

Virginia State University and Virginia Polytechnic Inst. & State University Combined Research and Extension Plan of Work 2022-2026

Status: Final
Date: 05/24/2021

I. Plan Overview

1. Executive Summary

Virginia Cooperative Extension (VCE), a partnership between Virginia Polytechnic Institute and State University (VT) and Virginia State University (VSU), and the Virginia Agricultural Experiment Station (VAES) and the Virginia State University Agricultural Research Station (VSUARS), enables people to improve their lives through research and education using scientific knowledge focused on the issues and needs of the citizens of Virginia. Audiences are involved in designing, implementing, and evaluating needs-driven programs. VCE is a dynamic organization that stimulates positive personal and societal change leading to more productive lives, families, farms, and forests, as well as a better environment in urban and rural communities.

The overall educational goal is to bring about change in people's knowledge, understanding, abilities, or behavior related to an issue and/or broader changes in economic, environmental, or social conditions. Progress towards these goals is recorded by planned program at the individual and team levels. The primary, overall research goal for Virginia is to develop relevant basic and applied research data to help solve the problems of the agricultural and life sciences sectors and to support the economic, environmental and social, and human health of the commonwealth of Virginia.

VAES, VSUARS, and VCE PROGRAMMATIC GOALS:

VCE's goals are to: 1) develop and transfer new knowledge in applied and basic life sciences, 2) perform relevant, objective, and timely research, 3) improve the quality of life for communities and citizens in the Commonwealth, 4) use a systems approach to programming, with interdisciplinary work teams that respond to the needs of individuals, groups, and organizations, 5) work with at-risk, underserved, and under-represented audiences who need specialized attention, 6) fully integrate a culturally diverse paid and volunteer staff in planning, implementing, and evaluating programs, and 7) recruit and collaborate with public and private partners to better utilize resources, heighten impact, and reach a more diverse audience.

In particular, VSU's Extension program goals are to: 1) improve local and state economies by helping small and limited resource farmers and citizens garner resources to own, operate, and sustain small businesses, 2) educate and empower socially disadvantaged farmers to produce, distribute, and market organic, locally grown, and ethnic foods to feed Virginia's citizens, 3) ensure safe food supplies by teaching small-scale growers and farm families effective food safety practices, 4) address health issues and nutrition practices that confront limited-resource urban and rural citizens, 5) help youth, families, and seniors manage money to survive during challenging economic times, and 6) enable parents and families to leave their children in high quality and safe child-care environments.

VAES is committed to developing and implementing research that addresses society's needs and expectations. VAES is focused on improving human and animal health and nutrition, advancing technology and machine learning applications; identifying and providing cyberbiosecurity and biosecurity strategies; enhancing the quality of the environment, reducing the effects of major infectious diseases, developing value-added products, building viable communities, and preventing chronic diseases such as obesity, heart disease, and diabetes. Research programs are conducted on the main campus as well as at the 11 Agricultural Research and Extension Centers (ARECs) located across the commonwealth.

The research focus of VSU's Agricultural Research Station includes the following: developing production systems that conserve natural resources; crop diversity and alternative crops; economically competitive and sustainable small-scale agricultural systems; bio-based energy production; improving food safety and quality; and value-added plant and animal products.

PLANNING: VAES, VSUARS, and VCE address a broad range of problems and issues facing citizens of Virginia through focused research and educational programming. The foundation for Research and Extension programs are built on the identification and prioritization of strategic issues through situation analyses, which are accomplished through the examination of trends and emerging issues identified by local advisory groups in Unit offices (Extension Leadership Councils), AREC Advisory groups, deans' advisory councils and individual Extension specialists. In 2018 every Unit office completed a local situation analysis. Unit profiles were created based on data gathered from a variety of sources such as US and Agriculture census data. This data was supplemented with community input collected via issue forums, focus groups, key informant interviews, and community surveys. Unit situation analyses will become the background and rationale for deciding which problems and issues are addressed and reported on by VAES, VSUARS, and VCE.

VCE continues its program planning process that is based on the objectives identified in the latest VCE Strategic Plan. Program Teams that are aligned with Strategic Plan objectives made up of agents, specialists, and others are meeting on a regular basis. These twelve Program Teams coordinate state level programming, including situation analysis, program planning, program development, evaluation, and reporting for the Strategic Plan objectives aligned with it.

District Program Leadership Teams made up of experienced agents representing all program areas, are providing training and mentoring to new agents on development, delivery and evaluation of programs. This effort is enhancing the capacity of Virginia Cooperative Extension to deliver quality programs and be able to document the impacts of those programs.

In 2020, VAES and VCE contributed to the development of a strategic plan for the Virginia Tech College of Agriculture and Life Sciences, which also serves to guide VAES research planning and actions for VAES-affiliated main campus and AREC-based faculty.

REPORTING: Beginning in 2016, all Virginia Tech College of Agriculture and Life Sciences and VSU Extension and research faculty reported through a new University-based activity reporting system. This system includes annual program reports focused on faculty goals, outputs, outcomes, and other data for each planned program for teaching, research, and Extension at an individual, unit, college, and organizational level. All research faculty are required to propose peer-reviewed Experiment Station projects submitted to USDA/NIFA, and entered into REEport. Researchers prepare annual progress and termination reports reviewed by the VAES associate director before being submitted to REEport.

2. FTE Estimates

Year	1862 Extension	1890 Extension	1862 Research	1890 Research
2022	382.0	33.0	302.0	18.0
2023	385.0	35.0	304.0	20.0
2024	389.0	36.0	306.0	20.0
2025	391.0	36.0	306.0	20.0
2026	391.0	36.0	306.0	20.0

II. Merit / Peer Review Process

Merit Review of Research Conducted by the Virginia Agricultural Experiment - Research under the Hatch, McIntire-Stennis, and Animal Health and Disease Acts is primarily conducted in three colleges that constitute the Virginia Agricultural Experiment Station (VAES): 1) College of Agriculture and Life Sciences; 2) College of Natural Resources and Environment; and 3) Virginia-Maryland Regional College of Veterinary Medicine. For each VAES project proposal submitted, the VAES Associate Director or the Associate Dean for Research in the project leader's college, chairs the review (hereafter referred to as the chair). The chair selects the project review committee consisting of three or more members proficient in the subject of the proposed project. They may be chosen from outside the university if recommended by the department/unit head or deemed appropriate by the chair. Faculty from other units within the university may be eligible for VAES support. The research proposal is reviewed by the project review committee for technical merit and for fit within the mission of VAES, and is approved by the Director or Associate Director of VAES. More detail is provided below.

Merit Review of VSU Agricultural Research - Virginia State University College of Agriculture has established a blue-ribbon Advisory Council to provide guidance and advice to the Dean of the College of Agriculture, in particular, and to the College of Agriculture (COA) in general, to assist the College to meet the agricultural education, Extension and research needs of the residents of the Commonwealth of Virginia and as appropriate national and global needs. The College of Agriculture Advisory Council (CAAC) is composed of eighteen (18) members representing producers, business, agricultural experts, and other who have an interest in COA. At least five (5) of the Council members are producers representing a cross-section of agricultural enterprises served by COA. The members of the CAAC have been carefully selected; therefore, they will be able assist the Dean and the College of Agriculture (COA) in developing/enhancing a proper perspective of needs and expectations of the clientele and stakeholders of the College of Agriculture as well as in identifying resources that may be acquired to meet the challenges and exploit opportunities.

Any applicant at ARS who desires to submit a proposal for consideration must first complete and submit a Request for Approval to Submit Proposals Form to the Director of Research. The Director of Research reviews the pre-proposal and notifies the applicant about a decision whether the proposal can be developed fully or not. A full proposal is submitted by applicant(s) to the Director of Research for review. The Director then decides on how the proposal is reviewed. It could be sent to external anonymous experts in the respective fields. The Director of Research's Office facilitates this process. The reviewers are asked to pay particular attention to scientific and technical merit, opportunities for cooperation in the proposed research with other individuals and units within the University and the Virginia clientele. Based on the external reviewers' comments, the Director advises the applicant to address the concerns about the proposal or develop another one that incorporates the relevant suggestions.

III. Stakeholder Input

1. Actions to Seek

Virginia Cooperative Extension and Virginia Agricultural Experiment Station work with stakeholders to receive input through local Extension Leadership Councils, AREC Advisory Boards, and many other citizen groups at local and regional levels. The citizen groups reflect the agricultural producers and the socio-economic composition of their communities and focus on conducting programs that produce outcomes based on priority needs.

A systematic analysis of educational needs is integral for VCE program planning. Through situation analysis, needs of stakeholders are assessed, analyzed, and then shape program direction and plans. Traditional methodologies of seeking input include surveys, key informant interviews, issue forums, listening sessions and focus group interviews. To encourage participation, surveys are conducted with paper and web-based response options. Issue forums, listening sessions, and focus group interviews are held in multiple locations throughout service areas in convenient and comfortable environments for non-traditional and traditional stakeholders. Specific efforts are made to assess needs where underrepresented populations reside, and to market input sessions through communication channels used by targeted sectors of the population. A statewide of situation analysis in every VCE Unit was conducted in 2018 and 2019. Plans are in process to create an annual situation analysis as an expectation.

Representation on local Extension Leadership Councils (ELCs) includes all VCE programming areas: 4H/Youth Development (4H), Family and Consumer Sciences (FCS), Agriculture and Natural Resources (ANR), and Community Viability. Currently, all 107 Extension units in Virginia have an organized local ELC and all Agriculture Research and Extension Centers (ARECs) have active advisory councils.

The VSU Extension program works with stakeholders through the VCELC for the systematic analysis of educational needs to plan Extension programs. To ensure that adequate stakeholder input is received from limited-resource and underserved audiences, VSU Extension is also informed by a VSU Agricultural Advisory Committee. Formed in 2008, the 15-member committee consists of members from agricultural commodity groups, the agri-business community, and public education. Other members include Extension professionals and volunteers, farmers, and a local legislator who advocates for the VSU School of Agriculture. All members work closely with or are aware of the needs of VSU's clients. Advisory Committees inform teaching, research, and Extension programs within VSU's College of Agriculture and research programs within V AES and the college. VCE advisory committee member guidelines were used as a basis for selecting VSU Agriculture Advisory members. Committee members represent the Extension program areas of 4-H, agriculture and natural resources, and family and consumer sciences and are invited to serve by the Extension administrators and Dean of the School of Agriculture. VCE and the ARECs have long facilitated grassroots involvement, buy-in, and ownership in local programs. VCE formally connects with the grassroots of the state through partnerships with local volunteer ELCs.

For the Virginia Agriculture Experiment Station (VAES), volunteer advisory councils (e.g. AREC Advisory Boards) provide stakeholder input. These partnerships represent the diversity of local clientele, communities, and industries across the Commonwealth of Virginia. In 2018, VAES and VCE held an Agriculture and Natural Resources (ANR) Summit to bring together stakeholders from across Virginia to discuss priorities and initiatives of importance. In 2020, each AREC developed and presented their new strategic plan to their advisory council to solicit input.

2. Methods to Identify

The Virginia Agricultural Experiment Station (VAES) conducts research relevant to the needs and priorities of the citizens of the Commonwealth. Research projects are established based on the input of advisory committees at each of the 11 Agricultural Research and Extension Centers (ARECs) distributed across the state. The nine academic departments and one school within the College of Agriculture and Life Sciences each maintain stakeholder groups and the College has its own advisory committee of producers, commodity groups, and agribusiness leaders that provide important feedback to VAES. VAES provides research-based input to the VCE programming process through faculty research and Extension specialists and administratively through AREC directors and statewide Extension program leaders. Invitations to the ANR Summit were identified by asking for all AREC and academic departments, commodity groups, Farm Bureau, agribusiness groups, and other ANR constituencies to provide names and contacts of possible stakeholders.

VCE formally establishes connectivity with stakeholders of the state through partnerships known as Extension Leadership Councils (ELCs). At the local level, this partnership represents the diversity of each county and city in which VCE exists as a resource. Representation includes VCE programming areas (4-H/Youth Development, Family and Consumer Sciences, Agriculture and Natural Resources and Community Viability), community leaders, and other organized community, agricultural, and youth associations and entities who partner with VCE. Extension staff and Leadership Council members work as equal partners to determine needs, establish program priorities, plan and implement solutions, identify and secure resources, market VCE and its programs, and evaluate and report program results/impacts to program stakeholders. Currently, all 107 Extension units in Virginia report having an organized local ELC.

Extension provides a formal mechanism for VSU and VT to receive stakeholder input for Extension and research programs. The situation analysis process in communities examines and determines what issues, problems, and opportunities exist that VCE resources should address (<http://www.ext.vt.edu/vce/support/process/situation.html>). An essential component of the process includes development of a unit profile (<http://www.ext.vt.edu/vce/support/unitprofiledata.html>). The unit profile developed by local agents is shared with ELCs to determine which key informants should be involved in situation analysis (<http://www.ext.vt.edu/vce/support/keyinterviews.doc>).

3. Methods to Collect

A systematic analysis of educational needs is integral for VCE program planning. Through situation analysis, needs of stakeholders are assessed, analyzed, and then shape program direction and plans. Traditional methodologies include surveys, key informant interviews, issue forums, listening sessions and focus group interviews. To encourage participation, surveys are conducted with paper and web-based response options. Issue forums, listening sessions, and focus group interviews are held in multiple locations throughout service areas in convenient and comfortable environments for non-traditional and traditional stakeholders. Specific efforts are made to assess needs where underrepresented populations reside, and to market input sessions through communication channels used by targeted sectors of the population.

In addition, a study was commissioned to assess current impacts of VAES and VCE on the economy and to gather recommendations from industry. Advisory council members and other stakeholders were invited to participate in interviews for this study. The Virginia Tech Office of Economic Development (OED) conducted the economic impact study for Agency 229, which provides funding to VCE and VAES. OED spoke with over 200 stakeholders from private industry; local and state government; VCE agents, specialists, volunteers, and clients; VAES researchers; and many agricultural councils and commodity groups.

4. How Considered

A systematic analysis of educational needs is integral for VCE program planning. Through situation analysis, needs of stakeholders are assessed, analyzed, and then shape program direction and plans. Traditional methodologies include surveys, key informant interviews, issue forums, listening and web-based response options. Issue forums, listening sessions, and focus group interviews are held in multiple locations throughout service areas in convenient and comfortable environments for non-traditional and traditional stakeholders. Specific efforts are made to assess needs

where underrepresented populations reside, and to market input sessions through communication channels used by targeted sectors of the population.

The VT Department of Agricultural and Applied Economics provided a document highlighting impacts of selected VCE and VAES efforts.

IV. Critical Issues

1 Agricultural Viability, Profitability, and Sustainability

Description:

We will use science-based research and educational strategies to address these critical agriculture issues:

- Enhance profitability and sustainability for farms of all sizes and types
- Mitigate risk in, and improve access to market opportunities for traditional, emergent, and specialty crops, aquaculture, and livestock production systems
- Empower farm transition planning
- Ensure nutritious, safe and equitably accessible local food systems
- Increase urban and organic farming success
- Improve global market competitiveness in food, fiber, and feed industries
- Improve on-farm soil health, grazing management, nutrient utilization, waste management, and pest management
- Assist producers with adherence to regulatory compliance requirements
- Build capacity among new and beginning farmers and ranchers
- Enhance agricultural literacy

Term: Long

Science Emphasis Areas

Sustainable Agricultural Production Systems

2 Biotechnology, Biomaterials, and Bioenergy

Description:

Biotechnology, biomaterials, and bioenergy programs focus on establishing regional community and industry networks to identify, research and educate on utilization of bacteria, water, plants, animals, and forests products to produce goods for human, industrial, and agricultural needs for all Virginians, such as:

- Enhancing plants and animals via biotechnology applications to increase yields; improve nutrient utilization, disease resistance, environmental remediation, and sustainable agricultural practices
- Reducing dependence on non-renewable energy sources
- Promoting economical and sustainable bioenergy and biomaterials production
- Fostering new and economically viable and affordable opportunities in bio-based businesses
- Improving natural resource sustainability

Term: Long

Science Emphasis Areas

Bioeconomy, Bioenergy, and Bioproducts

3 Community Viability

Description:

Community viability programming will promote continuing prosperity and financial security for all Virginians through educational strategies that:

Transforms traditional and at-risk local economies through entrepreneurship, small business development, and community-based local and regional food systems and enterprises

Empowers traditional and at-risk communities through individual and community leadership development, facilitation, and conflict resolution skills

Develops tools and resources to support best management practices that foster volunteerism

Enhances representative civic engagement, including youth and adult involvement in community decision-making

Minimizes losses to agricultural operations, individuals, families, and communities resulting from natural disaster or other emergencies

Term: Long

Science Emphasis Areas

Family & Consumer Sciences

4 Food, Nutrition, and Health

Description:

Utilizing science-based research and educational strategies, we will address the following food security and safety, nutrition challenges and health issues for all Virginians:

Educating youth and adults about positive nutrition habits and physical activity to reduce obesity, incidence of chronic diseases, and health care expenses

Reducing food insecurity through increased access to locally grown, safe, affordable, and nutritious foods and beverages

Improving consumer and producer food safety and human nutrition challenges

Reducing infectious and vector-borne diseases occurrences

Provide best-management practices for home food production and preservation

Term: Long

Science Emphasis Areas

Family & Consumer Sciences

Food Safety

Human Nutrition

5 Natural Resources, Environment, and Climate Change

Description:

Science-based research and education strategies will address critical issues of natural resource and environmental enhancement, protection and conservation including:

Educating traditional and underserved audiences to conserve, protect, and enhance natural resources while meeting society's demands

Reducing negative impacts of urbanization on available habitat for recreation and natural-resource-based economic opportunities

Developing conservation and protection measures for Virginia's surface and ground water resources, including the Chesapeake Bay watershed
Improving natural resource and environmental literacy through Master Naturalist, Master Well Owner, Master Gardener and other related efforts
Increasing energy efficiency in homes and farms

Term: Long

Science Emphasis Areas

Agroclimate Science
Environmental Systems

6 Strengthening Virginia Families

Description:

We will support strong, healthy family development and well-being leading to stronger Virginia communities, by utilizing science-based research and education to address these critical issues:

Maximizing the psychological, social, physical, and emotional well-being of Virginia residents in these areas:
parenting and child care, dependent care, elder care, grandparents raising their grandchildren, school-readiness, risky behavior prevention, and stress reduction
Increasing economic stability by improving youth and family financial literacy and security

Term: Long

Science Emphasis Areas

Family & Consumer Sciences

7 Youth Development

Description:

4-H programs focus on developing positive, healthy, skilled, productive youth to be tomorrow's leaders utilizing science-based research and educational strategies to address these critical issues:

Developing life skills and leadership skills and abilities for traditional and at-risk youth
Educating traditional and at-risk youth to make better dietary choices, increase physical activity and other healthy behaviors to prevent obesity
Creating awareness and changing behaviors that prevent at-risk behaviors that may lead youth to engage in crime, unprotected sex, substance abuse, gangs, or other at-risk behaviors that jeopardize their future
Increasing involvement and interest in Science, Technology, Engineering, Agriculture, and Technology (STEAM) careers for traditional and underserved youth

Term: Long

Science Emphasis Areas

Youth Development

8 SmartFarm Technology and Security

Description:

Using transdisciplinary research and education strategies, we will anticipate, develop, and advance the discovery and translation of technologies, including decisions through data analytics and machine learning, incorporating cyberbiosecurity, and address the biosecurity challenges of the food and agriculture system, such as:

Characterizing efficiencies and economics of technology applications for crops and green industries and animal agriculture

Identifying and characterizing risks and strategies for protection at the interface of digital, biological, and cyber physical systems in the food and agriculture system

Integrating technology for providing security against plant, animal, and food pests, diseases, and other biological threats

Developing workforce for meeting the future technology and security needs for the food and agriculture system

Term: Long

Science Emphasis Areas

Agroclimate Science

Bioeconomy, Bioenergy, and Bioproducts

Environmental Systems

Sustainable Agricultural Production Systems