2012 West Virginia State University Combined Research and Extension Annual Report of Accomplishments and Results

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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), continues to deliver programming that is responsive to the needs of University, State, and the Nation's stakeholders.

Since reinstatement of land-grant status in March of 2000, GRDI has continued to expand research and extension capacity, and is actively working to integrate research, teaching and outreach 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.

The MS graduate program in Biotechnology, 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 the agricultural and environmental research.

The following report provides details of the programs supported by Evans-Allen and Extension funds appropriated to 1890 Institutions and matching funds provided by the State of West Virginia. The corresponding National Institute of Food and Agriculture Priority Program will be identified for each Planned Program.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	35.0	0.0	16.0
Actual	0.0	24.0	0.0	12.7

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

All USDA formula funded WVSU research and extension projects are subject to both an internal and external annual review. The internal review consists of semi-annual and/or annual reports that detail work accomplished during that time period, including progress, student involvement, publications and presentations, collaborations, and stakeholder involvement. This information is also summarized in the annual CRIS report and impact statements. The reports are reviewed by the Associate Dean and Associate Director of Research and Extension, and are integral to the evaluation process. The College of Natural Sciences and Mathematics sponsors the annual WVSU Research Symposium during which many students and research faculty make presentations of their work. This permits a feedback mechanism among and within the WVSU community.

In the fall of each year, the Research and Extension Advisory Council (REAC) is convened to review research and extension programs together. The Advisory Council is composed of stakeholders external to WVSU representing university faculty, local community and business leaders, farmers and other entrepreneurs with and interest in our program. REAC was formed to further the integration of the Research and Extension programs.

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 were identified and invited to participate on the review panel to evaluate land-grant programs at WVSU. The invitation stressed 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.

Extension program leaders, specialists, research administrators and scientists sought 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 (Extension/ Researcher Interactions)

Brief explanation.

The goal of the WVSU Research and Extension Advisory Council is to have one or two 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.

There are two major components of the annual advisory meetings: presentations and/or tours of the programs by GRDI staff, and then breakout sessions of advisors, faculty, staff, and administrators to discuss major observations or issues of the University's programs. Specific questions formulated in a survey format were handed out during the meeting for the advisors to answer. Finally, to document all the discussions that took place during the meetings from committee participants, minutes were assembled and all survey information collected, analyzed and used to guide the programming process of the following research year.

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.

WVSU extension staff, research administrators and scientists sought individuals and groups within a specific area of expertise or understanding to provide input and guide the direction of programs in order to better address the needs of our targeted stakeholders. These individuals and organizations were invited directly to participate through a written invitation. Other individuals were encouraged by previous members or other University staff. Thus the advisory committee consisted of several individuals representing the different areas addressed by the research programs.

Target areas were defined based on the WVSU programming portfolio. Within each target area, individuals were identified and invited to participate in the advisory process. These individuals advised the scientists on possible stakeholders and issues important to those stakeholders. Also, research scientists regularly attend professional seminars, special interest meetings and other relevant conferences, and have identified stakeholders through interactions with groups or individuals interested in their research programs.

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.

Input received from the WVSU Research and Extension Advisory Council was collected in writing during the breakout sessions. This feedback was used to guide the programming process of the following year's research andextension programming cycle. This input can have an effect on the distribution of effort with the land-grant programs.

Brief Explanation of what you learned from your Stakeholders

1. Stakeholders appreciate the opportunity to interact with research and extension staff.
2. They take this opportunity seriously and new REAC members are always amazed at what is being done.
3. They want to see even greater collaboration between research and extension staff.

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	1340876	0	1476423

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	0	1270512	0	1134052
Actual Matching	0	1106977	0	301907
Actual All Other	0	0	0	53955
Total Actual Expended	0	2377489	0	1489914

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	0	427672	0	0

V. Planned Program Table of Content

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		5%		0%
102	Soil, Plant, Water, Nutrient Relationships		10%		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%
211	Insects, Mites, and Other Arthropods Affecting Plants		5%		29%
302	Nutrient Utilization in Animals		10%		0%
403	Waste Disposal, Recycling, and Reuse		5%		0%
405	Drainage and Irrigation Systems and Facilities		10%		0%
721	Insects and Other Pests Affecting Humans		5%		0%
806	Youth Development		5%		0%
902	Administration of Projects and Programs		5%		0%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.5	0.0	7.8

Actual Paid Professional	0.0	2.5	0.0	10.4
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	132345	0	981958
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	108292	0	78777
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 Research programming was focused on aquaculture, genetic mapping for vegetables, and field trials of many vegetables and cut flowers. Identification of molecular markers, association panels and genetic maps were continued for nutraceutical, pest and disease resistance, as well as yield and quality traits in melon, watermelon, squash, pumpkin, and peppers.

Advanced tomato lines from marker assisted selection were assessed for plant growth and organoleptic traits. Lines evaluated this year included crosses between lines with superior taste qualities and carrying the late blight resistance gene, Ph3. Seed was collected off superior lines. Work continues to identify the best or new markers to use for marker assisted selection. Generation of acyl sugars for tests with beneficial insects on tomatoes in protected culture was initiated by collaborating with an organic chemist to create acylsugars with one type of fatty acid esterified to the sugar moiety for testing.

An early dwarf cayenne pepper line is under development for release for both pot and field production. A seed increase was undertaken in 2012 to allow testing by growers as well as seed companies. In addition, it was also included in our hot pepper trials on campus.

Field trials of twenty eight peppers (sweet, hot and specialty) and cut flowers varieties were evaluated on plastic mulched beds with irrigation for use in state-wide recommendations. A two-year winter hardiness study with herbaceous ornamental perennials was initiated in 2012 and included mums, gladiolus, Monarda and Lamium.

The aquaculture program continued to analyze data from feeding trials, and included effects of protein and high fat diet on feed utilization and mitochondrial function in rainbow trout.

WVSU Extension personnel assisted in the development of alternative agricultural endeavors to aid farmers in increasing their revenues. Additionally, there is an emerging interest in the development of green spaces in our urban centers and municipalities. WVSU worked with these entities to maximize utilization of best practices in the field of cultivation, selection, and maintenance. WVSU Extension continues 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 offered youth from pre-K to age 18, a variety of opportunities for exposure to plant and animal education. Program emphasis was focused on the Junior Master Gardener program.

2. Brief description of the target audience

- Fish feed manufacturers, federal agencies (ARS) involved in rainbow trout breeding, fish farmers
- Horticulturalists, germplasm collectors, plant breeders, private seed companies, farm and volunteer organizations, farmers/growers, small-farm operators, minority farmers and landowners, underserved rural communities , agriculture professionals - WVU Extension agents, WVDA staff, etc, 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?

Use of eXtension occurred through participation in three communities of practice (CoP): Plant Breeding and Genomics, eOrganic, and Consumer Horticulture. One of our staff is part of the executive committee for the Plant Breeding and Genomics from SoCAP and will be joining as a co-Leader of the community in 2013. "Ask an Expert" questions were answered for all three CoP.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	853	4600	393	2500

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total

Actual	0	10	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
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Train undergraduate and graduate students in biotechnology and agricultural related fields

Year	Actual
2012	32

Output #3

Output Measure

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

Year	Actual
2012	2008

Output #4

Output Measure

- Develop vegetable varieties for small farm production
  Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Both urban/rural clientele will receive information on research-based horticultural management.
  Not reporting on this Output for this Annual Report

Output #6

Output Measure

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

Year	Actual
2012	876

Output #7

Output Measure

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

Year	Actual
2012	24

Output #8

Output Measure

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

Year	Actual
2012	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 cultivars
4	Small farmer adoption of new vegetable varieties
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 enterprizes 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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fish feed manufacturer, fish breeders, and farmers. 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 (40/10 or 40/20 or 40/30 percent crude protein/fat) on the growth performance characteristics, mitochondrial respiratory enzymatic activities and gene expression in the liver, muscle and intestine. Another 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. Growth performance characteristics, mitochondrial respiratory enzymatic activities and gene expression in the liver, muscle and intestine have been completed for diets containing 40/10, 40/20, and 40/30 percent crude protein/fat.

Results

Results from the first factorial experiment showed no significance between the two families of rainbow trout for the feed intake expressed as percent body weight gain per day, WG, FE, SGR and HSI showed. Nutrient utilization efficiencies (PER, PPV, LER and LPV) were not affected by the family type. The fish fed diet 40/10 had a significantly better LPV and LER when compared to those fed diets 40/20 and 40/30 whereas those fed 40/20 diet had better PER and PPV than those fed 40/30 diet. Rainbow trout family had no significant effect on the respiratory chain enzyme complex activity except for complexes I, IV and V in intestine, complex III in liver; and complex III and V in muscle. Significant interaction occurred between family and diet in all the

genes analyzed except in muscle PPARbeta, PGC-1alpha and liver PGC-1alpha.

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Fish feed manufacturer, fish breeders, and farmers. High feed cost is 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 (40/10 or 40/20 or 40/30 percent crude protein/fat) on the growth performance characteristics, mitochondrial respiratory enzymatic activities and gene expression in the liver, muscle and intestine. Another 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. Growth performance characteristics, mitochondrial respiratory enzymatic activities and gene expression in the liver, muscle and intestine have been completed for diets containing 40/10, 40/20, and 40/30 percent crude protein/fat.

Results

Dietary composition had significant ($P < 0.05$) main effect on all the growth performance

responses measured except FI and VSI. The visceral fat and hepatosomatic index were significantly affected by diet and rainbow trout fed 40/30 had a significantly higher visceral fat when compared to those fed the other two diets. Nutrient utilization efficiencies (PER, PPV, LER and LPV) were affected by the dietary composition. The fish fed diet 40/10 had a significantly better LPV and LER when compared to those fed diets 40/20 and 40/30 whereas those fed 40/20 diet had better PER and PPV than those fed 40/30 diet. Diet had significant main effect on activities of mitochondrial complexes in liver for I and II, intestine for III and muscle for I, II, III and IV. There were significant interactions between family and diet was for complex I in the liver, complexes II and IV in the muscle and complex V in the intestine. Results from gene expression showed that diets had clear impact on gene expression especially diet 40/20. Significant interaction occurred between family and diet in all the genes analyzed except in muscle PPARbeta, PGC-1alpha and liver PGC-1alpha. This is more observed in the fast family 120 fed diet 40/20 where there was better growth performance and feed utilization.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals

Outcome #3

1. Outcome Measures

Development of value-added cultivars

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Project 1: Protected culture production of tomatoes (Solanum lycopersicum L., formerly Lycopersicon esculentum Mill.) is best with varieties bred for this environment. In addition, the controlled environment conditions of protected culture production generates higher yields from varieties bred for this environment than the field varieties. Most of the varieties used in Europe for greenhouse production are bred for northern European conditions and palate with no breeding of tomato varieties specifically for high tunnel production. No public tomato breeder is focusing on breeding for the specialty market of tomatoes produced in protected culture. However, this is the fastest growing production segment for tomatoes.

New varieties and strains of vegetables, fruit and ornamentals are constantly being developed throughout the world. WVSU has germplasm developed from prior partnerships that has been selected to develop varieties of interest for WV growers. Potential lines for both hot peppers and watermelons have been selected based on grower interest.

Project 2: The US cucurbit crop growers are seeking to diversify melon varieties and rotate them every season, while protecting this vulnerable crop from phytopathogens. Development of high quality disease resistant cucurbit crop varieties is critical to the economic prosperity of US cucurbit crop farmers. Due to complex inheritance of yield, resistance and stress related traits and their low heritabilities, breeding for yield in cucurbit crop is very difficult. This challenging objective is much more complicated as yield traits are controlled by quantitative loci. Understanding the genetic control of phenotypic variation is an important first step in order to utilize marker assisted breeding of yield components in cucurbit crop morphotypes.

What has been done

Project 1: Standard tomato varieties, advanced breeding lines and germplasm were put into a bato bucket hydroponic system following marker assisted selection for the late blight genes, Ph3 and Ph2. Plants were also assessed for plant growth/habit and organoleptic traits. Seeds were collected off superior lines. Plants from the crosses between lines with superior taste qualities and lines that should be homozygous for the late blight resistance gene, Ph3, were evaluated for plant growth and taste and seed to produce F2 populations were obtained. Sequencing of the amplicons derived from these markers are being analyzed for the set of varieties and lines available to assist in identifying better markers to use for marker assisted selection. A collaboration with an organic chemist began this year to create single types of acylsugar for testing on plants with beneficials ('Synthesis of Selective Esterified Monosaccarides'). Currently he is working with an undergraduate student to produce enough for testing.

WVSU has selected several early dwarf cayenne peppers lines showing promise as a long thin cayenne pepper for production. Selected lines are early and dwarf as well as exhibiting prolific greenhouse production without bumble bees for pollination. Plans are to develop the first line as an open pollinated variety for use in both pot or field production. Additional pepper lines exist in our seed stock that could also be considered for release in the future. The first line is a cayenne pepper line which was trialed at WVSU AERS with four commercially available lines. Two blocks of six plants per variety were grown on irrigated raised beds covered in plastic mulch following standard production practices. Plants were grown from seed and hand transplanted into the field. Fruit were harvested by plant into marketable and cull classes following USDA standards. Seed were also harvested of the cayenne line being considered for release.

Project 2:

Thousands of SNP markers were used to build association mapping panels and QTLs and linked markers for various traits have been identified.

500 cucurbit crop collections (melon, watermelon and pumpkin) and 96 pepper collections were screened with 15,000 SNPs and 500 SSR primers for LD (Linkage Disequilibrium), structure and association mapping studies.

SNPs linked to various nutraceutical traits were also identified and advanced breeding lines have been evaluated in farmers fields

LD patterns were estimated across the melon genome by using 500 mapped SSR markers from the published literature, EST based SSRs and 15,000 SNPs.

Results

Project 1: continues to have problems with the Ph2 and Ph3 markers for late blight resistance. In some cases the amplicons or the restricted products are not the correct size based on information from our collaborator. In some cases estimating the size of the restricted products is difficult when there is less than a 30 bp difference between bands. Additional techniques are necessary to verify the markers and determine if they are appropriate to use. Sequencing of the amplicons from varieties and lines with and without the markers is underway. The two markers for Ph2 colocalize and thus only one of the two will be informative in marker assisted selection. We are working to determine if one of these is the best markers to use for Ph2 and to identify additional markers. The three markers listed for Ph3 cover a large genomic region (25Mbp). Problems persist with amplification of one of the three and sizes of the restricted products not aligning with information provided by the collaborator. Preliminary sequencing data identified a problem with homology between the amplicon sequence and the region it is proposed to be located for Ph2. Work analysis of sequence data from Ph3 amplicons is ongoing.

The early dwarf cayenne pepper line performed well against other commercially available cayenne lines. In 2012 it was one of the three earliest lines trialed and was second in producing the average fruit per plant (58 fruit/plant). In addition, the line transplanted well even in the hot dry summer of 2012.

Project 2: Various levels of QTL with high to moderate stringency were detected for fruit shape, fruit weight, soluble solids, and rind pressure and a majority of them was found to be in agreement with the previously published data, indicating that association mapping can be very useful for cucurbit crops and pepper molecular breeding.

Common markers are identified for fruit yield and soluble solids that can be used for marker-assisted selection to simultaneously improve yield and quality. Seven markers were identified to be linked with the resistance to powdery mildew.

Graduate students and undergraduate students associated with the research activities of this program have been exposed to various filed 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
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #4

1. Outcome Measures

Small farmer adoption of new vegetable varieties

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of farms in West Virginia has increased in the ten years with the majority being owned by a family or individual. The number of vegetable farms has almost doubled in the last five years but with only a small change in the acreage. This suggests that new small farms are on the increase focusing on high density production of horticultural crops.

Small farm growers in the state are interested in recommendations for the best or new varieties of sweet, hot and specialty peppers. In addition, there is interest in adding cut flower or ornamental production to their farm operations or crop rotation. Grafting vegetable plants in particular tomatoes has received a large amount of press and WV growers are interested in trialing the plants to see if it is worth the extra effort to produce the plants or purchase them. Expertise exists at WVSU in grafting tomatoes from a prior research project which has led to a stakeholder driven research project.

What has been done

WVSU ran yield trials on hot and specialty pepper varieties in 2011 and 2012. Varieties were chosen for three types: Cayenne, Jalapeno and Specialty. Two blocks of six plants per variety were grown on irrigated raised beds covered in plastic mulch following standard production practices. Plants were grown from seed and hand transplanted into the field. Fruit were harvested by plant into marketable and cull classes following USDA standards.

Trials of grafted tomato plants against non-grafted was initiated in 2012 with grafted plants produced at WVSU AERS with 2 rootstocks and 3 scions. Plants were delivered to three farmers for trialing in late May. However the plants all died due to an unknown disease. Plans are underway to repeat this project with five farmers using either high tunnel or field production in

2013.

Ornamental trials have been conducted at WVSU since 2003 in conjunction with the University of Minnesota. These trials have focused on mums as well as a few other herbaceous ornamentals and even resulted in the release of a new Gaura line (Anderson et al. 2009) and two mum releases in 2012 (Anderson et al 2012 a and b).

Cut flower trials with zinnias and sunflowers were undertaken at the AERS in the late summer of 2012. However, we had poor germination and as such did not take any data on the plants. The poor germination was probably due to poor irrigation across the planting surface as only one irrigation line is used for production of the majority of crops at our location as it is only one plant across the bed instead of several as it done with cut flower production.

Results

The growing environment in the two years differed dramatically and affected the pepper fruit yield as well as weeks to first harvest. In 2012 only 77% of the peppers transplanted produced peppers unlike 99% in 2011. This is likely due to the high temperatures experienced in 2012 as well as the change to dark green mulch. Concho was an early jalapeno variety with the highest average fruit weigh reliably over both years, but did not meet the high production per plant in number and weight that El Jefe exhibited. Recommendations would be to plant both varieties to get both early and high production. Joe's Long Cayenne produced the heaviest fruit both years, but the highest production varied between varieties in both years for both number and weight. Variation in weeks to first harvest occurred only in 2011 and with the lines producing the smaller average fruit weight. No clear recommendations can be made at this time.

In 2012 we initiated a two year winter hardiness study of 24 mum lines/varieties, 14 gladiolus lines, 4 Monarda lines/varieties and 2 Lamium varieties. Most of the Lamium lines were lost during the unusually hot summer either thru problems with transplant shock or during their initial growth. The remainder of the plants did well and the majority of them flowered. In the spring of 2013 we will assess what survived over the winter and take data as necessary during the summer.

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
2012	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With an increased emphasis on mathematics and reading at the elementary school level, resulting in a lesser focus on science, it has become increasingly apparent that our youth are becoming disconnected from nature. Research shows that in 4th grade 68% of boys and 66% of girls enjoy science. But by 5th and 6th grade, that interest starts to drop off, and it drops off at a greater rate among female students. According to the National Science Foundation, although women represent 46 percent of the workforce, only 25 percent of the jobs in science, engineering, and technology are held by women. In an attempt to educate youth of the importance of horticultural and agricultural practices as well as a means to keep them engaged in science throughout adolescence, agricultural education has been intertwined with community building programs. Findings from the Junior Master Gardener National Teacher/Leader Evaluation indicate that JMG has encouraged students to perform community service projects outside the classroom. Through the creation of intergenerational gardening opportunities, WVSU Extension Service hopes to ensure that a legacy of information can be conveyed to our younger populations and the next generation of agricultural scientists cultivated.

What has been done

In order to prepare adult volunteers to interact with youth on agricultural and horticultural based topics, West Virginia State University has utilized the Junior Master Gardener (JMG) Program curriculum and conducted hands-on trainings for interested individuals. Working directly with the National Headquarters for the JMG Program, West Virginia State University Extension Service serves as the State Coordinator for the program. Twelve JMG trainings/presentations were facilitated around the state as well as an additional nine Community and Adaptive Gardening Workshops to educate both the youth and adults on proper gardening techniques to develop sustainable gardening opportunities for years to come. Thirteen youth and adult based gardening programs have been implemented and sustained in central and southern WV with gardening activities conducted in classroom and after school settings, as well as facilitated in conjunction with numerous community organizations.

Results

Through the Junior Master Gardener efforts 393 youth have been directly impacted, but the number of youth indirectly impacted through programs generated from the trainings and additional outreach are well over 2500. West Virginia has a total of 19 active registered Junior Master Gardener Groups around the state, with eight of these established within this past programmatic year. This represents nine counties across the state, with four new counties coming on board this year alone. During this timeframe grant appropriations in support of these programmatic efforts

have totaled $659,992. The Community and Adaptive Gardening efforts have impacted a total of 483 adults directly while indirectly impacting more than 4000 through programs developed and information conveyed based on education received through our outreach efforts. Attendance at the workshop series alone represented 14 organizations across the state seeking education on program development, management and sustainability. Of the participants, 85% were looking to implement new garden programs this past year. Grant funding for these programmatic efforts during this timeframe totaled $22,128.

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
806	Youth Development

Outcome #6

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Farmers/growers will utilize best practices with alternative agricultural enterprizes 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
2012	663

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Traditional agriculture production in West Virginia has been steadily decreasing due to high overhead operational costs, lack of suitable cropland, increased restrictions by the EPA on concentrated animal feeding operations as well as an aging labor force. When it comes to farming in West Virginia, even the largest farms are small when compared to statistics nationwide. Reports from the WVU Small Farm Center indicate that the residents report spending $7.2 billion on food each year, but our farmers only capture 19 cents of every dollar spent in the state. With this trend, alternative agricultural practices targeting small farm and backyard gardeners have become a focus of the WVSU Extension Service. Through development of educational workshops illustrating how to best cultivate, manage and market a specialized crop, farmer's looking to optimize their farmland have been educated on how to make the most out of their small acreage.

What has been done

In an effort to educate small farmers and backyard gardeners how to cultivate, manage and market a specialized crop through alternative agricultural practices, 24 workshops were delivered around the state. Eleven workshops were conducted on the topic of small fruit production concentrating on brambles, strawberries, blueberries, grapes and tree fruits. Two workshops on seasonal crop extension through the use of cold frames were delivered educating the general public on ways to increase productivity and be the first and last to the market with fresh, quality produce. Water conservation practices were targeted as a topic with two hydroponic/aeroponic production workshops as well as two separate workshops on the implementation of rain barrels. Four urban forestry workshops were delivered on the topics of small orchard management as well as alternative woodlot management through specialty mushroom cultivation. Two workshops focusing on weed identification and alternative weed eradication methods were held as well as results the of a cut flower production project presented as a potential value added product for established farm enterprises.

To educate small farmers and backyard gardeners how to cultivate, manage and market a specialized crop through alternative agricultural practices, 24 workshops were delivered around the state. Eleven workshops were conducted on the topic of small fruit production concentrating on brambles, strawberries, blueberries, grapes and tree fruits. Two workshops on seasonal crop extension through the use of cold frames were delivered educating the general public on ways to increase productivity and be the first and last to the market with fresh, quality produce. Water conservation practices were targeted as a topic with two hydroponic/aeroponic production workshops as well as two separate workshops on the implementation of rain barrels. Four urban forestry workshops were delivered on the topics of small orchard management as well as alternative woodlot management through specialty mushroom cultivation. Two workshops focusing on weed identification and alternative weed eradication methods were held as well as results the of a cut flower production project presented as a potential value added product for established farm enterprises.

Results

Eleven Small Fruits Workshops were delivered covering production methods for brambles, strawberries, blueberries, grapes and tree fruits. These workshops were attended by 410 participants ranging from backyard gardeners, amateur wine makers as well as small farm operators. During these workshops, approximately 85% of the participants have indicated an increase in knowledge of small fruit production techniques. Approximately 60% of the participants indicated that they would be including small fruits in their operation during that growing season. A poster titled Small Fruit Demonstration Gardens: Educating the Public about Growing Their Own Small Fruits was also presented at the 2012 AEA/ARD Land-Grant Conference in Memphis, TN,

on June 24-28, 2012 in regards to the Small Fruit Program. Two Cold Frame Workshops were attended by 20 people and 75% of the participants surveyed illustrated that they had increased their knowledge of season extension and felt comfortable constructing a cold frame. The Hydroponic/Aeroponic Workshops were delivered to 33 people in conjunction with the FFA Program at a local High School. Water conservation and rain barrel workshops were also presented to an additional 54 participants. Four urban forestry workshops were delivered to 60 individuals on the topics of small orchard management as well as alternative woodlot management through specialty mushroom cultivation. During these workshops, approximately 80% of the participants have indicated an increase in knowledge of mushroom production and/or the health benefits of mushroom production. Multiple participants have shown an interest in marketing their mushrooms at a local farmers market, which will begin to open up a local niche market in the area. Two Alternative Weed Management classes were offered to the general public with 12 participants as well as a Cut Flower Production seminar at the 2012 International Master Gardener Conference in Charleston, WV which drew interest from 74 conference attendees. This same topic was also presented during the poster session at the 2012 AEA/ARD Land-Grant Conference in Memphis, TN, on June 24-28, 2012.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Traditional agriculture production in West Virginia has been steadily decreasing due to high overhead operational costs, lack of suitable cropland, increased restrictions by the EPA on concentrated animal feeding operations as well as an aging labor force. When it comes to farming in West Virginia, even the largest farms are small when compared to statistics nationwide. Reports from the WVU Small Farm Center indicate that the residents report spending $7.2 billion on food each year, but our farmers only capture 19 cents of every dollar spent in the state. With this trend, alternative agricultural practices targeting small farm and backyard gardeners have become a focus of the WVSU Extension Service. Through development of educational workshops illustrating how to best cultivate, manage and market a specialized crop, farmer's looking to optimize their farmland have been educated on how to make the most out of their small acreage.

What has been done

In an effort to educate small farmer's and backyard gardener how to cultivate, manage and market a specialized crop through alternative agricultural practices, 24 workshops were delivered around the state. Eleven workshops were conducted on the topic of small fruit production concentrating on brambles, strawberries, blueberries, grapes and tree fruits. Two workshops on seasonal crops extension through the use of cold frames were delivered educating the general public on ways to increase productivity and be the first and last to the market with fresh, quality produce. Water conservation practices were targeted as a topic with two hydroponic/aeroponic production workshops as well as two separate workshops on the implementation of rain barrels. Four urban forestry workshops were delivered on the topics of small orchard management as well as alternative woodlot management through specialty mushroom cultivation. Two workshops focusing on weed identification and alternative weed eradication methods were held as well as results the of a cut flower production project presented as a potential value added product for established farm enterprises.

Results

Though 663 small farmers and backyard gardeners have participated in the various workshops mentioned above, it will take at least three years or more to determine the overall impact of these endeavors. The short term goals of outreach have been far exceeded, but the long term goals will not be able to be quantified until follow up surveys are administered. This will allow us to determine how many of these individuals were successful not only in the implementation of the alternative agricultural crops, but also in the development of a market via an Agritourism perspective such as an roadside stand, u-pick farm or interaction at a local farmers market to sale their specialty products.

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

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

Limited field and greenhouse space has impacted the ability of the projects to achieve the intended outcomes. Additional field sites are being identified through contacts with farmers and other agencies.

Aquaculture feeding trials were terminated early because water temperature issues. This may have affected expected outcomes.

Laboratory and office space for one of the scientists was moved and renovated which has delayed the project, but the new facilities are larger and provide a better workflow to assist with improved activity in the future.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Two major initiatives were started: a review of physical facilities to conduct greenhouse and field work, and reallignment of extension personnel to better coordinate with research efforts. A new 5-year facilities plan was developed to provide more greenhouse and headhouse space to support both research and extension programming eforts. Also, new laboratory and office space was leased at the WV Regional Technology Park to accommodate more research efforts.

Key Items of Evaluation

Two major initiatives were started: a review of physical facilities to conduct greenhouse and field work, and reallignment of extension personnel to better coordinate with research efforts. A new 5-year facilities plan was developed to provide more greenhouse and headhouse space to support both research and extension programming eforts. Also, new laboratory and office space was leased at the WV Regional Technology Park to accommodate more research efforts.

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		10%		10%
102	Soil, Plant, Water, Nutrient Relationships		10%		5%
111	Conservation and Efficient Use of Water		10%		0%
124	Urban Forestry		10%		0%
131	Alternative Uses of Land		10%		5%
201	Plant Genome, Genetics, and Genetic Mechanisms		10%		35%
204	Plant Product Quality and Utility (Preharvest)		10%		25%
205	Plant Management Systems		10%		20%
211	Insects, Mites, and Other Arthropods Affecting Plants		10%		0%
212	Pathogens and Nematodes Affecting Plants		5%		0%
403	Waste Disposal, Recycling, and Reuse		5%		0%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	1.5	0.0	0.5
Actual Paid Professional	0.0	1.5	0.0	1.5
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	79407	0	13047
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	132345	0	111565
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	53955

V(D). Planned Program (Activity)

1. Brief description of the Activity

WVSU research scientists continued research efforts in the area of climate change. Mine land reclamation research was redirected to evaluating the use of biochar and other byproducts, and the development of management practices to improve soil productivity, land-use management, and soil environmental services.

Performance studies were conducted using the pilot plant digester and replicate experimental digesters were set up and operating a long-term study of energy thresholds and ecological resilience in the digester microbial communities.

A stakeholder driven project to construct a low-cost high tunnel using the majority of locally available resources began to field test the model to develop a manual. Thirty-one applications were received from eighteen counties. Eleven high tunnels were built in nine counties with the grower and others interested in high tunnel construction. Undertaking multiple builds enabled the staff to eliminate design problems. We found building with the grower not only educated them about high tunnels and their construction but also inspired their colleagues and/or other agriculture professionals that were present. This has spawned construction on additional high tunnels in the state.

WVSU Extension Service has continued 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

Landowners and small-farm operators, farm and volunteer organizations, WVDEP staff and local government officials, homeowners, various city, county and municipalities, state government, underserved and minority farmers/landowners, WVDA staff; USDA staff and other agricultural and natural resource focused agencies

3. How was eXtension used?

Use of eXtension occurred through participation in two communities of practice (CoP): eOrganic and Consumer Horticulture. "Ask an Expert" questions were answered for one of the CoP.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1199	4270	0	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	4	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Train students in anaerobic digester technology and environmental microbiology [Huber]

Year	Actual
2012	6

Output #2

Output Measure

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

Year	Actual

2012	4

Output #3

Output Measure

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

Year	Actual
2012	663

Output #4

Output Measure

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

Year	Actual
2012	6

Output #5

Output Measure

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

Year	Actual
2012	60

Output #6

Output Measure

- Develop novel technique for soil remediation on reclaimed mine lands. [Hass]
  Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Evaluate byproduct use, and land management practices, to improve soil productivity and environmental services. [Hass]

Year	Actual
2012	25

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	New knowledge concerning how microbial diversity gives rise to methane production and anaerobic digestion [Huber]
2	Number of small farmers adopting new varieties and growing techniques to adapt to changing environmental conditions [Liedl]
3	Extension clientele will implement best practices in agriculture and natural resources based on research-based knowledge.
4	Farmers/growers will utilize best practices with alternative agricultural enterprizes to diversify their income portfolio.
5	Increase awareness of soil remediation technology among mining operators and agencies. [Hass]
6	Improve value and use of biochar and other byproducts as soil amendments. [Hass]

Outcome #1

1. Outcome Measures

New knowledge concerning how microbial diversity gives rise to methane production and anaerobic digestion [Huber]

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Agricultural wastes, particularly animal manures, can be a significant source of greenhouse gases (GHG). The principal GHG coming from organic wastes is methane. Anaerobic digestion is an established method for controlling the emission and capture of methane from agricultural and other waste biomass. However, the usefulness of digestion for capturing agricultural GHG depends on the efficiency and stability of digesters which is quite variable. West Virginia poultry farms produce large quantities of wastes that can pollute watersheds and produce GHG. The focus of the WVSU Anaerobic Digestion and Bioenergy Research Program has been studying and optimizing thermophilic digestion. An important issue that discourages the use of this type of digestion is the cost. Future engineering of the process requires understanding the complex interactions among the microorganisms that produce GHG in order to improve stability, and reducing the cost of farm-based digesters.

What has been done

The stability of biogas production in digesters can be affected by the addition of new substrates. The impact of carbohydrate addition on stable poultry litter digesters was tested using five replicate digesters operated during a long-term time series experiment. Glucose pulses were applied to the digesters during continuous feeding with a complex (poultry litter) feedstock. Bacterial diversity (16S rRNA genes) of the replicate digesters was sampled with pyrosequencing. In a second experiment, we set-up and started a new pilot-scale thermophilic plugflow digester. The performance variables for the new digester were monitored, and its capacity to accommodate different hydraulic retention times was tested.

Results

It was found that a modest addition of glucose affected the long-term performance of the digesters. Instability slowly increased during 100 days of operation, including a decline in

methane production. Simulations using the ADM1 model showed that the accumulation of volatile fatty acids was consistent with a change in the kinetic parameters for volatile fatty acid consumption. Unweighted and weighted UniFrac analyses showed that microbial community structure progressively changed as the metabolic instability increased. Therefore, a modest glucose pulse disturbance in these thermophilic bioreactors induced long-term functional instability and structural change, implying a low level of resilience toward this disturbance. A thermophilic plugflow digester was established with poultry litter feedstock. The hydraulic retention time of the digester was advanced up to a 20 day period. The digestion process in the plugflow digester was found to be sensitive to temperature variation.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Season extension tools, such as high tunnels, can significantly increase sustainable food production by extending the season to grow and protect crops from inclement weather and pests. Planting and first harvest are earlier in high tunnels, which also allow plant growth earlier in the spring as well as later into the fall. In this way, high tunnel growers are able to access main and lucrative early- and late-season markets. High tunnels are ideally suited to the climate and topography for small producers in WV. In fact, the production season can almost cover the entire calendar year without the addition of small heaters even in WV. Thus, a producer growing only on the land can produce eight out of the twelve months, but a grower that augments this with a high tunnel can produce almost year round. There has been limited adoption of high tunnels in West Virginia prior to 2009 due to limited exposure to the technology, a lack of design knowledge,

and cost and transportation of materials to rural areas. Most growers while interested were not willing to spend over $10,000 to purchase a technology they are not familiar with and not sure if it was something that would augment their profits. Thus the idea was born to develop a low-cost eco-friendly high tunnel that could be constructed for under $1,000 to introduce growers to the technology and opportunities. This would allow them to investigate the use of high tunnel technology and see if it was worth expanding into this area for their farm enterprise. This project from the WV Department of Agriculture Specialty Block Grant Program.

What has been done

Our approach was to construct a low-cost high tunnel using as many locally available resources as possible. Thirty-one people or groups applied for the project from 18 counties in WV. By replicating a high tunnel design that was low-cost with multiple builds we were able to work out most of the 'bugs' to help in developing a manual. The project allowed us to complete construction of eleven high tunnels using our low-cost eco-friendly high tunnel concept. Twelve additional presentations and/or workshops in West Virginia on high tunnels have been completed since 2010.

Results

Eleven high tunnels were built using our low-cost eco-friendly high tunnel concept in nine counties in WV. The farmer/grower recruited others to assist with the building process. We found that this not only educated the grower about high tunnels and their construction but also inspired their colleagues and/or other ag professionals that were present. We have anecdotal evidence that that shows we are already on target to meet our goal of having thirty additional high tunnels constructed: 1) a number of people at our workshops have applied for NRCS EQUIP funding for a high tunnel which did not exist when we started this project, 2) we have growers and groups that have asked for our supply list and assistance to put up their own high tunnel and 3) we have groups already putting up another high tunnel (Williamson Community Garden site).

4. Associated Knowledge Areas

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

Outcome #3

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
2012	1040

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Extension is steeped in the tradition of taking research based knowledge and extending its outreach to the general public. Though this has always been the method of delivery, nationwide Extension marketing teams have been evaluating how this transfer of information has been perceived as well as received, necessitating an overhaul in the mode of delivery and marketing of the name Extension Service. In an effort to ensure that the general public is receiving information on how to implement best practices in agriculture based on research based knowledge, WVSU Extension Service has established workshops designed to better illustrate not only the concept being taught, but to also educate through hands-on, real life scenarios in the field, making Extension more pertinent to one's everyday life.

What has been done

In an effort to educate small farmers, backyard gardeners and the general public on how to implement best practices in agriculture and natural resources based on research-based knowledge, 28 workshops were delivered around the state. Nine Community and Adaptive Gardening Workshops were delivered to educate adults on proper gardening techniques to develop sustainable gardening opportunities for years to come. Five adult based gardening programs have been implemented and sustained in central and southern WV facilitated in conjunction with numerous community organizations. Eleven workshops were conducted on the topic of small fruit production concentrating on brambles, strawberries, blueberries, grapes and tree fruits. Water conservation practices were targeted as a topic with two hydroponic/aeroponic production workshops as well as two separate workshops on the implementation of rain barrels. Four urban forestry workshops were delivered on the topics of small orchard management as well as alternative woodlot management through specialty mushroom cultivation.

Results

The Community and Adaptive Gardening efforts have impacted a total of 483 adults directly while indirectly impacting more than 4000 through programs developed and information conveyed based on education received through our outreach efforts. Attendance at the workshop series alone represented 14 organizations across the state seeking education on program development, management and sustainability. Of the participants, 85% were looking to implement new garden programs this past year. Grant funding for these programmatic efforts during this timeframe totaled $22,128. Eleven Small Fruits Workshops were delivered covering production methods for brambles, strawberries, blueberries, grapes and tree fruits. These workshops were attended by 410 participants ranging from backyard gardeners, amateur wine makers as well as small farm operators. During these workshops, approximately 85% of the participants have indicated an increase in knowledge of small fruit production techniques. Approximately 60% of the participants indicated that they would be including small fruits in their operation during that growing season. A poster titled Small Fruit Demonstration Gardens: Educating the Public about Growing Their Own Small Fruits was also presented at the 2012 AEA/ARD Land-Grant Conference in Memphis, TN, on June 24-28, 2012 in regards to the Small Fruit Program. The Hydroponic/Aeroponic Workshops were delivered to 33 people in conjunction with the FFA Program at a local High School. Water conservation and rain barrel workshops were also presented to an additional 54

participants. Four urban forestry workshops were delivered to 60 individuals on the topics of small orchard management as well as alternative woodlot management through specialty mushroom cultivation. During these workshops, approximately 80% of the participants have indicated an increase in knowledge of mushroom production and/or the health benefits of mushroom production. Multiple participants have shown an interest in marketing their mushrooms at a local farmers market, which will begin to open up a local niche market in the area.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
124	Urban Forestry
131	Alternative Uses of Land

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	663

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Traditional agriculture production in West Virginia has been steadily decreasing due to high overhead operational costs, lack of suitable cropland, increased restrictions by the EPA on concentrated animal feeding operations as well as an aging labor force. When it comes to farming in West Virginia, even the largest farms are small when compared to statistics nationwide. Reports from the WVU Small Farm Center indicate that the residents report spending $7.2 billion on food each year, but our farmers only capture 19 cents of every dollar spent in the state. With this trend, alternative agricultural practices targeting small farm and backyard gardeners have become a focus of the WVSU Extension Service. Through development of educational workshops illustrating how to best cultivate, manage and market a specialized crop, farmer's looking to optimize their farmland have been educated on how to make the most out of their small acreage.

What has been done

In an effort to educate small farmer's and backyard gardener how to cultivate, manage and market a specialized crop through alternative agricultural practices, 24 workshops were delivered around the state. Eleven workshops were conducted on the topic of small fruit production concentrating on brambles, strawberries, blueberries, grapes and tree fruits. Two workshops on seasonal crops extension through the use of cold frames were delivered educating the general public on ways to increase productivity and be the first and last to the market with fresh, quality produce. Water conservation practices were targeted as a topic with two hydroponic/aeroponic production workshops as well as two separate workshops on the implementation of rain barrels. Four urban forestry workshops were delivered on the topics of small orchard management as well as alternative woodlot management through specialty mushroom cultivation. Two workshops focusing on weed identification and alternative weed eradication methods were held as well as results the of a cut flower production project presented as a potential value added product for established farm enterprises.

Results

Eleven Small Fruits Workshops were delivered covering production methods for brambles, strawberries, blueberries, grapes and tree fruits. These workshops were attended by 410 participants ranging from backyard gardeners, amateur wine makers as well as small farm operators. During these workshops, approximately 85% of the participants have indicated an increase in knowledge of small fruit production techniques. Approximately 60% of the participants indicated that they would be including small fruits in their operation during that growing season. A poster titled Small Fruit Demonstration Gardens: Educating the Public about Growing Their Own Small Fruits was also presented at the 2012 AEA/ARD Land-Grant Conference in Memphis, TN, on June 24-28, 2012 in regards to the Small Fruit Program. Two Cold Frame Workshops were attended by 20 people and 75% of the participants surveyed illustrated that they had increased knowledge of season extension and felt comfortable constructing a cold frame. The Hydroponic/Aeroponic Workshops were delivered to 33 people in conjunction with the FFA Program at a local High School. Water conservation and rain barrel workshops were also presented to an additional 54 participants. Four urban forestry workshops were delivered to 60 individuals on the topics of small orchard management as well as alternative woodlot management through specialty mushroom cultivation. During these workshops, approximately 80% of the participants have indicated an increase in knowledge of mushroom production and/or the health benefits of mushroom production. Multiple participants have shown an interest in marketing their mushrooms at a local farmers market, which will begin to open up a local niche market in the area. Two Alternative Weed Management classes were offered to the general public with 12 participants as well as a Cut Flower Production seminar at the 2012 International Master Gardener Conference in Charleston, WV which drew interest from 74 conference attendees. This same topic was also presented during the poster session at the 2012 AEA/ARD Land-Grant Conference in Memphis, TN, on June 24-28, 2012.

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

Outcome #5

1. Outcome Measures

Increase awareness of soil remediation technology among mining operators and agencies. [Hass]

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Improve value and use of biochar and other byproducts as soil amendments. [Hass]

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Appalachian regional soils are highly acidic and infertile. Mineral exploration, such as coal mining, and the earth-moving operations associated with such land uses further exacerbate the already fragile fertility of these soils. Using organic byproducts, biochar (byproduct of thermo-conversion of cellulosic biomass), and other byproducts have the potential to ameliorate soil properties and environmental services. Improving land management practices of disturbed lands can increase soil fertility and productivity, contributing to local agronomic output, food security, and economy.

What has been done

Development of storm-water soil rating was completed and a workshop conducted to present and disseminate the developed rating tool to relevant audience (the rating tool is currently available for public use through NRCS website). A long-term full-factorial field experiment evaluating anaerobically digested chicken litter as soil amendments is continued and monitored. Biochar from different feedstock and pyrolysis conditions was produced, analyzed, and tested as soil amendment in lab and greenhouse studies.

Results

Some 23 people attended the storm water rating workshop on WVSU campus in June 1st, 2012. Biochar research: properties varied with feedstock and pyrolysis temperature. Increase in biochar ash content increase biochar liming potential and nutrient content. Chicken litter biochar improve regional acid soil fertility by increasing soil pH, nutrient availability, and organic matter content. Two peer reviewed publications (2) were published in Journal of Environmental Quality, and in Journal of Soil and Water Conservation

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
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
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Limited field and greenhouse space has impacted the ability of the projects to achieve the intended outcomes. Additional field sites are being identified through contacts with farmers and other agencies.

The office for one scientist was moved and renovated which delayed the project

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Two major initiatives were started: a review of physical facilities to conduct greenhouse and field work, and reallignment of extension personnel to better coordinate with research efforts. A new 5-year facilities plan was developed to provide more greenhouse and headhouse space to support both research and extension programming eforts. Also, new laboratory and office space was leased at the WV Regional Technology Park to accommodate more research efforts.

Key Items of Evaluation

Two major initiatives were started: a review of physical facilities to conduct greenhouse and field work, and reallignment of extension personnel to better coordinate with research efforts. A new 5-year facilities plan was developed to provide more greenhouse and headhouse space to support both research and extension programming eforts. Also, new laboratory and office space was leased at the WV Regional Technology Park to accommodate more research efforts.

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
403	Waste Disposal, Recycling, and Reuse		0%		100%
	Total		0%		100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	6.3
Actual Paid Professional	0.0	0.0	0.0	0.8
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	139047
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	111565
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

In 2012, sustainable energy research at WVSU continued in studying microbial community interaction involved in anaerobic digestion. Controlled disturbances were utilized to cultivate greater digester microbial diversity and flexibility, in turn creating a more stable and resilient digester to convert

poultry litter biogas (methane). Replicate experimental digesters were set up and a long-term study was started looking at energy thresholds and ecological resilience in the digester microbial communities.

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.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	11	20	0	0

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Train students in digester operation, biochemical analysis, microbial analysis [Smith][Huber]

Year	Actual
2012	6

Output #2

Output Measure

- Change in digester operational methodology [Smith]
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Add an extension component to the digester program
  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	Change in digester operational methodology [Smith]
2	New knowledge concerning how microbial diversity gives rise to anaerobic microbial energy conversion and anaerobic digestion [Huber]

Outcome #1

1. Outcome Measures

Change in digester operational methodology [Smith]

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

New knowledge concerning how microbial diversity gives rise to anaerobic microbial energy conversion and anaerobic digestion [Huber]

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

West Virginia poultry farms produce large quantities of wastes that can pollute watersheds. Anaerobic digestion is a method for treating and stabilizing high-strength organic wastes such as animal manures and food manufacturing waste. Anaerobic digestion can also be used to provide sustainable bioenergy from waste biomass. The digestion process utilizes anaerobic bacteria to break down organic wastes and produce bioenergy (methane). Although the general metabolic steps are known, the mechanistic bases for important system properties are still unknown. In particular, we do not understand the reason for variations in the efficiency of individual digesters, the relationship between microbial diversity and bioenergy output, and the basis for system stability and resilience. The economics of digestion is an additional issue, especially for small farms. Digesters also serve as excellent model systems for understanding microbial bioenergy production because we do not yet have sufficient understanding of microbial functional diversity to engineer these processes using individual microorganisms.

What has been done

Variations in bioenergy production were evaluated in six replicate five liter methanogenic bioreactors during a long-term time series experiment. The bioreactors were subjected to varying hydraulic retention times to test their resilience to this environmental change. Microbial diversity

was sampled with pyrosequencing. An experiment was also conducted in the WVSU pilot plant thermophilic digester that tested the co-digestion of poultry litter and herbaceous plant biomass. Hay from a West Virginia farm was used as co-substrate at two different ratios. Performance variables were measured during the pilot plant experiment.

Results

Variations in the performance of six replicate five liter thermophilic continuous stirred-tank reactors (CSTR) were evaluated during changes in hydraulic loading. The bioreactors were operated for more than 400 days using poultry litter substrate. Multivariate ordination of the chemical variables revealed functional resilience following a different response trajectory for each disturbance, and high reproducibility among the replicates. Association mapping of bacterial diversity showed a loss of community dispersion among the replicates during the changes in hydraulic loading. This study showed functional resilience of the microbial communities during changes in hydraulic retention time, as well as changes in microbial community diversity. In a separate experiment, the efficiency and bioenergy production of the WVSU pilot plant digester were not diminished during co-digestion with 20% and 40% hay added to the poultry litter feedstock. The following publication was produced: Shade, A., H. Peter, S.D. Allison, D.L. Baho, M. Berga, H. Burgmann, D.H. Huber, S. Langenheder, J.T. Lennon, J.B.H. Martiny, K.L. Matulich, T.M. Schmidt, J. Handelsman. 2012. Fundamentals of microbial community resistance and resilience. Frontiers in Microbiology 3:417

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Other (Personnel changes)

Brief Explanation

Dr. Smith has left the research to serve as Director of CASTEM. A new research faculty position in bioenergy, focusing on anaerobic digestion has been advertised.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Energy program will grow next year as new bioenergy research faculty position is filled. This position will also have a public service and outreach compenent.

Key Items of Evaluation

Energy program will grow next year as new bioenergy research faculty position is filled. This position will also have a public service and outreach compenent.

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%		30%
703	Nutrition Education and Behavior		0%		20%
724	Healthy Lifestyle		20%		20%
802	Human Development and Family Well-Being		30%		30%
806	Youth Development		20%		0%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	6.0	0.0	1.0
Actual Paid Professional	0.0	6.0	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	317628	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	259902	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

WVSU Extension began a partnership with Kanawha County in December 2008 to create a plan that would bring policy and environmental approaches to positively impact the high rates of childhood obesity in the local area. The partnership was made available through a grant from the Robert Wood Johnson Foundation. Healthy Kids, Healthy Communities (HKHC) is a national program of the Robert Wood Johnson Foundation (RWJF), designed to help dozens of communities across the country reshape their environments to support healthy living and prevent childhood obesity.

Based on a rigorous selection process that drew more than 500 proposals from across the country, Kanawha County was one of 41 selected sites for the HKHC initiative. The project, called KEYS 4 HealthyKids: Unlocking the Doors to a Better Tomorrow is focused on improving opportunities for physical activity and access to affordable, healthy foods for children and families in Kanawha County.

KEYS is an acronym that represents the four keys necessary for "Unlocking" the barriers/doors that children and families face with adhering to a nutritious healthful diet and engaging in regular activity (K-Knowledge, E-Eating Healthy, Y-Youth Being Active, S-Safety and Empowerment). Steering committee members worked on projects at three specific champion sites incorporating all of the keys at their sites.

Additionally, WVSUES Youth Development has targeted youth active lifestyles and childhood obesity preventation as a primary goal of their operations. A variety of programs including Fast Track and 4-H GROWTH focus on the proper identification of healthy foods, proper preparation, and serving in unique and tasty ways.

2. Brief description of the target audience

Target audience for the programs are the City of Charleston 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

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	167	427	0	0

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth will participate in various workshops.

Year	Actual
2012	63

Output #2

Output Measure

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

Year	Actual
2012	3

Output #3

Output Measure

- Number of adults will participate in educational sessions.

Year	Actual
2012	167

Output #4

Output Measure

- New shopping venues will be available in food desserts.

Year	Actual
2012	2

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

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The epidemic of childhood obesity continues to worsen as years progress. According to the 2009 data from the Youth Risk Behavior Survey (YRBS), 14.4% of high school youth are overweight and 14.2% are obese. Local data from a pediatrician reveals that 47% of 3-5 year olds living in Charleston, WV are obese. The Robert Wood Johnson Foundation (RWJF) offered a grant opportunity called Healthy Kids, Healthy Communities. Nearly 600 locations applied for funding, and Charleston, WV was one of 47 chosen. By changing policy and the environment, the hope to elicit a more sustained impact. Through receipt of this funding, the Keys4 Healthykids was born. Within this project, WV State University Extension Service provided expertise in child nutrition, health education and evaluation and assessment. WV State University Extension Service dedicated staff to assess and evaluate the Initiative and provide leadership for related: revitalizing and building community gardens, developing green spaces and pocket parks, joint use policy, and nutrition policy changes in childcare institutions. KEYS is a four-year project with a primary goal of reducing the rates of childhood obesity by 2015.

What has been done

On behalf of WVSUES; the FCS Extension Specialist for Nutrition and Health; served as the team leader for the Eating Healthy taskforce. Through this project, the FCS Specialist led an effort and implementation of the EBT and WIC voucher acceptance at 2 Farmer's Markets. Coordination and implementation of 2 new garden sites at a local year-round elementary school and a nearby neighborhood center were developed through her leadership. In this capacity, she also provided technical assistance with the KEYS outreach communities. The specialist continued seeking additional grant funding, for financial support with the community gardens and the community gardens committee; and assisted with press releases that were sent out in the first week of April 2012, in response to the most recent county health rankings for nearly all 50

states. The only area Kanawha County improved in was clinical care. Access to treatment and treatment itself has improved. Additionally, she submitted five new dashboard reports for Healthy Kids, Healthy Communities evaluation system. As of December 31, 2011, the extension specialist had completed 47, met six benchmarks, generated two media events, and elicited four environmental changes. Worked with steering committee to develop the updated Neighborhood Action Funds Requests for Proposal; provided technical assistance to two locations wishing to apply for NAF funding in terms of partner creation and project ideas.

Results

WV State University Extension Service provided expertise in child nutrition, health education and evaluation and assessment. WV State University Extension Service will dedicate staff to assess and evaluate the Initiative and provide leadership for related: revitalizing and building community gardens, developing green spaces and pocket parks, joint use policy, and nutrition policy changes in childcare institutions. KEYS is a four-year project with a primary goal of reducing the rates of childhood obesity by 2015. Going into the 2012 fiscal year, the FCS Extension Specialist was instrumental in serving as the coordinator for all community gardening efforts within the KEYS project. During her tenure, impacts have included: Number of youth who participated in various workshops -to the basic gardening workshop (3), the grocery tour (5), photovoice (8), garden workshops at EEFRC (22), and garden workshops at Piedmont (38). Finally, the number of adults who participated in educational sessions; JMG-EEFRC (4), NAPSACC (5)KCS - Head Start teachers (138), family nights at EEFRC, forums (25).

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
724	Healthy Lifestyle
802	Human Development and Family Well-Being

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
2012	215

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The ramifications of the sedentary lifestyles lived by so many of America's youth, renders the prime candidates for increased health issues. Futuristically, physical inactivity threatens to reverse the decades-long progress that has been made in reducing death and suffering from cardiovascular diseases. Inactivity among youth may increase the future risk for many chronic diseases, including heart disease, stroke, colon cancer, and diabetes. In addition to the toll taken by human suffering, surges in the prevalence of these diseases could lead to crippling rises in our national health care expenditures. According to 2007 National Survey of Children's Health (NSCH) data, 18.9% of children ages 10 through 17 in West Virginia were obese, slightly higher than the national average of 16.4%. The same survey showed that state children were more likely to participate in physical activity on every day of the week (33.2%) than their national counterparts (29.9%). They were also more likely, however, to spend more than one hour on weekdays watching TV or playing video games (57.7% vs.50.1%).

What has been done

The FCS Extension Specialist conducted more than 5 presentations centered around; childhood obesity, making healthier food selections and increasing physical activity. During the workshops participants received substantial knowledge about reducing the amount of sugar consumption in their daily lives. In addition, the youth was also promoted to drink more water and get outside to play and stay active, opposed to spending increased amounts of time watching television or electronic gaming. The youth learned new and exciting forms of play; which were developed to target those parts of the body that are commonly associated with retaining consistent amounts of weight. Through an expansion of the partnership; the FCS Specialist collaborated with community experts to assist with teaching the kids more effective methods for staying active and reducing their choices of mostly selecting an indoor activity in their leisure time. Also, in other workshop parent/grandparent raising children were inclusive of receiving promotional information on how to encourage their child to become more active.

Results

Over the past year the FCS program area has experience a major transitioning in staff member. In May 2012 the Nutrition and Health Specialist and Registered Dietitian departed from the extension staff. Prior to her leaving, she made major strides in her work with the KEYS4 Healthykids programs. She continued conducting programs and providing community based opportunities for the project, until the day her tenure was completed. With the physical activity component, another program team resumed her work and provided further services and activities to finish the year in her absence.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	215

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The epidemic of childhood obesity continues to worsen as years progress. According to the 2009 data from the Youth Risk Behavior Survey (YRBS), 14.4% of high school youth are overweight and 14.2% are obese. Local data from a pediatrician reveals that 47% of 3-5 year olds living in Charleston, WV are obese. The Robert Wood Johnson Foundation (RWJF) offered a grant opportunity called Healthy Kids, Healthy Communities. Nearly 600 locations applied for funding, and Charleston, WV was one of 47 chosen. Obesity is a multi-factorial problem, which makes it very difficult to address and reverse the trend. However, the purpose of RWJF's funding is to implement environmental and policy changes to increase access to healthy, affordable foods and opportunities for physical activity for high-risk youth. By changing policy and the environment, the hope to elicit a more sustained impact. The K4HK Initiative will focus on revamping neighborhoods for kids and families that offer improved physical activity and play opportunities along with access to affordable, healthy foods and beverages. To give kids the best chance to lead the healthiest lifestyle possible, both active living and healthy eating must be available for high-risk families. The planned initiative is a collaborative program that will be effective, tenable, and replicable

What has been done

In this capacity, the specialist worked on budgets and proposals for Family and Youth Development Services projects - PAAC's church project at a local church and WVDRR Office of Health Promotion grant. Awarded funds were used to support eight Neighborhood Action Funds to community projects. Six of these include a community garden. Furthermore, the specialist provided support to the City Comprehensive Plan training, administrative functions, and to purchase water coolers and fruit/vegetable baskets for convenience store makeover initiatives. She also participated in review of all of the assessment tools that lead in support of the project. In

addition, she created an outline for her as to the steps to complete for other communities to attempt to improve access to healthy affordable foods through environmental and policy changes. The FCS Extension Specialist coordinated presentations and Basic Gardening Class at a faith based institution, in the capital city. Sixteen attendees learned the basics of gardening and container gardening from local gardening representatives.

Results

Going into the 2012 fiscal year, the FCS Extension Specialist was instrumental in serving as the coordinator for all community gardening efforts within the KEYS project. During her tenure, impacts have included: Number of youth who participated in various workshops -to the basic gardening workshop (3), the grocery tour (5), photovoice (8), garden workshops at EEFRC (22), and garden workshops at Piedmont (38). Also in the marketing aspect of program delivery; 3 news articles generated around childhood obesity and specific to these effort. Finally, the number of adults who participated in educational sessions; JMG EEFRC (4), NAPSACC (5)KCS - Head Start teachers (138), family nights at EEFRC, forums (25). Indirectly, thousands have been reached through radio, television, billboards.

4. Associated Knowledge Areas

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

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

Not Reporting on this Outcome Measure

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

- Economy
- Appropriations changes
- Other (Loss of technical support)

Brief Explanation

As with most institutions in this current climate; the most impactful external factor affecting the FCS Program Area is funding. As a system, we rely on the extramural funds to help support the basic operational needs. In this unit, there is a great demand for additional staff members to provide services to a larger clientele. This past year, has been very challenging due to the implementation of layoffs and reduction of staff that provide service in the FCS Program. This is the sole reason the final 3 outcomes were not able to be reported on this past year. We will continue to seek funding support by eternal mean; through establishing further partnerships, and re-staff the department to include a workforce that is more technically equipped to continue serving the health and wellness needs for the citizens of WV.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	4.0	0.0	0.0
Actual Paid Professional	0.0	2.0	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	105876	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	86634	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

Services offered by the WVSU Extension Service in 2012 were comprehensive. Through the Families and Consumer Sciences Program Area, programs offered were:

Dining with Diabetes: The "Dining with Diabetes" program is designed to educate individuals with diabetes, those who have been diagnosed with pre-diabetes and family members about the fundamentals of nutrition; how to prepare foods by reducing carbohydrates, sugar, and salts; and how to be more aware of proper serving sizes. Additionally, food safety practices are consistently interwoven into each lesson as food demonstrations are a part of each class. Following basic precautions, such as thorough hand-washing, avoiding cross-contamination, cooking thoroughly, and properly storing leftovers, are habits commonly not followed by most Americans. Those with diabetes are at higher risk for foodborne illness secondary to compromised immune systems.

Summer Food Service Program for Children (SFSP): The Summer Food Service Program (SFSP) is a federally funded program designed to provide children in low-income communities with nutritious and well-balanced lunches during the summer months when they are out of school. West Virginia State University Extension is one sponsor of SFSP.WVSUE currently partners with AVI Food Systems, Inc. to distribute reimbursable lunches to at least 12 different Summer Food sites. The SFSP is another program which strictly enforced food safety practices, such as ensuring prepared foods are stored and transported to supervised sites at proper temperatures, WVSUE works closely with the Office of Child Nutrition and WV Department of Agrulculture representatives to ensure sites and the foodservice sites are running up to code.

EFNEP: West Virginia State University Extension Service's EFNEP program offers two curricula:"Cent$ible Nutrition," for adults and "Show Me Nutrition" for youth."Cent$ible Nutrition" was developed by the University of Wyoming and "Show Me Nutrition" was developed by the University of Missouri. Both curricula consist of a variety of lessons focused on nutrition, health, food safety, food resource management, and/or physical activity. Food demonstrations are conducted during each lesson so that participants can try new and more healthful foods.

Fast Track Health and Nutrition will allow at least 100 youth will receive 36 hours of lessons related to health and wellness including food and kitchen safety components which will enhance their ability to prevent illness from food spoilage and food-bourne disease, and cross contamination. They will also learn proper methods for using potentially dangerous appliances and utensil when preparing meals.

Germ City is an integrated education, Extension and research program. Our program consists of activities conducted at fairs, festivals, schools, and community events focused on hand washing behavior change related to safe food handling and health. The focal point of the program is a large, walk-through tunnel equipped with black lights. Youth and adults apply a black light sensitive lotion and enter the tunnel, seeing pretend germs on their hands. After initial observation, participants are asked to wash their hands normally, re-visit Germ City, and assess their effectiveness. It's a hands-on experience, which teaches the importance of frequent, effective hand washing.

2. Brief description of the target audience

• Residents from low to moderate income level communities. Individuals experiencing difficulty with family resource management practices, health or nutrition issues, or any other at risk factors related to

the family unit will be permitted to participate in the extension programs. The target age for this population will be adults of any particular range and youth in middle to high school.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	146	309	1425	14128

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	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.

Year	Actual
2012	0

Output #2

Output Measure

- Number of participants that report an increased knowledge level about managing blood sugars

through diabetes education.

Year	Actual
2012	0

Output #3

Output Measure

- Number of participants report; they had an opportunity to learn effective meal techniques through healthy lifestyles education programs.

Year	Actual
2012	0

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.

Year	Actual
2012	0

Output #5

Output Measure

- Participants 18 years and under or 21 years of age with a disability, will receive one nutritious lunch per day through the Summer Food Service Program. Federal food guidelines will be follwoed in meal preparation. Appropriate temperature time and preparing of meals will be ensured prior to deleivery. Meals will be served in an adequate time frame following delievery. Site staff will ensure that appropriate meal counts are received and ordered daily. Program administrators will conduct site and process training for site supervisors.

Year	Actual
2012	13138

Output #6

Output Measure

- Number of participants graduating from EFNEP programming.

Year	Actual
2012	583

Output #7

Output Measure

- After completing the EFNEP program, participants will report having a better understanding of food handling practices.

Year	Actual
2012	583

Output #8

Output Measure

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

Year	Actual
2012	0

Output #9

Output Measure

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

Year	Actual
2012	0

Output #10

Output Measure

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

Year	Actual
2012	0

Output #11

Output Measure

- Number of youth participants learned safe guidelines to prevent food bourne illness

Year	Actual
2012	0

Output #12

Output Measure

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

Year	Actual
2012	0

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 participting in diabetes education workshops, will monitor and record blood sugars regularly. This will be indicated through Pre/Post test, to determine that they are keeping adequate account of blood sugar levels.
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	Partcipants engaging in healthy lifestyles programs will report using between one to two new food handling practices.
6	Youth will practice and deciminate information about kitchen safety, especially safe operation of stoves, blenders and cooking appliances, and proper handling of knives
7	Youth will practice and deciminate information to their families about food storage temperatures to prevent spoilage
8	Youth will practice and deciminate information to their families about preventing food bourne illnesses from consumption of uncooked or spoiled food
9	Youth will practice and deciminate 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 temperture times and prepartion of meals; the adequate time frame for serving meals and appropriate methods for counting, ordering, and storing meals daily. This information will be monitored by Pre/Post testing at the conclusion of the site supervisor training.
12	By attending the EFNEP,participants will be able to choose adequate portion sizes of foods, according to the MyPyramid recommendations.
13	By completing EFNEP, participants will be able to explain safe food handling practices.
14	After completeing the EFNEP program, partcipants will demonstrate their ability to prepare a safe, nutritious, and afforable meal.

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Individual's participting in diabetes education workshops, will monitor and record blood sugars regularly. This will be indicated through Pre/Post test, to determine that they are keeping adequate account of blood sugar levels.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

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.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

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.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

Outcome #8

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

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.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	13138

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Summer Food Program is sponsored by the WV Office of Child Nutrition through funding provided by the USDA. During the school year, many children receive free and reduced-price breakfast and lunch through the School Breakfast and National School Lunch Programs. The Summer Food Service Program is designed to fill the nutrition gap and make sure children can

get the nutritious meals they need during the non-school months. Good nutrition is important throughout the year. The SFSP provides well-balanced, nutritious meals for children during summer breaks. The target Audience for WVSU SFSP, are limited-resource children living in Kanawha County are targeted for this project.

What has been done
West Virginia State University Extension Service has been a sponsor for more than 10 years. Sponsoring this program is a commitment of time, effort and funding. WVSU has served 10-14 summer food sites in Kanawha County each summer. WVSU provides two extension staff members to manage the 10 week program. The management of this program requires that one of the staff members be trained in Nutrition Education and must attend trainings that are provided by the WV Office of Child Nutrition (OCN). In addition that individual plans nutritious meals using the USDA guidelines and submits them for approval to the OCN. An approved vendor is contracted to provide the meals each day. WVSU has utilized the food service vendor on campus which is AVI Food Systems.

Results
A 10 weeks successful summer feeding service program was administered by WVSU Extension Services, for youth needing to be fed throughout the summer months. More than 13,000 lunches were served to youth meeting the guidelines of this national feeding initiative. 11 locations throughout the capitol city of Charleston and its vicinity, received opportunities to be served by this program. Hundreds of youth were provided and free, healthy and nutritious meal in a safe and nurturing environment.

4. Associated Knowledge Areas

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

Outcome #11

1. Outcome Measures

Site supervisors operating the SFSP; will report having a complete understanding about, appropriate temperture times and prepartion of meals; the adequate time frame for serving meals and appropriate methods for counting, ordering, and storing meals daily. This information will be monitored by Pre/Post testing at the conclusion of the site supervisor training.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Summer Food Program is sponsored by the Office of Child Nutrition through funding provided by the USDA. During the school year, many children receive free and reduced-price breakfast and lunch through the School Breakfast and National School Lunch Programs. The Summer Food Service Program is designed to fill the nutrition gap and make sure children can get the nutritious meals they need during the non-school months. Good nutrition is important throughout the year. The SFSP provides well-balanced, nutritious meals for children during summer breaks. The target Audience for WVSU SFSP, are limited-resource children living in Kanawha County are targeted for this project.

What has been done

Two FCS staff member attended the SFSP workshop offered by the WV Office of Child Nutrition. In turn, the extension professionals provided a site supervisor training for the designated representative at each location. For anyone not being able to participate in that workshop or that came later, were trained in supplemental sessions. During the orientation, site leaders were educated on the mandated rules of compliance for each site. Filing out appropriate meal tickets and placing orders were major components of the information conveyed. Keeping meals stored at required temperatures, ensuring the thermometers are working appropriately, and keeping ours of operation remained significant components. Serving meals and ensuring procedures are being followed effectively; with leftover food or providing seconds, became points of discussion for the group. Displaying posters, safety, adult roles and participation, were also included in the training. Finally, the WVSU FCS staff constantly conducted site reviews of all location to ensure compliance was being upheld on every level.

Results

Site supervisors and other volunteers have a complete understanding of the compliance protocol to provide a stressful program. Over the course of the summer, site personnel took full advantage of the technical support provided by the FCS staff members. They were also instrumental with making progress reports whenever necessary. The site supervisors and delivery drivers interacted and worked together in a well-organized capacity. The positive interaction provided by the food service company, through this time period made the process even more efficient. This year was a good one, especially considered that sites were functioning properly as determine through the site monitoring process conducted by state officials. No location had to be closed prematurely and the site location team were dedicated and committed to serving the youth participating.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #12

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	583

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Expanded Food and Nutrition Education Program (EFNEP) is a health education program designed to assist limited-resource audiences in acquiring the knowledge, skills, attitudes and changed behavior necessary for nutritionally sound diets; to contribute to personal development; and to improve the total family diet and nutritional well-being. Limited resource audiences most often face many challenges with having access or financial resources to obtain food rich in nutrients. In the state of WV there is a fast growing need for these unhealthy behaviors to change. Considering the child and adult obesity rates are high, especially in WV it is necessary to reverse the ways people think about their food selection. Having the support to make healthier meal selections would be steps in the right direction for a population of youth and adults having one of the highest obesity rates in the Unites States.

What has been done

At the beginning of each lesson, the students also completed the pre-test so that their knowledge about healthy eating and lifestyles could be gauged. They were also taught lessons about 'Inside Pyramid' and the importance of eating a variety of fruits & vegetables, grains and meats and beans. I made the students aware that half of their plates should contain fruits and vegetables. The paraprofessional also noticed more water consumption since bringing water to every class. A couple of the students who stated "They didn't care for water too much" have started to drink the water during the classes. During these lessons, the students learned about the different food groups and were introduced to the Portion Plate. The staff member was able to show the participants an actual plate that separated the plate into half vegetables and fruits and

¼ meats and proteins with the other ¼ grains. The plate also displayed what a serving was equivalent to such as a cup of fruit is equivalent to size of a baseball. The participants also found out how much of each food group they were required to eat daily by matching up their age, activity level and whether they were male or female. Additionally, they learned about the importance of calcium, folic acid and iron in their diets.

Results

During the EFNEP Program at the Charleston YMCA, the kids learned to fill their plates with at least half vegetables and fruit. The Portion Plate is an excellent way for the kids to see how their plates should look when they sit down to eat their meals because kids can identify with seeing food on their plates. They also learned the multiple benefits of physical activity and why it is important to engage in some type of physical activity at least 60 minutes daily as opposed to sitting inside and playing video games. In both sessions, they also learned that calcium and iron is very essential at their respective ages especially calcium, which aids in growing and bone strength. At the Summer Transportation Institute camp, the campers learned that drinking water is more beneficial and healthier than drinking sugary drinks. They vowed to drink more water, cut down on the sugary drinks and only consume sports drinks after strenuous activity. Kids at the Charleston Y are incorporating some of the lessons into their daily lives; as multiple kids have explained how they ate a plate with half vegetables and fruit; played outside for at least an hour; and/or consumed milk and ate string cheese so they can get strong bones. Those are the strides that will help attack the obesity epidemic.

4. Associated Knowledge Areas

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

Outcome #13

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	583

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Expanded Food and Nutrition Education Program (EFNEP) is a health education program designed to assist limited-resource audiences in acquiring the knowledge, skills, attitudes and changed behavior necessary for nutritionally sound diets; to contribute to personal development; and to improve the total family diet and nutritional well-being. Limited resource audiences most often face many challenges with having access or financial resources to obtain food rich in nutrients. In the state of WV there is a fast growing need for these unhealthy behaviors to change. Considering the child and adult obesity rates are high, especially in WV it is necessary to reverse the ways people think about their food selection. Having the support to make healthier meal selections would be steps in the right direction for a population of youth and adults having one of the highest obesity rates in the Unites States.

What has been done

During the EFNEP Program at the Charleston YMCA, the kids learned to fill their plates with at least half vegetables and fruit. The Portion Plate is an excellent way for the kids to see how their plates should look when they sit down to eat their meals because kids can identify with seeing food on their plates. Also included within other lessons, the kids said they were consuming more water and fruits. The increase in consumption of water is important since sodas and fruit juices contain sugars and empty calories. The kids were split on vegetable consumption. Some kids loved eating vegetables and other kids were warming up the idea of eating more vegetables. Any change is a step forward as WV still ranks high on most obese states. I think the kids at Stonewall learned valuable things and will take them and incorporate in their lives. I will be able to provide statistical changes when posttests are concluded.

Results

West Virginia State University Extension Service's EFNEP initiative continues growing in the population being reached by these services. To date, the youth component has been provided at 55% of the eligible middle schools in Kanawha County, that have more than 50% of students enrolled, qualifying for free and reduced lunch. Youth programs have also been delivered at after-school sites on Charleston's West Side, community centers in the Upper Kanawha Valley, and for students attending the Cabell County School system (new geographic location). 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 583 youth that graduated through the university's EFNEP efforts. Total representation of 95% middle school students served; 83% of the participants resided in suburban communities, while the other 17% consisted of the urban population.

4. Associated Knowledge Areas

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

Outcome #14

1. Outcome Measures

After completeing the EFNEP program, partcipants will demonstrate their ability to prepare a safe, nutritious, and afforable meal.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

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

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

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

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

As with most institutions in this current climate; the most impactful external factor affecting the FCS Program Area is funding. As a system, we rely on the extramural funds to help support the basic operational needs. In this unit, there is a great demand for additional staff members to provide services to a larger clientele. This past year, has been very challenging due to the implementation of layoffs and reduction of staff that provide service in the FCS Program. This is a major reasoning as to the diabetes education program being at a disadvantage this past year. We will continue to seek funding support by eternal mean; through establishing further partnerships, and re-staff the department to include a workforce that is more technically equipped to continue serving the health and wellness needs for the citizens of WV.

Note: The number (13, 1338) depicted in the SFSP reporting are depictive of number of lunches serves
throughout the summer 2012 season.
Example of SFSP Challenges:

- Current food vendor must have the number of lunches needed 2 weeks in advance of delivery.

- The summer of 2012 also experienced a power outage in late June early July which created extra expenses on
the program. Lunches had been ordered in advance that were not used.

- TANF dollars were not available to offset costs for program expenses in 2012 and will probably not be available
in the future.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	8.0	0.0	0.0
Actual Paid Professional	0.0	5.0	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	264690	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	216585	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

Services offered to youth and families by the WVSU Extension Service were comprehensive initiatives to promote a better sense of overall health and well-being; with a belief that introducing positive skills into ones daily regiment will development of skills enabling better self-sufficiency. Programs worked to better engage underrepresented minority youth STEM education. The WVSU NASA Science, Engineering, Mathematics, and Aerospace Academy (SEMAA) offered free summer camps in 2012 that provided a unique week-long, hand-on, inquiry-based learning experience for youth.

Also, 4-H Youth Development programming in 2012 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, delivered through a variety of modalities.

2. Brief description of the target audience

• Low to moderate income level Adults and youth; .Individuals experiencing difficulty with family resource management practices, health or nutrition issues, or any other family related risk factors; youth 4th through 12th Grades; Pre-K and Kindergarten youth; teachers and after school providers

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3355	7500	0	4547

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	1	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of stsudents that will be served by H.O.U.S.E and Phase II programming.
  Not reporting on this Output for this Annual Report

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.
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

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

Year	Actual
2012	0

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.
Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Number of individuals participating in workshops to better enhance financial management at home.
  Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Participants obtaining a GED over a one year period.
  Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Number of clients receiving an adult health history journal.
  Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Number of participants receiving a youth health history journal.
  Not reporting on this Output for this Annual Report

Output #12

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 #13

Output Measure

- Number of participants (youth and adult) attending summer wellness camps or workshops.
  Not reporting on this Output for this Annual Report

Output #14

Output Measure

- Through creative arts programming, youth will receive 40 hours per month of art enrichment.

Year	Actual
2012	23

Output #15

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
2012	3638

Output #16

Output Measure

- Students will participate in laboratory activities in the following topics: Blood typing and DNA analysis; handwriting analysis and thing layer chromatography; drug toxin identification; and fingerprint identification for a total of twenty hours per week.

Year	Actual
2012	93

Output #17

Output Measure

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

Year	Actual
2012	403

Output #18

Output Measure

- New adult volunteers recruited and retained

Year	Actual
2012	6

Output #19

Output Measure

- Youth attending the Hip Hop Camp to be instructed in various aspects of expressive arts.

Year	Actual
2012	23

Output #20

Output Measure

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

Year	Actual
2012	1908

Output #21

Output Measure

- K-12 educators receiving STEM-related training.

Year	Actual
2012	160

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 the adult literacy programs, will use proper grammatical structures and reading comprehension skills strengthened.
7	After completing the adult basic education programs, students will graduate with their GED 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.

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.

Not Reporting on this Outcome Measure

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.

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

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 the adult literacy programs, will use proper grammatical structures and reading comprehension skills strengthened.

   Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

   After completing the adult basic education programs, students will graduate with their GED 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.

   Not Reporting on this Outcome Measure

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.

   Not Reporting on this Outcome Measure

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
2012	23

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With cuts to in school art and music programming, youth have less outlets and access to this type of programming. The WVSU 4-H Hip Hop Camp 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 that were delivered in Hip Hop and classical genres including music production, DJ (turntables), dance, song writing, recording, and visual arts. Through partnerships with local businesses and organizations, middle school youth were able to foster their desires to learn certain expressive arts skill 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 violent acts in the community by these particular youth, giving the mentors to guide them and productive ways to spend their time.

What has been done

WVSU Extension Service provided a three day residential camp on the campus of the University open to 35 middle school youth. The activities that were delivered in Hip Hop and classical genres including music production, DJ (turntables), dance, song writing, recording, and visual arts. We hired local artists to serve as teachers and counselors and they fostered the youth daily, providing step by step instruction on the youth's chosen track (music production, dance, recording, etc.). The teachers were trained to provide the essential elements of 4-H throughout the duration of the camp. At the culmination of the camp, youth demonstrated the skills obtained by providing a closing presentation to the parents and WVSU staff.

Results

At the culmination of the camp, 100% of youth demonstrated the skills obtained by providing a closing presentation to the parents and WVSU staff. Every youth demonstrated an increased knowledge of their chosen track by completing their presentation. Even the youth who began the camp with a fear of public speaking were able to publicly display their knowledge gained by performing.

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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	118

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Youth are often oblivious to financial matters and, therefore, begin their financial lives in such a way that leads to financial debt. As youth graduate from high school and enter college and/or life, they do not possess the knowledge or skills to manage their funds responsibly. With the national deficit increasing, it is imperative that we education our youth as early as possible so they will learn to be fiscally responsible, not adding to the nation's ever growing problem.

What has been done

WVSU provided the Ohio State University Extension financial literacy curriculum 'Real Money, Real World' to 93 high school and 25 middle school youth during the summer residential camp settings as a leadership component to the STEM focused programs of the Health Science and Technology Academy and Summer Transportation Institute. Lessons on education's relation to occupation, budgeting, calculating net income, and managing savings/checking accounts were provided in four lessons. The fifth and final lesson included a simulation that required the youth to take their net income earned from their randomly chosen occupation, and pay monthly bills with that income.

Results

Each youth completed a survey about their knowledge of the topics before and after the program. The surveys 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 my 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.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
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
2012	47

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 amount 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. Stonewall Jackson and Horace Mann Middle Schools along with the Roosevelt Neighborhood Center and Shawnee Clubhouse were the main sites for this program, giving youth in the Charleston and Dunbar areas the opportunity to participate. Afterschool and summer day camps were provided. As an afterschool setting, a 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 at Shawnee. 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 providing 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
2012	93

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 fun, yet educational opportunities to gain knowledge in the STEM areas.

What has been done

Nationally, 4-H set a goal to reach one million new youth in science programs by 2013. The HSTA summer program is proud to represent this initiative and helped add to the success of reaching this goal, which was exceeded before 2013. 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 post survey, 88.6% of youth reported they enjoyed the HSTA Summer Institute; 69.6% reported an increased interest in the health care field; 74.7% increased interest in science, and; 53.3% increased interest in math.

4. Associated Knowledge Areas

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

3b. Quantitative Outcome

Year	Actual
2012	327

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. 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.

What has been done

The WVSU Extension Service 4-H Youth Development program area provides experiences that will prepare the next generation of science, technology, engineering, and math leaders. Participating in national 4-H programs such as the National Youth Science Day experiment 4-H Eco-Bot Challenge provided local schools and afterschool sites an opportunity to engage and in educational, yet fun science experiment that was designed to spark youths' interest in the STEM fields. The teachers were provided curriculum and instruction along with materials to carry out the experiment. They were also provided ways to expand the experiment to new levels, should the youth display an extreme fascination of the project.

Results
From teacher and afterschool coordinator reports, 100% of the youth displayed an interest in the experiment and participated in identifying the scientific method used in the Eco-Bot Challenge.

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 #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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	403

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Students in science, technology, engineering and mathematics (STEM) fields are the future workforce for vital military, government and industry jobs and are destined to become the great thinkers needed to maintain U.S. leadership in technology and innovation. The U.S. is experiencing a shortage of young people, especially underrepresented minorities, with the interest and confidence to consider a career in STEM fields. The 21st Century demands a work-force with high-tech skills, however lagging test scores indicate a lack of STEM proficiency among the next generation. Often the STEM engagement many youth receive in the traditional school system lack the fun, hand-on exploratory components which are often essential to peak student interest. Additionally the traditional school year leaves many youth without academic engagement activities in the summer-time. This large time with no academic stimuli can be detrimental to student performance in the traditional classroom. Poor performance in STEM course by negative attitudes, lack of interest or understanding affects our youth by limiting their academic and career options. The decreasing number of youth pursuing STEM is detrimental to the work-force of the future.

What has been done

WVSU employs the innovative NASA Science, Engineering, Mathematics, and Aerospace Academy (SEMAA) to increase the participation of all youth, especially underrepresented minorities, in STEM. This program has the unique capacity to revitalize STEM education through the utilization of awe-inspiring subject matter, cutting-edge research, and world-class facilities. WVSU SEMAA utilizes a series of unique hands-on, inquiry-based classroom curriculum enhancement activities. These K-12 Curriculum Enhancement Activities, or CEAs, are aligned to the National Math, Science and Technology Standards and encompasses the research and technology of each of NASA's four Mission Directorates which provides and fun factor for the youth. In order to address the downtime experienced by area youth in the summer, WVSU offers the NASA SEMAA summer camps. These summer camps provide a week-long hand-on inquiry-based learning experience for the youth. In order to increase participation of underrepresented minority youth the summer camp is offered at no charge to participants.

Results

In 2012 a total of 1908 youth engaged in WVSU NASA SEMAA. 403 of those youth participated in our SEMAA summer camp. Nearly all of the youth engaged in this program showed an increase in science and math knowledge as well as an increase in positive attitudes about STEM.

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
2012	160

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Students in science, technology, engineering and mathematics (STEM) fields are the future workforce for vital military, government and industry jobs and are destined to become the great thinkers needed to maintain U.S. leadership in technology and innovation. The U.S. is experiencing a shortage of young people, especially underrepresented minorities, with the interest and confidence to consider a career in STEM fields. The 21st Century demands a work-force with high-tech skills, however lagging test scores indicate a lack of STEM proficiency among the next generation. Often the STEM engagement many youth receive in the traditional school system lack the fun, hand-on exploratory components which are often essential to peak student interest. Poor performance in STEM course by negative attitudes, lack of interest or understanding affects our youth by limiting their academic and career options. The decreasing number of youth pursuing STEM is detrimental to the work-force of the future.

What has been done

In order to have a greater impact on youth both inside and outside of the traditional classroom, the WVSU Center for the Advancement of Science, Technology, Engineering, and Mathematics (CASTEM) offers STEM related professional development opportunities to K-12 educators at no charge to participants. These opportunities encompass a wide variety of trainings and workshops which provide K-12 educators with the information and tools to bring fun hand-on learning based STEM activities to their formal and informal classrooms. Training educators in this way allows a greater youth engagement in STEM activities. In addition to providing the training component, CASTEM also works with the educators to provide supplies and equipment resources for their classrooms.

Results

In 2012 CASTEM provided professional development trainings to 160 educators. These educators received training on SEMAA curriculum, robotics activities, and/or StarLab (portable planetarium). All participants implemented their experiential STEM activities in their classrooms. Many of the educators, specifically those using robotics and Star Lab, were able to borrow the necessary equipment from WVSU CASTEM to ensure success in activity implementation.

4. Associated Knowledge Areas

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

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

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
403	Waste Disposal, Recycling, and Reuse		5%		5%
502	New and Improved Food Products		5%		5%
602	Business Management, Finance, and Taxation		30%		30%
604	Marketing and Distribution Practices		10%		10%
605	Natural Resource and Environmental Economics		10%		10%
608	Community Resource Planning and Development		40%		40%
	Total		100%		100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	12.0	0.0	1.0
Actual Paid Professional	0.0	7.0	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	370566	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	303219	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 WVSU office of Community and Economic Development worked collaboratively with various partners including the WVSU Research component, WVU Extension, local non-profits, government agencies, community members, and local businesses to address community vitality for targeted urban and rural distressed communities.

Several integrated approaches were employed over the year to support economic viability, targeting the macro (community) and micro (individual) levels. At the macro level, a focus on sustainable communities through the national Mainstreet ® model was continued and additional communities were targeted for service. Until the close of the Rural Business Services program in September 2012, we continued to focus on supporting entrepreneurship and business development in specialty foods with the annual Recipe Challenge, the WV Made co-operative, operating now under the new trade association name Artisans Trade Association, and agri-toursim with the Heritage Farm efforts. Programs and outreach also focused on green development including high performance building, sustainable site development, water and energy conservation, energy efficient building codes, community gardens, farmers markets and trails. A new pilot program developed by the Southern Rural Development Center titled "Turning the Tide on Poverty" was deployed by CED staff, providing a community led process for identifying issues related to poverty in the community, and working through the development and implementation of strategies to address these issues. We also expanded community development efforts related to disaster preparedness on the statewide level to Southern West Virginia.

Also, at the macro level, regional economic analysis and development of new regional clusters for business expansion continued to be a focus area for both the CED research and extension efforts. The second year of the Stronger Economies Together, the national USDA Rural Development initiative piloted by WVSU Extension, was deployed. This program helps counties form regional economic partnerships that are provided with extensive economic analysis followed by the development of deployment strategies aimed at fully developing their market share and enhancing economic growth or stability.

CED staff worked extensively with pre-launch and early stage business owners by providing business training, one-on-one coaching, mentoring services and networking opportunities. A new initiative, DigiSo, (Digital and Social Media) was launched to attract and serve a growing number of 'solopreneurs', mobile creative professionals, businesses and organizations interested in learning how to expand opportunities using rich media and digital communications. Our Economic Development Center was remodeled, physically and programmatically, to serve the state as an incubator for creative economy businesses. The facility also offers an affordable video and rich media production facility, co-working office

space, and workforce training in creative economy, business and entrepreneurship subjects, with a special emphasis on innovation and creative economy skills and knowledge.

Workforce development efforts continued to include training programs that assist women and minorities in entering the traditionally male dominated building and highway construction industries.

2. Brief description of the target audience

• Community leaders, government officials and agencies, community members, professional organizations and non-governmental organizations, building contractors and industry vendors, small business owners agricultural and non-agricultural, potential business start-ups, unemployed and under-employed workforce members (with focus on low-to-mod income) and regional economic development authorities.

3. How was eXtension used?

eXtension webinars focused on digital and social media best practices for rural and small businesses were marketed through our Website, our site-based promotional media, and via our Facebook and Twitter accounts, and when possible, eXtension offerings are promoted in public appearances.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4981	9800	0	0

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

Patent Applications Submitted

Year:	2012
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	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
2012	26

Output #2

Output Measure

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

Year	Actual
2012	195

Output #3

Output Measure

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

Year	Actual
2012	16

Output #4

Output Measure

- Workforce development participants receiving necessary training and placement assistance for targeted industries.

Year	Actual
2012	73

Output #5

Output Measure

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

Year	Actual
2012	7

Output #6

Output Measure

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

Year	Actual
2012	15

Output #7

Output Measure

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

Year	Actual
2012	1799

Output #8

Output Measure

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

Output #9

Output Measure

- Number of youth receiving entrepreneurship education.
  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
2012	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

West Virginia communities have an overwhelming number of abandoned, dilapidated properties, and virtually no budget to deal with them. Municipalities struggle also with growing costs and complexities of waste disposal, recycling, and reuse. These issues combined lower not only individual or community property value, but that of the entire region. As communities across the state compete to retain and attract talent and business, these issues often take center stage in planning sessions.

When asked to identify and prioritize a community's most pressing problems and potential solutions, there is rarely consensus right away. West Virginia communities engaged in regional planning are no different. Rarely do regional planning participants readily agree on how to best leverage assets including buildings, natural resources and landscapes, equipment, infrastructure, individuals, organizations, institutions, etc. to grow economic opportunity and improve quality of life. And even more rarely do regional planning participants collectively devise a common strategy to address targeted issues. Ineffective strategic planning ultimately becomes serious budget and business development concerns, as solutions to costly problems are not addressed, and community resources are often not leveraged for the highest and best purposes.

What has been done

In Southern West Virginia, our CED agents have led and participated in planning initiatives involving at least six communities, resulting in effective regional planning strategies and action plans specifically targeting waste removal, recycling and reuse.

Results

We have organized the removal of over 440 tons of trash and 21,000 tires from Fayette,

Mercer, Nicholas, Raleigh, Summers and Wyoming. We will conduct the 3rd Annual Mountain Pride Litter Sweep this year. We have made a visible impact on the appearance of the region and through public awareness of the effort, we are keeping the issue of litter as a priority to the revitalization of our communities. We are creating a network of individuals who will continue this annual sweep in future years. We have elevated the practice of deconstruction as an alternative to demolition to help keep valuable, often one-of-a-kind building materials in the value stream. We are now working closely with these six counties as they develop new comprehensive plans. CED agents provide comprehensive planning facilitation, GIS Community Analyst services, regional planning facilitation, Disaster Preparedness expertise and planning facilitation, community building and networking event planning expertise, green building and sustainable community development technical information and consulting.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
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
2012	260

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Every community wants to attract and retain jobs in growth industries. Start-ups are responsible for the highest number of jobs created, so it makes sense to support new businesses with financial assistance, training, and general support. Established businesses are responsible for highest rate of job destruction, so it is equally important to determine what existing businesses need to improve efficiency, and to stay competitive in a very dynamic, increasingly digital market. Also, it is important for every community to understand the churn of the job cycle, and the relationship between start-ups, existing businesses in various stages of their life-cycle, and

community viability and economic sustainability. Communities that provide excellent business support services play a serious role in community vitality.

What has been done

We studied industry clusters and created tailored programs to match needs in agri-business, entrepreneurship, and creative community and innovation economy development. We organized business networking forums, created market-responsive information sessions for small business owners, launched a new co-working facility that features an incubator for businesses that use or engage in digital and social media (film, editing, and rich media equipment), and offered expertise in business development technologies. CED agents have created partnerships with lenders, educators and local business owners to provide loan assistance, group business training, one-on-one mentoring and coaching, and referrals for professional services beyond our expertise.

Results

While serving 18 counties; more than 135 loan inquiries were fielded.
19 loan applications were submitted to the loan board in Wyoming County, WV. 13 loans were approved by the loan board. 8 businesses received loans in 2012:6 micro-loans totaling $103,800 and 2 revolving loans totaling $141,357. 4 small business loans were made for $158,000
Total 2012 loans closed were $403,157.

An estimated 100 businesses received training, mentoring, and or coaching services, reporting and/or demonstrating an increased understanding of business issues. Also, the state's first crowd-funding initiatives were launched at our Economic Development Center

Through the West Side Main Street Program, 82 businesses are served with educational and networking programs for all stages of the business cycle. Also, the EDC is positioned statewide as a virtual and physical resource for new economy business and workforce development resources and information

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
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.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	73

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Research on high growth and in-demand industries, best paying new jobs, and workforce trends supports our decision to provide targeted services, resources and information aimed at growing entrepreneurship and workforce development skills for innovation-based economic growth. Traditional industry jobs are declining rapidly in coal mining and production in Appalachia as gas and renewable energy markets grow. Training for careers in creative and technical industries is rarely encouraged or available to individuals in coal communities. These communities will suffer the most as coal companies shed employees over the next five-twenty years.

Unemployment rates in several communities are already over 10.1 percent. With no big industry waiting in the wings to take the place of coal, and the gas industry's plummeting market prices and lack of hiring consistency throughout the state, some state and local leaders are asking what the next step should be to mitigate what some consider the most serious impending economic crisis West Virginia communities have ever known. The answer heard often is cultivating a culture of entrepreneurship, and supporting small businesses that can operate anywhere, as long as broadband is accessible.

What has been done

We have restructured our Economic Development Center to physically and virtually serve and support the state's existing and would-be business owners and entrepreneurs, WVSU Extension and Research initiatives and other non-governmental organizations, with distance learning, rich media production equipment, facilities and expertise, and business development training and services. Our new programs reflect our emphasis on creative industries like digital communications and marketing, film making, multimedia production, database development and management, application development and software programming and development and video game design. With the growing emphasis on energy efficiency, resource conservation, and healthy homes and communities, our program development has grown to include training that offers portable skills in energy efficiency, management, and high performance residential design, construction and retrofitting.

Results

63 individuals attended creative economy workshops and skill-building training sessions. New programs for app developers, game designers, and social entrepreneurs are scheduled to launch summer 2013.

Construction training is regularly offered to women and minorities. We have built the capacity to reach small communities throughout the state, offering cutting edge information and resources

through web conference and distance learning infrastructure.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development

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
2012	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

CED leadership and agents actively sought multiple new opportunities for diverse funding and program support through grants and strategic partnerships, while maintaining strong relationships with existing partners. Much of the CED's grant and partner support was focused on supporting the collaborative efforts of nine counties impacted by the new world-class Boy Scouts of America High Adventure Camp, but regional partnerships and cost sharing strategies have enabled CED agents to assist with the facilitation of multiple planning initiatives, employee trainings, and business development programs that otherwise would not have been created or delivered.

What has been done

We have created and maintained key partnerships with regional stakeholders who offset CED agent salaries, collaborate on grant applications, and offer community resources to joint projects. Partners include the USDA, New River Gorge Regional Development Authority, Paint Creek Scenic Trail, Tamarack Foundation, Meadow River Trail, Nicholas County Airport Authority, Beaver Enterprise Corporation, Fayette County Farmland Protection Board, National Coal Heritage Area, WV GreenWorks, WV State Department of Education, Wyoming County Economic Authority, Create WV, and the US Green Building Council.

Results

In partnership with the New River Gorge Regional Development Authority, we produced a Beautification Toolkit that is currently being used to help communities prepare for the arrival of visitors to the 2013 Boy Scouts of America Jamboree. This toolkit is being presented to communities in Fayette, Mercer, Nicholas, Raleigh, Summers and Wyoming Counties to encourage them to take simple and low cost steps to create a better first impression on visitors to our region. This toolkit will be expanded to include joint offerings from the WVSU Extension program to communities around the state. Offerings will include training and information for certified deconstruction, high performance building and green certifications for buildings and communities, energy management and efficiency workforce development and training programs, as well as low cost/no cost beautification strategies. Fifty percent of three of the CED agents? salaries are covered by regional partners. Youth entrepreneurship programs are being piloted for statewide adoption.

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
2012	1230

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As communities search for ways to compete for talent and jobs, community revitalization, energy efficient building stock, and sustainability are key for attracting and retaining job creators. Construction industry research indicates a significant slowing of new construction projects for both residential and commercial markets, while the remodeling industry exceeds retail revenue, nationally. There is renewed emphasis on fixing what communities have (the built environment) for creative economy workers (people who can live and work anywhere, as long as they have

broadband). Rising energy costs and savvy, knowledgeable consumers are forcing would-be rehabilitation experts to improve properties for efficiency, indoor air quality, water and resource conservation, and for higher resale value. The high performance construction market was the only market to see growth in the recent economic recession. West Virginia has what some have rated as the nation?s fourth largest number of available existing buildings. Business owners, building owners, community developers, realtors, and real estate developers are all looking at new ways to revitalize WV towns and communities, filling rehabbed spaces with good paying job creators.

What has been done

CED leadership has focused program development efforts on supporting the cultivation of creative/innovation workers, entrepreneurs, and communities. We?ve developed physical facilities, program and expert capacity to assist digital and social media entrepreneurs, traditional small businesses, and community/municipal leaders with new economy and initial sustainability growth plans, training, and resources that connect individuals and organizations with new problem solving strategies and information.

Results

More than 1200 people have participated in community improvement initiatives, from litter sweeps to green school programs to energy efficiency training and information sessions. Significant improvements in The Economic Development Center?s capacity to support and connect multiple training and community building initiatives through digital and social media has meant the engagement of new audiences across the state, and new partnerships in creative, sustainable community development. Due in large part to our support of community and industry education programs in efficiency and sustainability, legislation is on track to be adopted this session to align the residential and commercial building codes with the standards specified in the 2009 International Energy Conservation Code. This means more than $220,000,000 of savings through energy efficiency and conservation between 2012 and 2030.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse
605	Natural Resource and Environmental Economics
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
- Government Regulations
- Other (Demographic changes)

Brief Explanation

Program funding and staff changes had a significant impact on our Rural Business Services program. Many of the programs that touched 18 counties are transitioning to new program leaders with CED's assistance.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Communities are being served, additional businesses and entrepreneurs are coming to WVSU for assistance with new and existing business development initiatives. Communities are also asking for sustainable community and beautification expertise.

Key Items of Evaluation

Entrepreneurs and small business owners served
Volunteer and stakeholder engagement
Community interest in programs
Community revitalization projects initiated and completed