



# AgBiz Logic™: Farm decision tools for changing climates

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The REACCH project is committed to research and outreach designed to better inform stakeholders and society of the opportunities and challenges that a changing climate presents for agriculture in the Pacific Northwest (PNW). As such, REACCH researchers at OSU are developing a unique web-based decision support tool (AgBiz Logic™) for assessing the impacts of climate change in the PNW (Figures 1 and 2). AgBiz Logic™ will incorporate AgEnvironment™ into the suite of software programs in AgTools™ (AgProfit™, AgLease™, and AgFinance™), providing readily accessible tools, web-based modules, and information to farmers, ranchers, and land use managers so that they can better understand the financial and environmental trade-offs associated with alternative management decisions—all at a scale that is relevant to their

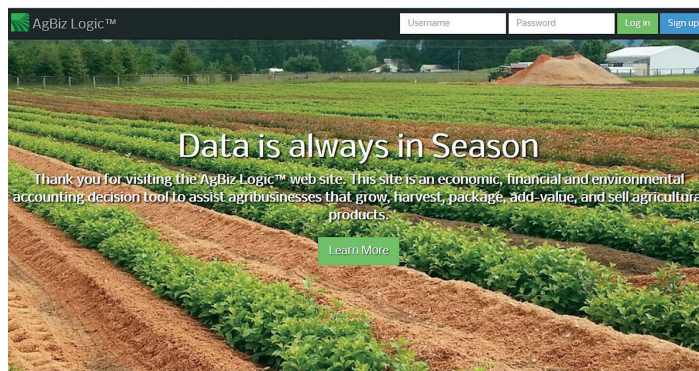
operations. Farmers, through the use of this software, can compare the effects of changes in their specific farm-level economic costs and returns associated with alternative on-farm actions (changes in management, technologies, rotations, and crop choices) in response to changes in climate, policies, and prices. This is a powerful tool with the means to summarize climate information, to help farmers visualize and interpret the information that is

## IMPACT

The goal of AgBiz Logic™ is to provide online web-based decision tools (AgTools™) that can empower farmers, growers, and land use managers to (1) use data unique to their specific farming operations to develop management pathways that best fit their operations under a changing climate, (2) understand how decisions about new programs, management options, and technologies/varieties may affect their net returns and livelihoods, and (3) better envision which actions farmers can take to build resilience to a changing climate.

available for their area, and, most importantly, to help them understand how this downscaled information could affect the costs and returns they are likely to face over the next 10 to 20 years. It is both a farm-level decision support tool and an assessment tool for researchers and government agencies to realistically determine how climate change and climate change policies may influence and affect regional agricultural sectors.

By incorporating regional/downscaled climate change information, farm financial information, and on- and off-farm environmental impacts of management decisions into one suite of interconnected user-friendly programs, we can better connect growers and researchers. The downscaled information on climate influences projects yield changes over time. These yield changes are the impetus for producer-generated changes in input use, management, and technology adoption that may lessen negative



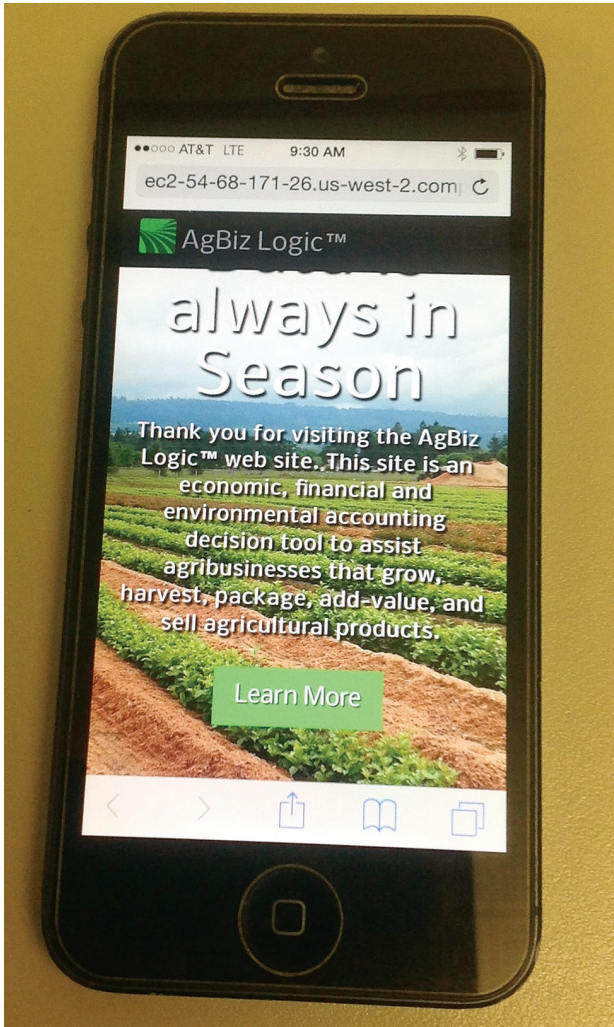
**Figure 2.** AgBiz Logic™ is a suite of software programs (AgProfit™, AgLease™, AgFinance™, and AgEnvironment™) used for capital investment analysis and environmental accounting.

impacts or take advantage of positive opportunities. The economic and financial calculators that are embedded into AgTools™ are the means for farmers to better understand how climate change may affect their lives and the environment they care deeply about. These types of decision tools are part of a global and national effort labeled “climate-smart agriculture” that focuses on making farms and farmers more resilient to a changing climate. They are the very heart of the recommendations made in the recent 2014 U.S. Government Accountability Office report 14-755, which speaks to the U.S. Department of Agriculture’s ongoing efforts to better communicate information to growers.

The use of AgTools™ in conjunction with AgEnvironment™ will also assist growers in the REACCH region and elsewhere to visualize and understand the range of changes (exposure to risk) to their net returns and to understand connections to both onsite and offsite environmental changes. This assessment tool provides the foundation of a truly integrated assessment and trade-off framework for assessing technology changes and changes in external drivers such as climate, water availability, and policy.

The overall objectives for this year are (1) to develop and pilot an online decision support tool for growers and researchers to assess the economic and financial impacts that changes in key factors (climate, water, and input costs) may imply for growers (stakeholders) in the REACCH region, and (2) to quantify the associated changes in key environmental dimensions that may affect production practices.

AgTools™ currently consists of a suite of software programs—AgProfit™, AgLease™, and AgFinance™—which contain return and cost information for crops and livestock. The new module, AgEnvironment™, is both an environmental accounting tool for farmers and a means to track and assess environmental impacts in a larger landscape. The program will allow a user to



**Figure 1.** AgBiz Logic™ will also be available as an iPhone app.

store changes in environmental outcomes that will be incorporated with AgProfit™ and AgLease™ scenario files in a trade-off framework. An AgEnvironment™ scenario file could also be imported into AgFinance™ for a whole farm or ranch analysis of the economic, financial, and environmental impacts of a grower's decision. As modifications are made to annual cost and return budgets, the capacity to compare the environmental as well as economic and financial impacts of a grower's decision will be a powerful add-on. The goal of the interface of AgEnvironment™ with AgTools™ is to track the changes in key environmental measures resulting from a change in crop rotations, implementation of a new technology, use of a conservation practice, etc. that may be linked to projected climate changes.

AgEnvironment™ is meant to capture the key onsite and offsite environmental impacts using science-based environmental models and simulators. Onsite environmental measurements could include tracking uses and applications of insecticides, fungicides, miticides, herbicides, fertilizers, and other petroleum-based products. Offsite environmental impacts that could be tracked may include changes in soil erosion runoff or water quality. As it relates to climate change, AgEnvironment™ provides a defensible means to track carbon footprints, greenhouse gas emissions, and carbon sequestration. This would be useful information in support of future climate programs such as carbon policies and carbon trading markets.

The goal is to launch AgBiz Logic™—a new user-friendly online interface with AgTools™—by October 2015, as an assessment tool for REACCH-area growers that reflects and integrates the economic, financial, and environmental accounting of the AgProfit™, AgLease™, AgFinance™, and AgEnvironment™ programs. Prior to this milestone, we will work closely with the REACCH extension team to pilot the assessment tool with a subset of growers in the spring and summer of 2015.



Photo by Nita Robinson.