

FINAL PERFORMANCE REPORT

AWARD YEARS 2016 FORWARD

A Final Performance Report must be received within 90 days after the end of the grant agreement. You are required to report on the administration of the agreement and each project approved within the agreement. The completed Final Performance Report will be posted to the AMS website.

GRANT INFORMATION

AGREEMENT

AMS Agreement Number:	A2018SHEDCO01		
Period of Performance:	Start Date:	9/30/2018	End Date: 9/29/2022
Award Amount:			

RECIPIENT

Recipient Organization Name:	Southern Hills Economic Development		
Recipient's Point of Contact			
Name:	Andrea Powers		
Phone:	605-890-0338		
Email:	edshedco@gmail.com		

REPORT

Report Type:	Final Report
Date Report is Submitted:	10/10/2022

GRANT ADMINISTRATION

If funds were used for grant administration, indicate the amount of funding expended from the beginning of the grant to the end of the reporting period covered by this report. Also, indicate the amount charged as indirect expenses versus the amount charged as direct expenses.

Amount Requested	Direct and/or Indirect Expended to Date
42,435	3400.36

FINAL PROJECT REPORT TEMPLATE

Final Performance Reports must illustrate the completion of each project within the grant agreement. Each project shall be outlined as separate project profiles. You will report on projects in the same order they were submitted in the approved application and subsequent amendments.

PROJECT INFORMATION

Project Title	Project Hydrothermal Applications for Sustainable Agriculture		
Recipient Organization Name:	Southern Hills Economic Development Corporation		
Period of Performance:	Start Date:	9/30/2018	End Date: 9/29/2022
Recipient's Project Contact			
Name:	Andrea Powers		
Phone:	605-890-0338		
Email:	edshedco@gmail.com		

PERFORMANCE NARRATIVE

PROJECT BACKGROUND

Provide enough information for the reader to understand the importance or context of the project. This section may draw from the background and justification contained in the approved project proposal.

Southwestern South Dakota is predominantly a food desert. Hydrothermal applications for heating year-round green houses would enable the area to become a food hub at an economically viable entry point for agricultural producers, while increasing the growing season from one season to three over the course of a year. We proposed to design and build out a hydrothermally heated greenhouse and collect data on tomato production over the course of two years to determine viability of the structure and yield increase. The structure would use hydrothermally heated water from a 3,000 ft. well to provide subfloor heat to the greenhouse. The project coordinator would focus on tomato production and measure the increase in production over the course of a year, from prior years of production without the heated greenhouse. The coordinator would then provide training and apprenticeship opportunities for the surrounding school districts as well as Future Farmers of American and various scout troops in the area.

The coordinator engaged interns through the South Dakota School of Mines to work with the technical aspects of the structure as well as the production. She joined two local farmers markets to provide a venue for product distribution as well as relationships with local restaurants to create a shorter supply chain for her product.

ACTIVITIES PERFORMED

Address the below sections as they relate to the entire project's period of performance.

OBJECTIVES

Provide the approved project's objectives.

#	Objective	Completed?	
		Yes	No*
1	Provide a prototype of sustainable growing techniques using hydrothermal energy to create year-round production.		X
2	Project HASDA will provide outreach and education opportunities to regional ranchers and farmers, as well as youth driven agricultural groups, students and potential interns in various agricultural fields.		X
3	Project HASA will provide outreach and educational opportunities to regional ranchers and farmers, as well as youth driven Agricultural groups, students and potential interns in various agricultural fields.		X
4	Project HASA will engage the regional communities with greater access to and consumption of locally produced specialty crops while raising awareness around the advantages and benefits of consuming food with a shorter production/delivery chain.		X

**If no is selected for any of the listed objectives, you must expand upon this in the challenges and lessons learned sections.*

ACCOMPLISHMENTS

List your accomplishments for the project's period of performance, including the impact they had on the project's beneficiaries, and indicate how these accomplishments assist in the fulfillment of your project's objective(s), outcome(s), and/or indicator(s).

#	Accomplishment or Impact	Relevance to Objective, Outcome, and/or Indicator
1	Designed the layout for the greenhouse including the subfloor hydrothermal heating device. A few different subfloor designs were explored, particularly the matrix material to hold the subfloor piping in place and the amount of piping needed as well as processes for recycling water post use.	Objective 1: Project HASA will provide a prototype of sustainable growing techniques using hydrothermal energy to create year-round production.
2	Interns from South Dakota School of Mines were engaged in the build out of the greenhouse system as well as monitoring of technical aspects of the greenhouse environments. Other interns were engaged to complete the planning and production.	Objective 2: Project HASDA will provide outreach and education opportunities to regional ranchers and farmers, as well as youth driven agricultural groups, students and potential interns in various agricultural fields.
3	The project did not engage other farms and ranchers since we were unable to complete the prototype and prove out through data that the hydrothermal produced heat increased growing time and yields.	Objective 3: Project HASA will provide outreach and educational opportunities to regional ranchers and farmers, as well as youth driven Agricultural groups, students and potential interns in various agricultural fields.
4	HASA continues to engage the regional community through participation in Local foods symposiums and participation in the Black Hills Area Local Foods COOP, and the Fall River Farmers Market. These local farmers markets provide residents of Fall River County opportunities to purchase produce grown within the county. The coordinator joined several farmers markets to distribute the product at the local level and created relationships with several restaurants in the area to shorten the supply chain to vine ripened tomatoes over a three season time frame.	Objective 4: Project HASA will engage the regional communities with greater access to and consumption of locally produced specialty crops while raising awareness around the advantages and benefits of consuming food with a shorter production/delivery chain.

CHALLENGES AND DEVELOPMENTS

Provide any challenges to the completion of your project or any positive developments outside of the project's original intent that you experienced during this project. Also, provide the corrective actions you took to address these issues. If you did not attain an approved objectives, outcome(s), and/or indicator(s), provide an explanation in the Corrective Actions column.

#	Challenge or Development	Corrective Action or Project Change
1	As a result of the pandemic, we were unable to make any progress on our project due to a shutdown of travel for all state employees beginning February 2020. The inability of staff and students of SDSU to travel since February of 2020 halted our project, construction and research portions. The travel ban was still in place as of 1/14/2022.	
2	Our designated location was terminated due to	We were unable to complete the project as a result of these challenges.

#	Challenge or Development	Corrective Action or Project Change
	death of property owner. We acquired a new location in the downtown area of Edgemont utilizing a different water source but with the same approximate temperature of 134 degrees. However, the travel restrictions on SDSU personnel prevented any attempts to use the property.	
3		
4		

LESSONS LEARNED

Provide recommendations or advice that others may use to improve their performance in implementing similar projects.

No one could have foreseen the pandemic however, If we have another opportunity to test our prototype project we would partner with an institution much closer to the physical location of the greenhouse.

CONTINUATION AND DISSEMINATION OF RESULTS (IF APPLICABLE)

Describe your plans for continuing the project (sustainability; capacity building) and/or disseminating the project results.

We have no results to disseminate. We do have an interested partner much closer to the physical location and there is still availability of sub surface hot water.

BENEFICIARIES

Number of project beneficiaries: 0.....Enter Number of Project Beneficiaries

OUTCOME(S) AND INDICATOR(S)/SUB-INDICATOR(S)

Provide the results of the project outcome(s) and indicator(s) as approved in your application and project proposal. The results of the outcome(s) and indicator(s) will be used to evaluate the performance of the Program on a national level.

OUTCOME MEASURE(S)

Select the Outcome Measure(s) that were approved for your project.

- ☐ **Outcome 1:** Enhance the competitiveness of specialty crops through increased sales
- ☐ **Outcome 2:** Enhance the competitiveness of specialty crops through increased consumption
- ☐ **Outcome 3:** Enhance the competitiveness of specialty crops through increased access
- ☒ **Outcome 4:** Enhance the competitiveness of specialty crops through greater capacity of sustainable practices of specialty crop production resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources
- ☒ **Outcome 5:** Enhance the competitiveness of specialty crops through more sustainable, diverse, and resilient specialty crop systems
- ☐ **Outcome 6:** Enhance the competitiveness of specialty crops through increasing the number of viable technologies to improve food safety
- ☐ **Outcome 7:** Enhance the competitiveness of specialty crops through increased understanding of the ecology of threats to food safety from microbial and chemical sources
- ☒ **Outcome 8:** Enhance the competitiveness of specialty crops through enhancing or improving the economy as a result of specialty crop development

OUTCOME INDICATOR(S)

Provide the indicator approved for your project and the related quantifiable result. If you have multiple outcomes and/or indicators, repeat this for each outcome/indicator (add more rows as needed).

#	Outcome and Indicator	Quantifiable Results
1	Outcome 4, Indicator 2.a: Though educational outreach 7 existing or new growers will adopt the recommended practices.	None-bans for COVID 19 prevented researchers from traveling to the site. No new practices were created or adopted,
2	Outcome 5 Indicator 1: Number of new or improved innovation models (biological, economic, business management, etc.) technologies, networks, products, processes etc. developed for specialty crops including producers, processors, distributors, etc.: <u>1</u>	None- Three innovation models are part of the design of the green house. Construction did not take place as a result of Covid bans for travel or the construction.
3	Outcome 5 indicator 2: Number of innovations adopted: <u>2</u>	None of these have been constructed due to COVID 19 and resultant bans on travel.
4	Outcome 8 indicator 1: Number of new rural careers created: <u>12</u>	New rural careers were not created.
5	Outcome 8 Indicator 5: Increased revenue/increased savings/one-time capital purchases (in dollars): <u>\$15,000</u>	Increased revenue/savings were not realized.

DATA COLLECTION

Explain what data was collected, how it was collected, the evaluation methods used, and how the data was analyzed to derive the quantifiable indicator.

None of the data proposed was collected due to travel bans or our research team.

FEDERAL PROJECT EXPENDITURES

EXPENDITURES

Cost Category	Amount Approved in Budget	Actual Federal Expenditures (Federal Funds ONLY)
Personnel	9,255	
Fringe Benefits	1,710	
Travel	3,000	1,400.36
Equipment		
Supplies	20,293	
Contractual	7,000	2,000.00
Other		
Direct Costs Sub-Total	41,258	3400.36
Indirect Costs	1,177	
Total Federal Costs	42,435	3400.36

PROGRAM INCOME (IF APPLICABLE)

Source/Nature (i.e., registration fees)	Amount Approved in Budget	Actual Amount Earned
1.none		
2.		
3.		
Total Program Income Earned		

Use of Program Income

Describe how the earned program income was used to further the objectives of this project.

ADDITIONAL INFORMATION

Provide additional information available (i.e., publications, websites, photographs) that is not applicable to any of the prior sections.

None.