VIRGINIA AGRICULTURAL EXPERIMENT STATION 2024 STAKEHOLDER NEEDS ASSESSMENT

Identifying Research Priorities for Agricultural, Environmental, Veterinary, and Life Sciences Advancements at Virginia Tech

Project Summary

The VAES is a research enterprise including more than 350 scientists located in three colleges at Virginia Tech: the College of Agriculture and Life Sciences, the College of Natural Resources and Environment, and the Virginia-Maryland College of Veterinary Medicine. The VAES is dedicated to addressing agricultural, environmental, natural, and community resource issues related to the future needs of Virginia, the region, the nation, and the world.

The 2024 needs assessment, conducted from May to October, collected input from stakeholders across Virginia to guide research priorities and resource allocation, ensuring VAES initiatives continue to align with and address stakeholder needs. Respondents identified key topics and rated the importance of related research areas.

The assessment received 251 usable responses, representing a subset of Virginia's diverse agricultural and environmental community. Respondents included 62 crop farmers, 52 livestock farmers, 20 agricultural professionals, 35 university educators or scientists, and 16 consumers. Stakeholders aged 18–34 comprised 34 respondents, 70 were aged 35–54, 99 were aged 55–74, and 18 were aged 75 and older. Additionally, 127 respondents identified as male, and 65 identified as female. Geographically, responses were distributed as follows: 63 from stakeholders in the Southwest VCE Region, 55 from the Northwest VCE Region, 22 from the Northeast VCE Region, 20 from the Southeast VCE Region, and 16 from the Central VCE Region.

While the survey offered a comprehensive list of stakeholder categories to choose from, including Extension agents, government officials, and public health professionals, many of these groups were not represented among the respondents. The low response rate underscores the need for improved outreach to engage underrepresented groups. Future efforts should focus on increasing participation from younger stakeholders, government officials, Extension agents, food system professionals, public and environmental health service professionals, and stakeholders in the Central and Southeast VCE Regions. This will ensure that the assessment more accurately reflects the diverse needs and perspectives of Virginia's agricultural and environmental sectors.

The following information highlights stakeholder perceptions of research areas considered to be of moderate and high importance.

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Research priorities identified by all stakeholders (*n* = 251) and the percentages of stakeholders who rated associated topics as *moderately* or *very important*.

Crops and Crop Production 54.18%	Environment 53.39%	Agricultural Economics 52.59%
Plant disease – 94.26%	Biodiversity conservation – 88.34%	Farm/agribusiness profitability – 91.66%
Soil Health – 91.81%	Ecosystem restoration – 88.33%	Agricultural policies – 88.34%
Weed management – 90.99%	Soil quality – 88.33%	Land use and farmland preservation – 85.84%
Fertilizer use – 89.34%	Incentives for environmentally frienfly practices – 87.50%	Farm/agribusiness labor – 75.83%
Plant stress – 82.78%	Water quality – 86.67%	Farm/agribusiness technology adoption – 75.00%

Livestock Farmers (*n* = 53)

Top livestock raised by livestock farmers:

Beef cattle

84.09%

Sheep

45.45%

Poultry

25.00%

Top crops grown by livestock farmers:

Forage Crops

100%

Cereals

48.15%

Vegetables

37.04%

Research priorities identified by livestock farmers and the percentages of those livestock farmers who rated associated topics as *moderately* or *very important*.

Livestock and Livestock Production 83.02%	Agricultural Economics 71.70%	Crops and Crop Production 50.94%
Infectious diseases – 97.68%	Farm/agribusiness profitability – 100%	Soil health – 100%
Reproductive health – 97.68%	Land use and farmland preservation – 94.74%	Weed management – 100%
Grazing management – 95.35%	Agricultural policies – 92.11%	Fertilizer use – 96.16%
Market access – 95.35%	Consumer food choices – 84.22%	Plant disease – 96.15%
Nutrition efficiency – 95.35%	Agricultural trade – 84.21%	Plant stress – 84.61%

Agricultural Professionals (*n* = 20)

Crops most relevant to agricultural professionals:

Fruits	Vegetables	Cereals
		
76.92%	69.23%	53.85%

Research priorities identified by agricultural professionals and the percentages of those professionals who rated associated topics as *moderately* or *very important*.

Agricultural Economics 65.00%	Crops and Crop Production 65.00%	Environment 55.00%
Agricultural policies – 92.31%	Weed management – 92.31%	Soil quality – 100%
Farm agribusiness Profitability – 84.62%	Plant disease – 92.31%	Water quality – 81.82%
Land use/farmland Preservation – 84.61%	Fertilizer use – 84.62%	Water resource management – 81.81%
Farm/agribusiness labor – 84.61%	Soil health – 84.61%	Pollution -81.81%
Food supply chain – 69.23%	Plant genomics – 76.92%	Incentives for environmentally friendly practices – 72.72%

Consumers (*n* = 16)

Research priorities identified by consumers and the percentages of those consumers who rated associated topics as *moderately* or *very important*.

Environment 75.00%	Education and Workforce Development 62.50%	Food and Nutrition 50.00%
Air quality – 100%	Leadership development – 100%	Food labeling – 87.50%
Endangered species – 100%	Workforce upskilling – 90%	Food safety – 87.50%
Incentives for environmentally friendly practices – 100%	Evidence based curriculum – 90%	Food safety education – 87.50%
Climate change including greenhouse gas emissions – 91.67%	Evidence based teaching methods – 90%	Food quality – 75%
Landowner education – 91.67%	Diversity in the workforce –80%	Food chemistry – 50%

Crop Farmers (*n* = 62)

Top crops grown by crop farmers:

Fruits	Vegetables	Cereals
		
70.97%	35.48%	17.75%

Research priorities identified by crop farmers and the percentages of those crop farmers who rated associated topics as *moderately* or *very important*.

Crops and Crop Production 91.94%	Pest Management 66.13%	Agricultural Economics 66.13%
Plant disease – 96.50%	Pesticide efficacy – 97.56%	Farm/agribusiness profitability – 90.25%
Soil health – 92.98%	Integrated pest management – 95.12%	Agricultural policies – 87.80%
Weed management – 89.47%	Pesticide use – 95.12%	Land use and farmland preservation – 78.05%
Fertilizer use – 87.72%	Invasive species – 92.68%	Farm/agribusiness labor – 73.17%
Plant stress – 80.70%	Native species – 92.68%	Farm/agribusiness technology adoption – 68.30%

University Educators or Scientists (*n* = 35)

Research priorities identified by university educators or scientists and the percentages of those educators/scientists who rated associated topics as *moderately* or *very important*.

Environment 65.71%	Food and Nutrition 42.86%	Public Health 37.14%
Ecosystem restoration – 91.31%	Food safety – 74.34%	Mental health and social well-being – 76.92%
Climate change including greenhouse gas emissions – 86.96%	Food quality – 66.66%	Physical activity – 76.92%
Incentives for environmentally friendly practices – 86.95%	Food safety education – 60%	Healthy aging – 69.23%
Pollution – 82.61%	Sensory characteristics – 60%	Brain function and health – 61.54%
Water resource management – 82.61%	Food chemistry – 60%	Environmental determinants of human health – 61.54%

Stakeholders Identifying as Male (*n* = 127)

Research priorities identified by male stakeholders and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Crops and Crop Production 65.35%	Agricultural Economics 58.27%	Environment 48.82%
Plant disease – 95.12%	Farm/agribusiness profitability – 91.89%	Soil quality – 95.16%
Weed management – 92.69%	Agricultural policies – 90.54%	Water quality – 88.71%
Soil health – 91.47%	Land use and farmland preservation – 86.49%	Ecosystem restoration – 87.09%
Fertilizer use – 90.24%	Farm/agribusiness technology adoption – 79.73%	Biodiversity – 85.49%
Plant stress – 81.70%	Farm/agribusiness labor – 71.62%	Water resource management – 85.48%

Stakeholders Identifying as Female (*n* = 65)

Research priorities identified by female stakeholders and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Environment 61.54%	Food and Nutrition 44.62%	Education and Workforce Development 43.08%	Agricultural Economics 43.08%
Incentives for environmentally friendly practices – 95%	Food safety – 86.20%	Workforce upskilling – 89.28%	Agricultural policies – 96.43%
Landowner education – 90%	Food safety education – 79.31%	Technology integration – 85.71%	Farm/agribusiness profitability – 89.29%
Air quality – 87.50%	Food labeling – 79.31%	Evidenced based curriculum – 85.71%	Land use and farmland preservation – 82.14%
Ecosystem restoration – 87.50%	Food quality – 79.31%	Evidenced based teaching methods – 82.14%	Agricultural trade – 78.57%
Pollution – 85%	Food chemistry – 75.87%	Community college education – 78.57%	Farm/agribusiness labor – 78.57%

Stakeholders Aged 18–34 (*n* = 24)

Research priorities identified by stakeholders aged 18–34 and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Environment 66.67%	Crops and Crop Production 54.17%	Sustainable Food Systems 37.50%	Food and Nutrition 37.50%
Soil quality – 81.25%	Plant disease – 100%	Agricultural ecology – 100%	Food safety – 100%
Biodiversity conservation – 81.25%	Plant stress – 92.31%	Food security – 100%	Food safety education – 88.89%
Water quality – 75%	Soil health – 92.31%	New farmer support – 100%	Food labeling – 66.66%
Incentives for environmentally friendly practices – 75%	Weed management – 84.61%	Food waste – 88.89%	Food quality – 66.66%
Solid waste – 75%	Fertilizer use – 84.61%	Local food accessibility/ distribution – 77.8%	Food chemistry – 55.55%

Stakeholders Aged 35–54 (*n* = 70)

Research priorities identified by stakeholders aged 35–54 and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Agricultural Economics 50.00%	Crops and Crop Production 50.00%	Environment 45.71%
Farm/agribusiness profitability – 91.43%	Plant disease – 91.18%	Incentives for environmentally friendly practices – 96.88%
Agricultural policies – 91.42%	Plant stress – 91.18%	Ecosystem restoration – 93.75%
Land use and farmland preservation – 82.86%	Fertilizer use – 85.29%	Biodiversity conservation – 90.62%
Food supply chain – 77.15%	Soil health -85.29%	Landowner education – 90.62%
Farm/agribusiness technology adoption – 74.28%	Weed management – 85.29%	Air quality – 87.50%

Stakeholders Aged 55–74 (*n* = 99)

Research priorities identified by stakeholders aged 55–74 and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Agricultural Economics 56.57%	Crops and Crop Production 55.56%	Environment 54.55%
Agricultural policies – 96.43%	Plant disease – 96.36%	Water resource management – 94.45%
Farm/agribusiness profitability – 96.43%	Soil health – 94.54%	Water quality – 94.44%
Land use and farmland preservation – 92.85%	Weed management – 92.73%	Pollution – 90.74%
Farm/agribusiness labor – 83.93%	Fertilizer use – 92.73%	Ecosystem restoration – 90.74%
Farm/agribusiness technology – 82.14%	Plant stress – 76.36%	Air quality – 88.89%

Stakeholders Aged 75+ (*n* = 18)

Research priorities identified by stakeholders aged 75+ and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Crops and Crop Production 66.67%	Agricultural Economics 61.11%	Pest Management 55.56%
Weed management – 100%	Farm/agribusiness profitability – 81.82%	Pesticide efficacy – 100%
Plant disease – 91.67%	Land use and farm preservation – 72.73%	Toxicology of pesticides – 90%
Soil health – 91.66%	Agricultural trade – 72.72%	Pesticide use – 90%
Fertilizer use – 83.33%	Estate and transition planning – 72.72%	Native species – 90%
Plant stress – 75%	Food supply chain – 72.72%	Invasive species – 90%

Stakeholders in the Southwest VCE Region (*n* = 63)

Research priorities identified by stakeholders in the Southwest region and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Environment 63.49%	Food and Nutrition 41.27%	Agricultural Economics 39.68%
Biodiversity conservation – 90%	Food safety – 65.38%	Agricultural policies – 92%
Ecosystem restoration – 90%	Food safety education – 69.23%	Farm/agribusiness profitability – 92%
Climate change, including greenhouse gas emissions – 87.5%	Food chemistry – 65.38%	Land use and farmland preservation – 88%
Incentives for environmentally friendly practices – 87.5%	Food labeling – 65.38%	Farm/agribusiness technology adoption – 80%
Air quality – 85%	Food quality – 65.38%	Consumer food choices – 72%

Stakeholders in the Northwest VCE Region (*n* = 55)

Crops most relevant to stakeholders in the Northwest region:

Fruits

72.22%

Forage Crops

41.67%

Cereals

30.56%

Research priorities identified by stakeholders in the Northwest region and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Crops and Crop Production 67.27%	Agricultural Economics 61.82%	Environment 45.45%
Plant disease – 100%	Farm/agribusiness profitability – 91.18%	Soil quality – 100%
Soil health – 88.89%	Agricultural policies – 88.23%	Ecosystem restoration – 92%
Weed management – 88.89%	Land use and farmland preservation – 79.41%	Biodiversity conservation – 88%
Fertilizer use – 83.33%	Agricultural trade – 70.59%	Incentives for environmentally friendly practices – 88%
Plant stress – 86.11%	Estate and transition planning – 70.59%	Water quality – 88%

Stakeholders in the Northeast VCE Region (*n* = 22)

Crops most relevant to stakeholders in the Northeast region:

Fruits	Vegetables	Cereals
		
69.23%	53.85%	38.46%

Research priorities identified by stakeholders in the Northeast region and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Environment 63.64%	Crops and Crop Production 59.09%	Agricultural Economics 54.55%
Biodiversity conservation – 100%	Plant disease – 100%	Agricultural policies – 91.67%
Ecosystem restoration – 100%	Fertilizer use – 92.31%	Farm/agribusiness profitability – 91.66%
Climate change – 92.86%	Soil health – 92.31%	Land use and farmland preservation – 91.66%
Incentives for environmentally friendly practices – 92.86%	Weed management – 92.31%	Consumer food choices – 83.33%
Soil quality – 92.86%	Plant genomics – 76.92%	Farm/agribusiness labor – 83.33%

Stakeholders in the Southeast VCE Region (*n* = 22)

Crops most relevant to stakeholders in the Southeast region:

Fruits	Oilseeds	Cereals
		
66.67%	58.33%	50%

Research priorities identified by stakeholders in the Southeast region and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Environment 65%	Crops and Crop Production 60%	Agricultural Economics 55%	Pest Management 55%
Biodiversity conservation – 100%	Weed management – 100%	Agricultural policies – 100%	Biological control – 100%
Incentives for environmentally friendly practices – 100%	Fertilizer use – 91.67%	Farm/agribusiness profitability – 90.91%	Integrated pest management – 100%
Landowner education – 100%	Plant disease – 91.67%	Land use and farmland preservation – 90.91%	Invasive species – 100%
Pollution – 100%	Soil health – 91.67%	Agricultural trade – 81.81%	Native species – 100%
Soil quality – 100%	Plant stress – 83.33%	Farm/agribusiness labor – 81.81%	Pollinator health – 100%

Stakeholders in the Central VCE Region (*n* = 16)

Livestock most relevant to Central region stakeholders:

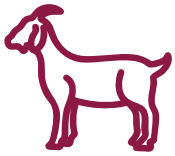
Beef cattle

90%

Poultry

60%

Goats



40%

Crops most relevant to Central Region stakeholders:

Fruits

72.22%

Cereals

50%

Vegetables

41.67%

Forage Crops

41.67%

Research priorities identified by stakeholders in the Central region and the percentages of those stakeholders who rated associated topics as *moderately* or *very important*.

Crops and Crop Production 75%	Livestock and Livestock Production 62.5%	Agricultural Economics 62.5%
Plant disease – 100%	Immunology – 100%	Agricultural trade – 100%
Soil health – 100%	Infectious diseases – 100%	Farm/agribusiness profitability – 100%
Weed management – 100%	Nutrition efficiency – 100%	Farm/agribusiness technology adoption – 100%
Plant stress – 91.66%	Parasites – 100%	Land use and farmland preservation – 100%
Plant chemistry – 91.66%	Reproductive health – 100%	Agricultural policies – 90%