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NEW DIRECTIONS AT TVA WITH SPECIAL REFERENCE TO AGRICULTURAL RESEARCH

by

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Agricultural Research and Practices
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ABSTRACT

Public Support for the Tennessee Valley Authority's (TVA) fertilizer research and development program in Muscle Shoals, Alabama, ended in fiscal year 1993. Regional field offices that served as liaison for the program closed in 1993, and two-thirds of the projects at Muscle Shoals were eliminated. TVA's research center at Muscle Shoals, formerly known as the National Fertilizer and Environmental Research Center, is now the TVA Environmental Research Center. Efforts at the Center have diversified to include research and support areas of Agricultural Research and Practices, Atmospheric Sciences, Biotechnology, Waste Management and Remediation, Environmental Site Remediation, Support Services, Environmental Management, and Technology Transfer. "We're building on the expertise and success of our earlier research and focusing our new projects on emerging problems of the 21st century," TVA's Chairman Craven Crowell said in prepared remarks to Congress on March 2, 1994. Agricultural Research in TVA has been aligned with corporate objectives to develop solutions to environmental problems of regional, national, and international significance because the agency's business incorporates a broad mix of responsibilities, including power generation, navigation, flood control, shoreline management, recreation, environmental research, and economic development. Agricultural strategies for watershed protection lie at the core of TVA's new agricultural research agenda. The major influences for this agenda are TVA's direct stewardship responsibilities for the 60,000 miles of streams that feed the 652-mile-long Tennessee River; the 11,000 miles of shoreline; and 470,000 acres of TVA- managed public land.

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Thank you for the opportunity to participate on the program for the 1994 Great Plains Soil Fertility Conference. We at TVA have enjoyed working with many of you in the audience throughout the years - those of you in the university community, those of you in the industrial sector, and the many others of you serving agriculture. We have worked with you as partners in research and technology applications. We also have directly sponsored agricultural research projects throughout the United States, both basic and applied, especially in the areas of soil chemical and fertilizer reactions. As many of you know, we have not initiated projects in this area this fiscal year. Many of you have asked, "What's happening at TVA?" The purpose of this presentation is to answer this question in general. More specifically, our purpose is to update you on significant new directions at TVA and on their impact on TVA's agricultural research agenda.

BACKGROUND FOR NEW DIRECTIONS

Federal budget deficits placed TVA's fertilizer research and development programs (and other programs) under fire by the Reagan/Bush administrations for many years. President Clinton followed suit, categorizing TVA's fertilizer program with many other Federal programs as "Programs that don't work or are no longer needed." Public support for TVA's fertilizer research and development ended in fiscal year 1993.

The move to discontinue fertilizer programs is part of the "streamlining government" movement. U.S. News & World Report, in its January 10, 1994, issue used TVA as an example of streamlining government, with a picture of TVA's constructed wetlands effort and the caption, "Streamlining Government - the Tennessee Valley has been forced to restructure its operations in the wake of Federal efforts to trim the budget deficit." In short, TVA adopted the president's agenda for reinventing government and is deploying the attendant principles in its operations.

EFFECTS OF THESE DEVELOPMENTS ON TVA

Major changes at TVA resulted from these developments. For example, fertilizer research and development ceased. Two-thirds of the projects at the former National Fertilizer and Environmental Research Center at Muscle Shoals, Alabama, were eliminated. The center now is known as the TVA Environmental Research Center. On March 2, 1994, TVA Chairman of the Board, Craven Crowell, said in a prepared speech to Congress, "We're building on the expertise and success of our earlier research and focusing our new projects on emerging problems of the 21st century."

The changes not only affected TVA's Muscle Shoals operations. They included all of TVA programs receiving appropriations from Congress. Numbers of managers and supervisors were reduced from about 245 to 75, yielding a very "flat" organizational structure. Four of seven levels of management were reduced. TVA hired Dr. Ronald L. Ritschard, Senior Scientist and Vice President, to lead the new center in Muscle Shoals, with the intent to support TVA's directive to establish a world-class environmental research center. Dr. Ritschard is organizing the Center from a business perspective and is ensuring that the Center aligns itself with TVA's efforts to develop solutions to environmental problems of regional, national, and international significance.

Because of increasing public support for environmental concerns, TVA adopted "Environmental Leadership" as one of its primary goals. This is no surprise to those familiar with TVA, as portions of the agency already were involved or were evolving into environmental research, development, and related efforts. TVA is well-positioned and appropriately structured to provide solutions to a number of environmental problems since it is located in a region that is a microcosm of the Nation's environmental and economic challenges. For example, it is a single government entity with many purposes: (1) power generation (fossil, hydro, nuclear); (2) navigation; (3) flood control; (4) shoreline management; (5) recreation; (6) economic development; and (7) environmental research.

The TVA Environmental Research Center at Muscle Shoals now is diversified in the environmental arena. Organizational entities include: (1) Agricultural Research and Practices; (2) Atmospheric Sciences; (3) Biotechnology; (4) Environmental Management; (5) Environmental Site Remediation; (6) Support Services; (7) Technology Transfer; and (8) Waste Management and Remediation. Programs at the Center are organized by four major business: (1) Twenty-First Century Agriculture - Agricultural Strategies for Watershed Protection; (2) Utility Waste Management and Remediation; (3) Poultry Litter Utilization; and (4) Ozone (troposheric) Mitigation Strategies. In addition to these major businesses, "Emerging Businesses" are being explored to identify new programs of promise. Some examples are air toxics emission control, bioremediation of polychlorinated biphenyl PCB) pollutants, global climate change, and wetlands research for wastewater cleanup.

A CHANGING PARADIGM FOR AGRICULTURAL RESEARCH AT TVA

Throughout the years, agricultural research in TVA gained national and international recognition in addressing fundamental problems that reflected emerging issues and concerns of modern agriculture. Common denominators included agronomic and

environmental aspects of plant nutrients, agrichemicals, and wastes. The major sanctioning force for this direction was TVA's national fertilizer research and development mandate.

In a period of scarce resources, TVA cannot afford to duplicate and compete with USDA, the land-grant university system, private interests, and others in conventional, production agriculture research activities. With the elimination of programs to develop and transfer fertilizer technology and to research basic soil chemical and fertilizer reactions, agricultural research at the TVA Environmental Research Center is taking on a new role, aligning its program with overall agency goals and national direction and policy. The former focus - fertilizer development and testing, conventional production systems, and field level environmental impacts - is being replaced with research emphasizing agricultural solutions to water quality problems at a watershed scale.

National policy is emphasizing watershed management. Committed to environmental leadership, TVA is resolved to make the Tennessee River the cleanest, most productive commercial river system in the Nation. As mentioned earlier, TVA has positioned itself to provide leadership through world class research and development to solve environmental concerns. And TVA is dedicated to ensure that its lands and facilities meet customer demands for quality and environmental sensitivity.

Agricultural research within TVA has a unique opportunity for success in a watershed for several reasons. TVA has had a watershed orientation from its inception, using the watershed as a tool for comprehensive, integrated resource development and protection. Elements required for a program are within the agency. For example, many of TVA's programs are conducted within a watershed that encompasses 41,000 square miles. There are 60,000 miles of streams that feed the 652-mile-long Tennessee River. TVA has direct stewardship responsibilities for: (1) 41,000 surface acres of water; (2) 11,000 miles of shoreline; (3) 470,000 acres of public lands; (4) 54 dams; (5) 14 navigation locks; (6) 1,000 miles of navigable waterway; (7) 174 public recreation areas; and (8) many miles of trails and roads.

In short, TVA agricultural research now is focusing on agricultural solutions to water quality problems with systems that protect the total quality of the watershed at the core of the program. This approach better aligns agricultural research with other initiatives in TVA such as clean water, pollution prevention, waste management, land management, and economic development. Examples of specific agricultural research projects include:

1. <u>Watershed Characterization and Modeling to Evaluate the Impact of Agricultural Practices on the Watershed</u>. This work

includes the identification and documentation of the magnitudes of contaminants and also provides tools or methodologies to gauge risks and to measure progress of mitigation strategies.

2. Agricultural Strategies to Intercept Pollutants in Transport to Surface Waters and Groundwater. Research includes riparian zone functions and value in management of water quality; role of constructed wetlands in preventing nonpoint source pollution; and sustainability of revegetated/restored lands to reduce sediment loads in the watershed.

3. Alternatives to Agrichemicals for Controlling Aquatic Plants in the Tennessee River System. The number of pesticides licensed for aquatic plant control continue to decline. This project will focus on alternatives to agrichemicals for aquatic weed control.

4. Pollution Prevention Research and Demonstrations for Agricultural Retailers. TVA has 69 pollution prevention demonstrations in 27 states for fertilizer and agrichemical retailers. Objectives are to research, test, and demonstrate improved technologies and strategies to prevent contamination from agricultural retailer sites. The U.S. Department of Agriculture, the U.S. Environmental Protection Agency, Office of Technology Assessment, State Regulators, and related institutions have recognized TVA's importance in working with these agencies collectively with retailers. Future programs will have a research element, and other agri-industries will be targeted in pilot efforts.

CLOSING REMARKS

Thank you again for this opportunity to share our new direction with you. We have been through some uncertain, but exciting, times at TVA. We have found that change, although not an easy street, cannot be ignored for long. We realize we are not the only ones going through dramatic changes. Many of our colleagues in the United States Department of Agriculture, in the university community, and in other entities and agencies serving agriculture are experiencing similar program and budget pressures. Interestingly, we have gone through a sequence of reactions similar to those we recently noted in an external seminar on change. These include, usually sequentially, shock or denial, emotion (usually anger), bargaining (pleas to keep programs), depression (grief), and acceptance (intellectual/emotional). We have seen many of these reactions to date in ourselves as well as in many of our colleagues. We believe we are in the last stage of this sequence because we see enthusiasm building daily as we embark on new programs at the TVA Environmental Research Center. We have a renewed appreciation for our agency, its mission, its leaders, and its desire to serve the people of the United States. We look forward to refining and

redefining our linkages with our friends in the agricultural arena.