FUNDING THE FUTURE

The SmartFarm Innovation Network is an **investment** in the future of Virginia's **ANR industries** — the state's **largest private economic sector** valued at more than $91 billion.

A **decentralized network** of incubator centers strategically located around the state will serve as a lever to **attract new businesses** to the commonwealth while supporting existing businesses. Industry will have a vested interest in **supporting research related to food, agriculture, forestry, and natural resources, and Extension programs**, while the state can help fund the required infrastructure and human capital. Investments by the state are needed for **enhancing research infrastructure** such as tools, equipment, facilities, and human capital to conduct cutting-edge research and Extension programs.

To learn more about the Virginia Agricultural and Natural Resources Initiative and the SmartFarm Innovation Network, contact:

Saied Mostaghimi
Director, Virginia Agricultural Experiment Station
smostagh@vt.edu

Ed Jones
Director, Virginia Cooperative Extension
ejones1@vt.edu

VIRGINIA AGRICULTURAL EXPERIMENT STATION
VIRGINIA TECH

Virginia Cooperative Extension
Virginia Tech • Virginia State University

VT/0818/CALS-1247

SmartFarm Innovation Network

HARNESSING TECHNOLOGY TO DRIVE FUTURE ECONOMIES

The Vision

Create a decentralized **network of interconnected centers** across the commonwealth where Virginia Tech's **interdisciplinary researchers** and Virginia Cooperative Extension specialists can **partner with industries** to develop and deploy **innovative technologies** to increase overall **efficiency, resilience, and sustainability** of **food, agricultural, and natural resources** production systems. **This network of innovation centers** will help feed a growing global population and **spark a new agricultural and natural resources (ANR) economy**.

Building the farm of tomorrow - today

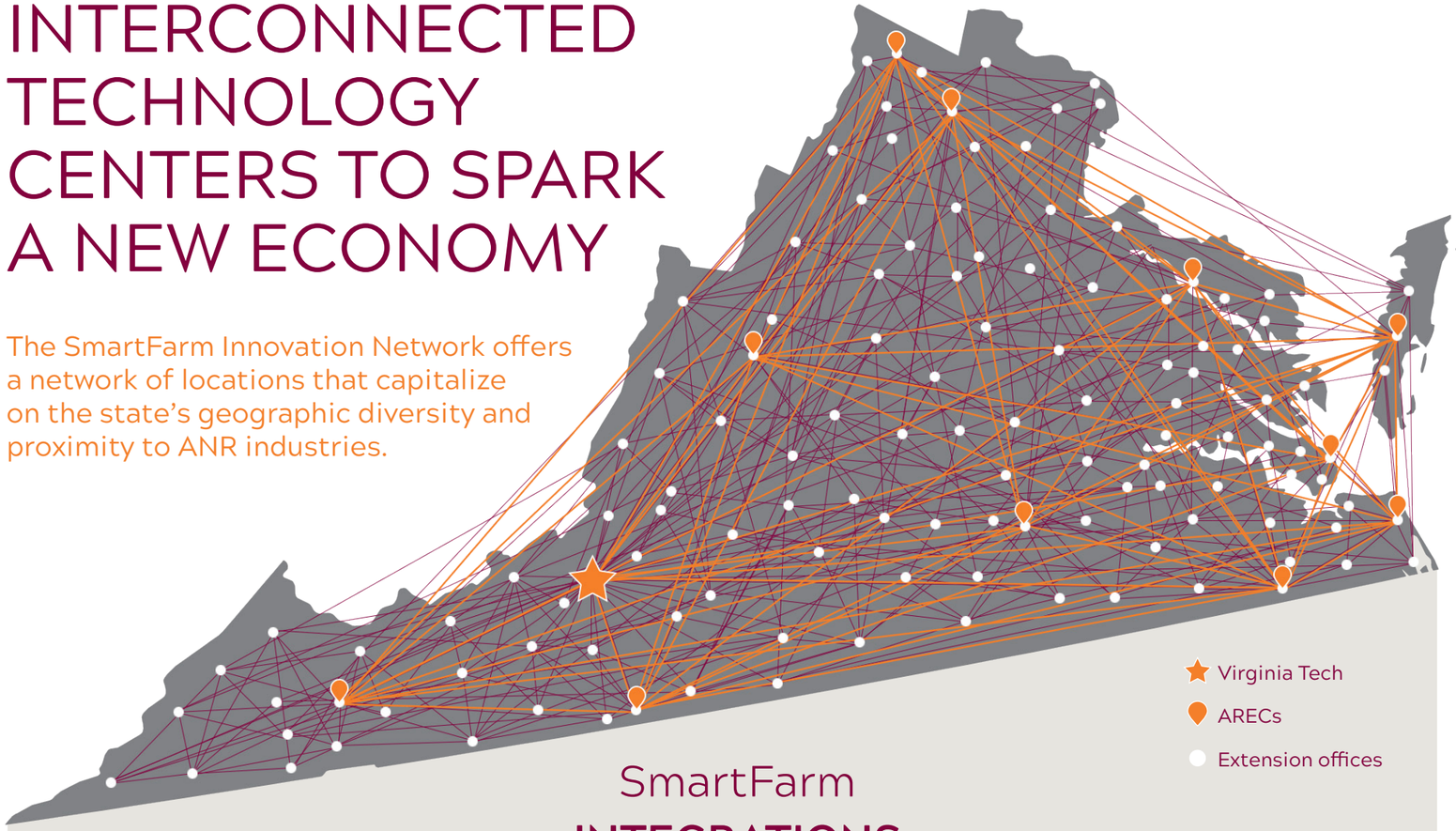
An initial priority of the Virginia ANR Initiative is the proposed **SmartFarm Innovation Network;** a network of 12 interconnected locations — the Blacksburg campus and the 11 Agricultural Research and Extension Centers (ARECs) **strategically located** around the state — where the **technologies of 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**.

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.



SmartFarm INTEGRATIONS

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.

Core to Novozymes' purpose is connecting with partners to solve the world's biggest problems, such as food security for a growing global population. A Virginia Tech Smartfarm Innovation Network that is well-funded and has a wide scope would be an excellent resource to help us realize this purpose.

Chris McDowell, Ph.D.
Novozymes Biologicals, Inc.

Bringing the ANR Initiative to life

In April 2018, the **Virginia Agriculture and Natural Resources Summit** brought stakeholders together to discuss solutions and identify resources needed to **create jobs around the commonwealth, increase value for stakeholders, and develop a strong workforce**.

Among the ideas that emerged from two days of dialogue were: the need to **develop innovative technologies for farms, public lands and resource management; increase networking opportunities** between ANR industries and Virginia Tech; **address workforce challenges** in the ANR sectors; **expand partnerships** among the university, ANR industries, and the government; and develop a more modern transportation infrastructure for ANR.

The **SmartFarm Innovation Network** is a direct response to those calls to action.