

The 1890 Facilities Program at West Virginia State University: Transforming the University Landscape and Strengthening its Land-Grant Programs

As West Virginia State University (WVSU) concludes the second full five-year cycle (2008-2012) in relation to its National Institute of Food and Agriculture (NIFA) 1890 Facilities Program, it is timely and appropriate to reflect upon accomplishments and the many significant institutional benefits this program has brought about since its reactivation in 2003.

The 1890 Facilities Program was designed to provide 1890 Universities much-needed infrastructural resources, thereby strengthening their food and agricultural programming in the way of equipment, facilities renovations, new construction and acquisition of new property. Unquestionably, having access to this program has enabled WVSU to positively transform its physical landscape and strengthen its land-grant programming. This transformation, in turn, has been a key success factor in terms of making a case for the current quality and reputation of the University's research and extension activities, which has been voiced by the communities and stakeholders served. In fact, the 1890 Facilities Program at WVSU has provided the physical infrastructure and the support needed for the University's Gus R. Douglass Land-Grant Institute staff and administrators to efficiently design and deliver the aforementioned programs.

These invaluable resources, derived over the past few years from this unique program, have been strategically allocated to continue rebuilding and sustaining the University's outreach (extension) and research missions. Simply put, without the 1890 Facilities Program and associated resources, WVSU would have had a very difficult time to advance its land-grant related programming to the level it is to date. The following are excerpts of three of the most recent and salient projects, which exemplify the impact and the significant contributions of the 1890 Facilities Program at WVSU.

I. Renovated Aquaculture Lab to Increase Research Capacity at WVSU

WVSU's aquaculture lab, located in the basement of the Hamblin Hall science building, underwent a significant renovation during the fall of 2011. This renovation was designed to increase research capacity and reduce labor needed to maintain the lab facility. The lab is the site of research aimed to elucidate the nutritional requirements of fish species, such as rainbow trout. Previous fish feeding trials required continuous water treatment and the need for someone to be in the laboratory throughout the entire day at different times. This constraint was resolved with the support of the 1890 Facilities Program funding by equipping the lab with a recirculating aquaculture system (RAS). RAS is an enclosed system where the only water replacement is the water lost to evaporation and cleaning (about five to 10 percent of the total water volume on a daily basis).

Furthermore, the wet laboratory was previously designed as a completely flow-through system where treated city water entered into the fish rearing tanks for a single pass and was then discarded. With the implementation of a new recirculating aquaculture system,

manpower input was drastically minimized, while most of the water is also recovered and recycled. The new system has also enabled researchers to compare three different water temperatures with the RAS's multiple water temperature control devices.

Dr. Jonathan Eya, biology professor and research scientist with WVSU Agricultural and Environmental Research Station (AERS), is the person in charge of this research. The overall goal of Dr. Eya's research is to understand the effects of dietary, genetic, temperature and other production factors that regulate nutrient retention efficiency, growth and development in aquaculture species, therein increasing production efficiency both in West Virginia and the nation. Thanks to additional support received from NIFA's capacity-building grant program, Dr. Eya has been able to more fully understand molecular mechanisms related to the interactive effects of water temperature and dietary composition at different life history stages, which in turn may have important consequences for optimization of commercial production of rainbow trout and other species. Dr. Eya has also incorporated his research into the classroom via research-based curricula to provide students with the highest quality education. Dr. Eya has continuously trained and involved students in firsthand research, as he considers this to be also one of the primary purposes of his aquaculture lab. This lab has also provided continued research opportunities for a research technician and graduate and undergraduate students.



II. Transforming WVSU's Community and Economic Development Center

The Economic Development Center (EDC) is an education and outreach component of WVSU Extension Service's Community and Economic Development program. The facility where the Center resides is a 5,000 square-foot commercial space built in the 1960s, located on the west side of the city of Charleston. Since its purchase in 2006, with support of US Housing and Urban Development (HUD), the Center has been actively delivering outreach programming to communities and stakeholders in the entire state, including business incubation and training. In an effort to expand and enhance services, with the support of NIFA's 1890 Facilities Program and the HUD's Historically Black Colleges and Universities' grants, the Center underwent an extensive renovation completed in April 2012. These renovations were completed by a local contractor and included the redevelopment of two training spaces, 11 offices, two open-access work areas, a communal meeting area and three high tech labs for business incubation. The renovation also included the addition of a fire suppression system, new energy-efficient air-conditioning system and roof, and a sophisticated access control system that will permit 24/7 monitored usage of the facility. With the completion of the approximate \$1.1 million in renovations, the EDC is now a unique and modern facility that allows the University to work with enterprises, including rural businesses, as well as provide the first co-working office space in southern West Virginia. This building will continue to be used to support rural business and strengthen agricultural extension programming related to economic and community development.



III. Establishment of WVSU's Campus Youth Aerospace Education

Laboratory

What was an old car garage at a recently acquired property on campus is now the home of the campus Youth Aerospace Education Laboratory (AEL), an integral part of WVSU's NASA Science, Engineering, Mathematics and Aerospace Academy (SEMAA). The AEL was opened in April 2012 and has already provided STEM education to K-12 youth in the surrounding school system. This endeavor was made possible by combining 1890 Facilities Program and NASA funding. More specifically, the 1890 Facilities Program supported the renovation and physical transformation of this facility, whereas the NASA funding was invested to purchase all the educational equipment required for this program. The AEL is a state-of-the-art classroom with 10 workstations designed to deliver STEM education to students. At the site, students complete a virtual cross-country flight using NASA research as the theme. Students also investigate the effects of reduced gravity on fluids, materials and the human body. This site is equipped with a Reduced Gravity Drop Tower, as well as a Mars Robotics Laboratory. In addition to the 600 ft. renovation for the AEL site, the entire property has been renovated to house four staff members, including coordinators and supporting personnel, and an associated computer laboratory. This AEL program is to date an important component of the University's extension programming in Youth Education.

