

Future of Farming Position Paper: Research and Education
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Vision for the Future

Washington agriculture is at a crossroads. Forces such as globalization, high energy costs, reduced labor availability, and environmental pressures all threaten to compromise Washington's position as a leading agriculture state. Research and education are critical elements required to stimulate innovation and insure that Washington agriculture remains globally competitive and environmentally sustainable. Countries competing for market share in the state's high-valued specialty crops are allocating significant funding at research and technological innovation in an attempt to capture market share. Our response must be oriented toward producing the absolute highest quality product, and developing cost-reducing technologies to narrow the gap between costs of production in Washington and competing countries.

Washington must develop a research and development arm of its industry that is second-to-none in generating new technologies and disseminating these innovations to its agricultural producers and food processors. As the state's land-grant university, Washington State University (WSU) is well positioned to lead the state's food and agriculture industry into a new era characterized by a food system that is able to compete globally with quality differentiated products. Realizing this vision will require a seamless partnership of all parties involved – higher education, state and local governments, the agricultural production sector, and businesses and not-for-profit entities involved in development and commercialization of new technologies.

Current and Future Health of the Sector

Despite significant funding challenges resulting from state budget recisions over much of the past two decades, there are many positive attributes of Washington's agricultural research and education programs. WSU has built several outstanding programs in both the plant and animal sciences, and a recent study of research productivity ranked WSU second in the nation in plant sciences and third in veterinary sciences. Funding shortfalls from the state government have been partially countered by active engagement and funding from several commodity commissions. Over the last three years, WSU has engaged in an active program to strengthen its connections with the agricultural industry, and success during the 2007 legislative sessions halted a continual downward trend of state funding directed toward agricultural research and education.

In 2006-07, Dan Bernardo, Dean of the College of Agricultural, Human, and Natural Resource Sciences at WSU, conducted over 50 listening sessions with industry leaders to gain their input on the state of WSU's agricultural programs and priorities for research and education. Several common themes emanated from these discussions, including:

- insufficient operating support (e.g., technical staff, equipment, operating funds) for existing research programs and faculty,
- an imbalance between basic and applied research focusing on today's problems,
- critical gaps in programs resulting from budget recisions of the past decade,

- poor physical infrastructure at many WSU research facilities,
- inadequate extension staff to disseminate research-based information, and
- an insufficient number of graduates trained to enter the food and agriculture industry.

Efforts over the past two years have been directed toward addressing each of these priorities. In 2007, WSU received the first significant infusion of new resources for agricultural programs in over a decade, with the allocation of \$6 million of new biennial funding. Despite this funding and aggressive reallocation of existing resources, critical gaps remain in research and education activities and programs necessary to support a vibrant food and agricultural industry.

Challenges

The greatest challenge in developing the research and education infrastructure to support a globally competitive agricultural industry is funding. The majority of funding for agricultural research and education has been derived from three primary sources: (1) state government, (2) federal government, and (3) grants from commodity commissions. Historically, the State of Washington has not funded agricultural research and education well. Despite its expansive and highly diverse agricultural sector, Washington ranks 28th in the nation in state appropriations for agricultural research and extension. Federal funds for agricultural research have continued to trend downward, and a trend over the past two decades has been toward funding more basic research; thus, placing the onus on states to fund applied research focused on local agricultural issues and commodities. WSU has been fortunate to garner federal support in the form of USDA Special Research Grants to make up some of the gap in its funding base for applied agricultural research. Unfortunately, these funds (over \$4 million annually) are at risk, as “ear marks” have been targeted for reduction in recent federal legislative sessions.

Because of the tremendous diversity of the state’s agricultural production and its diversity of growing conditions, WSU possesses one of the largest network of agricultural research facilities in the country. This network of research facilities includes the Irrigated Agriculture Research and Extension Center located in Prosser, the Tree Fruit Research and Extension Center in Wenatchee, the Northwestern Washington Research and Extension Center in Mount Vernon, and the Puyallup Research and Extension Center. Three additional research farms, as well as the Pullman Research Station, are located in eastern Washington. Fiscal limitations have forced the closure of two other facilities over the past five years. Unfortunately, several of the remaining facilities are extremely antiquated and are suffering from extended periods of deferred maintenance. Without infusions of capital, additional facilities will likely be closed and research will continue to be limited by the quality of the infrastructure.

As noted above, strong private-public partnerships exist to fund critical agricultural research in several of the state’s agricultural industries. For example, the larger agricultural commodity commissions in the state currently provide over \$5 million annually to support WSU food and agriculture programs. Broader partnerships and participation with private foundations and agribusinesses are needed to expand the state’s resource base allocated to agricultural research, technology development, and technology transfer.

Many employees within the state’s agricultural production and processing sectors, as well as

supporting industries and public agencies are nearing retirement age. Private firms and public agencies express a great deal of concern about replacing these employees, as fewer students are graduating from the higher education system who are trained in the appropriate fields of study. Recruiting these students to agricultural fields of study and graduating a pool of talent sufficient to staff the industry's labor needs will be a formidable challenge requiring a strategic partnership between industry and higher education.

Current Opportunities

The general economic climate of the agricultural sector provides a unique opportunity for addressing many of the challenges that have plagued agricultural research and education in the past. With the weakening general economy and relatively strong agricultural markets, private and public investment capital should be attracted to the industry. Similarly, students who have traditionally shunned agricultural fields of study or professionals who have looked toward other industries may feel compelled to look at new opportunities in the food and agriculture sector.

Advancements within biosciences present some of the most promising outcomes in the improvement of agricultural production in decades. Insights into genomics, proteomics, and other emerging fields of study provide unprecedented opportunities for generating new insights and transferring knowledge of biological processes into practice. For example, the field of genomics allows researchers to unlock the genetic secrets within a plant genome and identify how combinations of genes translate to various characteristics of a plant. Therefore, scientists applying these tools to the tree fruit industry are able to produce "designer" varieties which fit our state's unique growing conditions, meet the taste preferences of consumers, and have a healthier nutritional profile faster and more precisely than through the use of traditional breeding approaches. WSU is a global leader in many areas within plant genetics and genomics, and in fact, is currently the international leader in a project aimed at sequencing the apple genome.

A critical need for government, private industry, and higher education is to strategically set the state's research priorities over the coming years. Both the private and public sector face significant resource constraints, and wasteful duplication and ill-conceived ventures must be avoided at all costs. A place for higher education, and perhaps state government, is to lead this research prioritization dialogue. An excellent example of this type of effort for a single industry is the tree fruit industry technology roadmap, a collaborative product of industry and the research community to ensure the U.S. tree fruit industry remains economically viable by reducing production costs and delivering premium quality (<http://www.treefruitresearch.com/technology-roadmap/>). Efforts to prioritize areas of research and address educational priorities within the College of Agricultural, and Human Sciences at WSU are summarized in the college's strategic plan (<http://cahnrs.wsu.edu/downloads/strategic-plan-2007-03.doc>).