given as workshops around the state.

Results

Data from the 2012-2014 study looking at winter hardiness in mum, Monarda, Lamium and Gladiolus were collected and compiled to be sent to our collaborator. A new two-year study of mum (44 lines) and Gladiolus (10 lines) was initiated in the summer of 2014. Funds were secured for the creating schedules for vegetable production focused on maximum profitability and sustainable production with West Virginia University and a second project to develop a high tunnel app to use for small farm growers with Kentucky State University, both over the next three years. Funding was secured for the WV Agritourism Initiative, which began in November of 2014, and included training on the use of computer software in decision making. In addition, funding was obtained for the EIP with WVU and the initial meeting was held in December. More than 30 service providers and over 300 farmers were reached by the programming from the WVSU NE SARE PDP program alone. Some of these trainings were at conferences, requested by agriculture service providers or as part of the WVU NE SARE PDP programming efforts. In addition, SARE website used by the WV NE SARE staff was overhauled (<http://anr.ext.wvu.edu/sustainable-ag/sare>) and use of the Facebook page ?SARE in WV? (<https://www.facebook.com/WVSARE>) was focused on current topics and trainings. The website and Facebook page are clearinghouses for information on sustainable agriculture topics as well as highlighting new sources of information and training in the state and region.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants

Outcome #2

1. Outcome Measures

Extension clientele will implement best practices in agriculture and natural resources based on research-based knowledge.

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	61

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

As a change occurs in the realm of agricultural production, a focus on sustainable agricultural production has become more desirable. Based on this demand, Extension based agricultural program efforts out of WVSU have focused on implementing workshops to illustrate best management practices in urban forestry and natural resources to extend the knowledge of the University out to the greater community. Workshops and presentations have been delivered on urban forestry topics to help ensure that the general public as well as the private sector is well educated.

What has been done

Workshops were delivered on the topic of tree pruning to help ensure that the general public is aware of the proper tree care techniques and equipment. In pursuit of becoming the first Tree Campus in West Virginia, WVSU Extension Service developed a Campus Tree Board, contracted a campus survey of the existing trees, assisted with Arbor Day/Earth Day celebrations and developed a tree maintenance plan in conjunction with the campus Physical Facilities staff. The Extension Service developed a Tree Memorial Program that was piloted in Ravenswood, WV to plant trees in honor of individuals or organizations in the community. Meetings were attended with the West Virginia Division of Forestry to help foster a relationship with the organizations Urban Forestry Division to better assist with the dissemination of information throughout the state.

Results

Three workshops were presented on the topic of tree pruning to 31 participants to help ensure that the general public is aware of the proper tree care techniques and equipment. The campus of WVSU was also designated in April as the first Tree Campus in West Virginia and only the second 1890 University to have been bestowed this honor. The Extension Service facilitated two tree plantings, one in spring and the second in the fall of 2014, dedicating 7 new trees to the Tree Memorial Program that was piloted in Ravenswood, WV. This brings the total to 14 new trees planted to date at the Riverfront Park and the Public Library locations. Over 30 individuals were involved in the tree planting ceremonies and were educated on proper tree planting protocols. Five meetings were attended, along with connections made with 60 individuals, in conjunction with the West Virginia Division of Forestry to help foster a relationship with the organizations Urban Forestry Division to better assist with the dissemination of information throughout the state. Efforts are underway to work together in central and southern WV due to the remote location of the Urban Forestry Division in the most northern region of the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
124	Urban Forestry
131	Alternative Uses of Land
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants
403	Waste Disposal, Recycling, and Reuse
902	Administration of Projects and Programs
903	Communication, Education, and Information Delivery

Outcome #3

1. Outcome Measures

Farmers/growers will utilize best practices with alternative agricultural enterprises to diversify their income portfolio.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	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
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
124	Urban Forestry
131	Alternative Uses of Land
211	Insects, Mites, and Other Arthropods Affecting Plants
403	Waste Disposal, Recycling, and Reuse
902	Administration of Projects and Programs
903	Communication, Education, and Information Delivery

Outcome #4

1. Outcome Measures

Develop value-added product to pyrolysis process of biomass-to-energy conversion.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Biochar is a charcoal like material composed mainly of recalcitrant carbon. Used as soil amendment, it sequesters the carbon in soil and reduces carbon emission to the atmosphere. Acceptance and wide use of biochar in agriculture depends on its ability to show improvement to soil quality and fertility.

What has been done

We used biochar as a sorbent to remove excess nutrients from anaerobically digested dairy manure, and to improve biochar nutrient content. We conducted a series of lab assays and pot experiments to assess biochar contribution to soil fertility and its effect on plant growth.

Results

A protocol for development of nutrient enriched biochar was developed. Soil analysis and pot experiments demonstrated the agronomic and horticultural value of nutrient-rich biochar as soil amendment. Study results were presented at SSSA meeting on Nov. 2014 at Long Beach CA.; A book chapter on biochar, and a white paper with the detailed description of the biochar enrichment procedure and results of use as soil amendment published (Hass A., J.M. Gonzalez. 2014. Biochar. p. 95-124 In: Lopez-Valdez F. and Fernandez-Luqueno F. [Eds.], Fertilizers: components, uses in agriculture and environmental impacts. Nova Science Publishers, New York, NY; BiocharG: Improving Fast Pyrolysis Biochar of Agronomic Use - Augmentation. Amir Hass, Dharmesh Patel, and John H. Fike. 25 p.)

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
111	Conservation and Efficient Use of Water

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

Brief Explanation

All research programs have been impacted by the delay in receiving federal funds and a decrease in State matching. McIntire Stennis funding has contributed significantly to this area of research.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The WVSU Vegetable Genomics program is beginning to work in the Climate Change arena.

Key Items of Evaluation

The WVSU Vegetable Genomics program is beginning to work in the Climate Change arena.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

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
101	Appraisal of Soil Resources		0%		10%
102	Soil, Plant, Water, Nutrient Relationships		0%		10%
123	Management and Sustainability of Forest Resources		0%		10%
201	Plant Genome, Genetics, and Genetic Mechanisms		0%		20%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		0%		10%
403	Waste Disposal, Recycling, and Reuse		0%		20%
511	New and Improved Non-Food Products and Processes		0%		20%
	Total		0%		100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.5	0.0	7.3
Actual Paid	0.0	0.0	0.0	4.5
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
0	0	0	244000
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	249347
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	33480

V(D). Planned Program (Activity)

1. Brief description of the Activity

WVSU Agricultural and Environmental Research Station research efforts are focused on improving thermophilic digestion of poultry waste, developing anaerobic microbial energy conversion, and increasing awareness of soil remediation technology among mining operators and agencies. We are expanding into studying the functional role of additional oil biosynthesis genes in Arabidopsis and translate the proven examples from the model plant to a dedicated bioenergy crop for the production of bioenergy.

2. Brief description of the target audience

Digester manufacturers and users, poultry farmers, other agricultural waste producers, environmentally concerned citizens, undergraduate and graduate students, engineers and scientists who study bioreactors and anaerobic microbial processes. Mine operators, mine reclamation contractors, land owners

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2014

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Train students in digester operation, biochemical analysis, microbial analysis.

Year	Actual
2014	0

Output #2

Output Measure

- Improve the operation of thermophilic poultry waste digesters.

Year	Actual
2014	0

Output #3

Output Measure

- Add an extension component to the digester program
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Evaluate the feasibility of adopting anaerobic digestion on poultry farms in WV through extension outreach to farmers.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Develop soil management practices for the use of biochar and anaerobic digester products as soil amendments for regional soils.

Year	Actual
------	--------

2014

0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Improve the operational parameters that have been used to control thermophilic poultry waste digesters.
2	New knowledge concerning how microbial diversity gives rise to anaerobic microbial energy conversion and anaerobic digestion.
3	Increase awareness of beneficial use of waste and byproducts to improve soil productivity and ecological services.

Outcome #1

1. Outcome Measures

Improve the operational parameters that have been used to control thermophilic poultry waste digesters.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Anaerobic digestion (AD) is a well-established process for converting organic wastes into bioenergy (methane). The economics of AD can be improved when different types of wastes are combined (co-digested). WVSU has a long-term research program that has investigated the efficiency, stability and microbiology of a thermophilic, pilot-scale, digester that treats poultry farm waste. We are also interested in whether this digester and its microbiome can successfully utilize other types of organic wastes. Our current research is testing whether glycerol, which is the major waste produced by biodiesel manufacturing, can be co-digested with poultry litter. If these wastes could be processed together in this digester, that would improve the economics of thermophilic digestion which is somewhat more costly than mesophilic digestion. We are also interested in improving the economics of thermophilic digestion by creating smaller scale, less expensive digesters. To this end, we have also investigated the feasibility of a thermophilic plugflow digester design.

What has been done

To investigate the potential of digesting glycerol in a thermophilic digester adapted to poultry litter, we began a co-digestion experiment using three replicate model 10-liter digesters. These digesters were started with inoculum from the WVSU pilot plant thermophilic digester. We also completed an experiment that tested the feasibility of developing a thermophilic digester with a plug flow design for poultry litter using microorganisms from the WVSU CSTR digester. The new plugflow digester was pilot-scale and contained 1 cubic meter of liquid. The start-up of the digester was done during the previous year and the experiment was completed during 2014. The performance of the digester and associated microbial ecology were evaluated.

Results

The digesters used for the glycerol experiment were stabilized at a 15-day steady state hydraulic retention time with poultry litter substrate. The effect of 3% glycerol co-substrate was evaluated in terms of reactor performance and microbial diversity dynamics. This level of glycerol was found to be inhibitory to methane production and caused a large shift in the primary bacterial diversity. The evaluation of the new pilot-scale thermophilic plugflow digester was completed; the entire experiment lasted nearly 600 days. We found that biogas was produced and COD was reduced in the new digester indicating that the design and process did work. The microbial diversity of the digester was tested using pyrosequencing to target 16S rRNA genes. During a period of lower temperature lasting several weeks, biogas production decreased and the diversity of the microbial community shifted to dominance by Proteobacteria. However, when the temperature was restored, digester performance and community diversity began to recover. Two WVU graduate students contributed to this research, as well as two technicians, one visiting graduate student (Mexico), and two undergraduate students. Dr. Teodoro Espinosa-Solares, Department of Agroindustrial Engineering, Universidad Autonoma Chapingo (Mexico) was a collaborator. In addition, analysis and modeling of data from a previous fatty acid kinetics experiment was continued and a paper from this work is in progress.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Measures

New knowledge concerning how microbial diversity gives rise to anaerobic microbial energy conversion and anaerobic digestion.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Transitioning from a fossil fuel-dependent economy to one based on sustainable energy production is a major national objective. One of the most promising types of sustainable methods for energy generation is the microbial conversion of biomass to energy. This can be accomplished most effectively with mixed microbial consortia because no single species possesses the required suite of metabolic processes. However, mixed microbial consortia are

quite complicated and the ability to engineer their properties has been limited. Future advances in environmental biotechnology will require systems-level analysis of these microbial processes in order to reveal and engineer underlying mechanisms. These goals require new approaches to studying bioenergy communities and new educational curricula to train the next generation of students. This project was supported by a USDA CBG Research/Teaching Integration grant (Huber, PI) that investigated the systems-level properties of methanogenic microbial consortia, and created a systems biology and metagenomics component for the biotechnology curriculum at WVSU. The research conducted with this grant will be useful for applications in agriculture and industry where bioenergy produced from organic wastes can be used to offset the energy costs of manufacturing and farming. The educational component of the grant provided training in advanced DNA sequencing technologies, bioinformatics, and microbial systems biology for students at WVSU and visiting international students and scientists.

What has been done

This CBG had both research and education objectives. The research objectives were to understand how microbial communities perform biomass-to-bioenergy conversion using a systems analysis of methanogenic reactors. Three long-term bioreactor experiments were continued during the past year. The first experiment sought to elucidate the relationship between the stability and efficiency of bioenergy production in terms of microbial community properties. Six replicate five-liter reactors were operated for more than three years of continuous operation to measure metabolic performance, stability and resilience. A second long-term experiment was conducted which measured the resilience of methanogenic reactor communities toward environmental perturbations. Another set of replicate reactors was used to provide a detailed time series profile of performance during steady state operation prior to environmental disturbances and during the recovery period. Using these system parameters, we measured the properties of resistance, resilience and stability following pulse disturbances caused by increased organic loading. In addition, metagenomics analysis was done to compare the microbiomes of thermophilic and mesophilic digesters that treat poultry litter and plant biomass. Another major objective of the grant was to build the educational capacity of the biotechnology program at WVSU with regard to incorporating microbial systems biology.

Results

For the first experiment, systems analysis of the reactors consisted of time series measurements of primary metabolites and microbial community dynamics. Continuous measurements of biogas composition, COD removal, fatty acid production, and other chemical variables were made during this experiment. Fine-scale microbial population diversity was sampled using pyrosequencing. We found that food web structure and population interactions changed in response to feeding level. To our knowledge, network analysis of methanogenic ecosystems have never been performed at this level. A second long-term experiment was conducted which measured the resilience of methanogenic reactor communities toward environmental perturbations. A set of five replicate 10-liter reactors was used to provide a detailed time series profile of performance during steady state operation prior to environmental disturbances and during the recovery period. We found that the history of the reactors (previous substrates) affected their resilience to the pulse disturbances, and that resilience varied for individual fatty acids. In another experiment, we demonstrated that replicate microbiomes could occur in alternative stable states. Time series analysis showed that replicate reactors originating from the same stable source community could stabilize in alternative states with different energy conversion efficiencies. Metagenomics analysis showed that the thermophilic digester (WVSU) and the mesophilic digester shared primary functions based on SEED subsystem classification. However, important differences, including carbohydrate utilization pathways, were also found. In addition, modeling was done of fatty acid kinetics in this hydrogenotrophic microbiome. For the educational component of the grant, training was provided in environmental biotechnology, microbial systems biology, and

genomics to graduate and undergraduate students at WVSU and visiting international graduate students. The technology provided by the grant also supported other research at WVSU (freshwater ecosystems) and research with collaborators at Universidad Autonoma de Coahuila (Mexico) and Universidad Autonoma Chapingo (Mexico). A "Microbial Metagenomics Workshop" was taught at WVSU. The Workshop was attended by thirteen participants, including graduate students, undergraduates, and visiting international scientists.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

Outcome #3

1. Outcome Measures

Increase awareness of beneficial use of waste and byproducts to improve soil productivity and ecological services.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Current remediation and reclamation practices of disturbed lands fall short of reviving a natural system's ability to sustain ecosystem services, such as clean water and good fertile, non-eroding soils. Best management practices (BMP) for reclamation must be demonstrated, implemented and adopted in order to improve post-mining land use and reclaimed soil fertility and productivity.

What has been done

With support of the Appalachian Regional Commission, we initiated a public-private partnership with a regional land-holding company and a mining operator to identify a location and to implement BMPs on recently reclaimed coal mine, which included deep contour ripping and reforestation. In addition, a field experiment was conducted to evaluate and compare establishment and growth of different bioenergy crops (switchgrass, miscanthus, big blue stem and broom sage) under different fertilization regimes (none and optimal).

Results

Over 30,000 black locust trees were planted and a genetic trial for selection of suitable hybrid poplar genetic line (60 lines tested) was established on nearly 40 acres of reclaimed land. Outreach activity was conducted to provide university staff and students, as well as members of the local community, with the opportunity to visit a reclaimed mine site and to have a hands-on experience in planting trees and establishing pollinator's garden. More than 45 people participated and more than 800 trees were planted. Field trial of bioenergy grasses failed and had to be reseeded.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
123	Management and Sustainability of Forest Resources
403	Waste Disposal, Recycling, and Reuse

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

Brief Explanation

The anaerobic digestion research program has been impacted by recent State regulations concerning above ground storage tanks. Mine site access can be a complicating factor in addition to weather. All research programs have been impacted by the delay in receiving federal funds and a decrease in State matching.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Sustainable Energy program is an area of emphasis at WVSU as a new position was created: Assistant Professor of Bioenergy and Environmental Biotechnology. The Anaerobic Digestion program has been hampered by a lack of funding and new State regulations on above ground storage tanks. McIntire Stennis funding has contributed significantly to this area of research.

Key Items of Evaluation

The Sustainable Energy program is an area of emphasis at WVSU as a new position was created: Assistant Professor of Bioenergy and Environmental Biotechnology. The Anaerobic Digestion program has been hampered by a lack of funding and new State regulations on above ground storage tanks. McIntire Stennis funding has contributed significantly to this area of research.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

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
701	Nutrient Composition of Food		30%		0%
724	Healthy Lifestyle		20%		0%
802	Human Development and Family Well-Being		30%		0%
806	Youth Development		20%		0%
	Total		100%		0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	6.0	0.0	1.0
Actual Paid	0.0	1.0	0.0	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
0	51266	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	38549	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Through various programs, WVSU Extension Service personnel will target the aspects of personal behavior and environmental barriers that hinder personal healthy lifestyles.

1. Youth will be educated on proper serving sizes, healthy food selection and preparation, and monitoring intake

2. WVSU Extension Service will work with partners to revitalize community parks and greenspace and conduct walkability and bikeability audits to ensure safe access to and from the parks.

3. Engage schools and students attending during the school day in lessons that will let them gain knowledge of fresh fruits and vegetables and how to grow them.

4. WVSU Extension Service faculty and staff will instruct lessons about kitchen and food safety, food preparation, healthy food selection, economical ways to practice healthy and nutrition, and engage in physical activities.

5. Parental involvement will be encouraged and requested throughout the program in order to educate the caregivers on the issues being addressed with their youth during the implementation of the program.

2. Brief description of the target audience

The target audience for the programs are West Virginia's large municipalities where there is a higher minority population (17% vs 3% for the state), food deserts, higher crime rates, extreme poverty, and higher rates of childhood obesity.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	75	113

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

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth will participate in various workshops.

Year	Actual
2014	75

Output #2

Output Measure

- News articles will be generated around childhood obesity and specific to these efforts.

Year	Actual
2014	1

Output #3

Output Measure

- Number of adults will participate in educational sessions.

Year	Actual
2014	6

Output #4

Output Measure

- New shopping venues will be available in food deserts.
 Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Safe new green spaces will be created to encourage community active lifestyle activities.
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Number of youth will participate in the Fast Track health and nutrition program.

Year	Actual
2014	75

Output #7

Output Measure

- Middle School youth in the Fast Track program will demonstrate improved safety and food preparation skills.

Year	Actual
2014	75

Output #8

Output Measure

- Fast Track participants will report an increased knowledge and practice of healthier food consumption.

Year	Actual
2014	75

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Youth and Families will increase knowledge and awareness of nutrition
2	Youth and Families will increase knowledge of physical fitness activities
3	Youth, Families and Communities will increase social competency through community sustainable gardening
4	Youth Families and communities will increase demand for healthy food options in their communities
5	Youth will make positive health choices including selection of healthy foods and increasing active lifestyle activities
6	Families will make positive health choices including selection of healthy foods and increasing active lifestyle activities

Outcome #1

1. Outcome Measures

Youth and Families will increase knowledge and awareness of nutrition

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CDC (2010) cites the need for better youth health education to address problems related to childhood obesity in West Virginia. It is also a priority of the programs to educate the parents and caregivers of youth in order to assist them in making healthier decisions for our children.

What has been done

The Fast Track program provided lessons on key issues in childhood obesity such as lack of knowledge, interest, and skill to incorporate health and nutrition practices in daily life activity. Fast Track participants learned about kitchen and food safety, food preparation, healthy food selection, economical ways to practice healthy and nutrition, and engaged in physical activities. Community organizations such as local recreation centers assisted in the engagement of physical activity. Parental involvement was encouraged and requested throughout the program in order to educate the caregivers on the issues being addressed with their youth during the implementation of the program.

Results

Students have shown an increase in healthy eating and snacking. They are now more likely to incorporate fresh fruits and vegetables into their diets and meal planning with their families. Students have also shown they are making better choices in choosing drinks that accompany their meals. They are choosing milk, water and fruit juices instead of sodas. Snacking on items like potato chips and candy is now giving way to fruits and vegetables.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
724	Healthy Lifestyle

802 Human Development and Family Well-Being
806 Youth Development

Outcome #2

1. Outcome Measures

Youth and Families will increase knowledge of physical fitness activities

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CDC (2010) cites the need for better youth health education to address problems related to childhood obesity in West Virginia. It is also a priority of the programs to educate the parents and caregivers of youth in order to assist them in making healthier decisions for our children. Furthermore, the physical education program in schools has decreased in frequency and entertainment that encourages little mobility, which opens the door to more youth leading increased sedentary lifestyles.

What has been done

The Children Youth and Families at Risk funded WVSU Fast Track program aimed to improve awareness in these areas, reducing the rate of obesity amongst our youth. Middle school youth in the Charleston area were targeted for this program. Afterschool and summer day camps were provided. As an afterschool setting, six week 2-hour a day sessions were offered to the schools and neighborhood center. Two one week day camps, 7 hours a day, were offered during the summer. Lessons on food safety, food preparation, physical fitness, and financial literacy were offered. As youth participated in the program, they were provided examples of healthier, yet cost effective snacks, breakfast, lunch, and dinner options.

Results

Our results show that students spare time sedentary activities, such as video games and watching television, increased to larger episodes of physical activity. Students are now being active for at least one hour a day and burning more calories during that time. We have also seen an increase in the type of physical activities, such as, team sports, walking biking, etc. Along with this, we also see a greater awareness in the students of how important exercise and physical activity is for the body and healthy development.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Youth, Families and Communities will increase social competency through community sustainable gardening

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Youth Families and communities will increase demand for healthy food options in their communities

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Youth will make positive health choices including selection of healthy foods and increasing active lifestyle activities

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The CDC (2010) cites the need for better youth health education to address problems related to childhood obesity in West Virginia. It is also a priority of the programs to educate the parents and caregivers of youth in order to

assist them in making healthier decisions for our children. Furthermore, the physical education program in schools has decreased in frequency and entertainment that encourages little mobility, which opens the door to more youth leading increased sedentary lifestyles.

What has been done

The Children Youth and Families at Risk funded WVSU Fast Track program aimed to improve awareness in these areas, reducing the rate of obesity amongst our youth. Middle school youth in the Charleston area were targeted for this program. Afterschool and summer day camps were provided. As an afterschool setting, six week 2-hour a day sessions were offered to the schools and neighborhood center. Two one week day camps, 7 hours a day, were offered during the summer. Lessons on food safety, food preparation, physical fitness, and financial literacy were offered. As youth participated in the program, they were provided examples of healthier, yet cost effective snacks, breakfast, lunch, and dinner options.

Results

Our results show that students spare time sedentary activities, such as video games and watching television, decreased and there was an increase in physical activity. Students are now being active for at least one hour a day and burning more calories during that time. We have also seen an increase in the type of physical activities, such as, team sports, walking biking, etc. Along with this, we also see a greater awareness in the students of how important exercise and physical activity is for the body and healthy development. There has also been an increase in the choice of healthier food options.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #6

1. Outcome Measures

Families will make positive health choices including selection of healthy foods and increasing active lifestyle activities

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes

Brief Explanation

School and other site location schedules, weather conditions, changes in economy, appropriations changes all affected the program implementation. It was difficult to keep a consistent schedule due to changes in site location schedules, and funding cuts caused us to change some of the program deliverables.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Fast Track program used four evaluation tools as pre and post surveys including the Student Background Questionnaire, Student Survey, 14-Item Resilience Scale (RS-14), and YAR-PET (Youth at Risk - Program Effectiveness Tool). From our pre and post surveys, we found that the Fast Track participants have reported an increased knowledge and interest in consuming healthier foods in home and while dining out, an increase in the amount of physical activity as well as an increase in the belief of the importance of physical activity, a decrease in consumption of drinks high in sugar and high calorie fast food items.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Food Safety

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
703	Nutrition Education and Behavior		25%		0%
724	Healthy Lifestyle		25%		0%
802	Human Development and Family Well-Being		25%		0%
806	Youth Development		25%		0%
	Total		100%		0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	5.0	0.0	0.0
Actual Paid	0.0	3.0	0.0	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
0	153798	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	115647	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Expanded Food and Nutrition Education Program (EFNEP) -EFNEP is a federally funded educational program designed to assist limited resource children and families with children in improving the total

family's nutritional well-being and health through a series of practical lessons on basic nutrition and healthy lifestyles, resource management, and food safety.

NOTE: for this reporting period the WVSU EFNEP program was in transition hiring a complete new staff of para-professionals. Therefore there will not be any numbers or outcomes to report.

Health Lifestyles Cooking Schools- West Virginia ranks 44th in the Nation for the most Diabetics. In 2014 9.7% of WV population indicated that they had been told by a physician that they had diabetes. Those afflicted with this disease must consistently focus on controlling blood sugar levels and preventing complications. The WVSU Healthy Lifestyles Cooking School teaches meal planning and food preparation skills that reduce calories, control carbohydrates, modify fats and increase fiber of familiar food recipes. This cooking school targets individuals who are at risk for diabetes, heart disease or hypertension.

Food Preservation-is the process of treating and handling food to stop or slow down Food spoilage, loss of quality, edibility or nutritional value and thus allow for longer food storage. Preservation usually involves preventing the growth of bacteria, fungi(such as yeasts), and other micro-organisms(although some methods work by introducing benign bacteria, or fungi to the food), as well as retarding the oxidation of fats which cause rancidity.

Use the Germ City tunnel to physically show participants the importance of proper and frequent hand washing. Teaching the public through Extension programs the importance of following proper safe food handling practices - cleaning, washing hands; separating foods to avoid cross-contamination; cooking foods to proper internal temperatures to kill bacteria; and store leftovers quickly and properly.

2. Brief description of the target audience

- The target audience for the first part of the year was the city of Charleston where there is a higher minority population (11% v. 4% for the state), food deserts, high crime rates, extreme poverty and high rates of childhood obesity. During the second part of the year, WVSU expanded their service location to offer programs in the western region portion of the state in Huntington, WV. There, the EFNEP program provided services to middle school youth and a new staff member was hired to conduct programming targeting adults from young to late adulthood.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	75	0

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- After completing the healthy lifestyles education workshop, participants will be able to prepare, cook, and store food safely.
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of participants that report an increased knowledge level about managing blood sugars through diabetes education.
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of participants report; they had an opportunity to learn effective meal techniques through healthy lifestyles education programs.
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of individuals will be provided with more tools for making better decisions about the dietary choices through the healthy lifestyles education programs.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Young participants will receive one nutritious lunch per day through the Summer Food Service Program.
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Number of participants graduating from EFNEP programming.
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- After completing the EFNEP program, participants will report having a better understanding of food handling practices.
Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Participants completing the EFNEP program will report an increased knowledge about cooking appropriate times and temperatures.

Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Number of youth participants learned kitchen safety techniques, including using cooking appliances and knives

Year	Actual
2014	75

Output #10

Output Measure

- Number of youth participants learned safe practices to prevent food spoilage

Year	Actual
2014	75

Output #11

Output Measure

- Number of youth participants learned safe guidelines to prevent foodborne illness

Year	Actual
2014	75

Output #12

Output Measure

- Number of youth participants learned practices to prevent cross contamination of raw and fresh foods

Year	Actual
2014	75

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	After completing the healthy lifestyles education workshop, participants will be able to prepare, cook, and store food safely.
2	Individual's participating in diabetes education workshops will monitor and record blood sugars regularly.
3	As a result of the healthy lifestyles program; participants will report incorporating at least one effective meal planning technique in their daily lives.
4	After completing the healthy lifestyles programs; participants will report adopting of one or more tools for making better decisions about making dietary choices.
5	Participants engaging in healthy lifestyles programs will report using between one to two new food handling practices.
6	Youth will practice and disseminate information about kitchen safety, especially safe operation of stoves, blenders and cooking appliances, and proper handling of knives
7	Youth will practice and disseminate information to their families about food storage temperatures to prevent spoilage
8	Youth will practice and disseminate information to their families about preventing foodborne illnesses from consumption of uncooked or spoiled food
9	Youth will practice and disseminate information to their families about the prevention of cross contamination between raw and fresh food in cooking and during preparation.
10	Youth participating in the SFSP will receive one balanced, nutritionally correct meal per day that is prepared and held at safe temperatures.
11	Site supervisors operating the SFSP; will report having a complete understanding about, appropriate temperature times and preparation of meals; the adequate time frame for serving meals and appropriate methods for counting, ordering, and storing meals daily.
12	By attending the EFNEP, participants will be able to choose adequate portion sizes of foods, according to the MyPlate recommendations.
13	By completing EFNEP, participants will be able to explain safe food handling practices.
14	After completing the EFNEP program, participants will demonstrate their ability to prepare safe, nutritious, and affordable meals.

Outcome #1

1. Outcome Measures

After completing the healthy lifestyles education workshop, participants will be able to prepare, cook, and store food safely.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Individual's participating in diabetes education workshops will monitor and record blood sugars regularly.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

As a result of the healthy lifestyles program; participants will report incorporating at least one effective meal planning technique in their daily lives.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

After completing the healthy lifestyles programs; participants will report adopting of one or more tools for making better decisions about making dietary choices.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Participants engaging in healthy lifestyles programs will report using between one to two new food handling practices.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Youth will practice and disseminate information about kitchen safety, especially safe operation of stoves, blenders and cooking appliances, and proper handling of knives

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Youth will practice and disseminate information to their families about food storage temperatures to prevent spoilage

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Youth will practice and disseminate information to their families about preventing foodborne illnesses from consumption of uncooked or spoiled food

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Youth will practice and disseminate information to their families about the prevention of cross contamination between raw and fresh food in cooking and during preparation.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Youth participating in the SFSP will receive one balanced, nutritionally correct meal per day that is prepared and held at safe temperatures.

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

Site supervisors operating the SFSP; will report having a complete understanding about, appropriate temperature times and preparation of meals; the adequate time frame for serving meals and appropriate methods for counting, ordering, and storing meals daily.

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

By attending the EFNEP, participants will be able to choose adequate portion sizes of foods, according to the MyPlate recommendations.

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

By completing EFNEP, participants will be able to explain safe food handling practices.

Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

After completing the EFNEP program, participants will demonstrate their ability to prepare safe, nutritious, and affordable meals.

Not Reporting on this Outcome Measure

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

Due to a decrease in staff , the SFSP and EFNEP programs were inactive throughout the year.

School and other site location schedules, weather conditions, changes in economy, appropriations changes all affected the program implementation. It was difficult to keep a consistent schedule due to changes in site location schedules, and funding cuts caused us to change some of the program deliverables.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

On a national level; WVSUES is a growing contributor in the small school sector; since the incorporation of 1890 EFNEP funding in 2007. In the 2012 Tier Data report, published by USDA's National Institute of Food and Agriculture (NIFA); there were a total of 633 youth that graduated through the university's EFNEP efforts. Total representation of 10% uprising middle school students, 90% middle school students served; 33% of the participants resided in suburban communities, 13% resided in rural communities; while the other 55% consisted of the urban population.

Youth participants from Enslow Middle School, located in Huntington, W.V. had the opportunity to visit Huntington Kitchen, which was showcased during the infamous Jamie Oliver broadcast on national television about the obesity epidemic in Huntington. The participants were privy to try different fruits such as star fruit, kiwis, etc. These are fruit that the youth may not have the opportunity to try on a regular basis. The youth were astonished at how good fruits can be. This is important because they are encouraged to grab a piece of fruit rather than candy or bag of chips when they want to snack.

100% of the cooking school Participants learned how to:

- Prepare food using less fat, sodium, and sugar.
- Flavor foods with spice and herbs that would not add the fat, sodium or sugar to their diets.
- Store food safely according to the USDA standards.
- Prepare foods safely without the fear of cross contamination.

Key Items of Evaluation

Evaluation is key and EFNEP continually illustrates a positive impact on the youths it serves. After participating in the EFNEP program with WVSU Extension Service, results have indicated:

- 75 percent increase in fruit consumption
- 20 percent increase in overall knowledge about healthy food choices and physical activity
- 50 percent decrease in television viewing
- 85 percent increase in food label reading (up from 45 percent in pre-test results)

The Fast Track project evaluations results show an upward trend of the students being more informed and empowered with a confidence that will help them prepare food for themselves. They also show students making healthier eating and snacking choices that they may not have made before taking part in the Fast track program.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Resilient Youth and Families

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
801	Individual and Family Resource Management		25%		0%
802	Human Development and Family Well-Being		25%		0%
803	Sociological and Technological Change Affecting Individuals, Families, and Communities		25%		0%
806	Youth Development		25%		0%
	Total		100%		0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	8.0	0.0	0.0
Actual Paid	0.0	11.0	0.0	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
0	563926	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	424039	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Tax Preparation: The federal Earned Income Tax Credit (EITC) is the nation's largest cash program directed at low-income families. It reduces the amount of income tax low- to moderate-income working families (with annual incomes of up to roughly \$35,000) are required to pay, and provides a wage supplement to some families. Free tax preparation is available to help workers fill out their tax returns.

Helping Our Undergraduates Succeed in Education (H.O.U.S.E.) /Phase II: The West Virginia State University H.O.U.S.E. program is the only program of its kind in the nation. The H.O.U.S.E. program is composed of two initiatives. The first component assists six at-risk 17-24 year olds with transition into college life; by providing for them with a residence in a small family home setting for their first four semesters. The second component assists three female victims of domestic violence or homelessness, who wish to succeed by graduating from college. Residents of the H.O.U.S.E. program are referred from local and state agencies as well as departments within the university.

Health Literacy: is a program that teaches adult and youth participants how to open the lines of communication with their health care provider(s). The program gives tools that helps the participants to become empowered and take charge in the decision making process with regards to their health care. Participants are supplied with a Health History Journal to take with them to doctor's appointments, which includes individual sections on family and personal health history, medications, insurance, etc.

Active Lifestyles for Adults and Seniors: Programs developed to enhance gross motor enrichment, improved wellness and healthier lifestyle choices for adults/seniors. Active living is provided through experiential, motivational, and competitive programs to promote physical activity and positive cognitive selection. The program participants represent a host of clientele; from resident nursing home, active living facilities, individuals with limited mobility and even suffering from general medical condition. These programs may be continuous or episodic.

4-H Youth Development programming included after-school, in-school, and summer based enrichment opportunities across the spectrum of mission mandates of 4-H (STEM, Healthy Living, and Citizenship). These efforts focused on literacy, the arts and sciences, and were delivered through a variety of modalities including observational and experiential learning experiences. Activities focused on agriculture, creative and expressive arts, use of the scientific method, and mentoring were used most often.

2. Brief description of the target audience

The target audience for the first part of the year was the city of Charleston where there is a higher minority population (11% v. 4% for the state), food deserts, high crime rates, extreme poverty and high rates of childhood obesity. During the second part of the year, WVSU expanded their service location to offer programs in the western region portion of the state in Huntington, WV. There, the EFNEP program provided services to middle school youth and a new staff member was hired to conduct programming targeting adults from young to late adulthood.

Youth K through 12th Grades in our service areas of central and southern West Virginia from low to moderate income level communities.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1885	5553	1101	5651

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of students that will be served by H.O.U.S.E and Phase II programming.

Year	Actual
2014	7

Output #2

Output Measure

- Number of contact hours for case management and skill development received by students in the H.O.U.S.E./Phase II programs.

Year	Actual
2014	250

Output #3

Output Measure

- Number of households being served by the Bounce Back Tax Program.

Year	Actual
2014	123

Output #4

Output Measure

- Number of participants served through Strengthening Families programs.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of individuals being served by the parenting education program.
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Number of individuals being served through relationship enhancement programs.
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Number of participants served with individual literacy and technology programming over a one year period.

Year	Actual
2014	705

Output #8

Output Measure

- Number of individuals participating in workshops to better enhance financial management at home.

Year	Actual
2014	639

Output #9

Output Measure

- Number of clients receiving an adult health history journal.

Year	Actual
2014	1000

Output #10

Output Measure

- Number of participants receiving a youth health history journal.

Year	Actual
2014	400

Output #11

Output Measure

- Number of senior citizens participating in six to eight weeks of active lifestyles programs.
Not reporting on this Output for this Annual Report

Output #12

Output Measure

- Number of participants (youth and adult) being served by physical activity or programs to promote a more active lifestyle.

Year	Actual
2014	900

Output #13

Output Measure

- Through creative arts programming, youth will receive 8 hours per month of art enrichment.

Year	Actual
2014	60

Output #14

Output Measure

- Number of youth receiving ongoing exposure to adult service providers around a variety of educational topics including expressive arts, media literacy, 4-H SET, and STEM pipeline programs.

Year	Actual
2014	3448

Output #15

Output Measure

- Students will participate in laboratory activities in the following topics: Blood typing and DNA analysis; handwriting analysis and thin layer chromatography; drug toxin identification; and fingerprint identification.

Year	Actual
2014	96

Output #16

Output Measure

- Youth attending CASTEM camps receiving life skill, math and science skills over a two week period.

Year	Actual
2014	38

Output #17

Output Measure

- New adult volunteers recruited and retained.

Year	Actual
2014	20

Output #18

Output Measure

- Youth attending the expressive arts camp to be instructed in various aspects of expressive arts.

Year	Actual
2014	43

Output #19

Output Measure

- K-12 youth receiving STEM-related education through NASA-centered programming

Year	Actual
2014	1443

Output #20

Output Measure

- K-12 educators receiving STEM-related training.

Year	Actual
2014	204

Output #21

Output Measure

- Number of individuals reporting, they developed better money management and spending practices, over the past year.

Year	Actual
2014	533

Output #22

Output Measure

- Number of individuals reporting they developed better ways to save money over the past year.

Year	Actual
2014	114

Output #23

Output Measure

- Number of middle/high school youth participating in financial management programs.

Year	Actual
2014	404

Output #24

Output Measure

- Youth participating in the 4-H Family Growth program.

Year	Actual
2014	550

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Students who are able to maintain a 2.0 will be considered successful through participation in the H.O.U.S.E. and Phase II program.
2	Students attending the H.O.U.S.E./Phase II programs will indicate an increased knowledge on the Daniel Memorial Assessment.
3	Teens/Adults participating in the financial literacy programs indicate an increased knowledge of their personal financial management strategies.
4	Adults receiving relationship enhancement instruction, demonstrate harmful behavior avoidance.
5	Participants completing parenting education programs will indicate an increase in knowledge about beneficial parenting techniques.
6	Participants completing financial education programs, will use proper spending habits.
7	After completing financial management programs; participants will be able to save more finances in the next fiscal year.
8	After completing the health literacy workshop, participants will continue to use the personal health history journals and demonstrate improved patient physician interaction.
9	After completing the active lifestyle programs, participants will report the addition of better health management practices, including additional physical activity.
10	Youth attending expressive arts programs will demonstrate mastery of their creative art.
11	Youth will demonstrate financial literacy skills including budgeting, fiscal record keeping, and understanding financial management principles.
12	Youth will report making better choices about spending habits at the grocery store.
13	Youth will report an interest in pursuing a health, science, or technology-related career.
14	Youth will demonstrate knowledge of the scientific method.
15	Youth attending CASTEM camps will exhibit increased knowledge of math, science, and life-skills.
16	K-12 teachers trained by the program will incorporate more experiential STEM-learning activities for students.
17	Youth completing the 4-H Family Growth program will report an increased interest in reading and gardening activities.

Outcome #1

1. Outcome Measures

Students who are able to maintain a 2.0 will be considered successful through participation in the H.O.U.S.E. and Phase II program.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The students of WVSU participating in the HOUSE/Phase II Programs are typically ones that have experience many challenges in life. The individuals are diverse in a multitude of ways because stressors, they have overcome in order to enroll in college. Eligibility for the program includes youth that represent, first-time generation, formerly incarcerated, a history of homelessness, previous domestic violence issues and a lack of family support. Quite often, these students are not viewed as one's that would obtain a college degree. Most often, former students admit that their college experience would have been more difficult without the opportunity to have the transitional experience. It is the responsibility of staff working with this population, to ensure that each of the participant needs are carefully considered. This program is unique to the country and especially by its affiliation to an institution of higher education. It is most often considered a model for other agencies or professionals helping people achieve a better quality of life.

What has been done

Students attending the HOUSE program have a daily academic support system in place to assist the undergraduate with tools for being successful. The staff has an ongoing relationship with the WVSU Collegiate Support and Counseling Department. There are monthly presentations and workshops provide to the students by the counselors and services are continuously provided. Tutors were also obtained in order to also provide a resource to the participant when experiencing academic challenges. The HOUSE Program Coordinator also develops a relationship with each instructor for every student participating in the program. Professors serve as an extended network for keeping the coordinator informed about the individuals overall performance in the course. Class attendance and grades are strictly monitored in order to have a first line of engagement for keeping students on task. Mentoring and confidential consultation, are included for providing a

platform of encouragement for them to meet their educational goals.

Results

In May 2014, the average GPA for the program was 3.05 on a 4.0 scale. This reflects an increased average GPA of 36.77% from the when participants were first admitted to the program (2.23 avg.).

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #2

1. Outcome Measures

Students attending the H.O.U.S.E./Phase II programs will indicate an increased knowledge on the Daniel Memorial Assessment.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The students of WVSU participating in the HOUSE/Phase II Programs are typically ones that have experience many challenges in life. The individuals are diverse in a multitude of ways because stressors, they have overcome in order to enroll in college. Eligibility for the program includes youth that represent, first-time generation, formerly incarcerated, a history of homelessness, previous domestic violence issues and a lack of family support. Quite often, these students are not viewed as ones that would obtain a college degree. Most often, former students admit that their college experience would have been more difficult without the opportunity to have the transitional experience. It is the responsibility of staff working with this population, to ensure that each of the participant needs is carefully considered. This program is unique to the country and especially by its affiliation to an institution of higher education. It is most often considered a model for other agencies or professionals helping people achieve a better quality of life.

What has been done

The Daniel Memorial Life Skills Assessment Program assesses individuals on 16 different life skills needed to transition into adulthood and live independently. Program staff works diligently to assist clients with improving their skills in order to live independently and become successful with daily decision that affect their lives. Topics include Money Management, Food Management, Job Seeking, Job Maintenance, Education Planning, Housing, Transportation, Health, Interpersonal Skills, Emergency and Safety, Leisure Activities, Health, Job Maintenance Skills and a host of other life skill areas. Upon entering the HOUSE/Phase II programs, participants are administered the assessment to determine, what skills they possess and what items will need to be addressed.

Results

Over the course of the year, participants were randomly selected to retake the assessment as a means for monitoring student?s progression. In addition, graduating seniors will be reassessed as they depart from the programs, in order to gain a holistic view. This allows the students and program coordinator; to reflect upon how the HOUSE/Phase II Programs have benefited the independent student and the level of skills they have developed to live independently. WVSUES staff also continues to provide ongoing support and regular programs for the resident of the HOUSE/Phase II Programs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #3

1. Outcome Measures

Teens/Adults participating in the financial literacy programs indicate an increased knowledge of their personal financial management strategies.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	784

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

According to the 2009 results of efforts conducted by the West Virginia Alliance for Sustainable Families (WVASF), the report details fifty three participating organizations who were asked to

identify services they would like to be able to provide related to economic sustainability and/or financial literacy. Thirty-seven organizations responded to this question expressing interest in services that fell into the following categories: Financial Literacy, Workforce Development, and remainder twenty-six responses related to Financial Literacy. The need for basic money management skills (basic banking, etc.) was also identified with emphasis placed on teaching such skills early and targeting to levels that are appropriate for individuals at various life stages.

What has been done

West Virginia State University (WVSUES) is currently offering Financial Literacy workshops. They have currently been presented them in five different counties (Kanawha, Lincoln, Logan, Putnam, and Cabell). Each workshop is approximately 4- 6 weeks, once a week between 1- 2 hours. Our anticipation is to encourage better decision making for people seeking to complete high school, prepare for college, or sharpening skills to support current employment advancement. Our goal is to increase the confidence of individuals to manage their money efficiently while gaining the understanding of financial risks and benefits of saving.

Results

Participants increased their knowledge in financial literacy by completing lessons on budgeting and smart ways to save/spend income which will improve the overall economic state of WV by producing financially responsible residents
100% of Real Money Real World participants reporting an increase in knowledge on managing money and budgeting

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #4

1. Outcome Measures

Adults receiving relationship enhancement instruction, demonstrate harmful behavior avoidance.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Participants completing parenting education programs will indicate an increase in knowledge about beneficial parenting techniques.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Participants completing financial education programs, will use proper spending habits.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	404

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Daily spending decisions can have a far greater negative impact on a child's financial future. Educating, motivating and empowering children and young teens to become regular savers and investors will enable them to keep more of the money they earn and do more with the money they keep.

What has been done

Students participated in "Real Money Real World", a simulation that allows children to choose jobs and salaries through a random drawing. Each of them were to add children, housing, entertainment, cars etc and calculate it into their budget. Roughly 12 booths were set up relating to life events. At the end each student has to have a balanced budget.

West Virginia State University collaborated with Marshall University School of Pharmacy/Medicine in a summer camp that included students grades 10th-12th from all surrounding areas in a workshop that was offered to increase their literacy education level. In this particular segment they were to correspond career choices with personal income and taught how financial security as well as learning to manage daily spending can result in cost of living decisions.

Youth participated in weekly activities that engaged their imagination and allowed them to express their unique personalities. Exercises included a variety of things but most importantly encompassed money management activities

Results

Every participant gained knowledge in at least three areas they did not know before in regards to money management. Participant mindfulness of education level and corresponding career choices has increased their awareness of how personal income and financial security can affect

daily spending.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #7

1. Outcome Measures

After completing financial management programs; participants will be able to save more finances in the next fiscal year.

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

After completing the health literacy workshop, participants will continue to use the personal health history journals and demonstrate improved patient physician interaction.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In today?s climate, people have to more conscientious about their health care needs. A large factor in that is being able to monitor one?s health more closely through maximizing time with their physician to effective record keeping. Americans, who more visits to their health care provider, have increased medical expenses. Individuals that have been trained in the health literacy possess the ability to assist other with monitoring their overall quality of health and being more of a contributor of the needs, opposed to simply a receiver. According to the National Network of Libraries of Medicine (NNLM) (2012), In addition to the effects of low health literacy on the individual patient, there are economic consequences of low health literacy to society. According to the report Low Health Literacy: Implications for National Health Policy "Low health

literacy is a major source of economic inefficiency in the U.S. health care system." The report estimates that the cost of low health literacy to the U.S. economy is between \$106 billion to \$238 billion annually. This cost remains the same. To put this in perspective, the cost represents an amount equal to the cost of insuring every one of the more than 47 million people who lacked coverage in the United States in 2006. Improving health communication reduces health care costs and increases the quality of health care.

What has been done

The FCS Nutrition and Health Specialist continues to serve on the North Central ISFAC (Inter-Service Family Assistance Committee) in the north central part of the state. Funding (\$29,000) to provide this program has continued to come from the Harrison County Family Resource Network for the 13 north central counties. In the 2014 year funding was not only provided for the military families but a program was implemented for the families that the FRN serves on a day to day basis. Programs were provided to one of the Catholic Parishes and the Association of Retired Federal Employees.

Results

Families who attended the health literacy program were, better equipped to track and maintain the family medical records. Caregivers were empowered to better advocate for their patients/loved ones.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #9

1. Outcome Measures

After completing the active lifestyle programs, participants will report the addition of better health management practices, including additional physical activity.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

This past year, WVSUES continued to focus on the expansion of our healthy lifestyles programs for seniors. The generations of older Americans are rapidly growing throughout the United States. Quite often these individuals are raising a younger child and there is an overwhelming need for them, to take more steps for being active. According to the Centers for Disease Control and Prevention (2012), physical activities among seniors; helps maintain the ability to live independently and reduces the risk of falling and fracturing bones, reduces the risk of dying from coronary heart disease and of developing high blood pressure, colon cancer, and diabetes, helps people with chronic, disabling conditions improve their stamina and muscle strength, Reduces symptoms of anxiety and depression and fosters improvements in mood and feelings of well-being. Finally regular physical activity helps maintain healthy bones, muscles, and joints and helps control joint swelling and pain associated with arthritis.

What has been done

1. Developed and published a planning document and history designed to help local nursing homes implement their own local Geri Olympic program.
2. Expanded use of the Facebook site and email data base for sharing research and information relevant to senior wellness and quality of life.
3. Began development of a state wide data base or email file that could be used to promote Geri Olympics its benefits.
4. Conducted 10 Geri Olympics on the move programs in rural hospitals for residents unable to attend regular Geri Olympics programs in Charleston.
5. Presented and set up exhibits at two state conferences presenting the values, benefits and goals of Geri Olympics. (SHEC Conference and Senior Conference at Cedar Lakes)
6. Completed and published an evaluation at Geri Olympics that includes feedback, enabling the improvement of the Geri Olympics program and involvement of the resident athletes as well as volunteers and health care professionals.
7. Conducted after school physical fitness programs to increase youth activity levels.
8. Began a campus wellness program to increase student, faculty and staff physical activity through walking and fitness instruction.

Results

Over the past year, 300 nursing home residents have experienced Geri Olympics programs focused on reducing the effects of living a sedentary life and other issues revolving around being lonely, hopeless and boredom. The overall goals have been to promote quality of life, wellness, active living and an opportunity to be socially and intellectually connected to peers and the community. As a result of the \$25,000 grant that was awarded by the WV Department of Health and Human Services in 2012, the program has continued to grow in geographic expansion. Geri Olympics Programs are also inclusive of an outreach program (Geri Olympics on the Move) having the same benefits and goals for nursing homes in rural areas and community hospitals. This past year, the program served more than 155 residents through the central, northern, and southwest regions of the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #10

1. Outcome Measures

Youth attending expressive arts programs will demonstrate mastery of their creative art.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	43

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With cuts to school art and music programming, youth have less outlets and access to this type of programming. 4-H Young Film Makers Club was created to provide distinct programming to address the growing needs that youth have in developing life skills and becoming more productive members of their society. In order to achieve this, we provided activities in the theatre and film/visual arts. Through partnerships with volunteers, local businesses and community organizations, youth between the ages of 9 and 18 are able to foster their desires to learn certain expressive arts skills with caring adults who have already mastered the skills. Providing this healthy and nurturing way as an outlet for youth to express themselves will ensure less criminal acts in the community, higher student achievement by these participating youth and an increased sense of self-worth by participants while being given productive ways to spend their time.

What has been done

WVSU Extension Service provided a monthly 4-H Young Film Makers Club at the Economic Development Center attended by a total of 12 middle school youth. The teachers were trained to provide the essential elements of 4-H throughout the duration of the camp. At the culmination of the program, youth demonstrated the skills obtained by providing a final project that they could share with their parents, family members, community members and WVSU staff. So far the 4-H Young Film Makers club has completed several full film projects. At the culmination of the camp and the completion of every theatre and film project, 100% of youth have demonstrated their newly obtained skills and confidence by providing a presentation

Results

At the culmination of the camp and the completion of every theatre and film project, 100% of

youth have demonstrated their newly obtained skills and confidence by providing a presentation

to the parents, family members, community members, the club members and WVSU staff. Every youth demonstrated an increased knowledge in and an increased mastery of their chosen area by completing their presentation. Even the youth who began the club with a fear of public speaking/performing were able to publicly display their knowledge gained by presenting or performing their work.

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
806	Youth Development

Outcome #11

1. Outcome Measures

Youth will demonstrate financial literacy skills including budgeting, fiscal record keeping, and understanding financial management principles.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	610

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Daily spending decisions can have a far greater negative impact on a child's financial future. Educating, motivating and empowering children and young teens to become regular savers and investors will enable them to keep more of the money

What has been done

Student's participated in "Real Money Real World", a simulation that allows children to choose jobs and salaries through a

random drawing. Each of them were to add children, housing, entertainment, cars etc?and calculate it into their budget. Roughly 12 booths were set up relating to life events. At the end each student has to have a balanced budget.

West Virginia State University collaborated with Marshall University School of Pharmacy/Medicine in a summer camp that included student?s grades 10th-12th from all surrounding areas in a workshop that was offered to increase their literacy education level. In this particular segment they were to correspond career choices with personal income and taught how financial security as well as

learning to manage daily spending can result in cost of living decisions.

Youth participated in weekly activities that engaged their imagination and allowed them to express their unique personalities.

Exercises included a variety of things but most importantly encompassed money management activities

Results

After completion of the financial literacy program, all participants were able to exhibit and demonstrate their knowledge gained on budgeting, keeping record using a checkbook register as well as other financial management skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
806	Youth Development

Outcome #12

1. Outcome Measures

Youth will report making better choices about spending habits at the grocery store.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	75

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Obesity is a national epidemic that continues to grow, especially in WV. One of the reasons obesity is so prevalent in West Virginians is because there is not enough knowledge on how to eat healthier on a budget, nor is there a desire to do so. The more unhealthy food that is purchased and consumed, the more obesity the state and nation becomes, which leads to increased medical costs applied to obesity related illnesses such as diabetes and high blood pressure.

What has been done

The Children Youth and Families at Risk funded WVSU Fast Track program aimed to increase knowledge in these areas, reducing the rate of obesity amongst our youth. Middle school youth in the Charleston area were targeted for this program. Afterschool and summer day camps were provided. As an afterschool setting, six week 2-hour a day sessions were offered to the schools and neighborhood center. Two one week day camps, 7 hours a day, were offered during the summer. Lessons on food safety, food preparation, physical fitness, and financial literacy were offered. As youth participated in the program, they were provided examples of healthier, yet cost effective snack, breakfast, lunch, and dinner options. They were provided lessons on how to calculate their spending, how, and when to purchase the items.

Results

By the completion of the Fast Track program, 100% of youth were able to demonstrate in their lesson the methods used to budget and purchase a meal healthier than the meals they usually consume, while staying within their budget.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
806	Youth Development

Outcome #13

1. Outcome Measures

Youth will report an interest in pursuing a health, science, or technology-related career.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	131

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Research has found that only 5% of current US college graduates earn science, engineering, or technology degrees compared to 66% in Japan and 59% in China. Fewer youth in the US pursue these careers and we believe that is due to a lack of interest, which comes from a lack of enjoyable, yet educational opportunities to gain knowledge in the STEM areas

What has been done

The HSTA summer program and Summer Transportation Institute are proud to represent the initiative of increasing youth participating in Science, Technology, Mathematics, and Engineering. WVSU provides youth with hands-on learning experiences that has proven to spark their interests

in the STEM fields by providing time on the college campus while learning in the classrooms and laboratories.

Results

After completion of the HSTA post survey, 66% increased interest in math, and; 74% reported that HSTA had a moderate to very high impact on their interest in pursuing health care careers. After completion of the STI post survey, 52% reported an increased interest in science, a 45% increased interest in math and a 75% increased interest in technology and engineering.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and

806 Communities
Youth Development

Outcome #14

1. Outcome Measures

Youth will demonstrate knowledge of the scientific method.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	38

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Students receive less science instruction in elementary school due to a disproportionate focus on improving Math and English standardized test scores and youth are missing out on some of the science skills that they need before middle and high school due to this fact. Less instruction on science could also be a major factor in the decreased interest in STEM fields, leading to the low percentage of college graduates in that area as well. STEM majors are also needed to fill positions in the workforce. The knowledge of the scientific method increases the understanding of the necessity of research and development to solve global problems.

What has been done

Students participated in hands on learning activities integrating Biology, Chemistry, Physical Science and Environmental Studies. The students engaged in problem solving relevant to the STEM topics as well as to real world. The lessons also presented opportunities for students to collaborate and work as a team. All parts of the experience were intended to increase student STEM knowledge and also the understanding of how science is done.

Results

The students were engaged and excited with the activities. They enjoyed interacting with other students and learning about new ideas. The students gained expertise with problem solving as they were given exposure to varied situations. At the end of the experience the students reported a positive change in how they felt about science and about solving problems.

4. Associated Knowledge Areas

KA Code	Knowledge Area
---------	----------------

806 Youth Development

Outcome #15

1. Outcome Measures

Youth attending CASTEM camps will exhibit increased knowledge of math, science, and life-skills.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1443

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The issue that exists with lack of knowledge of scientific method also exists with general math and science knowledge. Students receive less science instruction in elementary school due to a disproportionate focus on improving Math and English standardized test scores and youth are missing out on some of the science skills that they need before middle and high school due to this fact. Less instruction on science could also be a major factor in the decreased interest in STEM fields, leading to the low percentage of college graduates in that area as well. STEM majors are also needed to fill positions in the workforce. The knowledge of the scientific method increases the understanding of the necessity of research and development to solve global problems. Students need to be aware of math and science in their everyday life in order to be productive successful individuals.

What has been done

The students participated in lessons with math and science emphasis. Lessons used math to solve science problems or used science to collect data or solve math problems. The lessons integrated math and science with other topics to make real life application. As the students participated their knowledge of both math and science was assessed and deficiencies in skills was addressed.

Results

The students reported that they understood specific concepts better. They showed interest and engagement by questioning. Students have asked to return to camps and have stated that they had a good experience. Interest in math increased as students used the math in real life settings.

4. Associated Knowledge Areas

KA Code **Knowledge Area**
806 Youth Development

Outcome #16

1. Outcome Measures

K-12 teachers trained by the program will incorporate more experiential STEM-learning activities for students.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	204

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Students receive less hands on science instruction in K-12 science classed due to a disproportionate focus on improving Math and English standardized test scores, lack of undergraduate hands on training, lack of time and lack of funding for materials. youth are missing out on some of the science skills that they need before middle and high school as well as preparation for college. Less instruction on science could also be a major factor in the decreased interest in STEM fields, leading to the low percentage of college graduates in that area as well. STEM majors are also needed to fill positions in the workforce. Teacher knowledge and skill for science correlates to comfort level with materials and content. Continual professional development provides content knowledge as well as increases the comfort level for the instructors.

What has been done

The training delivered aligned with both national and state standards of instruction and methodology. As trainings were delivered, the teachers were able to assess appropriate grade level and complexity. The materials for the lessons were provided when needed for the classrooms.

Results

The geographic location of some schools effect the attendance at workshops. Some school districts provide more professional development than others. The support of STEM by the district affects the emphasis that teachers place on STEM.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #17

1. Outcome Measures

Youth completing the 4-H Family Growth program will report an increased interest in reading and gardening activities.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	448

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The literacy rate in the state of WV is remarkably lower than many others in the U.S. In 2008, the state ranked as one of 17 in the entire country for having a literacy rate falling below the national average. These factors are prevalent because typically individuals that experience difficulty in school typically tend to drop out or begin failing at early stages of education.

What has been done

Through this project we plan to connect the community with research-based knowledge, emerging horticulture issues as well as West Virginia State University's faculty, staff, departments and programs. In partnership, we work to enhance the quality of life of individuals, families and communities throughout WV by using gardening success as a tool for enhancing environmental and scientific literacy, building community and promoting human well-being. Programming includes after-school, in-school, and summer based enrichment opportunities.

Results

After completion of the GROWTH program, youth and adults have displayed an increased interest in reading and agriculture through increased levels of participation on behalf of the teachers and students. Students have demonstrated more knowledge on topics related to nutrition, gardening, and nature as well increased their interest in reading books related to those topics. Pre and post surveys have also proven an increase in knowledge in the same areas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

School and other site location schedules, weather conditions, changes in economy, appropriations changes all affected the program implementation. It was difficult to keep a consistent schedule due to changes in site location schedules, and funding cuts caused us to change some of the program deliverables.

The geographic location of some schools effect the attendance at workshops. Some school districts provide more professional development than others. The support of STEM by the district affects the emphasis that teachers place on STEM.

The students come to camps with varied experience in science and scientific problem solving. Their prior experiences impacted the outcomes because not all students had the same level of prior knowledge nor were they able to follow steps of investigation. As students learned and cooperated the learning increased.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Each youth completed a survey about their knowledge of the topics before and after the program. The survey's indicated that 100% of the youth reported knowledge gained in all areas of the financial literacy curriculum. Group discussions proved that youth were unaware of the amount of funds it takes to maintain a certain lifestyle from month to month. They learned that it is necessary to begin making plans for their futures now;

starting by improving or maintaining adequate grades in order to pursue the career they have chosen. Through the program, youth also gained knowledge of various occupations that are available.

Families who attended the health literacy program were, better equipped to track and maintain the family medical records. Caregivers were empowered to better advocate for their patients/loved ones.

By the completion of the Fast Track program, 100% of youth were able to demonstrate in their lesson the methods used to budget and purchase a meal healthier than the meals they usually consume, while staying within their budget.

At the culmination of the expressive arts 4-H club, and the completion of every theatre and film project, 100% of youth have demonstrated their newly obtained skills and confidence by providing a presentation to the parents, family members, community members, the club members and WVSU staff. Every youth demonstrated an increased knowledge in and an increased mastery of their chosen area by completing their presentation. Even the youth who began the club with a fear of public speaking/performing were able to publicly display their knowledge gained by presenting or performing their work.

This, year's G.O., played host to over 199 nursing home or assisted living residents, from 22 facilities around the state that competed, in activities designed to enhance their active lifestyles capacity. The Geri Olympics started as a small event to provide students with out of class learning experiences, community agencies assistance in programming for seniors and nursing home residents, an exciting competitive event for nursing home resident athletes that provided an opportunity for competition, socialization and involvement.

There were 160 volunteers that represented a host of community and collegiate organization. There were 30 students that participated as volunteers from the Allied Health Department of Kanawha Valley Community and Technical College and 32 that represented the Marshall University School of Pharmacy. In September 2014, the first annual Geri Symposium will be hosted at Marshall University being co-hosted by the pharmacy school which bears its name and the Institute for Geri Olympics and Active Living, which was established in 2014.

Key Items of Evaluation

Financial Literacy program results have shown that each participants knowledge of managing money as a whole increased by the end of the one hour long workshop as well as 100% stating the course was helpful overall and would recommend it to others.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Community Vitality

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
602	Business Management, Finance, and Taxation		10%		0%
604	Marketing and Distribution Practices		10%		0%
605	Natural Resource and Environmental Economics		5%		0%
608	Community Resource Planning and Development		75%		0%
Total			100%		0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	10.0	0.0	1.0
Actual Paid	0.0	8.0	0.0	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
0	410128	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	308392	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Community and Economic Development Program Area of WVSU Extension Service works collaboratively with various partners including our researchers, WVU Extension, local non-profits, government agencies, community members, local businesses, etc. to address community vitality for targeted urban and rural distressed communities. Several integrated approaches to increase economic viability will be utilized. With a focus on green development, community beautification, abandoned and dilapidated buildings, historic preservation, agribusiness development and entrepreneurship the collective emphasis will be on the development of sustainable, healthy communities.

Statewide and local economic analysis and development of opportunities for business expansion continues to be an area of concentration for both the extension and research efforts. Through partnerships with the New River Gorge Regional Development Agency and the Hatfield and McCoy Trails, community and economic development agents have been placed in five counties to help enhance the probability of economic growth or stability within the southern regions of the state. The CED staff will continue to work extensively with clients who want to start a business, providing training and other services to better meet their needs to become successful in their endeavors.

Community revitalization has become a larger focus for the CED program area over the past year. Through an increase in staff and the new areas of specialization they bring to the program area, increased emphasis has been placed on enhancing the sense of community. Whether it be through programs to create new restaurants or lodging in a tourist driven community or the addition of wayfinding signage to enhance the experience once there, these efforts are bringing small communities to better assess their needs and make progress.

2. Brief description of the target audience

- Community leaders, government officials and agencies, community members, small business owners, potential business start-ups, un-employed, regional and statewide community development partners, members of civic, community, revitalization and preservation organizations.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4948	23768	756	2438

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

Patent Applications Submitted

Year: 2014

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- WVSUES will provide technical assistance with various community planning, disaster preparedness and/or re-development efforts.

Year	Actual
2014	73

Output #2

Output Measure

- Number of potential, start-up and existing small business owners served with training, mentoring and other assistance programs.

Year	Actual
2014	524

Output #3

Output Measure

- Educational programs and initiatives related to community revitalization including green projects, will be provided and/or supported.

Year	Actual
2014	53

Output #4

Output Measure

- Workforce development participants receiving necessary training and placement assistance for targeted industries.
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Grants, financial awards or new partnerships to support initiatives will be developed, received and utilized.

Year	Actual
2014	24

Output #6

Output Measure

- Number of regional and local economic development initiatives initiated, led, and supported by faculty and staff members.

Year	Actual
2014	48

Output #7

Output Measure

- Number of volunteers, community members, and stakeholders actively involved in initiatives.

Year	Actual
2014	1474

Output #8

Output Measure

- Number of small business owners working on facade renovations.
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Communities will implement components of their strategic action plans or regional economic development plans.
2	Potential business owners or existing small businesses received financial assistance, obtained a business licenses or reported an increased knowledge of relevant business issues as a result of participation in CED programs.
3	Participants of workforce training programs successfully complete training programs resulting in certification for job placement, enhanced industry skills or employment.
4	Grants, financial awards or partnerships will be awarded or developed for use to support CED initiatives.
5	Participants report increased comprehension of revitalization or green development principles.

Outcome #1

1. Outcome Measures

Communities will implement components of their strategic action plans or regional economic development plans.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	48

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

WVSU Extension Service is working in traditional and creative new ways to help West Virginians understand our collective potential in the new global economy. We have reorganized our programs to streamline our efforts to work on targeted initiatives. To do this we have hired new agents with expertise in historic preservation, cultural tourism, agribusiness and entrepreneurship who are working with community leaders, existing and future business owners, entrepreneurs and youth to connect on diverse collaborative projects. Our work is focused on sustainable communities and economic growth to better assist communities to take the next step in their action plan and propel them closer to their end goals.

What has been done

WVSU Extension Service works to develop programs and provides planning support to help communities attract and retain that next generation of business developers. With a focus on innovative and artistic ideas, new ways to incorporate technology into the mainstream as well as avenues to increase tourism at the county level, the main goal is to empower communities implement their plans into action.

Agents partner in local government and regional planning initiatives. WVSU Extension agents led and will likely continue to lead and participate in the design and delivery of a leading statewide training conference focused on innovation and sustainability as economic drivers. This conference includes training for community and economic developers, municipal leaders, educators, business leaders, entrepreneurs, and community advocates from across the state. Agents have also led projects to enhance county way-finding by identifying and assessing all county tourism assets, providing signage which more readily identifies the assets, and then coordinating with the CVB to point visitors to these assets.

Results

The first dual conference with Create WV leadership and The Building Conference at Glenville State College was attended by over 400 people. During the conference whitespace (broadband), sustainability, resilience, Eco Districts, Lean Startup and other transformative concepts were discussed. As a result, several communities are working to become whitespace demonstration pilots, implementing modular onsite wastewater systems that are central to more municipalities planning efforts, contacting the WVSU EDC for training and consultative services and also integrating students from FBLA and colleges around the state in multiple community planning efforts. During this event Five Placemaker Awards were conferred. Based on this conference success, West Virginia State University EDC is now recognized for innovation economy program development, entrepreneurship and 21st Century workforce development.

The Nicholas County Signage Process was developed and began signage implementation in July with the first signs placed at a local historic site related to the Hawk’s Nest Tunnel disaster. Upon completion, this will be a tourism tool upon which to build, relationships with local tourism managing entities enhanced, and tourism assets readily identified. An open dialogue with tourism partners has been fostered due to the collaborative nature of this project.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #2

1. Outcome Measures

Potential business owners or existing small businesses received financial assistance, obtained a business licenses or reported an increased knowledge of relevant business issues as a result of participation in CED programs.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	524

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

West Virginia often falls toward the bottom of the list in many business related categories. WVSU CED professionals have partnered statewide with organizations to provide training events,

examining data related to small business engagement and participation and work together to engage that next generation of entrepreneurs. Creation of a small business in the state can be a tedious task and WVSU Extension Service is looking to provide a bold, fresh approach to small business development, from engagement to market.

What has been done

Two trainings have been coordinated among program partners on the side of Farm, Food and Finance. These meetings connected producers and farmers to potential lending sources as well as provided business plan/coach assistance. The training also focused on agri-businesses in southern WV, connecting producers to Farm to Table market in Raleigh County. An Entrepreneurs Café was also held in Summers County, providing entrepreneurs an opportunity to pitch their business idea for potential funding.

Micro-Enterprise and Small Business Development Training series was designed to engage developing and existing business owners in new ways with subject matter experts in design, marketing, law, finance, programming, and business strategy. Through the delivery at the WVSU EDC barriers to expensive software, equipment and facilities were reduced. This opportunity provided training, mentoring and technical assistance for developing business owners, startups, and existing small business owners. One-on-one assistance was made available through lunchtime clinics, networking events for encore entrepreneurs. A focus was given to Web development, social media, marketing, business plan development, client relationship management, intellectual property and business law, branding, and networking for funding and increased product distribution.

Five new Maker Camps for primary and middle school students to engage diverse student audiences in science, technology, research, engineering, and math were piloted. Participants engaged with the facilities, equipment, mentors and peers to learn about and make new things that matter to them.

A training on ?5 Strategies to Promote and Grow Your Business Online? was given to small businesses in the area. Some topic areas of this workshop included how to: build an effective website, make your website quality better, use social media more effectively, get your website easily found and take reservations and payments online.

The startup of a small business was supported through the creation of Sandy?s Coffee Shop in Richwood, while a feasibility study for a potential economic driver in the development of the Richwood ATV Park was initiated. Numerous consultations were held with local developers on plans for multi-use developments as well as with local business owners on business expansion and new business development.

Results

The two Farm, Food and Finance trainings were attended by a total of 46 participants. Producers learned about new and emerging markets and potential funding sources for expansion. The Entrepreneurs Café in Summers County was attended 36 people and 6 entrepreneurs participated and pitched their business idea. The winner was a female farmer looking to expand her farm and begin harvesting bloody butcher heirloom corn. She was awarded a \$500 cash prize. She used the prize money to purchase a grist meal for corn meal production both for chicken feed and human consumption. Several other entrepreneurs made connections at the café and begin collaborating to sell their goods locally.

Micro-Enterprise and Small Business Development Training series impacted 336 individuals. Participants have taken advantage of Web design, social media and business planning and business law clinics and coaching sessions to help them in their next steps toward small business development.

While there are a growing number of STEM camps available to upper primary students and older, few, if any, exist in the Charleston area for lower primary students. With funding from the WV NIP

Tax Credit program and the Greater Kanawha Valley Foundation, 65 kids, ages 6 to 15, attended the five pilot Maker Camps to thematically explore multimedia (Web design, photography, sound engineering, video production, robotics, microcontrollers, desk top manufacturing, prototyping, design thinking, problem solving, and entrepreneurship with weeklong day camps. All participants reported a minimum of 90% gain in knowledge in at least five areas.

The training on the "5 Strategies to Promote and Grow Your Business Online" received feedback that many individuals were able to take this information back to their business and incorporate new ideas or strategies. Since the trainings several one-on-one consultations with individuals on advertising options for their businesses have been conducted. Individuals have also been put in touch with the Small Business Administration and local Economic Development Authorities regarding small business loans and early business planning.

The creation of Sandy's Coffee Shop in Richwood has provided a safe, clean, hometown business will provide venue and opportunity to the community. It has provided a connection to the Richwood Creations product with main street Richwood and will provide the thousands of tourists that pass along Main Street a place to stop and invest in the local economy.

Through the implementation of Phase I of the feasibility study of the ATV Park in Nicholas County, the opportunities that this could bring to this community are fruitful. This project would mean around 3-4 year round jobs, just as many seasonal jobs, and a potential influx of thousands of visitors to an area of our county which is financially destitute.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices

Outcome #3

1. Outcome Measures

Participants of workforce training programs successfully complete training programs resulting in certification for job placement, enhanced industry skills or employment.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Grants, financial awards or partnerships will be awarded or developed for use to support CED initiatives.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With increasingly difficult economic times, budgets are dwindling, and WVSU Extension professionals have to seek additional and alternative funding to support the community and programmatic work that so desperately needs to be done.

What has been done

Agents in southern West Virginia worked with regional development agencies to write grants to various foundations. Working with several community groups in Nicholas County, nine grant applications were submitted in support of efforts in the county. Additionally grant writing assistance for project development for beautification and community capacity building was provided to the Richwood Blueprint Team. Grant writing assistance was provided for the development of bricks and mortar project in Oak Hill. This project will look to provide an outlet for agri-business while increasing local food security through decreasing the local food desert.

Paint Creek Scenic Trail Association also worked with the WVSU Agent with on an Oral History Project funded by grants from the National Coal Heritage Area and the West Virginia Humanities Council.

A Community Resource Guide titled Destination Beautification was redesigned to bring together numerous topics and knowledge bases reflective of the CED and ANR program areas. The guide will be distributed for local as well as regionally statewide as a branded product of WVSU Extension Service. This program will be shared nationally with extension partners and submitted to the Journal of Extension for national recognition. Funding was applied for in support of this combined effort

Results

The Agent in Nicholas County and submitted a \$7290 Nicholas County Community Foundation grant on behalf of the Richwood Alumni Association. This grant would be part of an \$11,090 facility maintenance project to assure the ongoing availability of the Richwood Alumni Hall, which is utilized for a variety of large community meetings. Additionally, a grant was submitted for \$4122 to the Nicholas County Community Foundation on behalf of the Richwood Lions Club. This grant would fund 80% of the club purchase of seasonal street side banners for Main Street in Richwood. Finally, the body of a \$7600 Nicholas County Community Foundation grant was prepared on behalf of the Richwood Civic Engagement Team. The grant would fund purchase of portable amenities (tables, chairs, sound, lights?) to be utilized in hosting community activities in the downtown Sculpture Garden park. Funding of any portion of these grant applications would benefit the residents and visitors of the city of Richwood.

Providing continued assistance to the Richwood Community Initiatives a \$10,000 Flex-E-Grant was submitted on behalf of the Richwood Building Commission, of which \$5000 is targeted for development of Helios Park. Working to provide Richwood with a unique green-space in a prominent location, this support would go toward ongoing beautification efforts in the city. As a gateway community of the Monongahela National Forest, Richwood will benefit by continuing to improve the Main Street impression. In-town walkability with access to the existing rail-trail is a key initiative that would assist in revitalization of Richwood.

The Agent in Fayette County has worked closely with The Paint Creek Scenic Trail Association (PCSTA), a partnership between the Upper and Lower Paint Creek Watersheds. The Paint Creek travels from Raleigh County, through Fayette County, into Kanawha County, roughly following the WV Turnpike. The road that is associated with the creek is an important alternate route in the event of WV Turnpike closure. The PCSTA works to develop tourism opportunities and is interested in developing a rail trail that would improve recreational access along the Paint Creek. The WVSU Agent obtained \$665 from Mountain RC&D, through WVDA to be utilized for the construction. The Agent also established connection between Farmer’s Market and Crickmer Farms of Danese, to begin selling Christmas trees and holiday items. This will help to extend the season for the Farmer’s Market and assist Crickmer Farms with a transition to a local market.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

Participants report increased comprehension of revitalization or green development principles.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1524

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Communities are stressed more than ever with shrinking populations, shrinking budgets, and shrinking resources making it difficult to address aging transportation, water, waste water

infrastructure; and structural issues. West Virginia communities have an overwhelming number of abandoned, dilapidated properties, and a litter problem, and no budget to deal with these issues.

Municipalities struggle also with growing costs and complexities of storm water management, waste disposal, recycling, and reuse. These issues combined with lower individual or community property values have become a regional issue. Communities statewide have been engaging in comprehensive planning, and under these present conditions, more community leaders are looking for the low hanging fruit in terms of opportunities that can serve as drivers for economic diversity. Communities need reliable information on how to make the best of what currently have and be presented ways of adapting resources to fit current or future needs while encouraging growth and expansion.

What has been done

The development of the John Henry Museum and Gift Shop has involved an oral history project with WVSUES Director of Communications and Megan Sheets, Digital Marketing Specialist at WVSU. They filmed an interview with Bill Dillon regarding John Henry and the construction of the Big Bend Tunnel. The completed project will be featured in the John Henry Museum and can be used as an educational tool for elementary children. The WVSU Agent in Summers County has assisted with the sorting and prioritizing artifacts and organizing material to begin archiving for the museum. The Agent has also worked with local crafters and artisans on displaying and selling their goods in the gift shop, focusing on only WV made products.

Another project funded through a grant from National Coal Heritage Area introduced historic preservation to the region as a way to help develop capacity. A month long traveling display visited 6 different counties in central West Virginia and involved a reception as well as informative presentations on various aspects of historic preservation. Along these same lines, the Nicholas County Historic Landmark Commission focuses on historic preservation and heritage tourism, assessing the potential for historically significant structures to be renovated for alternative use.

Agents are also working with the Summersville Downtown Revitalization Team to propose and implement revitalization opportunities in that community and have connections in several counties assessing the same options. In Nicholas County the Richwood Nuisance Property Committee and Building Commission is tasked with addressing abandoned and dilapidated properties and works closely with the WVSU Agent in the county for their expertise on the topic. Similarly, the Agent in Fayette County has provided assistance in development of a façade loan program with National Coal Heritage Area and New River Gorge Regional Development Authority.

Focusing on opportunities for recreation, the Summersville Lake Access Development Project requested the assistance of the WVSU Agent, who then coordinated the involvement of the City of Summersville and the Army Corps of Engineers. This project will provide light watercraft access to a key location on Summersville Lake, one of the largest tourist attractions in the area. Along those same lines, the WVSU Agent in Fayette County served as the representative for the development of Meadow River Trail, a 16.7 mile recreational trail being developed between Fayette and Greenbrier Counties.

Results

The John Henry Museum will preserve the rich history of the local story as well as capture labor and railroad history. The Museum is also housed in an historical building and the group is working on preserving its history as well.

The Bridges to the Past traveling display spurred the conversation about historic preservation throughout the 6 county region, increasing the awareness of the Preservation Alliance within the

state. Through this numerous collaborations have been initiated as program efforts to be pursued within the coming year.

The Richwood Beautification Team prepared and submitted a grant to the Nicholas County Community Foundation grant to complete "Helios Park". This project will combine a solar trellis with a native vegetation pocket park in the place of a previously burned out downtown lot. The Agent has provided feedback in support of continued assessment and proposed refresh of the downtown Sculpture Garden pocket park. Upon implementation of the proposed efforts, Richwood will have a unique asset in a prominent location, supporting ongoing beautification efforts. As a gateway community of the Monongahela National Forest, Richwood benefits by continuing to improve the Main Street impression.

The National Coal Heritage Area wishes to invest funding in a loan program to assist business and property owners in the New River Gorge Region with financial assistance in preserving and beautifying storefronts. There is little funding currently available for these types of improvements, which have a significant impact on the overall impression of our downtowns. This kind of program could provide a catalyst for reviving our small town commercial districts. The Agent in the county continues to support the conversation to further develop this opportunity for the storefronts in the area.

The Meadow River Trail project has been ongoing for the past 5 years. It will create a 16.7 mile rail trail for non-motorized use in Northern Fayette County and Eastern Greenbrier County. Potential exists to connect to NPS Trails in the New River Gorge, establishing community connections to public lands. A lumberyard borders the trail and provides ample space to supplement the recreational activities of the trail. The owner has shown interest in offering retail and convenience items, which would be a great asset to the community that currently has no local availability of such items. Additional work is being done that may allow for purchase of adjacent land to the Meadow River site that would be valuable public lands and help to protect the watershed and allow for additional recreation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities

Brief Explanation

Continued budget cuts and the struggling economy impacted the overall program budgets in this past year. Through development of partnerships, staffing levels have steadily increased and allowed for greater diversification of the programming efforts. Though working on limited budgets, the Agents and the Specialist focused on providing quality services that required little overhead- streamlining their approach to serve as a connection

between partners in their counties rather than taking on projects on their own. Partnerships and collaborations across the state have flourished in this past year and will continue based on the mutual respect established during these economically strapped times. The program was forced to focus on the distinct needs of the community and to make use of the resources readily available to make progress, a mindset we look to follow for years to come. Programs and resources will continue to be collected, created, and disseminated in unique ways to ensure the outreach of quality programs to the individuals in the state we are deemed to serve.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Business clients polled reported increased knowledge in planning, marketing and accessing finance, and basic business knowledge.

A growing number of businesses are connecting with WVSU Economic Development Center resources to learn how to develop and manage their own Website, including a shopping cart component for e-commerce, and social media platforms.

We are working on tracking increased revenue, industry sector, and the number of SBA certified small business start ups as a result of engagement with WVSU agents. Regional Community and Economic strategic planning is taking place as a result of our placement of highly qualified and diverse Agents in southern WV.

Key Items of Evaluation

VI. National Outcomes and Indicators

1. NIFA Selected Outcomes and Indicators

Childhood Obesity (Outcome 1, Indicator 1.c)	
0	Number of children and youth who reported eating more of healthy foods.
Climate Change (Outcome 1, Indicator 4)	
0	Number of new crop varieties, animal breeds, and genotypes with climate adaptive traits.
Global Food Security and Hunger (Outcome 1, Indicator 4.a)	
0	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
Global Food Security and Hunger (Outcome 2, Indicator 1)	
0	Number of new or improved innovations developed for food enterprises.
Food Safety (Outcome 1, Indicator 1)	
0	Number of viable technologies developed or modified for the detection and
Sustainable Energy (Outcome 3, Indicator 2)	
0	Number of farmers who adopted a dedicated bioenergy crop
Sustainable Energy (Outcome 3, Indicator 4)	
0	Tons of feedstocks delivered.