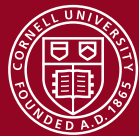


Cornell AgriTech

New York State Agricultural Experiment Station



Cornell **CALS**

College of Agriculture
and Life Sciences

Evolving Roles of Agricultural Experiment Stations at Cornell University

Jan Nyrop

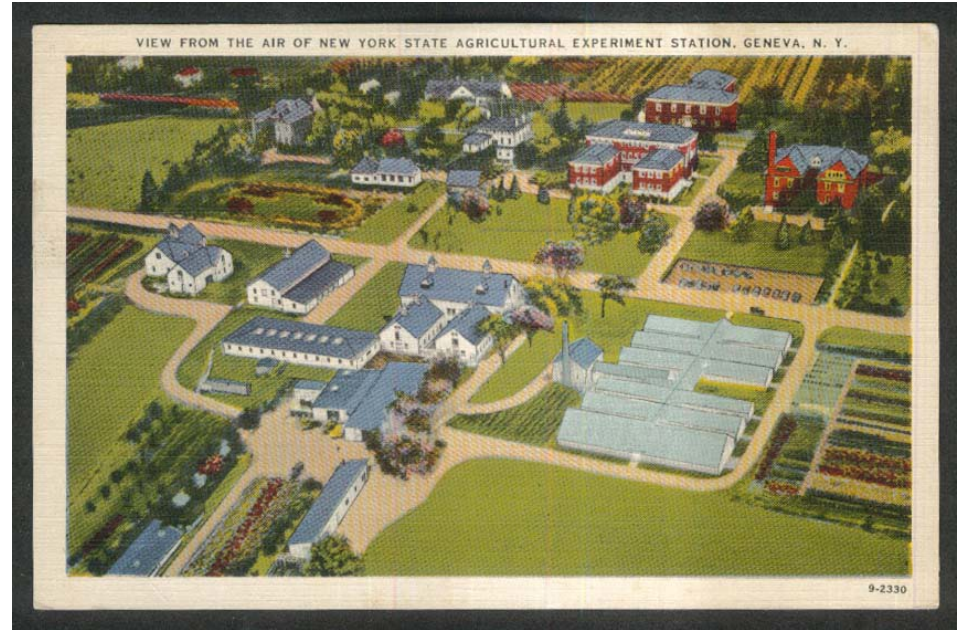
Retired Goichman Family Director

Cornell AgriTech

New York State Agricultural Experiment Station

An Agricultural Experiment Station is a scientific research center that investigates potential improvements to food production and agribusiness (*USDA NIFA*).

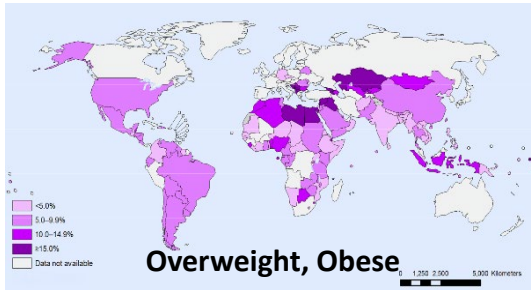
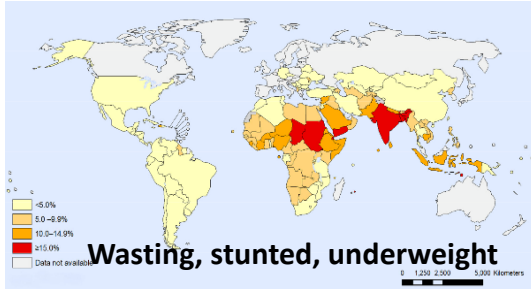
And.....



Global agriculture demands a radical transformation

Nutrition

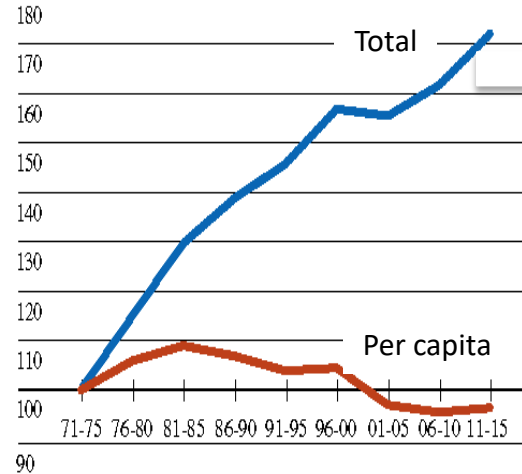
Children <5 yrs of age



http://www.who.int/nutgrowthdb/jme_unicef_who_wb.pdf

Global Grain Production 1971-2015

Index: 1971-75=100



<http://www.au.af.mil/au/awc/awcgate/cia/globaltrends2015/375781.gif>

Water



(Pacific Institute)



(www.optimumdim.com)

~40% of global food production based on irrigated agriculture, accounting for ~70% of all fresh water used by humans. (United Nations, 2012)

What is needed for radical transformation?

Analytics for Decision Support & Responsible Social Policy

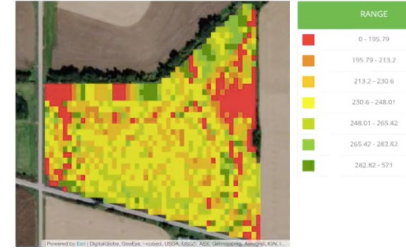
- A systems framework for hybrid mechanistic and data-driven AI models
- Predictive solutions to improve management and conserve resources

Digital Innovations for the Farm of 2030

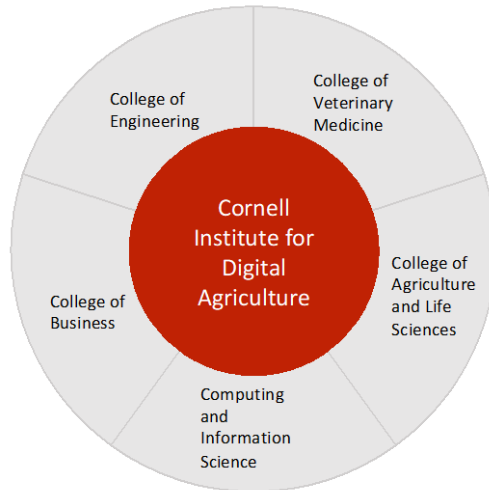
- Remote, local & *in-situ* nano-biotech sensors for sustainable operations
- Software-defined Farm™ – flexible network & cloud compute solutions

Discovery and Design of Next Generation Food Systems

- Bridging the genome-phenome gap to decode physiological phenomena
- Breakthroughs in adaptable, nutritious crops and farm operations
- Addressing the institutional challenges of data access/ownership



Developing an interdisciplinary digital agriculture initiative



A Cross-cutting Interdisciplinary Initiative

Resources invested

- Hatch \$
- Leadership
- State investments
- Faculty startup

Agrifood is an Economic Driver

Food, Agriculture and related industries make up 9.7% of NY's employment with 1.25 million people employed in Agrifood-related jobs

- On-farm jobs
- Fishing
- Food and Beverage Manufacturing
- Food Wholesale & Distribution
- Food & Beverage Stores
- Food Service, Eating & Drinking



Projected 10 Yr Economic Impacts of Increasing Food Production in NY

Investment outcome	Direct employment	Indirect and induced employment	Net GDP increase
Double production of produce	6,300	8,000	\$1,347M
20% increase in food manufacturing	9,800	19,000	\$3,391M
1,000 more farmers	1,000	600	\$115M
50% increase in organic production	800	570	\$97M

Center of Excellence for Food and Agriculture at Cornell AgriTech

URI Southern Tier proposal
2015

Plant Science
Innovation Center
proposal
2016

CoE for Food
Agriculture
conceptualized
2017

CoE funded,
Director hired
2018

Space and labs
renovated
2020

First lab tenants
2021

New York State
designated
incubator
2021

A dynamic **hub for innovation and collaboration**, the Center of Excellence for Food and Agriculture at Cornell AgriTech leverages the **unparalleled research and expertise** of Cornell University to accelerate growth and position New York State as a **global leader** in food and agricultural advancement.



How the CoE helps: A three-pronged strategy



PUSH

new technologies to
commercialization within New
York State



PULL

existing companies into New York
State, attracted by the
opportunities to work with sources
of innovation and research



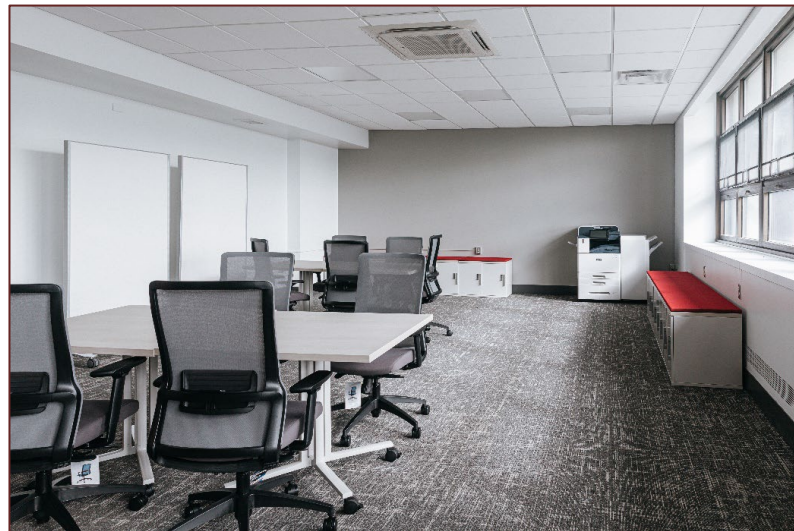
GROW

existing agriculture and food
technology companies in New York
State

CoE Impact

New and
Retained Jobs:
577

Non-Job
Economic
Impacts: **\$116**
million



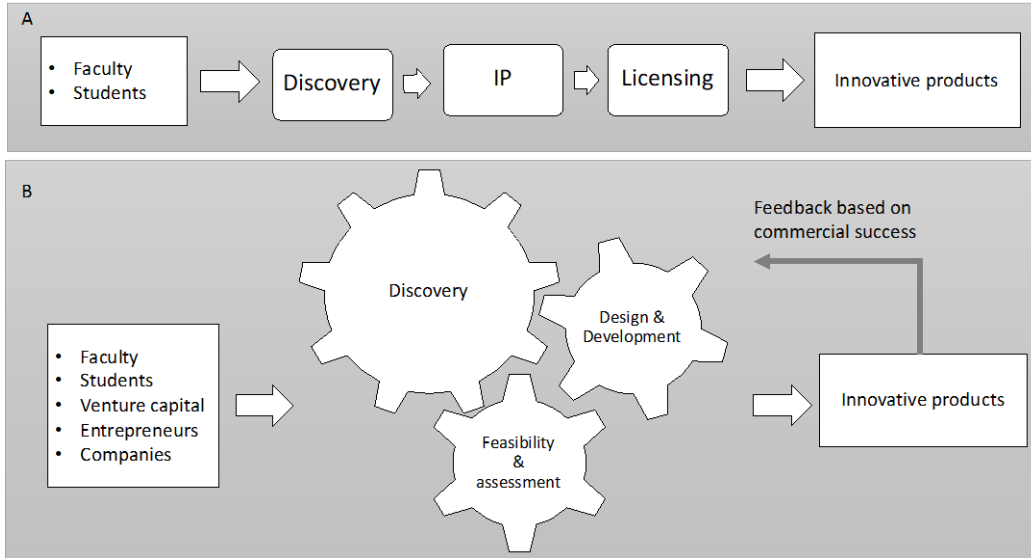
Co-Location Space

Mushroom innovation company is expanding into the new facility at the NYS Center for Excellence in Food and Agriculture

PUBLISHED ON MARCH 23, 2022



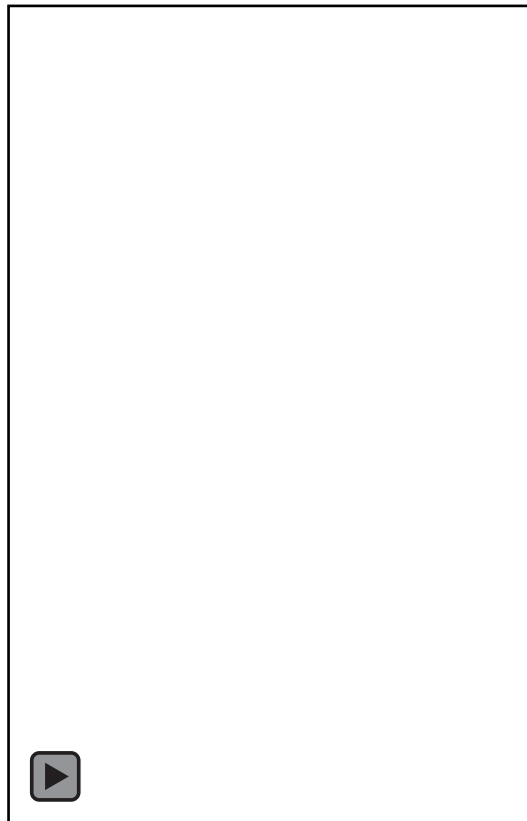
"As we explored fresh mushroom growing processes to develop our gourmet products, we asked ourselves if we could grow mushroom mycelia using the lactose sugars abundantly present in acid whey, the by-product of Greek yogurt manufacturing," said Chris Carter, Empire Medicinals' Executive Vice President and Board Member. "That led us to interesting and expansive research in the cultivation of mycelia submerged in liquid." (Courtesy Photo)



Indirect impacts of the CoE

- Expansion of the Cornell Food and Agriculture Technology Park
- Opportunity for capital project to renovate Food Science Lab
- New faculty hires
- Potential faculty endowment
- Implementation of Discovery Commercialization Engines

Personal



Abrupt





Immoral



Now

PAIN

