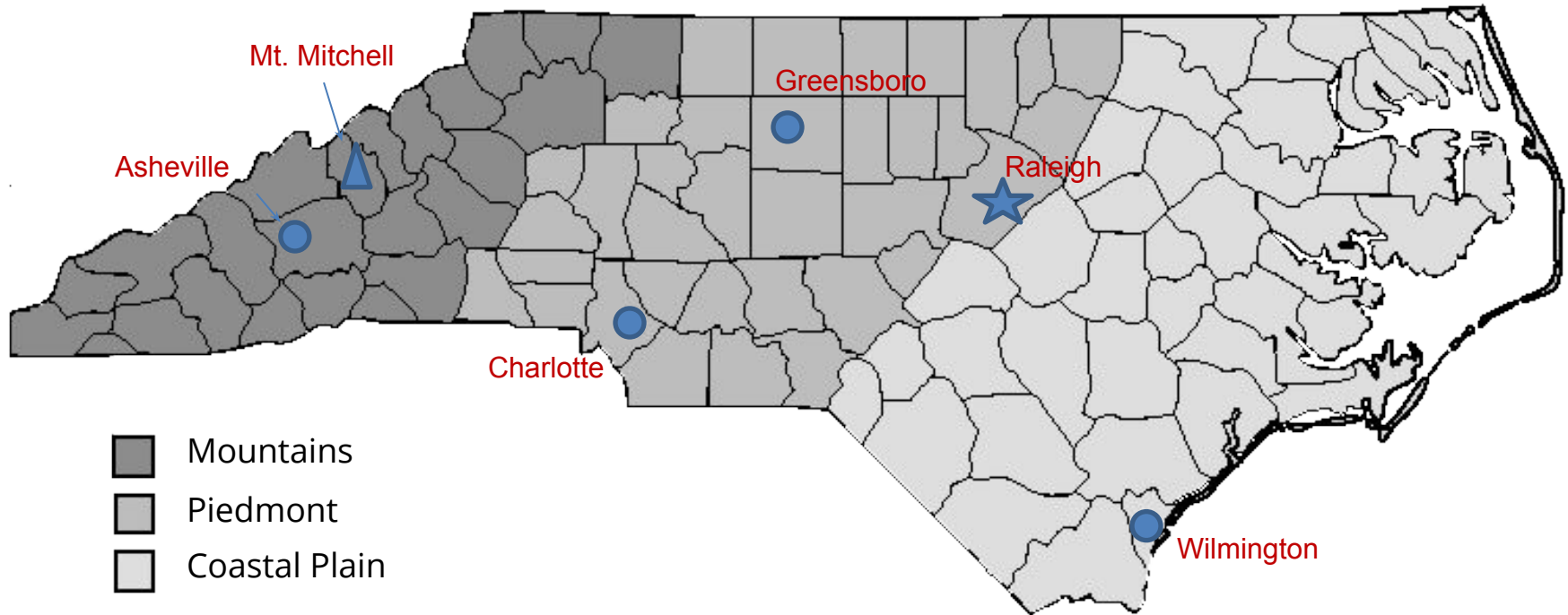


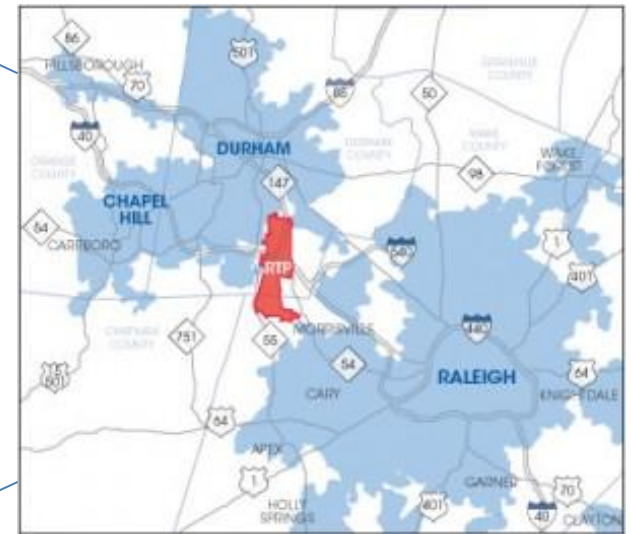


NC STATE THINK AND DO
THE EXTRAORDINARY

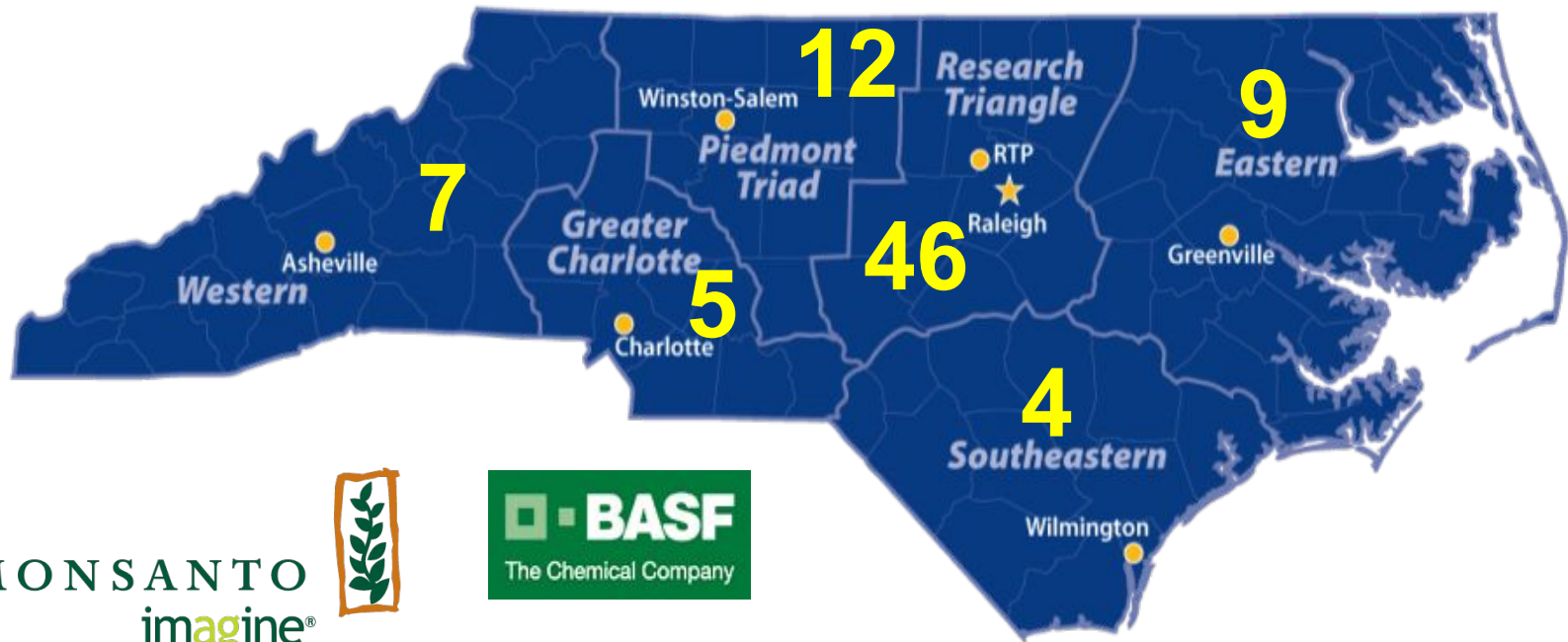
NC Geographic Diversity



Research Triangle Park



Ag Biotech Across North Carolina



MONSANTO
imagine®



PIONEER
A DUPONT COMPANY



Bayer CropScience

novozymes
Rethink Tomorrow

syngenta

FMC

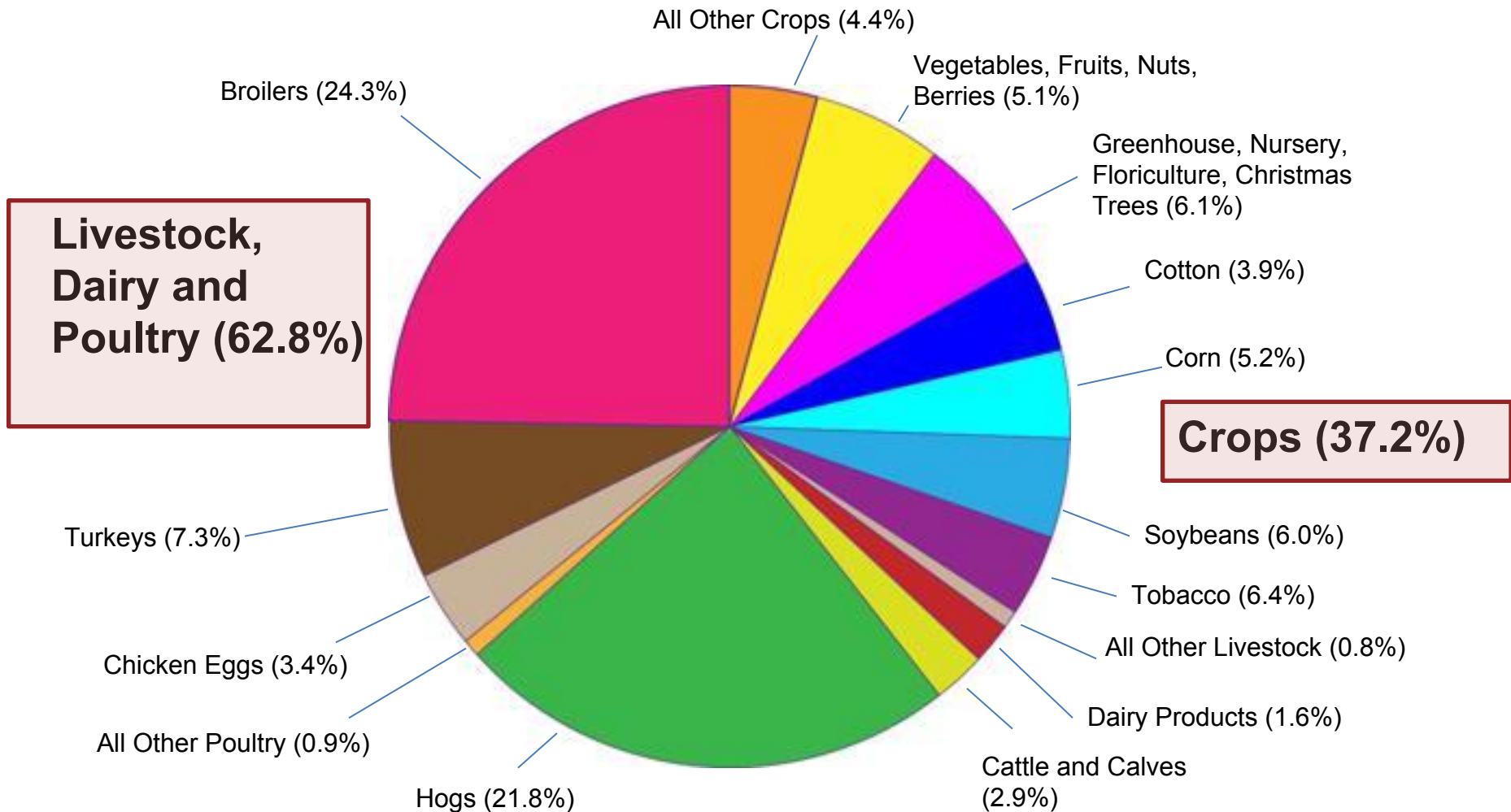
zoetis

NORTH CAROLINA BIOTECHNOLOGY CENTER

Emerging RTP Ag Biotech Companies



NC Agricultural Diversity = Opportunity



*Total Source of Farm Cash Receipts = >\$11.7 billion

Source: NCDA&CS, 2014



17 Campuses

Appalachian State University

East Carolina University

Elizabeth City State University

Fayetteville State University

North Carolina A&T State University

North Carolina Central University

North Carolina State University

UNC Asheville

UNC-Chapel Hill

UNC Charlotte

UNC Greensboro

UNC Pembroke

UNC Wilmington

UNC School of the Arts

Western Carolina University

Winston-Salem State University

NC School of Science & Math

Globally Recognized Land-grant University

#20

Forbes top STEM colleges of 2016

2,000+

research, teaching, extension faculty and doctoral scholars

\$349m

in research awards (FY16)

12

colleges

70%+

faculty engaged in sponsored research

#3

in industry sponsored research*

34,000+

students

24

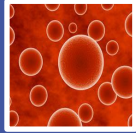
members of national academies

#7

in all research expenditures*

NC State Research

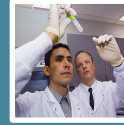
Strategic Focus Areas



Health & Well-Being



Energy & Environment



Educational Innovation



Safety & Security

Advanced Materials & Manufacturing

Advanced Computing & Networking

Data Science & Analytics

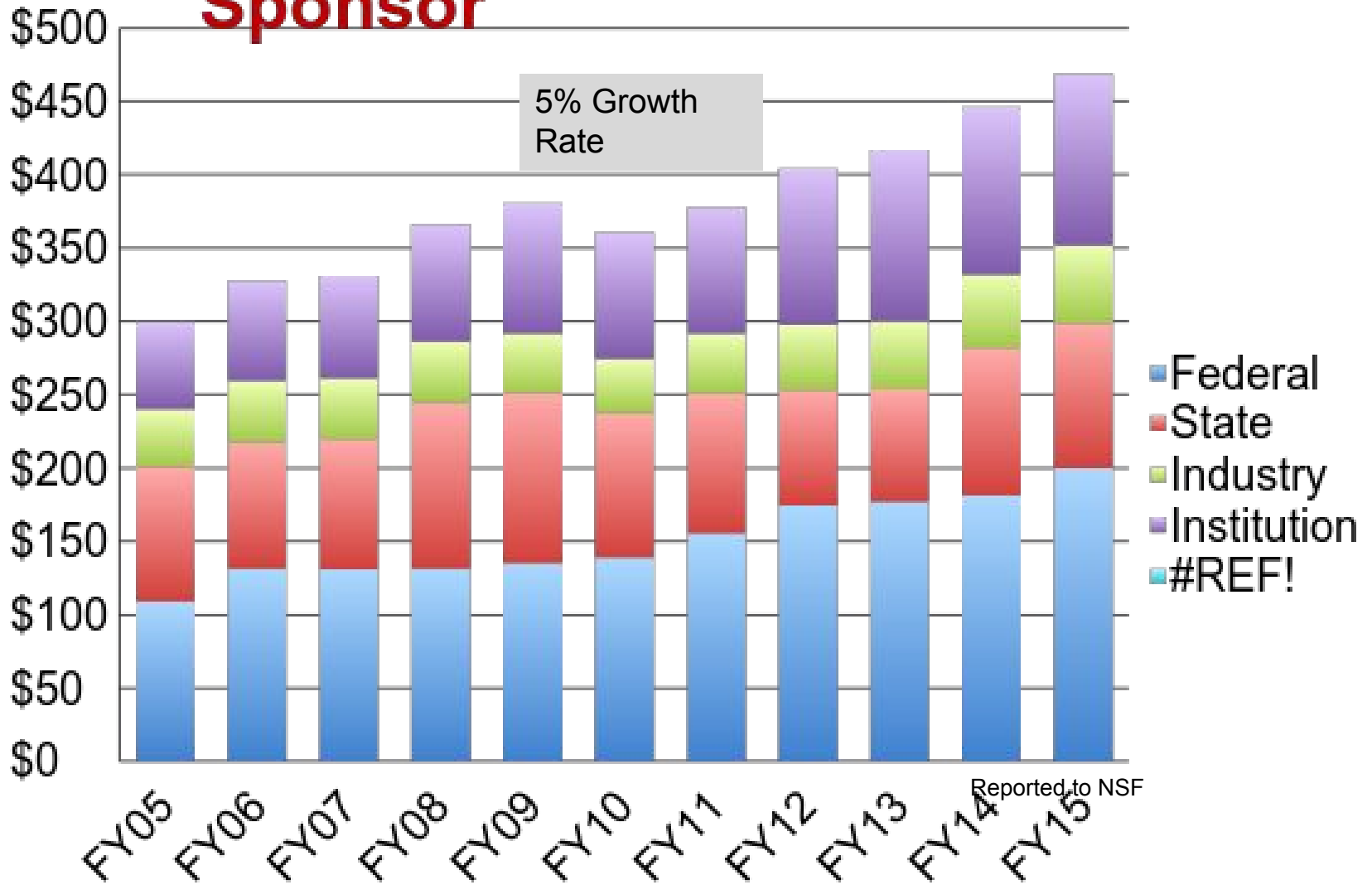
NC Plant Sciences

Evaluation, Policy & Leadership

Innovation & Entrepreneurial Network

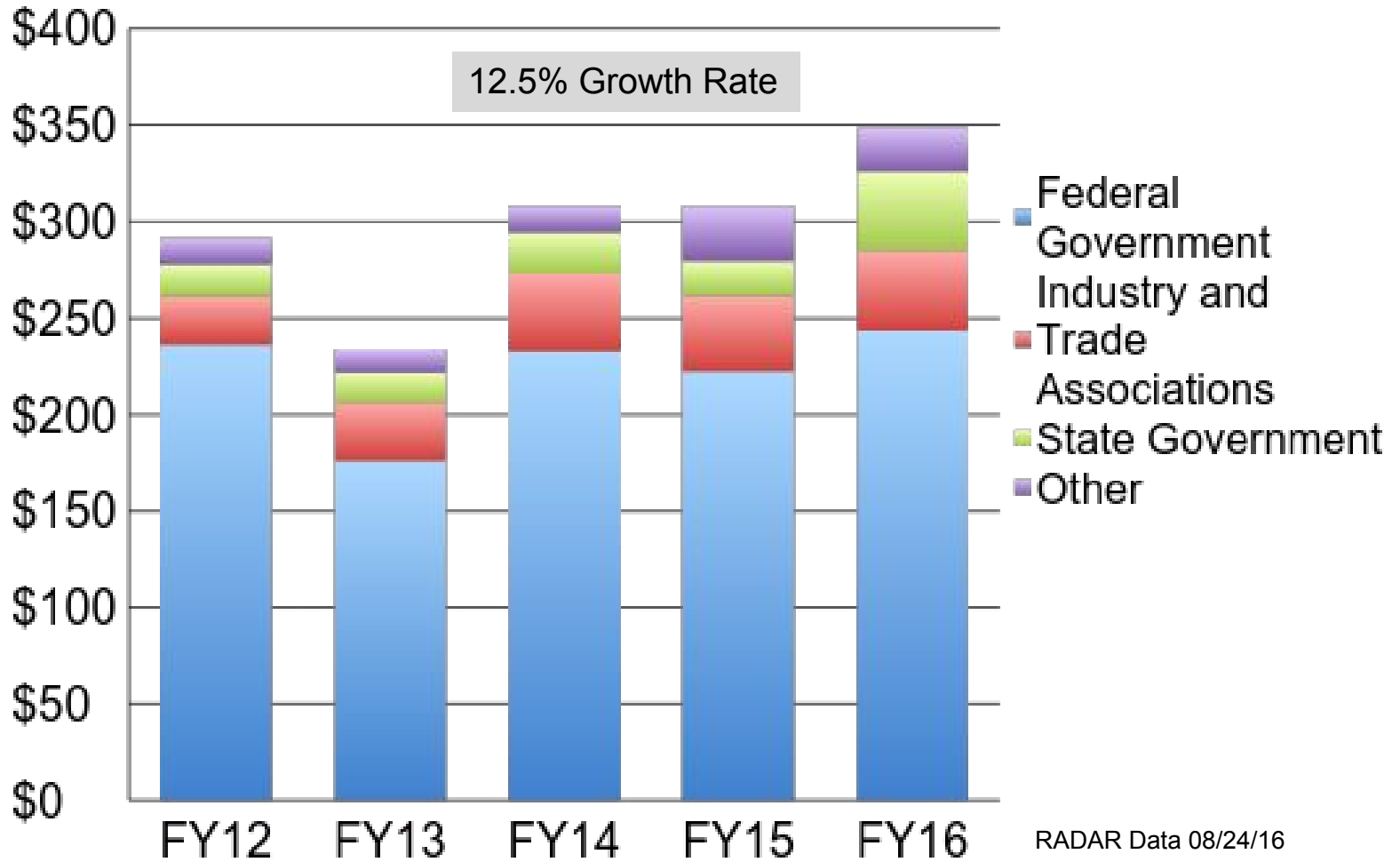
Economic & Societal Benefit

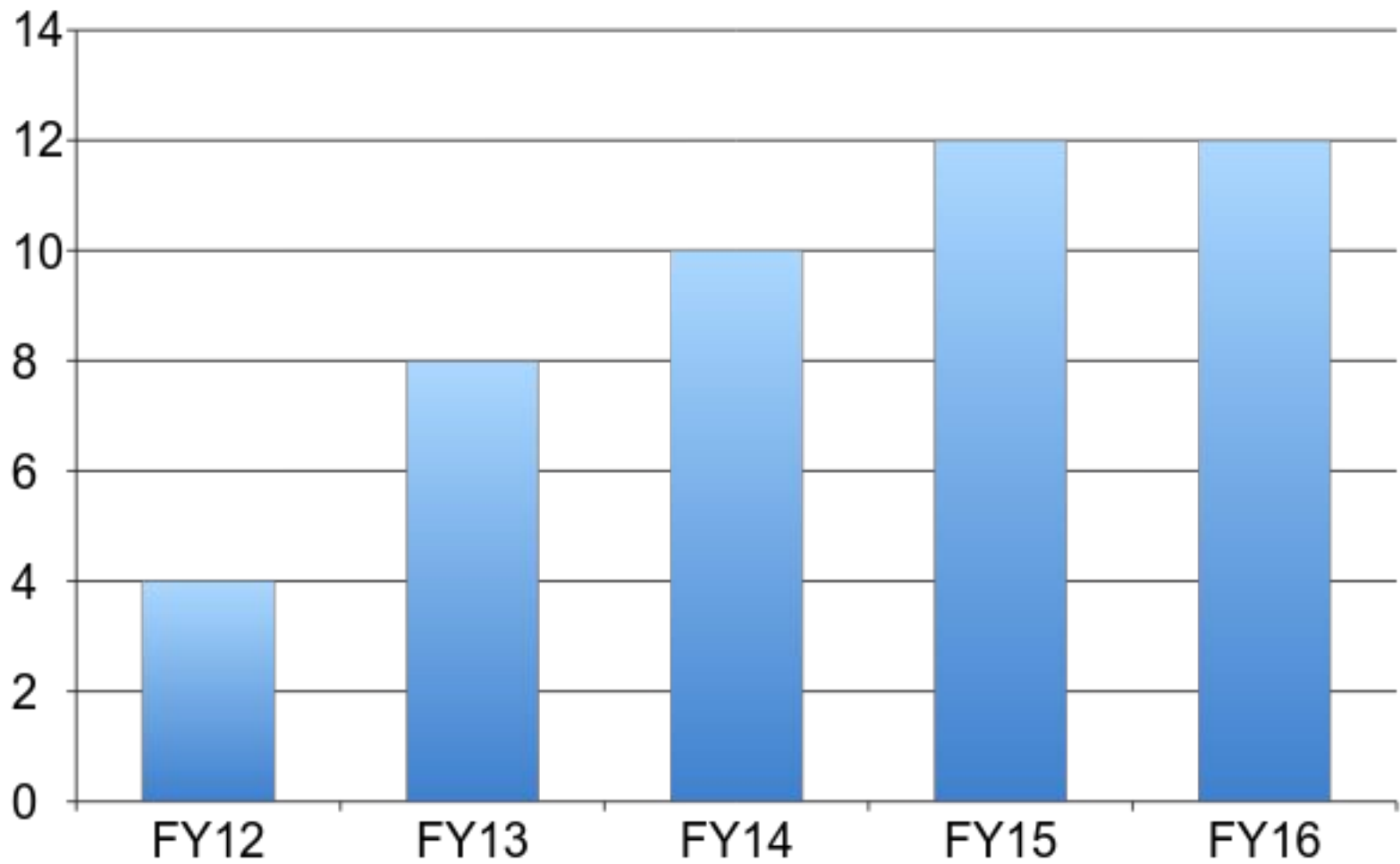
NSF R&D Expenditures by Sponsor



Reported to NSF

Research Awards by Sponsor







FY2016 Technology Commercialization & New Ventures in Review

291 new invention disclosures filed

56 new patents awarded

164 commercialization agreements signed

914 Material Transfer Agreements (MTAs), Confidential Disclosure Agreements (CDA)s and other agreements

\$3.8 million in royalties

Centennial Campus



Centennial Campus



CALS by The Numbers

2,826

Undergraduate &
AGI Students

18

Undergraduate
Degree Programs

994

Graduate & PhD
Students

25

Graduate
Programs

1,623

Faculty & Staff

4 + 12

4 Systems
12 Departments

22

Centers &
Programs

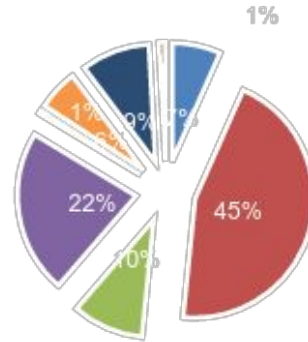
18 + 4

18 Research Stations
4 Field Labs

40 in 4

CALS/Provost Strategic Hires

CALS Expenditures 2015-16



- Federal Appropriations
- State Appropriations
- County Support
- Contracts and Grants
- Overhead Receipts
- Sales and Service
- Foundations
- Misc. Gifts

FY 2015-2016	Academic Programs	NCARS	NCCES	Total	Percentage
Federal Appropriations	\$ -	\$ 8,239,512	\$ 10,011,270	\$ 18,250,782	7%
State Appropriations	\$ 26,229,333	\$ 57,494,858	\$ 40,079,649	\$ 123,803,840	45%
County Support	\$ -	\$ -	\$ 26,854,040	\$ 26,854,040	10%
Contracts and Grants	\$ 511,967	\$ 50,940,817	\$ 9,918,404	\$ 61,371,188	22%
Overhead Receipts	\$ -	\$ 1,365,823	\$ 40,254	\$ 1,406,077	1%
Sales and Service	\$ 3,616,801	\$ 2,959,405	\$ 8,714,068	\$ 15,290,274	6%
Foundations	\$ 10,674,861	\$ 8,000,312	\$ 7,178,215	\$ 25,853,388	9%
Misc. Gifts	\$ 352,205	\$ 1,516,042	\$ 572,134	\$ 2,440,381	1%
Total	\$ 41,385,167	\$ 130,516,769	\$ 103,368,034	\$ 275,269,970	100%

College of Agriculture and Life Sciences

Nearly 600 projects
support over 90
commodities, related
agribusinesses and
life science industries

Research
expenditures
\$145.4 million in
FY2016

17 plant varieties
released in FY2016

Research grants
awarded **\$120.7 million**
in FY2016

50 invention disclosures
93 patents filed
101 license agreements
in FY2016

12 academic
departments

18 Agricultural
Research
Stations

North Carolina's principal agency of agricultural and life sciences research

CALS Faculty Hiring Programs



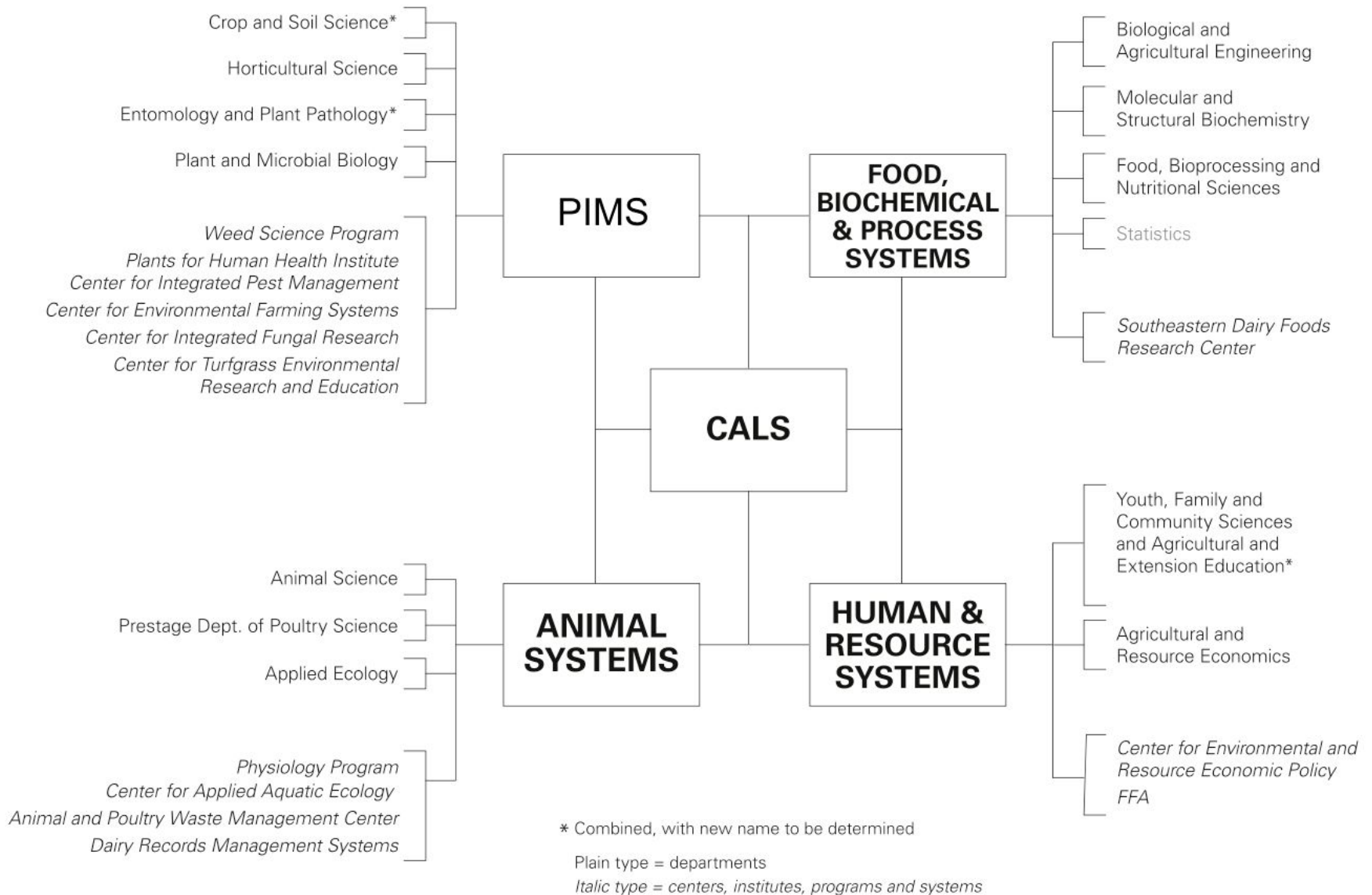
Chancellors Faculty
Excellence Hires

CALS/Provost Strategic Hires

College Priority Hires



Collaborative Systems



Animal Systems

Robert Beckstead – Turkey Physiology
Casey Nestor – Neurophysiology
Deborah Esposito – Tissue Regeneration
Stephanie Ward – Dairy Extension
Giuseppe Valacchi – Tissue Regeneration

Food, Biochemical & Engineered Systems

Colin Kay – Nutrition
Celso Castro-Bolinaga – River Dynamics
Mario Ferruzzi – Nutrition
Steven Hall – Aquaculture
Chadi Sayde – Soil Moisture

Human and Resource Systems

Harrison Fell* – Energy Policy
Lindsay Haynes-Maslow – SnapEd
Raymond Guiteras* - Environmental Health
Annie Hardison-Moody – 4H
Joy Morgan – Ag Teacher Education

Plant, Insect, Microbe and Soil Systems

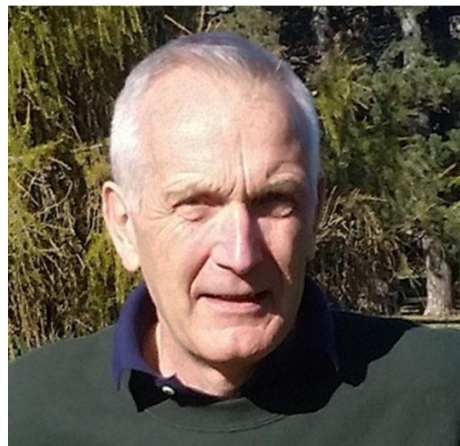
Tom Kon – Pomologist
Angela Post – Small Grains
Manuel Kleiner* - Microbiome
Lindsey Thiessen – Tobacco
Anna Whitfield* - Plant Viruses
Dorith Rotenberg* - Insects and Virus
Joe Barycki – Enzymes
Ramon Leon – Weed Ecology

New Department Leadership



Garey Fox

Biological and
Agricultural
Engineering



John Beghin

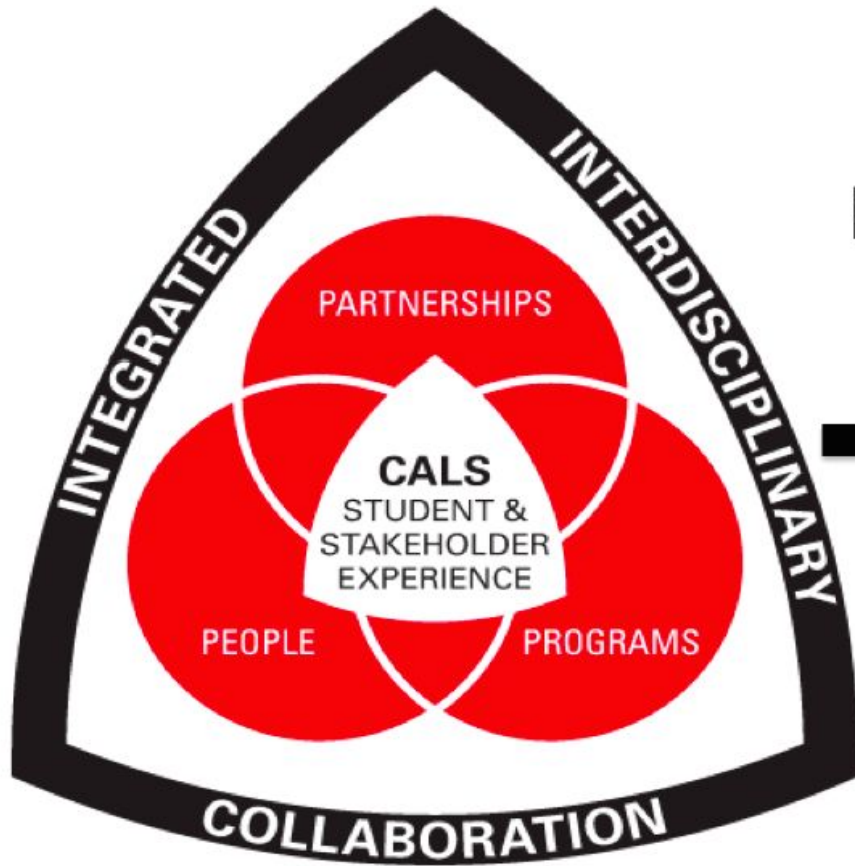
Agricultural
and Resource
Economics



Melanie Simpson

Molecular and
Structural
Biochemistry

CALS is Working on BIG IDEAS



- Food Manufacturing Initiative
- Plant Sciences Initiative
- Food Animal Initiative
- Leadership

Our Aspiration:

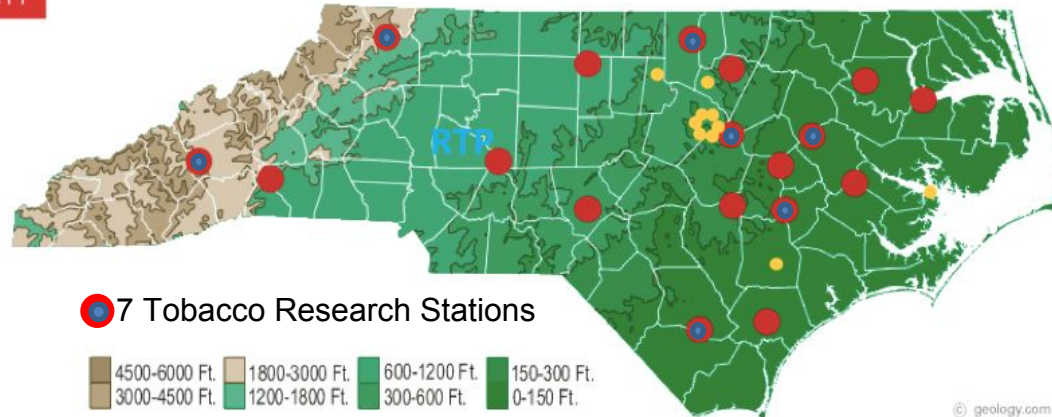
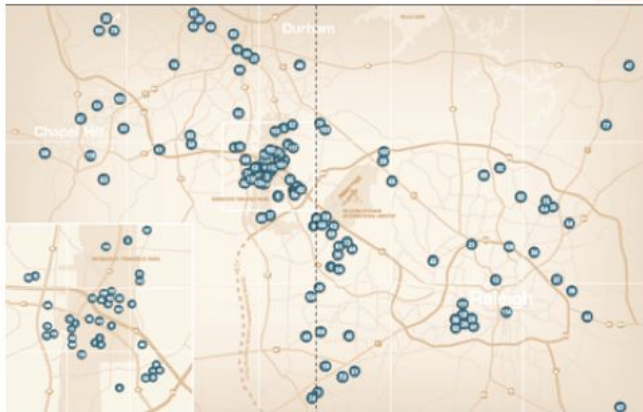
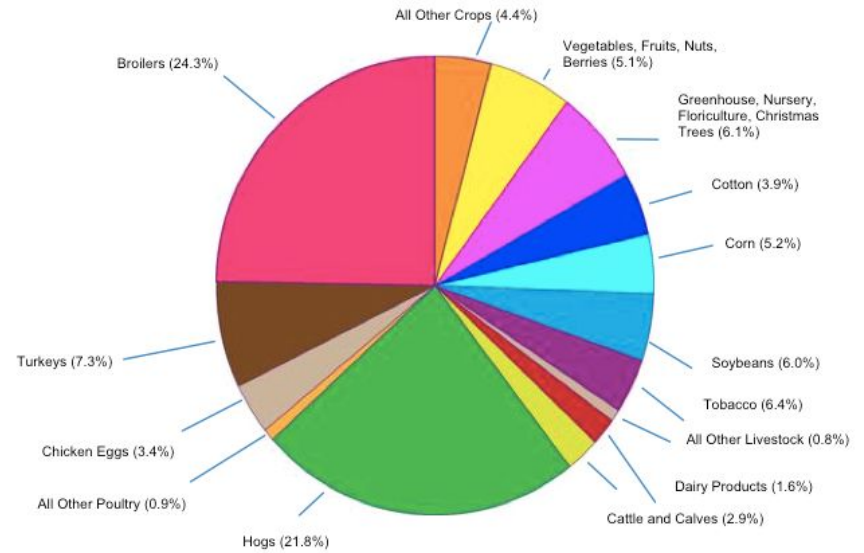
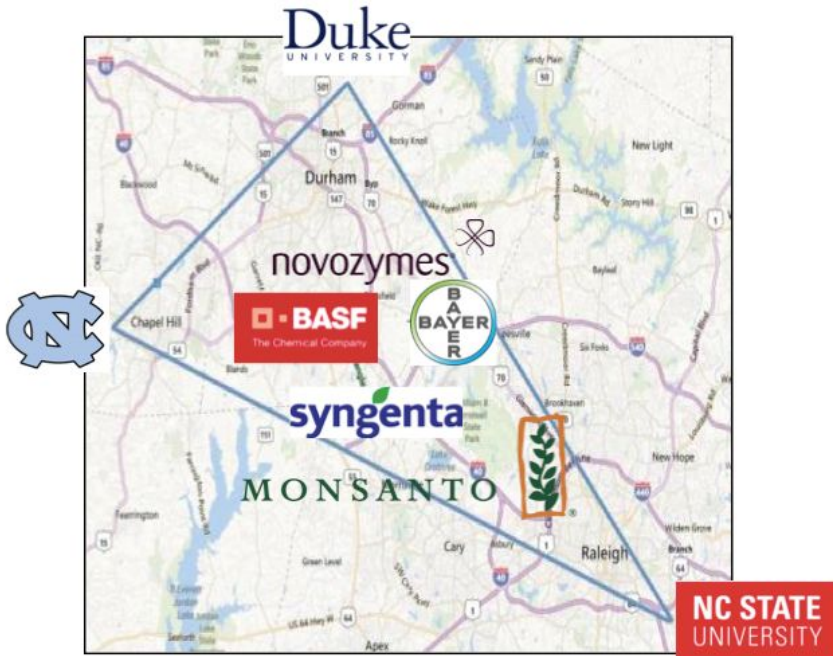
To become the world's foremost
Plant Sciences Enterprise.



\$160 Million Investment

Opening August 2021

NC Unique Assets



7 Tobacco Research Stations

4500-6000 Ft.
 3000-4500 Ft.
 1800-3000 Ft.
 1200-1800 Ft.
 600-1200 Ft.
 300-600 Ft.
 150-300 Ft.
 0-150 Ft.

18 Research Stations 10 Field Laboratories

84%

of U.S. agricultural jobs
are projected to be in
Plant Sciences
disciplines



\$200 Million Programmatic Investment

Ongoing Partnership Engagement

Engagement: NC Plant Sciences Initiative

- > Access to interdisciplinary, project-based teams
- > Opportunity to work side by side on concrete projects
- > Access to top students
- > Interactions with partner universities and agencies
- > Access to partner suites, VC and start-up partners

**NC PSI will be the best place in the world
for Plant Sciences partnerships.**

How Is NC PSI Different?

- > Deployment of fluid, interdisciplinary, multi-partner teams on projects to address grand challenges & opportunities
- > Embedded entrepreneurial network with a focus on IP and launching start-ups
- > Training of a new breed of interdisciplinary farmers and scientists – with global team experience

A uniquely integrated innovation pipeline...

The NC PSI Value Proposition



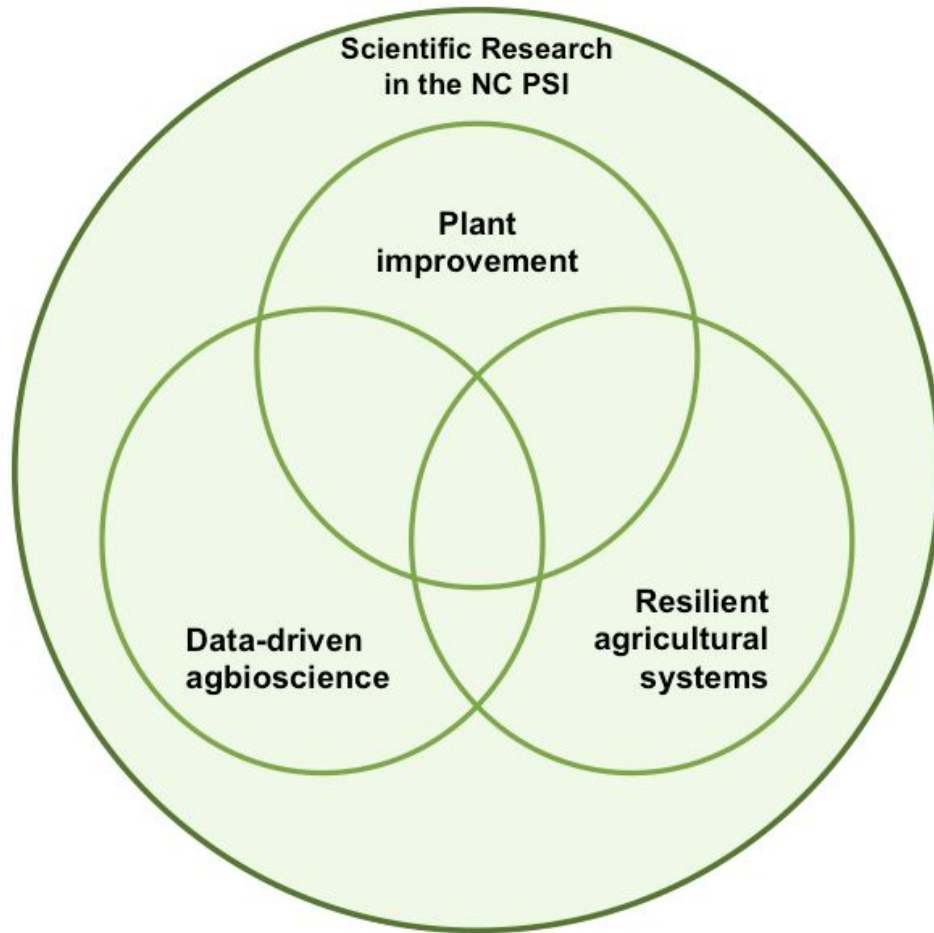
Student
Training



Work Force
Development



Project-Based Discovery & Innovation



- > Analytical capabilities
- > Animal feed
- > Bioenergy
- > Food security
- > Microbe sourcing
- > Microbiome platforms
- > Microbial physiology, formulations and alternative delivery

Plant Sciences Building

To be located on NC State Centennial Campus

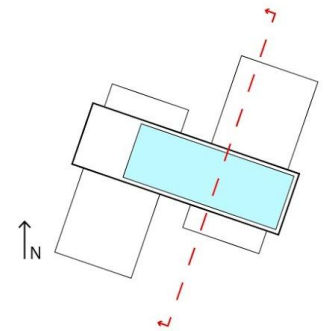
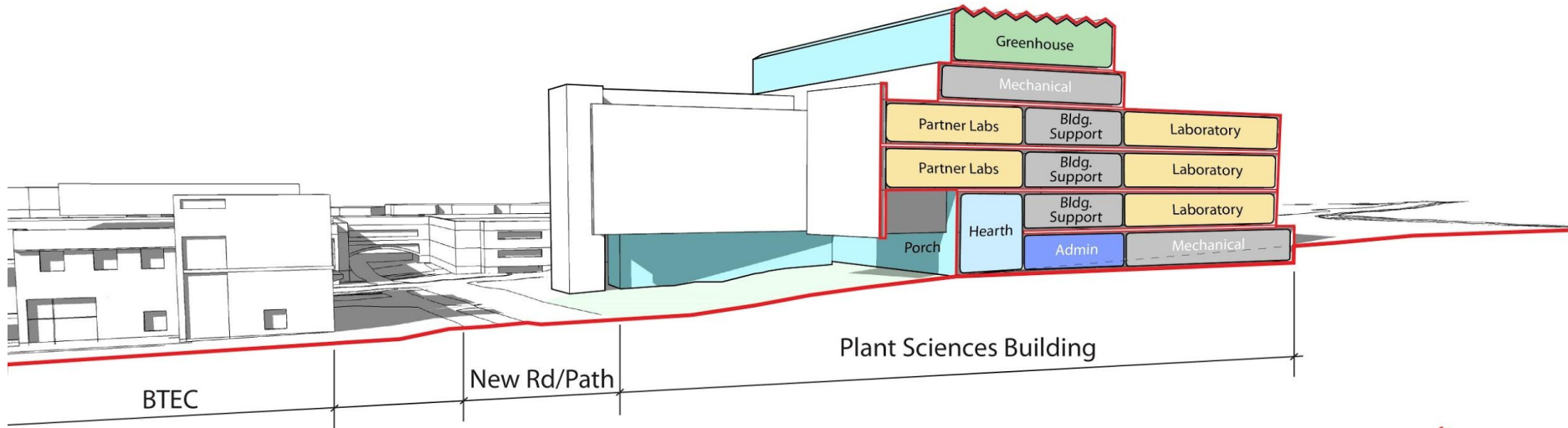


Building Cost:
\$160.2 Million

- Building Planning and Construction Cost is **90% funded**
- Combination of support from NCSU (\$5M), Connect NC Bond (\$85), Golden LEAF Foundation (\$48M), 40+ NC stakeholder groups and foundations (\$6M)



Design Concept: "The Porch"



Broad Stakeholder Support

- > Carolina Feed Industry Association
- > Corn Growers Association of NC
- > FAIR Products
- > Golden LEAF Foundation
- > NC Ag & Life Sci. Research Foundation
- > NC Agricultural Consultants Association
- > NC Agricultural Foundation
- > NC Blackland Farm Managers
- > NC Blueberry Council, Inc.
- > NC Cattlemen's Association
- > NC Composting Council, Inc.
- > NC Cotton Producers Association
- > NC Dairy Foundation
- > NC Farm Bureau
- > NC Farm Credit Banks (3)
- > NC Fisheries Association
- > NC Forage & Grasslands Council
- > NC Green Industry Council
- > NC Herb Association
- > NC Irrigation Society
- > NC Nursery & Landscape Association
- > NC Peach Growers Society
- > NC Peanut Growers Association
- > NC Pork Council
- > NC Poultry Federation
- > NC Small Grain Growers Association
- > NC Soybean Producers Association
- > NC State Grange
- > NC State University
- > NC Strawberry Association
- > NC Sweet Potato Commission
- > NC Tobacco Foundation, Inc.
- > NC Tomato Growers Association
- > NC Vegetable Growers Association
- > NC Watermelon Association
- > Tobacco Growers Association of NC
- > U.S. Tobacco Cooperative, Inc.
- > Weed Society of North Carolina

\$14+ Million Raised – Planning Phase

Food Manufacturing Initiative

Translate our state's farm output into products for consumers.

North Carolina's highly diverse variety of crops, livestock, soils and climate make it an ideal location to process and manufacture food goods. NC State's research and tech transfer strength will be instrumental in making this possible.

North Carolina's General Assembly funded this initiative to expand agriculture's economic impact in our state to \$100 billion by 2025 – a 22% gain.

+22%



Take the products of North Carolina's number one industry



Add research and technology from its largest university



Transfer that knowledge to commercial endeavors



Create jobs, new products and a manufacturing economy

The North Carolina Research Campus in Kannapolis



DHM | RI



N.C. STATE UNIVERSITY AT THE N.C. RESEARCH CAMPUS

Transforming Human Health, Nutrition & Agriculture.



COLLEGE OF

AGRICULTURE & LIFE SCIENCES

ACADEMICS ▲ RESEARCH ▲ EXTENSION

THE N.C. RESEARCH CAMPUS



Nutrition Research Institute

Plants for Human Health Institute

David H Murdock Research Institute

Translational Medicine Institute

Partners



North Carolina State University • UNC Chapel Hill • UNC Charlotte • UNC Greensboro • Duke University • North Carolina Central University • North Carolina A&T University • Appalachian State University • RCCC

LabCorp • Dole • General Mills • Zeiss Microscopy • Sensory Spectrum • Cabarrus Health Alliance • Carolinas Health Care System



Supporting CALS Five Core Strategic Themes

1. **Enhancing the production, quality, accessibility and profitability of food, plant, animal and bioenergy products for North Carolina, the nation and the world;**
2. **Ensuring environmental stewardship and sustainability of air, land, soil and water resources;**
3. **Creating a food supply that is safe, secure, healthy, affordable and of high quality;**
4. **Improving human health and well-being for individuals, families and communities; and**
5. **Preparing students and stakeholders for leadership and success in the global workforce.**

Lake Wheeler Field Lab Farm of the Future



Become a major community engagement gateway to connect the public to agriculture and food systems

Agricultural Destination Point



Lake Wheeler Road Field Lab and Farm of the Future Concept

**Be a showcase for
leading edge.**

**Be an opportunity
for partnerships
with industry,
commodity
organizations
and others.**



In addition, Relocated and Centralized Facilities

- Storage / warehouse complex
- Small Ruminant Unit from Trenton Road
- Metabolism Unit from Trenton Road
- Horticulture Field Lab Annex



Lake Wheeler Dairy & Museum



NC STATE THINK AND DO
THE EXTRAORDINARY



Thank You