



United States
Department of
Agriculture

Transportation and Marketing
Acer Access and Development Program

Fiscal Year 2020 Description of Funded Projects

Number of Grants Awarded: 12
Amount of Funds Awarded: \$5,436,983.78

For more information, please visit the grant program's website: <https://www.ams.usda.gov/acer>

NOTE: The below project descriptions were provided by the grant recipients.

Connecticut

Recipient: Yale University, New Haven, CT
Project Type: Producer and Landowner Education
Award Amount: \$394,035.00

Sap, syrup, and silviculture training to support Southern New England maple syrup producers

Maple syrup producers in southern New England are disadvantaged due to a lack of educational opportunities for experiential education in sap collection, maple syrup production, and forest management. Additionally, the sugar and red maple forests of Southern New England are on the front lines of challenges due to climate change. Maple producers are scrambling to adapt to unpredictable sap flow events and reduced sap and sugar yields, unaware of steps they can take to actively mitigate some of these changes.

This educational campaign will provide maple producers in Southern New England with training through workshops and demonstration areas. This effort will help them continue the tradition of producing maple syrup and provide them with the knowledge and hands-on training necessary to adapt their operations for long-term sustainable production. This effort will also fill a niche by providing educational training in maple syrup production and forest management for aspiring maple producers and forest landowners. A total of 18 workshops will take place in Southern New England over a three-year period in the three topic areas of sap collection, maple syrup production, and maple silviculture.

Benefits of this project include adoption of more efficient sap and syrup production systems and healthier, more resilient sugarbushes. Our educational campaign will encourage landowners to adopt efficient sap collection and syrup making practices while managing their sugarbush for long term sustained yields in the face of climate uncertainty.

Kentucky

Recipient: University of Kentucky Research Foundation, Lexington, KY

Project Type: Producer and Landowner Education

Award Amount: \$499,440.00

Enhancing the Awareness, Knowledge, and Understanding of Sustainable Maple Syrup Production Practices Among Current and Potential Maple Syrup Producers

Sustainable maple syrup production is dependent upon many factors, including forest stand dynamics, the number and size of sugar and red maple trees suitable for tapping, and the optimal temperature range during the tapping season. Furthermore, forest succession, climate change, and natural disturbances all influence these factors. The interplay among these factors determine potential level of maple syrup production in a particular locality. The long-term goal of this project is to develop education and extension training resources, building on integrated research to enhance producer and landowner awareness, understanding, and knowledge of sustainable maple syrup production in Kentucky and other maple producing states. To achieve this long-term goal, several activities will be implemented under two specific objectives: (i) develop spatiotemporal-economic education and extension analytic tools to enhance maple syrup production by county in syrup producing states, and (ii) develop and implement novel education and extension resources targeting new and current maple syrup producers in Kentucky. The project will utilize the most current and forecasted data on maple syrup production for all maple syrup producing states by county with flexibility for similar application at individual producer and landowner unit in an easy to use online dashboard portal. This project will recruit new maple syrup producers, expand current maple syrup production, and educate landowners and operators about the economic benefits of maple syrup production as a viable business and a sustainable natural resource activity.

Michigan

Recipient: Michigan State University, East Lansing, MI

Project Type: Producer and Landowner Education

Award Amount: \$449,653.13

Creating the next generation of modern maple producers by pairing the Land Grant University Mission with FFA student chapters, Tribal Schools, and Forestry Clubs across the Upper Midwest

This project will use a unique partnership model that links land grant university experts and state maple association members with geographically dispersed high school FFA units, a tribal maple entity and a collegiate forestry club to enhance regional maple production knowledge in Michigan and Wisconsin. Increasing maple knowledge of younger maple producers with hybrid learning opportunities is critical to the sustained growth of the industry, and will serve as a working template for other states in the entire maple region to follow. The proposed project blends intensive hands on maple trainings using a “train the trainer” model for adult instructors with hybrid learning opportunities for the next generation of producers, and community maple outreach education driven by the local FFA students. Hybrid online learning platforms will link each of the participating schools together and be fully scalable to meet the needs of students from high school to adults who are life-long learners across the country. Lastly, it

actively partners nearby state maple association members with each school unit to serve as a local mentor and a direct link to the respective state associations.

New Hampshire

Recipient: University of New Hampshire, Durham, NH

Project Type: Producer and Landowner Education

Award Amount: \$427,615.00

Developing and testing a novel tap design for increasing sugarbush sap yields and sustainability through research, extension, and producer partnerships

Today's maple taps seat very tightly inside tap holes and restrict sap flow at sapwood depths up to 1" beneath the cambium. Sap flow studies in sugar maples during the growing season have found that maximum sap flows occur at more shallow sapwood depths (0.4" and 0.6"), and that sap flows decrease at deeper depths. Tall, vertical nonconductive wood columns (NWCs) that form above and below tap holes reduce sapwood hydraulic conductivity and decrease radial sugar maple growth rates, and larger tap holes create larger NWCs. Thus, taps that are less restrictive of sap flow at shallow sapwood depths and utilize smaller tap holes may increase sap yields and reduce volumes of NWC. However, the knowledge about dormant season winter sap flow and NWC formation in sugar maple critical for optimizing tap design is currently lacking. This proposal seeks to explore these opportunities to improve maple tap design by accomplishing four objectives: 1) determine the depth of maximum winter dormant season sap flow; 2) correlate sap flow data with sap yield for both our novel Prototype I tap and the industry-standard tap; 3) assess the impacts of tap hole dimensions on NWC volume; and 4) integrate the results into tap design and development. A Prototype II tap will be tested on-farm by cooperating sugar producers, refined based on their input into a Prototype III Tap, and field-tested again by producers. Strong collaboration with diverse partners will facilitate outreach and dissemination of results and promote adoption of novel tap technologies.

New York

Recipient: Cornell University, Ithaca, NY

Project Type: Producer and Landowner Education

Award Amount: \$496,495.00

Best Practices for Increasing Maple Production through Forest Management and Extending Sap Collection Season

Maple producers can expand the productive capacity of their sugarbush by growing more trees, purchasing additional land and equipment, or by increasing the productive output of individual trees. Of these options, the most cost and time effective is increasing individual tree productivity. By overcoming barriers that limit the duration of the sap collection season and the volume of sap collected from each tree, this project will increase syrup production for maple businesses while also creating guidance to ensure the health and long-term sustainability of maple trees. The Cornell Maple Program will accomplish these objectives by establishing guidelines for maximizing sap collection from all dormant season sap flows while protecting the tappable sustainability of the trees, thinning forests for increased

light availability to promote health and sugar production and, providing proper soil nutrients. Additionally, real-time comparison benchmark data will be generated and made available online for producers to utilize as a decision-making tool during the sugaring season. By establishing a robust educational framework that communicates these strategies, we will increase the productivity and profitability of maple operations.

Recipient: Cornell University, Ithaca, NY
Project Type: Producer and Landowner Education
Award Amount: \$500,000.00

Maximizing productivity of maple enterprises through increased sap utilization and development of new value-added products

Continued expansion of the maple products industry requires producers to address several key constraints to growth. These limiting factors include the productive capacity of the sugarbush and demand for maple products in the marketplace. The Cornell Maple Program will address these impediments with a four-part plan that includes innovative research approaches coupled with rigorous extension activities to promote increased production of maple products: 1) Develop high-value options for buddy maple syrup, allowing producers to utilize a greater amount of the total productive potential of the sugarbush. 2) Create novel, high-value maple products, including gourmet maple chocolate, and improve the quality of existing maple confections to give maple producers access to lucrative new markets. 3) Establish technical guidelines for the safe bottling and sale of maple sap to expand the presence of maple in the beverage industry 4) Produce a monthly podcast series to improve accessibility to research in the maple industry. Project staff will increase producer knowledge and normalize adoption of new products and processes in each of these focus areas through a comprehensive educational outreach program. This effort will entail extension through workshops, maple schools, publication of technical guidelines in print and digital formats, and development of online, multimedia resources conducted in collaboration with regional maple programs for a broad impact across all maple producing states.

Recipient: New York State Department of Agriculture and Markets, Albany, NY
Project Type: Market Development and Promotion
Award Amount: \$462,918.30

2020 ACER ACCESS AND DEVELOPMENT PROGRAM - Opportunities and Strategies to Increase Consumer Awareness and Usage of Pure Maple Syrup

New York State is a leader in maple syrup production. The State ranks #2 in production nationally, producing over 800,000 gallons annually¹. The New York State Department of Agriculture and Markets (AGM) submits this proposal to conduct market-based research that will drive consumer demand for pure maple syrup. Since 2005, USDA indicates maple syrup production has increased 341% across the U.S. and 369% in New York². As the supply of maple syrup continues to increase it is necessary to invigorate consumer demand or risk falling prices.

Increased demand for pure maple products will benefit brands and the industry overall. A study commissioned by the Pennsylvania Maple Syrup Association³ found that purchase decisions for maple syrup generally occur at the store shelf with little thought of brand or product attributes. Pointedly, consumer attitudes suggest confusion regarding the identity of pure maple syrup. To evolve, there is a need to intensify research and promotion efforts around consumer awareness and attitudes.

This project will expand research, education, and extension efforts involving market sizing, audience research, message testing, development, and planning to 1) identify market opportunities, 2) optimize messaging, and 3) develop a market promotion and evaluation plan. As a result of this work, the industry will be equipped with education, marketing tools, and methods to grow the awareness and relevance of pure maple syrup among audiences representing the greatest opportunity.

Ohio

Recipient: The Ohio State University, Columbus, OH

Project Type: Producer and Landowner Education

Award Amount: \$217,148.13

Freeman's Maple (red x silver) Potential for Syrup Production and Resilience in Ohio's Forests

The Ohio State University will examine syrup production potential, climate adaptability, and resilience to forest pests of Freeman's maple (*Acer freemanii*) – a naturally occurring Acer hybrid (red x silver maple) – in Ohio's woodlands. *Acer freemanii* is a common nursery tree but little is known about the hybrid's naturalized occurrence and its performance in maple operations. The project will be conducted at The Ohio State University-Mansfield sugarbush and evaluate Freeman's maple's viability within the maple syrup industry. A tree inventory of the Mansfield sugarbush indicates a high density of Freeman's maple occupies the middle range of growing conditions with sugar and red maples dominating the optimal and marginal growing space, respectively. Early data indicates that stand-wide sap sugar content is 2.0% despite lower projections given the large percentage of non-sugar maple taps. Genotyping for positive identification and single-tree monitoring are needed to evaluate Freeman's maple in comparison to traditional Acer tree species. Additionally, it is poorly understood how *Acer freemanii* responds to growing degree days (e.g., bud break, first bloom), an underutilized method to optimize tapping time. Lastly, Ohio's maple producers are faced with threats that already impact other states' producers – spotted lanternfly and Asian longhorned beetle. Both are currently priority species for monitoring and control efforts, and producers are ideal first detectors if properly trained to examine their sugarbush woodlands for signs of initial infestation. Examining *Acer freemanii* to expand tapping potential and considering other factors to ensure future forest resilience and optimized production practices are foci of the proposal.

Oregon

Recipient: Oregon State University, Corvallis, OR

Project Type: Producer and Landowner Education

Award Amount: \$500,000.00

Building a Sustainable Bigleaf Maple Sap Industry in Oregon through Landowner Awareness, Networking, Mapping, Education and Training

This producer and landowner education project focuses on active and potential production of bigleaf maple (*Acer macrophyllum*) sap for food products in western Oregon. Bigleaf is native to the Pacific Northwest and substantial volumes occur throughout western Oregon. Bigleaf has many commercial uses including flooring, musical instruments, veneer and firewood, but its economic potential as a food is underdeveloped in Oregon. Collection of maple sap and processing into food products like syrup has a long history in Oregon as an informal pastime for hobbyists, but unlike in British Columbia, has a limited presence in commercial markets. The goal of this project is to catalyze development of a bigleaf maple sap industry that provides small agricultural and forest landowners, land trusts, and public agencies with an additional, ecologically sustainable, and economically significant revenue stream. The project will meet this goal through these following objectives: 1) build awareness of bigleaf maple sap economic opportunities; 2) create and recruit landowners into a formal network of producers; 3) develop a landowner-based peer learning and planning group with professional assistance and training to inventory, set up, and monitor tapping and to assess samples for nutrients, flavor and bacteria; 4) pilot a mobile service program to expand the pool of landowners who want to provide trees for tapping but cannot provide the labor; and 5) record and spatially visualize quantitative and qualitative project information generated in a web-based decision support tool.

Rhode Island

Recipient: University of Rhode Island, Kingston, RI

Project Type: Market Development and Promotion

Award Amount: \$491,350.00

Providing Publishable Standards of Identity and Unique Compositional Chemistry Findings of Maple Sap Products for Increased Market Promotion and Sales

Maple sap (maple water) products are produced from sap tapped directly from maple trees but there is confusion and lack of industry consensus and consumer knowledge as to what constitutes 'authentic' maple water. With immense potential for growth in the multibillion-dollar functional beverage market sector, the market promotion of maple water products hinges on establishing standards of identity (SI) which are currently lacking. Being a natural product, maple water is prone to alteration, adulteration, falsification, and fraudulent labeling. Thus, the establishment of reference points for its chemical composition, supported by validated laboratory assays, is critically needed lest this great market opportunity be missed. This project will provide publishable SI and unique compositional chemistry findings of maple water which will help define, authenticate, and distinguish it from other functional beverages thereby positioning the maple industry for promotion and growth in this market sector. By leveraging: 1) the University of Rhode Island (URI) Maple Collaborative web portal and social media

platforms created for maple promotion (www.uri.edu/maple), 2) URI's Cooperative Extension outreach network, and 3) commercial U.S. maple water producers' supply chain, retailers, websites, and social media, this project will increase consumer awareness of maple water products. As a global leader in maple chemical compositional and health benefits research, and with the aforementioned existing maple promotion platforms, we are uniquely qualified and strategically situated to accomplish this project.

Washington

Recipient: University of Washington, Seattle, WA

Project Type: Market Development and Promotion

Award Amount: \$499,808.00

Increasing Exports of U.S. Maple Products

Early reports indicate that 2020 will be an outstanding year for maple syrup production, reflecting favorable weather conditions, new technologies, and a growing number of producers. But social distancing requirements due to the coronavirus are limiting local market retail opportunities. Small producers are relying even more than usual on bulk sales, highlighting the vital role performed by bulk buyers and the importance of expanding markets and increasing global reach that ultimately benefits everyone in the supply chain.

While "stay at home" is, hopefully, a temporary phenomenon, growing maple production is an ongoing success. Efforts to attract more producers and improve production efficiency have been very effective. U.S. maple syrup production has doubled over the past ten years, with incredible potential for more. Expanding volume requires corresponding efforts to increase consumption and extend distribution. Rising demand helps maintain or improve prices and benefits all producers, large and small.

This project is focused on growing international demand for U.S. maple products. Recent changes in trade agreements have put American suppliers at a tariff disadvantage in key European and Japanese markets. We have identified six alternative markets where U.S. producers have competitive market share and potential for expansion. We will identify key consumers and end uses, options for promotion and distribution, potential trade barriers, and other basic information U.S. producers can use to tailor marketing strategies specific to their respective brands and products. This project will foster the development of relationships between U.S. maple producers and international buyers and traders, increasing the export of U.S. maple products.

West Virginia

Recipient: Future Generations University Corporation, Franklin, WV

Project Type: Market Development and Promotion

Award Amount: \$498,521.22

Accessing South Atlantic Markets for US Maple Syrup: educating consumers and enhancing distribution networks

This Market Development and Promotion project will support the growth of the U.S. maple syrup industry in the South Atlantic. It will enhance current markets in Virginia, Maryland, and West Virginia by increasing consumer awareness about U.S. maple syrup and sap products. It will also expand consumer access to U.S. maple products into new markets throughout Virginia, Maryland, West Virginia, Washington D.C., Georgia, as well as North and South Carolina.

Virginia, Maryland, and West Virginia's maple industries have seen a resurgence in recent years, which presents an opportunity to support the entire U.S. maple syrup industry through market growth. The need and the opportunity for the maple industry to thrive in the Virginias and Maryland is finding access to new markets.

Future Generations University, Virginia Tech, Appalachian Sustainable Development, and Garrett County Economic Development have created a three-state collaborative partnership to raise consumer awareness about the U.S. maple industry and expand access in the South Atlantic. If awarded funding, the project will: a) conduct market research to track industry growth; b) increase consumer knowledge and awareness c) analyze existing market demands and distribution trends to foster linkages between buyers, distributors, and sellers with local/regional producers.