Building the farm of tomorrow - today

An initial priority of the Virginia ANR Initiative is the proposed SmartFarm Innovation Network; a network of 12 interconnected locations — the Blacksburg campus and the 11 Agricultural Research and Extension Centers (ARECs) strategically located around the state — where the technologies of tomorrow are being developed, tested, and implemented today. The network covers a range of locations that capitalize on their proximity to ANR industries around the commonwealth and on the state’s geographic diversity.

This network of 12 interconnected centers will be a platform for collaboration that leverages Virginia Tech’s existing strengths to meet the demands of an evolving and technologically advanced ANR sector. The centers will work with industries to commercialize technologies that address challenges in the areas of environment, policy, workforce development, and more.

Teams of interdisciplinary researchers will develop systems and technologies that meld agricultural and natural resources production systems with biodesign, biomaterials, big data, artificial intelligence, and cybersecurity. Industry partners will be able to tap into this network of innovation by using the network as an incubator for launching new products to help ANR remain the largest private sector in the state.
The SmartFarm Evolution

On the SmartFarm of the future, the development and application of precise, accurate, field-deployable sensors and biosensors will enable continuous monitoring and diagnosis of various stressors and environmental conditions impacting plants and animals. Drones will fly over forests and crops to communicate with robots embedded in harvesting equipment on the ground. Sensors on livestock, in field crops, and forest lands will be linked to the cloud where big data is transformed into practical information regarding precision feeding, protection, and management decisions. Plants will be biodesigned to require less water and fertilizer and will be tolerant to drought, pests, and floods while producing more food. Farmers will manage their businesses not with tractors, but with iPads.

This is the SmartFarm of tomorrow — and Virginia Tech is poised to lead the commonwealth into this future and to be the catalyst for a new ANR economy.

A door to partnerships with Virginia Tech

The SmartFarm Innovation Network will be a portal into all the expertise that Virginia Tech has to offer, as well as a platform for collaboration that turns ideas into action. A new generation of students trained in global systems sciences, artificial intelligence, data analytics, and other university initiatives will fuel the workforce needed to drive this new economy and will introduce new ideas to leverage technology in the field and forest lands.

Putting the most innovative technology into the hands of people to create a better tomorrow is what Virginia Tech has done since its founding nearly 150 years ago — and will continue to do for years to come.

Virginia Tech

ARECs

Extension offices

SmartFarm INTEGRATIONS

Cyberbiosecurity
Cloud computing
Data science
Systems modeling
Robotics
Artificial intelligence
Sensors and biosensors
Precision agriculture
Geospatial technologies

Biodesign and genetics
Vertical farming
Food security
Renewable resources
Systems biology
Synthetic biology
Social and environmental issues

SYSTEMS
TECHNOLOGY
SUSTAINABILITY
SOCIO-ECONOMICS
HUMAN BEHAVIOR
POLICY

Building a network of interconnected technology centers to spark a new economy

The SmartFarm Innovation Network offers a network of locations that capitalize on the state’s geographic diversity and proximity to ANR industries.