



# KENTUCKY STATE UNIVERSITY

## **Doctoral Programs:**

- 1. Agroecology and Sustainability**
- 2. Aquaculture/Aquatic Science**

Kentucky's Flagship PhD Programs: Integrating Research, Outreach, and  
Community Impact

# Thank you

Chairman Mr. Tipton and all members of  
the Committee,  
for your continued support, especially for  
the current Biennial funding.

# The Ask

KSU is seeking a carve-out bill for  
its USDA-supported Land Grant Program  
&

your **support** for Land Grant's PhD Programs in  
(1) **Agroecology and Sustainability; and**  
(2) **Aquaculture/Aquatic Science.**

This initiative will cultivate a highly skilled workforce in Next-  
Generation Agricultural Science and be a Leader in Agricultural  
Innovation.

# A PhD in Agroecology and Sustainability: Why NOW?



## Practical Solutions for Kentucky's Agricultural Challenges

Tackles soil degradation, mine land reclamation, and food insecurity.



## Workforce Pipeline

Produces highly skilled graduates for KY Agriculture, USDA, DOE, academia, and private sector.



## Community & Statewide Impact

Research and Extension engagement across all KY Counties.



## Financially Sustainable

Break-even at launch; leverages federal dollars into Kentucky's economy.



## Alignment reflects KSU's 1890 Land- Grant mission:

Advancing Kentucky's agriculture, environment, & communities by integrating research, teaching, & Ext.

# PhD in Agroecology and Sustainability

**Program Designation:** CIP Code 01.0308

**Definition:** A program that integrates **agricultural principles and practices** that, over the long term, **enhance environmental quality**, and makes efficient use of nonrenewable resources, and integrates natural biological cycles and controls.

**link** <https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=89195>

## Core Instructional Areas:

- Principles of agroecology
- Crop and soil sciences
- Soil fertility and nutrient cycling
- Entomology
- Horticulture
- Animal science
- Weed science and management
- Applied ecology
- Agricultural economics
- Rangeland ecology
- Watershed management





# Why Kentucky Needs a PhD Program in Aquaculture and Aquatic Science



Aquaculture is America's fastest-growing food sector

KSU has built the **#2 Aquaculture Academic Program** in the Country.



America relies too heavily on imported seafood

The US imports over 80% of its seafood, mostly uninspected and often contaminated.



Federal policy supports domestic seafood growth

Executive Order (2025): "Restoring American Seafood Competitiveness."



Expanding aquaculture enhances food security and health

Wild fisheries cannot keep up with domestic demand. **"Make America Healthy Again"**



Kentucky's opportunity for diversification and leadership

Diversifying into aquaculture strengthens rural jobs and resilience. KY can distribute fresh seafood into the interior US.

# PhD in Aquaculture and Aquatic Science

**Program Designation:** CIP Code 01.0303

**Definition:** A program that prepares individuals to select, culture, propagate, harvest, and market domesticated fish, shellfish, and marine plants, both freshwater and saltwater. Includes instruction in the basic principles of aquatic and marine biology; health and nutrition of aquatic and marine life.

**Core Instructional Areas:**

- basic principles of aquatic and marine biology;
- health and nutrition of aquatic and marine life;
- genetics and genomics of aquatic life,
- design and operation of farms and breeding facilities,
- fisheries management (\$1+ billion in KY revenue)
- water treatment – natural bodies, drinking, wastewater, industry

**link** <https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=87991>



# Notable Grant Awards and Extramural Fundings secured by KSU's Land Grant Program

Year	Secured	Source
2019-22	\$499,999	USDA-NIFA AFRI
	\$71,989	1890 Center of Excellence
	\$1,250,000	NEXTGEN
	\$2,035,000	USDA
	\$990,000	KY Ag. Dev. Fund/Board
	\$49,996	1890 Center of Excellence
	\$349,000	USDA AMR Service
Total:	<b>\$5,245,984</b>	

Year	Secured	Source
2023	\$1,500,000	NEXTGEN-UMES
	\$118,305	McIntire-Stennis funding
	\$399,197	DOE
	\$37,477	SBIRGY
	\$120,000	CEGFSD
Total:	<b>\$2,174,979</b>	

Year	Secured	Source
2024	\$8,250,000	NSF
	\$7,000,000	NSF-DARE-KY
	\$709,042	USDA-NIFA
	\$750,000	DOE
	\$380,000	USDA-ARS
	\$649,152	USDA-NRCS
Total:	<b>\$17,738,194</b>	

Year	Secured	Source
2025	\$1,359,000	KY Ag. Dev. Fund/Board
	\$193,176	USDA/Rural Business Dev
Total:	<b>\$1,552,176</b>	

**Total Sourced Funds (2019-2025)**

**\$26.7+ million**



National  
Science  
Foundation



KADF  
KENTUCKY AGRICULTURAL  
DEVELOPMENT FUND

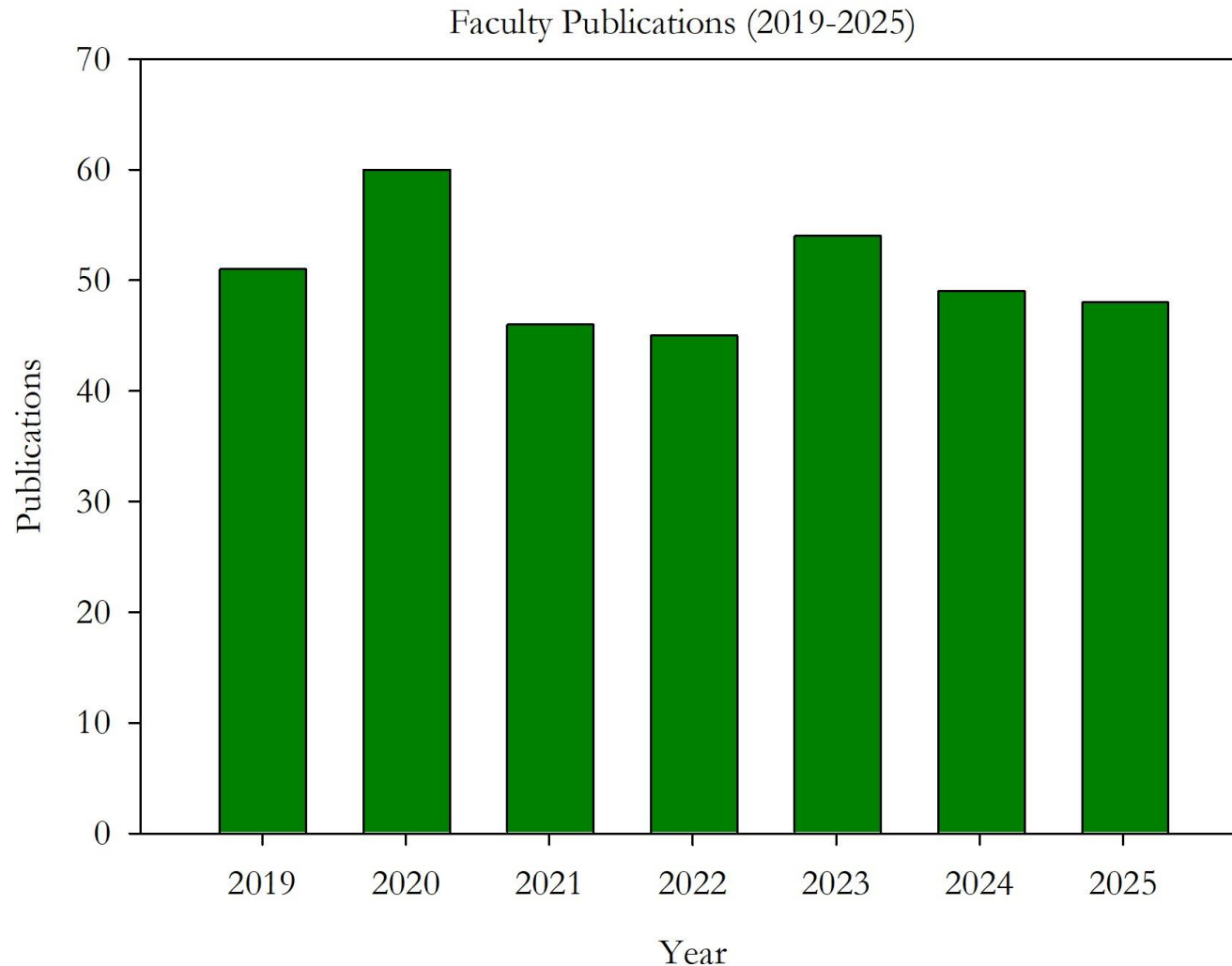


U.S. DEPARTMENT  
of ENERGY





# Scholarly Publications by Land Grant Faculty



**353+**

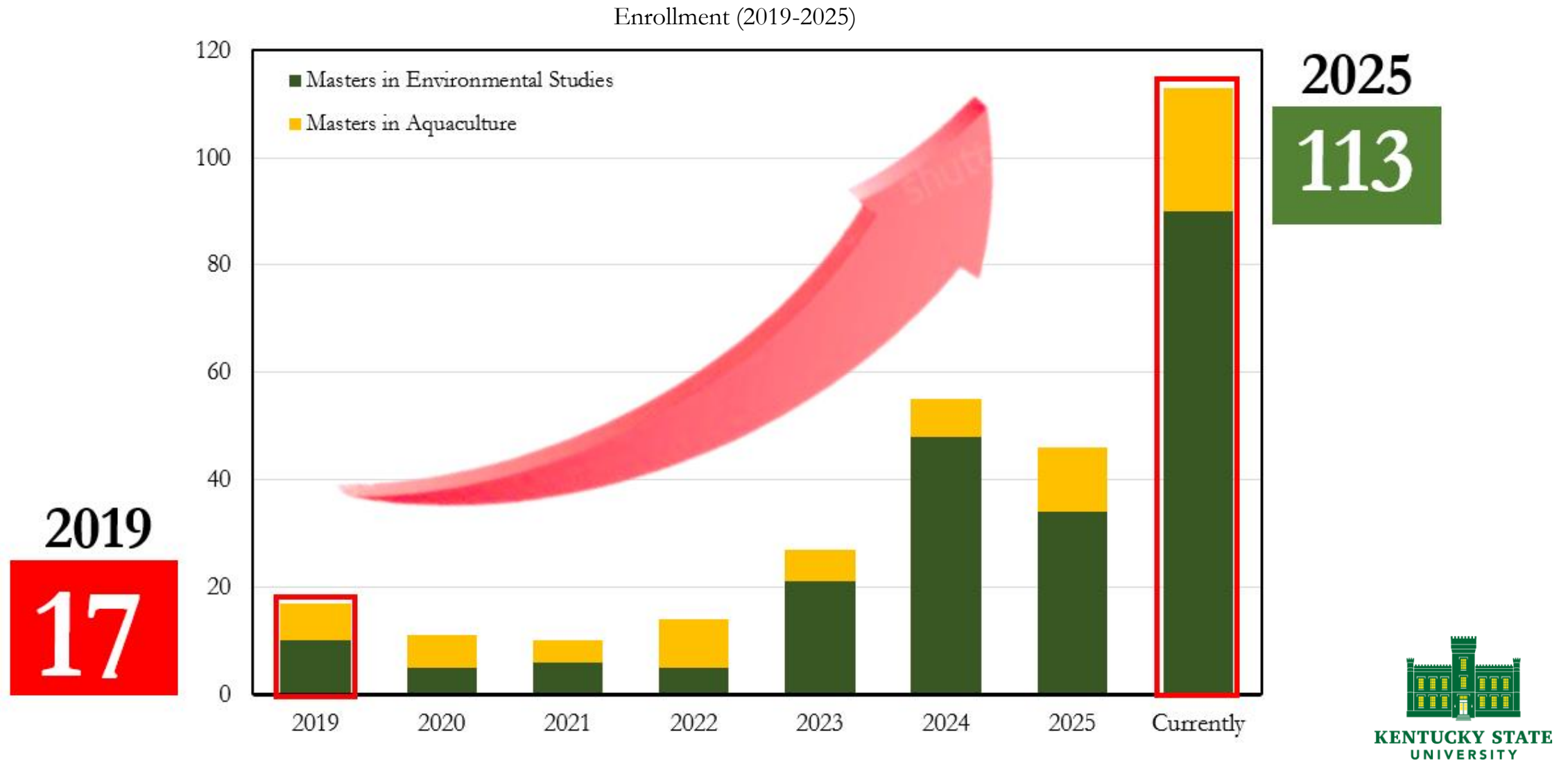
Peer-reviewed  
publications  
In past 7 years

Average **~50/year**

# Critical Mass of Qualified Faculty

<b>Biochar Technology</b> <ul style="list-style-type: none"> <li>• Dr. Gebremedhin</li> <li>• Dr. Chiluwal</li> <li>• Dr. Antonious</li> </ul>	<b>Business, Economics &amp; Statistics</b> <ul style="list-style-type: none"> <li>• Dr. Chinonso</li> <li>• Dr. Bernard</li> <li>• Dr. Dasgupta</li> <li>• Dr. Parajuli</li> </ul>	<b>GIS and Remote Sensing</b> <ul style="list-style-type: none"> <li>• Dr. Gyawali</li> <li>• Dr. Upadhaya</li> <li>• Dr. Parajuli</li> <li>• Dr. Chiluwal</li> </ul>	<b>Nutrition and Food Safety</b> <ul style="list-style-type: none"> <li>• Dr. Tope</li> <li>• Dr. Bebe</li> <li>• Dr. Wang</li> <li>• Dr. Wempe</li> </ul>
<b>Agricultural water quantity/quality</b> <ul style="list-style-type: none"> <li>• Dr. Antonious</li> </ul>	<b>Agroforestry</b> <ul style="list-style-type: none"> <li>• Dr. Onduso</li> <li>• Dr. Parajuli</li> </ul>	<b>Health and Wellness</b> <ul style="list-style-type: none"> <li>• Dr. Bebe</li> <li>• Dr. Besona</li> <li>• Dr. Tope</li> </ul>	<b>Plant and Soil Scientists</b> <ul style="list-style-type: none"> <li>• Dr. Gebremedhin</li> <li>• Dr. Pomper</li> <li>• Dr. Chiluwal</li> <li>• Dr. Obura</li> <li>• Dr. Sharma</li> <li>• Dr. Antonious</li> <li>• Dr. Kobayashi</li> <li>• Dr. Nzaramyimana</li> <li>• Dr. Wempe</li> </ul>
<b>Aquaculture</b> <ul style="list-style-type: none"> <li>• Dr. Andrew Ray</li> <li>• Dr. Waldemar Rossi</li> <li>• Dr. Durborow</li> <li>• Dr. Ken Semmens</li> <li>• Dr. Noel Novello</li> <li>• Dr. Patrick Erbland</li> </ul>	<b>Entomology and/or Integrated Pest Management</b> <ul style="list-style-type: none"> <li>• Dr. Webster</li> <li>• Dr. Kamminga</li> <li>• Dr. Antonious</li> <li>• Dr. Wempe</li> </ul>	<b>Human Dimensions</b> <ul style="list-style-type: none"> <li>• Dr. Gyawali</li> <li>• Dr. Upadhaya</li> <li>• Dr. Nzaramyimana</li> <li>• Dr. Bebe</li> <li>• Dr. Tyrell Kahan</li> </ul>	
<b>Animal Science</b> <ul style="list-style-type: none"> <li>• Dr. Carr</li> <li>• Dr. Hines</li> <li>• Dr. Bebe</li> <li>• Dr. Wang</li> <li>• Dr. Wempe</li> <li>• Dr. Valens</li> </ul>	<b>Forestry and Natural Resources</b> <ul style="list-style-type: none"> <li>• Dr. Onduso</li> <li>• Dr. Parajuli</li> <li>• Dr. Upadhaya</li> </ul>	<b>Molecular Biology</b> <ul style="list-style-type: none"> <li>• Dr. Carr</li> <li>• Dr. Pomper</li> <li>• Dr. Lai</li> <li>• Dr. Tope</li> <li>• Dr. Lu</li> <li>• Dr. Wempe</li> <li>• Dr. Webster</li> </ul>	<b>Urban and Organic Agriculture</b> <ul style="list-style-type: none"> <li>• Dr. Nzaramyimana</li> <li>• Dr. Dasgupta</li> <li>• Dr. Chowdhury</li> <li>• Dr. Obura</li> </ul>
<b>Agricultural gas emissions</b> <ul style="list-style-type: none"> <li>• Dr. Gebremedhin</li> </ul>	<b>Crop Physiology</b> <ul style="list-style-type: none"> <li>• Dr. Chiluwal</li> <li>• Dr. Nzaramyimana</li> </ul>		

# Current Pipeline: MES/MEST/Aquaculture



# Program Outcomes

- **Minimizes future gap** between demand for **highly skilled** workforce vs supply
- Tangible/measurable solutions to current challenges in fields of agroecology, **integrated farm health** and management across the State and the Appalachian region
- Create **positive economic impact** for commonwealth farmers and stakeholders in Kentucky, regionally, and nationally
- **Career placements** in USDA, DOE, academia, and industry



# The Ask!

Support KSU Land Grant's PhD  
Programs Shaping the Next Generation  
Leaders in Agroecology, Sustainability,  
and Aquaculture/Aquatic Sciences

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This institution is an equal opportunity provider.



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