

## **Progress report for ONE18-320**

### **Developing Markets for Warm Season Grass within the Pennsylvania Farm Community**

[ONE18-320 \(project overview\)](#)

**Project Type:** Partnership

**Funds awarded in 2018:** \$14,993.00

**Projected End Date:** 08/26/2019

**Grant Recipient:** Penn Soil RC&D Council

**Region:** Northeast

**State:** Pennsylvania

**Project Leader:**

[Michael Palko](#)

[Email](#)

Biomass Renewable Energy LLC

Expand All Collapse All

#### **Project Information**

##### **Project Objectives:**

To launch a marketing campaign throughout Pennsylvania's farming community that educates and promotes the many economic and environmental benefits of using warm season grasses, and to develop a catalogue of warm season grass growers and sellers within each county in Pennsylvania. The Association of Warm Season Grass Producers in partnership with the Penn Soil RC&D Council will reach out to at least 5,000 Pennsylvania farmers during 2018, will help them discover the many environmentally beneficial and cost-saving benefits of these grasses, illustrate their superior properties when compared with traditional hay-straw and sawdust products, and will help them begin using these grasses in their farming operations. The Association membership will conduct an inventory of growers and suppliers by county in Pennsylvania and publish a catalogue of those growers and suppliers to include producer's location, product type (grass species), product form (round or square bales), price, availability, and delivery distance.

##### **Introduction:**

Pennsylvania farmers, who could benefit by using warm season grasses in their farming operations, simply don't understand the many benefits of warm season grasses, nor do they know who grows and could sell these products to them and their farm community. The Association of Warm Season Grass Producers will reach out to at least 5,000 Pennsylvania farmers during 2018, help them discover the many benefits of these grasses, and help them begin using these alternative beneficial crops in their farming operations. The Association membership, however, does not know the location of most

Pennsylvania growers and suppliers. While members of the Association were exhibiting at a Lancaster County fair in 2017, a farmer producing select, organic eggs decided to start using switchgrass for her chickens' bedding. When asked who in Lancaster County could supply switchgrass for bedding, no one could provide the name of a switchgrass grower in that county. Needed is an inventory of growers and suppliers by county in Pennsylvania.

Much has been reported about warm season grass and their many economic and environmental benefits. In many cases, warm season grass performed better than the traditionally used material such as bedding straw or sawdust. Specialized reports touting the benefits and virtues of warm season grass are in publications that farmers do not readily access and read. These reported benefits are not getting to the audience that needs the information the most. The proposed marketing campaign is to get the benefits of warm season grass use into the farm community by showing them firsthand what this grass looks like and how its many product forms can out-perform other products used to sustain farms. We will build on what has been reported in research reports by bringing information and publications to farmers and end users who visit Pennsylvania's ag-shows, expos, and fairs. These venues are also excellent opportunities to provide end users a catalogue of grass growers and product producers by county in Pennsylvania.

### **Cooperators**

Click linked name(s) to expand

[Will Brandau](#) (Educator)

[Ian Paddock](#) (Educator)

[Larry Hartpence](#) (Educator)

[Leonard Reggie](#) (Educator and Researcher)

[Matthew Glennon](#) (Educator)

[Michael Kramer](#) (Educator)

[Rodney Leighow](#) (Educator)

[Dan Arnett](#) (Educator)

[Dr. Dan Ciolkosz](#) (Educator and Researcher)

[Andy Bater](#) (Educator)

[Judy Box](#) (Educator)

[Wesley Ramsey](#) (Educator)

[Dr. Mike Jacobson](#) (Educator and Researcher)

[Sarah Wurzbacher](#) (Educator and Researcher)

### **Research**

#### **Materials and methods:**

We seek to improve the acceptance and use of warm season grass by the farm community, improve its market potential, and promote additional acres planted by educating a total of 5,000 farmers to the benefits and uses of these grasses. We will conduct a census of warm season grass growers and will publish a catalogue of product producers for each county in Pennsylvania by the end of August 2019.

Farmer cooperators from the Association of Warm Season Grass Producers will participate in 2 Pennsylvania farm shows/ag-expos, and in 5 county fairs. They will interact with farmers and fair participants, supplying them with publications and information that highlight the many economic and environmental benefits from using warm season grass in farming operations. We will show four video demonstrations on how to grow, harvest, store, and pelletize warm season grass. We will demonstrate its absorbency in poultry houses and as livestock bedding, its fuel capabilities, and its superior absorbency when used in silt socks for erosion and sedimentation control measures.

We will attend two agricultural shows/ag-exhibits. Shows and Exhibits begin in August 2018 and extend into February 2019. At each show, at least two farmer cooperators from the grass growers association will greet and educate visitors, hand-out supporting literature and present videos, and record contact information of those interested in incorporating warm season grass into their farming operations.

During each show/exhibit, a record of contact information will document fair participants who asked questions and discussed using warm season grass as part of their farm processes. This information will be used to follow-up, encourage, and assist potential users to incorporate warm season grass into their farming operations and to provide them access to grass producers and suppliers.

Ag Progress Days, August 14-16, 2018

Keystone Farm Show, January 9-11, 2019

At five county fairs we will replace the traditional bedding materials being used in the livestock barns with warm season grass. Arrangements will be made with five county fair livestock barn managers to gain their permission and cooperation to replace their traditional bedding and make them aware of the benefits of using warm season grass over other materials. We will supply them with one to five 200-pound supersacks of processed, ground-grass as a substitute for their hay-straw and sawdust bedding, to demonstrate the advantages of using this as an alternative bedding for their livestock. We will post signs at the fair barns about the grass bedding being used and the benefits those grasses provide, thus reaching 2,500 in the farming community who visit these five fairs. At each selected fair, any two of the seven farm cooperators will deliver the supersacks and assist in its distribution as bedding.

During 2018 county fairs extend from May through October. Depending on the fair managers that agree to participate, five fairs will be selected: Lycoming County, Troy, Montour-DeLong, Northumberland County, and Bloomsburg Fairs. During each fair, a record of contact information will document fair participants interested in using warm season grass as part of their farm processes. This information will be used for follow-up contacts to encourage and assist potential users to plant or purchase and incorporate warm season grass into their farming operation and to provide them access to grass producers and suppliers. Participation targets are 500 interested visitors at each fair for a total of 2,500 participants receiving product information and education and product suppliers.

FARM SHOW/COUNTY FAIR CONTACT INFORMATION RECORDS & FOLLOW-UP REPORT:

Palko will compile the records kept of those farm show & county fair participants interested in using warm season grass as part of their farm processes. The follow-up with any of the potential warm season grass users and any reported encouragement and assistance given to them and any results from contacting grass producers will be reported and published by end of the project period.

#### GRASS PRODUCERS CENSUS DATABASE AND CATALOGUE:

Needed is a catalogue of farmers who grow and sell warm season grass. The catalogue will publish the producer's farm location, acreage in grass production, species and varieties of grass being grown, stand purity/weed percentage estimates, willingness to sell grass and related products, voluntary pricing information, and delivery radius in miles and by county. When a project, a farmer, or a fair needs grass, they will know who in a geographical area has material to supply. Using Google Maps, we will produce a map showing locations of warm season grass production farms in each Pennsylvania county.

The inventory of farmers who plant, grow, and harvest warm season grass will be conducted from February to the end of July 2019. Initial surveys inquiring the location of possible warm season grass producers will be sent to the regional offices for the following agencies: Conservation Districts, Pennsylvania Game Commission, USDA Farm Services Agency, USDA NRCS, the Pennsylvania Nature Conservancy, PA Department of Transportation, and Penn State University Extension. From these inquiries, 3 farmer cooperators and Palko will contact farmers who are planting. Based on successful past experiences, these initial contacts generally lead to other farmers who also plant warm season grass within that local farming community. Palko will head-up the census inventory and develop the database from these leads provided by the above listed agencies and producers. He will ground-truth 50% of these to verify data accuracy especially estimated stand purity/weed content. A catalogue with map will be published in August 2019 to include the information described above.

#### **Research results and discussion:**

**Association of Warm Season Grass Producers:** The Association marketed switchgrass by inviting/introducing Joe Greco from BEG Group LLC to an invited group of switchgrass growers. His company is in the market for weed free stands of switchgrass, dry, square bales for their Big Switch Erosion and Filtration Media. They stuff silt socks with grass, grass seed, and fertilizer mixes to stage on rights-of-way and disturbed land requiring erosion & sedimentation controls. Two dozen producers/members in attendance. Will Brandau then gave a brief tour of his switchgrass fields and work that he does on his farm.

The Association marketed switchgrass by inviting Robert Rice to present new information on using switchgrass as a feedstock for biochar production. Currently, there are many organic feedstocks used to produce biochar. Switchgrass is one such feedstock receiving interest within the farm community because of its abundant yields per acre and relative ease of production and maintenance. More on this subject this coming year. Andy Bater then gave a brief tour of his switchgrass fields and work that he does on his farm.

The Association invited growers to a meeting at Penn State Ag Extension Office, Montoursville, PA to introduce Diamond Sock and their request for switchgrass for their silt sock process. Located in State College, PA, (central PA) Diamond Sock has become a popular customer for farmers growing warm season grass, because of their central location and willingness to travel hundreds of miles for grass

feedstocks. Switchgrass has increased from \$65 to \$90 to \$150+ per ton in the past year and a half. Twelve producers/members in attendance.

The Association attended Ag Progress Days, Aug 14-16, at Penn State University's Rock Springs Farm. Eight members attended to demonstrate and discuss the benefits of switchgrass as bedding and bioenergy. We were situated next to the warm season grass crop field demonstration plots. D. Arnett, A. Barkley, W. Brandau, & S. Wurzbacher discussed results during their panel discussion to a seated audience. There were 510 exhibitors, and 42,000 visitors. If we reached 30% of those attendees with our message, then we educated about 12,600 visitors.

**Outreach:** The Pittsburgh Zoo operates an International Conservation Center in southeast Somerset County PA. It is also known as the Elephant Mating Farm, where they have barn facilities to mate elephants, and eventually zebras, African wild dogs and other animals planned for the future. They heat the elephant barn using a wood chip boiler, with which they are not satisfied. Suggested is to burn switchgrass, which they grow for the elephants' bedding and some feed...and some bales are sent to downtown Pittsburgh to the main zoo. They have 50 acres of grass, currently, and would like to expand that to meet internal demand. The zoo farm manager likes the idea of burning switchgrass to heat their bull barn and the new female birthing-barn with switchgrass. Other Educational Activity. Currently there is only one boiler in the United States using switchgrass, non-densified, from bale-to-boiler, successfully as a boiler fuel...grass fed into the boiler in bale form, not as a pellet or briquette. The farm manager and her field assistant at the International Conservation Center (Elephant Mating Farm) were provided a tour of the greenhouse in New Jersey to show them the Lin-Ka boiler used to heat 7 acres of flower greenhouses, Harmony NJ. Pictures attached. The challenge... Lin-Ka is the only boiler successfully, safely burning bales of switchgrass in a boiler. They are manufactured in Denmark; the zoo wants made in America. The zoo harvests their grass into round bales; the Lin-Ka is set-up to burn square bales (problem detail is found in the mesh versus string to hold the bales as such, and the labor to remove mesh is intensive, and it is costly to switch to square bales.

**The Pennsylvania Grass Producers Census** is underway. There are seven producers who are currently members in the Association of Warm Season Grass Producers, and who are part of the Census. They are as follows: B. Trumbower, F. Circle, D. Arnett, J. James, J. Woodruff, J. Bolukas, L. Hartpence, M. Glennon, L. Reggie, M. Perry, R. Leighow, W. Brandau. The Pittsburgh Zoo Elephant Mating Farm is a new addition to the census as is Craig Coleman in Somerset County. Also, Sam Elkins from Marion Center, PA has 300-400 acres of switchgrass and makes small bales. He puts 650 small bales on each of 4 or 5 trailers to deliver as bedding. Jeffrey Marshall, Heritage Foundation in Bucks County PA has helped many establish stands of switchgrass in southeast PA during the previous decade. Currently, a meeting and tour are being scheduled. Others who may be participants in the census include the Milton Hershey School and Fort Indiantown Gap Army Depot, both in Dauphin County. These two large landowners have expressed interest before because they grow switchgrass and don't know exactly what to do with it, commercially. The Army Depot is of particular interest. Their fields of grass are intended to maintain the prairie grass habitat found naturally on this military base. The prairie serves as the nesting habitat of the Regal Fritillary Butterfly <https://www.dmva.pa.gov/dmvaoffices/Environmental-Resources/Documents/Regal-Butterfly/Regal-Repatriation-Facts.pdf>. Loss of these native grasses would result in the extirpation of this butterfly species from PA.

**Grass Bagging Experiment:** Grower Leonard Reggie is conducting a marketing experiment to bag ground-up switchgrass as backyard poultry and horse bedding. He stuffs 30-gallon lawn & leaf brown-paper bags with 25-30 pounds of grass. His method is to remove 90% of the dust from the grass before bagging. 30 bags on a 4'X4' pallet weigh about 800 pounds at 18% moisture content...that's 50 pounds per square foot of cargo space. His is a low volume, high labor product...more on this product in later reports.

**Custom Harvester:** There are probably many who will harvest custom jobs farm-to-farm; however, Nate Moss is just one such harvester. He does round bales of switchgrass, and achieves about 800 pounds /bale.

**Grass Broker:** M. Stoltzfus, Reading PA does not grow grass, but sells bedding products. He wants large quantities of switchgrass bales.

**Other Participant:** Roger Samson, Executive Director, Resource Efficient Agriculture Production REAP – Canada, Ste. Anne de Bellevue, Quebec. Focus is switchgrass dairy bedding publications. [www.reap-Canada.com](http://www.reap-Canada.com).

Susan Parry, State Grasslands Conservationist at USDA-NRCS, Harrisburg, Pennsylvania, has extensive knowledge of those throughout Pennsylvania who are growing switchgrass, including those participating in the Conservation Reserve Enhancement Program CREP.

**Switchgrass Demonstrations at 5 County Fairs:** Two to four super-sacks of switchgrass were delivered to each of 5 county fairs during the summer of 2018. Each sack weighed about 200 pounds. Grass was ground to 1.5" and minus, and was intended to be used as poultry bedding. But to our surprise, the following animals demonstrated satisfying results: poultry, dairy cows, horses, angora rabbits, guinea pigs, and goats. Those showing angora rabbits especially liked grass bedding because it did not mat in their fur like sawdust. Many have requested more switchgrass for next year's fairs and their own farm use.

- Lycoming County Fair – July 2018
- Troy Fair – July 2018
- Montour DeLong Fair – July 2018
- Northumberland County Fair – August 2018
- Bloomsburg Fair – September 2018

According to the PA State Association of County Fairs, the average Pennsylvania county fair pulls in over 49,900 visitors. If our switchgrass as bedding message reached only 30% of those visiting our 5 county demonstration fairs, we educated approximately 74,850 visitors last summer, exceeding our grant's goal of reaching 5,000 people. Five Workshop/Field Days.

Will Brandau, Chairman, Association of Warm Season Grass Producers, **prepared a press release** on the work that the Association is doing to promote the marketability of warm season grasses. The attached press release went out October 30th to the following **17 farming publications:**

Agri News

American Farm Bureau

American Farm Bureau Federation  
Dairy Business  
Lancaster Farming  
Successful Farming  
The Farmers Friend  
Magazine, Farming  
Farm Progress  
Farm Industry News  
Farmer Iron  
Farm Progress  
American Farm  
Biomass International Anna Simet  
Citizens Voice  
River Reporter  
Farm World

Currently delivering super sacks of Warm Season Grass **poultry bedding** to the **103rd Pennsylvania Farm Show 2019**, (Harrisburg Farm Show Complex). Larry Hartpence and Will Brandau are taking it to Harrisburg for the 800 poultry barn cages. We are NOT hosting a booth, but the poultry grass bedding, banners and handouts will be in the poultry barn. This is the nation's largest indoor agricultural event, featuring 6,000 animals, 10,000 competitive events, 300 commercial exhibitors, attracting over 500,000 visitors. The 2016 Show's economic impact to south-central Pennsylvania = \$95 million, & supported more than 18,000 jobs over the course of the week-long event. If our message reaches 30% of those visiting this year's Farm Show, then we will have educated approximately 150,000 visitors.

January 8-10 – **Keystone Farm Show** (York, PA Fair Grounds) – We are hosting a switchgrass booth this year. The largest commercial farm equipment & service provider trade show in Pennsylvania. It is the Farm Show for Farmers with 50,000 visitors and 500+ exhibitors. Held at the York Expo Center Grandstand, York Fairgrounds, York, PA. Targets full-time farmers in PA, NJ, MD, and northern VA. If our message reaches 30% of those visiting this year's Keystone Farm Show, then we will have educated approximately 15,000 visitors.

February 06 – 09 – **28th Annual PASA Pennsylvania Association of Sustainable Agriculture Winter Conference** (Lancaster PA Conference Center) – Should be a great event for us and anticipate a lot of interest. Thousands of farmers, homesteaders, educators, agriculture & food system professionals gather for four days of intensive learning on more than 160 sustainable food and farming topics. The trade show includes over 100 vendors. Visitors come from more than 30 states and six countries.

**50** Farmers participating in research

### **Education & Outreach Activities and Participation Summary**

**250** Consultations

**3** Curricula, factsheets or educational tools

**3** On-farm demonstrations

**16** Published press articles, newsletters

**3** Tours

**3** Webinars / talks / presentations

**7** Workshop field days

**3** Grower Leonard Reggie is conducting a marketing experiment to bag (paper lawn/leaf bags) ground-up switchgrass as backyard poultry and horse bedding.

### **Participation Summary**

**25** Farmers

**25** Ag service providers who participated in the project

#### **Education/outreach description:**

All activities are listed in the Research section above.

#### **Learning Outcomes**

##### **Key areas in which farmers reported changes in knowledge, attitude, skills and/or awareness:**

Too soon to report results, but expectant results will be in all areas... knowledge gained, attitudinal changes, skills gained in growing warm season grass properly, and awareness of what the market demands in this new and changing commodity.

The Association is the primary group to assist the farm community in how to successfully market warm season grass, especially switchgrass. Dairy, poultry, horse farms and those raising smaller animals will learn that switchgrass is a better and useful material for bedding. Industrial and institutional users will learn that this grass can be used to fuel boilers and thereby avoid the higher costs of other heating fuels. They may learn that some of these end users may grow their own fuel sustainably on their own acres. The grass silt sock producers demand pure, weed-free stands of switchgrass. Farmers interested in selling existing fields of grass or those looking to plant new stands and enter this market will need help/education on how to provide clean, weed-free, proper grass bales, either square or round, to succeed. Environmentalists will learn that fields of switchgrass have a positive impact on the habitat of animals and especially insects that need native, indigenous plants for nesting and habitation, especially insects that struggle in environments converted to other cultivations. Planting switchgrass is a means to expand the establishment of butterfly and pollinator habitat.

#### **Project Outcomes**

**75** Farmers changed or adopted a practice

**50** New working collaborations

##### **Project outcomes:**

Quality of grass product has been steadily improving. When word spread that there was a new need for switchgrass, farmers who had fields of grass... mixed with golden rod and autumn olive...started



harvesting and delivering this poor-quality mix. This prompted the grass silt sock producers to ask the Association to get the word out that the bales of grass have to come from pure stands of switchgrass to be of any service to this new market opportunity. Many opportunities have presented themselves to educate farmers/growers to improve their stands/fields of switchgrass and for the Association to educate growers how to improve the quality of their grass product for delivery to end uses such and the grass silt sock providers.

#### **Assessment of Project Approach and Areas of Further Study:**

This study has focused the publics' as well as the memberships' attention on the marketability of switchgrass. As a result, it opened pathways to two large manufacturers of environmental silt sock who were looking for grass instead of sawdust to stuff into their fabric tubes. The resultant change in value for a bale of switchgrass has been a game changer for farmers. Prices went from \$65 to \$90 to \$150-165 per ton of switchgrass in just over a year's time. Quality of grass product has been steadily improving as well. When word spread that there was a new need for switchgrass, farmers who had fields of grass... mixed with golden rod and autumn olive...started harvesting and delivering this poor-quality mix. This prompted the grass silt sock producers to ask the Association to get the word out that the bales of grass must come from pure stands of switchgrass to be of any service to this new market opportunity. The Association is preparing an education brochure on how to plant switchgrass and how to ensure it is weed free. More on this in this coming year.

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