Participating in the "Resilient Economic Agricultural Practices" Public-Private Partnership (REAP PPP): A Public-Private Partnership That Supports Long-Term Research Aimed at Promoting Healthy Soils, Healthy Landscapes, and Vibrant Agricultural Economies

In October, 2012, USDA's Agricultural Research Service asked the ATIP Foundation[i] to establish a public-private partnership to support long term (~10 years) research associated with soil health for multiple land uses of food production, feed production, fiber, biofuels, and wildlife habitat. This was necessary because congressional authorization expired for the Sun Grant program that had funded substantive portions of the research portfolio for several years, putting the continuation of these ongoing programs at risk roughly half way through their needed lifecycle; the shortfall is over $1.4M. In 2013, the REAP PPP was established with donations from seven Founders. They are: ADM, DuPont Pioneer, Monsanto, National Corn Growers Association, New Holland Agriculture, POET-DSM, and The Nature Conservancy. The ATIP Foundation is now launching an outreach campaign to expand participation in the REAP PPP to other organizations and corporations with an interest in such research.

Background & Key points on the Value of Participating in the REAP PPP:

- The ATIP Foundation and USDA have established a partnership, enabling private organizations to provide funds and input to the ATIP Foundation, whose representatives then work with the USDA administration, to provide advice and direction on the research investigations.
- This inaugural public private partnership (PPP) focuses on long-term sustainability of agriculture in the USA. The REAP initiative serves as a new PPP model for USDA through which organizations can share costs, leverage investments and have access to a large body of scientific knowledge and capabilities while networking with allied industry partners in pre-competitive space.
- Healthy soils are the cornerstone of viable crop production and investments in this research will help insure the long-term viability of our U.S. agriculture sector. Thus, there is broad relevance to this initiative.
- The REAP PPP was announced April 3, 2014, in a press release with USDA identifying the seven Founders of the PPP.
- The ATIP Foundation and Founders now desire to broaden participation to corporations and organizations that have a vested interest in adopting practical outcomes of the research program to sustain soil health for multiple uses.

- This PPP, with its Technical Review Council (TRC) will have important roles in reviewing and providing comment on the research investigations; including suggestions to expand in new research directions (e.g., water availability / water quality; new biofuels and industrial products crops, etc.). The ATIP Foundation communicates these REAP PPP reviews to USDA through the USDA Liaison Committee which was established as the formal communication portal with the Foundation.
- Guidance from the TRC will address such factors as the removal ratios of food and feed crop residues for ancillary bioenergy development, establishing dedicated biofuel crops, and new prospects for plant processing, These recommendations and research directions may lead to creating new or enhanced business opportunities.
- Sustainable cropping practices that support commodity-feedstock growth can be leveraged by Ag Services in bringing origination expertise to opportunities.

Specific Focus Areas of the REAP Research Investigations benefiting Participants and Public Good

Land use intensification using current crops

- Research will promote an understanding of near-term and long-term soil health issues, to augment dual/multi-purpose crops in the Midwest and elsewhere.
- Research will bench mark economic and environmental impact of harvesting multiple portions (e.g., corn grain and stover) of crops for expanded uses.
- This research will document changes in fertility demands and may lead to recommendations for alternative crop selection criteria that would benefit farmers, conservationists, and the post-harvest processing industry.
- Research will help to define complementary management to enhance soil health and long term agricultural productivity.
- Outcomes are expected to assist in alleviating land use intensification issues to avoid land use change and facilitate food, feed and biofuel production to support a growing population.

Development of novel oil seed crops

- Research will aid complementary research projects to accelerate the development and integration of new oilseed crops, such as cuphea, camelina, and calendula into agricultural systems in key Midwest markets in the USA. Such efforts also support biofuel development for the U.S. armed services for use in every theater. Outcomes may lead to scaling-up production to meet the demands of the emerging bioenergy, bioproducts, and personnel care industries.
- Research will contribute to studies on watershed-scale hydrological processes to predict consequences of management practices and variable weather that impact water and soil quality that influence agricultural productivity.

Climate change and mitigation

- Research promotes monitoring and understanding interactions among agricultural systems for mitigating global climate change.
- Research will provide bench marks and identify management strategies to enhance the capacity of agriculture to mitigate climate changes.
- Outcomes are expected to contribute toward offsetting greenhouse gas emission and aid in reducing climate changes associated production risks.

Landscape integration

- Research promotes diversifying the landscape by integrating cover crops, perennials, and short-season oil-seed crops to provide opportunities for additional environmental services (e.g., pollinator support) and more intensive, sustainable land use for food, feed, and fuel production.
- Outcomes are expected to lead to novel marketing opportunities to provide new seed sources, new co-products to meet the expanding demand for "green" product alternatives.

Take away message: ***Long Term Soil and Crop Research Enables Sustainable Agriculture Practices***

Poorly Managed Soils

Sustainably Managed Soils

Recent Accomplishments of REAP Research from USDA ARS

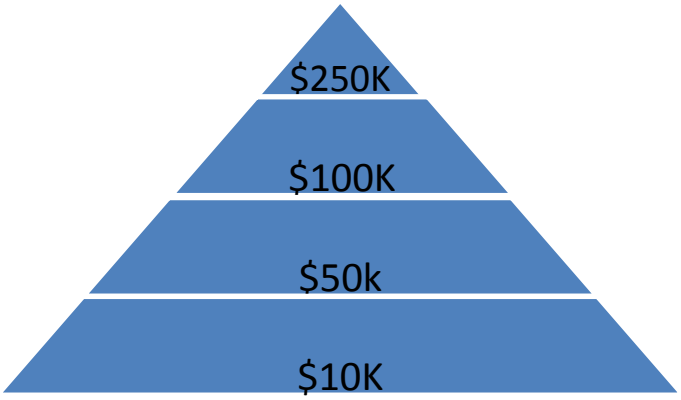
1. REAP reported results of multi-location studies includes 239 site-year yield dataset as well as a broad range of environmental issues (e.g., soil organic carbon (SOC), GHG emissions, microbial communities, cover crops, etc.) with regards to corn stover management.
2. An outcome of the REAP efforts was inclusion of managements to ensure protection of soil organic matter in the revised 2011 "Billion Ton Report." Furthermore, REAP efforts are providing

technology to ensure critical non-grain feedstock supply needs can be met in an agronomic, environmentally, and economically sustainable manner.

3. A major REAP contribution was development of the REAPnet database which is closely aligned with the ARS **G**reenhouse gas **R**eduction through **A**gricultural Carbon **E**nhancement network (GRACEnet) database. The database application is a data discovery tool that provides site-specific projects information that, once peer-reviewed, will become publically available.
4. Field data were used to develop and validate a Landscape Environmental Assessment Framework (LEAF). This tool has been available to private sector investors in the bioenergy industry through a cell phone application, thus enabling producers to make in-field determinations regarding the general suitability of that location for stover harvest. A version of LEAF is also being used to guide on-the-go, site-specific single-pass corn grain and stover harvest as well as subsequent tillage operations.
5. As stated by a 2013 DOE review team, "…this (REAP) project provided a broad assessment of stover yield potential, feedstock characteristics and sustainability metrics."

Participating in the REAP Public-Private Partnership

The following is offered as a guide to suggested donations. The pyramid is shaped in proportion to the relative number of donors sought per category. Note that top level donors are invited to serve in an advisory capacity to the Foundation on all current and future initiatives (see website).



Founders of REAP PPP: are invited to serve on the Steering Committee; propose additional participants for the Technical Review Council, and are designated as Founders on ATIP Foundation webpage.

1. $250K or higher: Invitation to serve on the Executive Advisory Council that broadly advises the Foundation on all its activities. In particular, the Foundation expects to establish separate councils for each of the 4 "pillars" of ARS research (Plant Production and Protection; Animal Production and Protection; Natural Resources and Sustainable Agriculture Systems; Nutrition, Food Quality and Safety). Donors help shape PPP initiatives and provide guidance to ARS / USDA, through ATIP, and propose Foundation Forums / Showcases and other events.

2. $100K: invitation to serve on Technical Review Council, invitation to review draft research reports (semi-annual) and newsletters, assist in planning forums / showcases.

3. $50K: Receives research reports and newsletters that will be posted to ATIP Foundation website after final review and clearance. Invited to attend a public annual REAP event in D.C. sponsored by ATIP Foundation at USDA with USDA and Congressional participants.

4. $10K: receives newsletters, participate in forums/showcases, and other events. Invited to attend a public annual REAP event in D.C. sponsored by ATIP Foundation at USDA with USDA and Congressional participants.

Interested parties should contact the Foundation concerning the utilization of a "Restricted Gift Memorandum of Understanding" to initiate participation.

v.5.1.14

[i] The ATIP Foundation (Agricultural Technology Innovation Partnership) is a 501(c)(3) non-profit organization whose 8 member organizations are economic development entities that serve to facilitate technology transfer for USDA's Agricultural Research Service. Corporate offices are in Arlington, TX, with offices in 7 additional states. For more information, see WWW.ATIPFOUNDATION.COM.