The Center of Excellence for Regulatory Science in Agriculture

Kevin L. Armbrust

Claiborne Chair of Environmental Toxicology
American Chemical Society Fellow
Department of Environmental Sciences
College of the Coast and Environment
Louisiana State University
armbrust@lsu.edu

Danesha Seth-Carley

Associate Professor
Department of Horticultural Science
College of Agriculture and Life Sciences
North Carolina State University
dgseth2@ncsu.edu

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

Major Recommendations from Stakeholders

Regulatory systems created **without input from stakeholders** will not be effective or efficient

WHAT'S NEEDED?

…more effective and open communication

…a leader to advance education and facilitate communication

THIS LEADER SHOULD …

a. **Raise Awareness** of regulatory challenges

b. **Increase Cooperation** and collaboration among stakeholders

c. **Address Important Challenges** in an unbiased manner

d. **Educate the Next Generation** of regulatory scientists

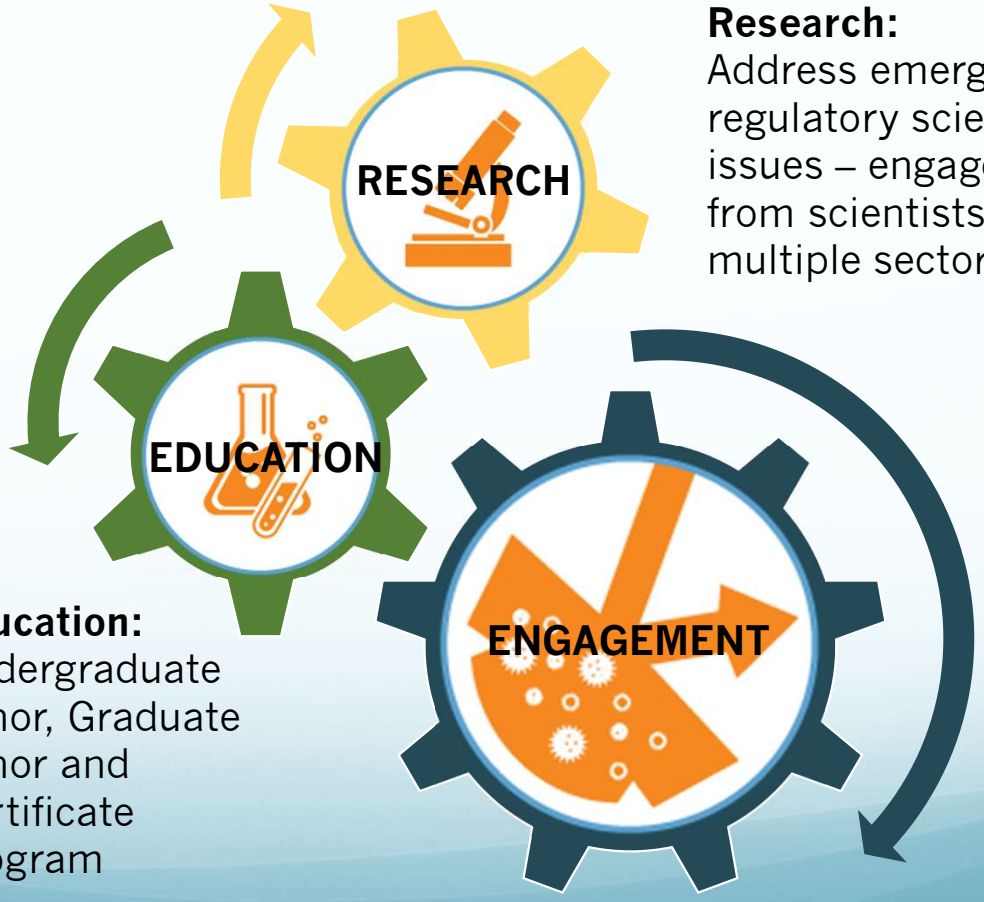
The Center of Excellence for Regulatory Science in Agriculture

VISION:

CERSA will partner with

- **Universities**
- **Federal Agencies**
- **Industry**
- **NGOs**
- **Other stakeholders**

to advance Regulatory Science in Agriculture nationally and internationally



Research:
Address emerging regulatory science issues – engagement from scientists in multiple sectors

Education:
Undergraduate Minor, Graduate Minor and Certificate Program

Engagement:
Provide a forum to bring together stakeholders including growers to address current issues

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

NC STATE UNIVERSITY

EDUCATIONAL

FOCUS

1. UNDERGRADUATE
2. GRADUATE
3. REGULATORY CERTIFICATE
4. INTERNSHIPS
5. SHORT COURSES

Education

Internships

- Four-month internship, typically over the summer.
- Interns are paid by CERSA
- Students teamed with mentoring organizations based upon joint interest
- Mentoring organizations to date have represented industry, government and NGOs.
- Can be remote or in-person

#mentoring #regulatoryscience #ag #lifesciences
NC State - College of Agriculture and Life Sciences

Entomology Grad Student Participates in First Regulatory Science Internship Program

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

Short Courses

- Emphasis on Professional Skills (Soft Skills)

- Communication skills
- Organizational skills
- People Skills
- Problem-solving Skills
- Public Speaking Skills
- Leadership Skills
- Stress-Management Skills

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

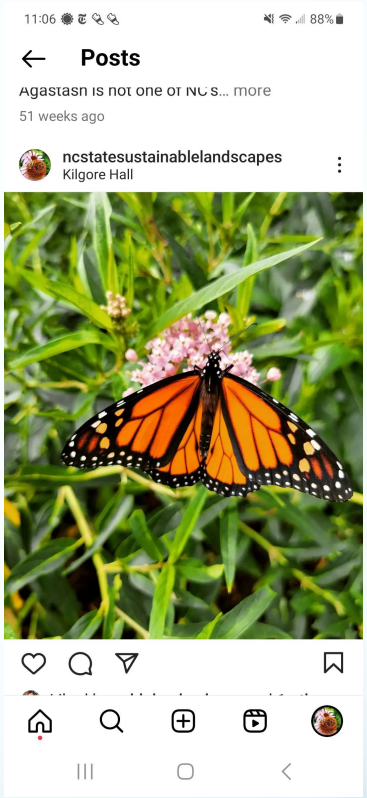
NC STATE UNIVERSITY

LSU

Short Course 1: Science Communication and Mis-Information

Goal: Help participants better understand:

- The role social media/other media plays in scientific communication
- How to advocate for use of sound science
- Benefits of using narrative tools to communicate science
- Create professional presentations and use social media with confidence



CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

Short Course 2: Leadership and Communication

Goal: Participants learn to improve their communication skills which will help them better understand their strengths and weaknesses to improve the way they communicate and lead their team

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

Regulatory Focused WORKSHOPS!
(Example) 2020 CERSA Virtual VFS Workshop

The goal was to identify and promote necessary systematic changes to incorporate filter strip technology into risk assessments and risk management. (September 8-10, 2020)

- Participants:
  - Regulatory agencies: EPA, PMRA, CDPR, IBAMA
  - Other government agencies: USDA, NMFS, AAFC
  - Academia
  - Industry
  - NGOs
  - Grower groups
- Plenary sessions followed by 3-day workshop discussion
- https://cersavfs2020.wordpress.ncsu.edu/

VFS Workshops to Advance Regulatory Science

Vegetative Filter Strips

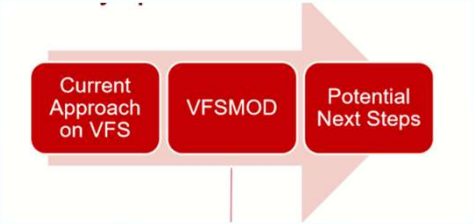
NC STATE UNIVERSITY

Dec 2018 and Sept 2020

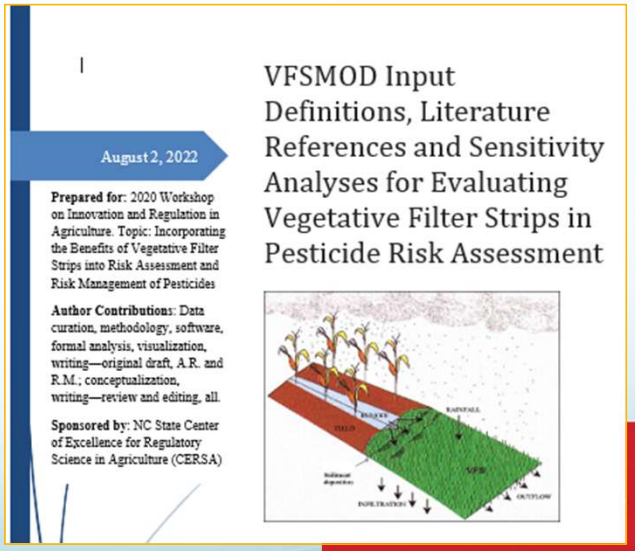
Goal: incorporation of VFS into regulatory risk assessment and management

Accomplishments:

- EPA and PMRA moving towards adoption of VFS modeling
- PMRA developed regulation and a modeling tool



- Harmonization among regulatory modeling approaches
- 2 Published papers (*in press*)



CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

LSU

2020 Advances in Regulatory Risk of Pesticide Drift – UAS and Manned Aerial Application

NC STATE UNIVERSITY

Final Report - 2020 CERSA Virtual Workshop

Sponsored by the North Carolina State University, Center of Excellence for Regulatory Science in Agriculture (CERSA)

Advances in Regulatory Risk Assessment of Pesticide Drift from Unmanned Application Systems (UAS) and Manned Aerial Application. December 1-3, 2020

Prepared by: Kevin Armbrust, Louisiana State University; Edward Bals, Micron Sprayers; Danesha Seth Carley, NC State University; Daniel Martin, USDA-ARS; Laura McConnell, Bayer Crop Science; Robert J. Soileau, Louisiana State University; Jane Tang, Bayer Crop Science; Harold Thistle, TEALS, Inc.; Gregory Watson, Bayer Crop Science

Presentations and Attendee List on Workshop Website: https://cersauas.wordpress.ncsu.edu/

Executive Summary

Spray drift is a major exposure pathway considered in pesticide regulatory risk assessment for human and environmental safety. Emergence of Unmanned Application System (UAS)-based pesticide application technology for crop production, mosquito control, and industrial vegetative management brings regulatory challenges and potential benefits for human safety and precision control of invasive weeds. Regulatory models like AgDRIFT® and AGDISP™ have been used by regulators for decades to estimate spray drift from manned aerial applications (https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/models-pesticide-risk-assessment). However, these models have not been updated to reflect many best management practices and newer technologies utilized today. This workshop focused on advancing the science around regulation of pesticide drift from both UAS and manned aerial applications. At the end of the workshop, attendees agreed upon a set of consensus statements:

"Under the auspices of the 2020 CERSA Virtual Workshop Advances in Regulatory Risk Assessment of Pesticide Drift from Unmanned Application Systems (UAS) and Manned Aerial Application, multiple stakeholders across public and private sectors agree that:

*We **promote the implementation of UAS platforms in a complementary manner** to conventional aerial and ground application equipment rather than a replacement for traditional application methods. UAS may have the potential to expand application capacity in specific use conditions.*

We recognize the need for the development of public-domain regulatory models, supported by high quality data, for the predictions of performance, drift and exposure from the use of UAS.

We commit to continuing the conversation on how to keep drift modeling for manned aircraft up to date, whether by revising default inputs or expanding assessments to consider higher tier simulations.

We further support continued research into the effect of pesticide droplet size on efficacy for all application platforms.

Therefore, we support a concerted, collaborative effort involving diverse stakeholders in academia, government research organizations, industry sectors, and other key groups to develop research protocols, empirical data & regulatory models in order to drive this effort forward."

US Regulatory Policy Workshop: Genome-Edited Microbial Products for Agricultural Use

Sep 26-27, 2022
National Academy of Sciences
Washington DC

Goal: Identify significant knowledge gaps regarding assembling a thorough risk assessment process for genome-edited microbials.

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

The USDA-FAS CERSA Partnership

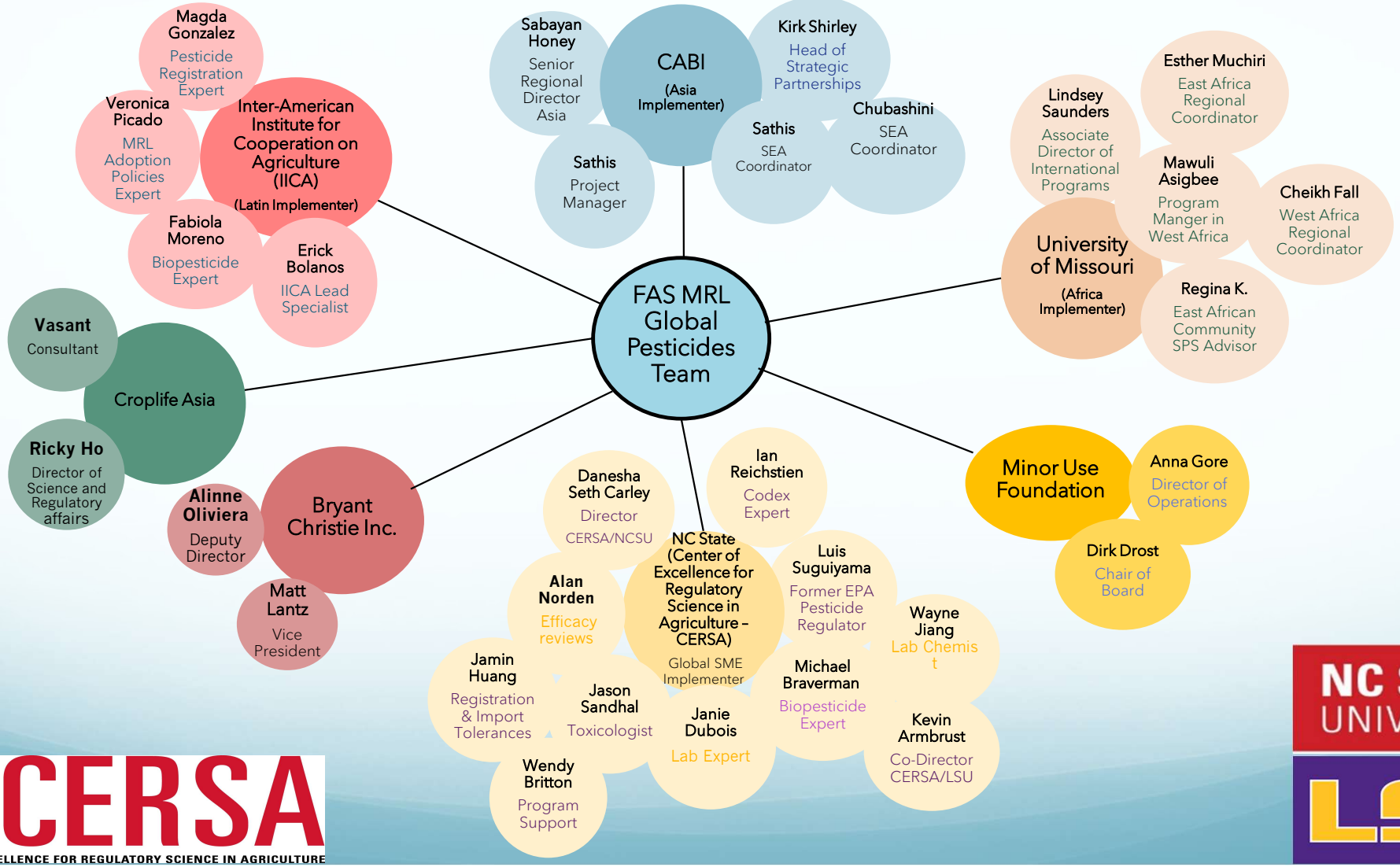
- Assist countries without robust regulatory programs to build regulatory capacity.
- Focused Asia, Latin America and Africa.
- Goals to assist with regulatory program development encouraging regional cooperation.
- Develop training programs for regulatory groups and conduct educational programs.
- Coordinate team of SMEs to work with implementing partners (MUF, IICA, CABI, Bryant-Christie, Univ. of Missouri, Croplife-Asia) in these efforts.

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

MRL Global Pesticides Implementing Partners Team Chart

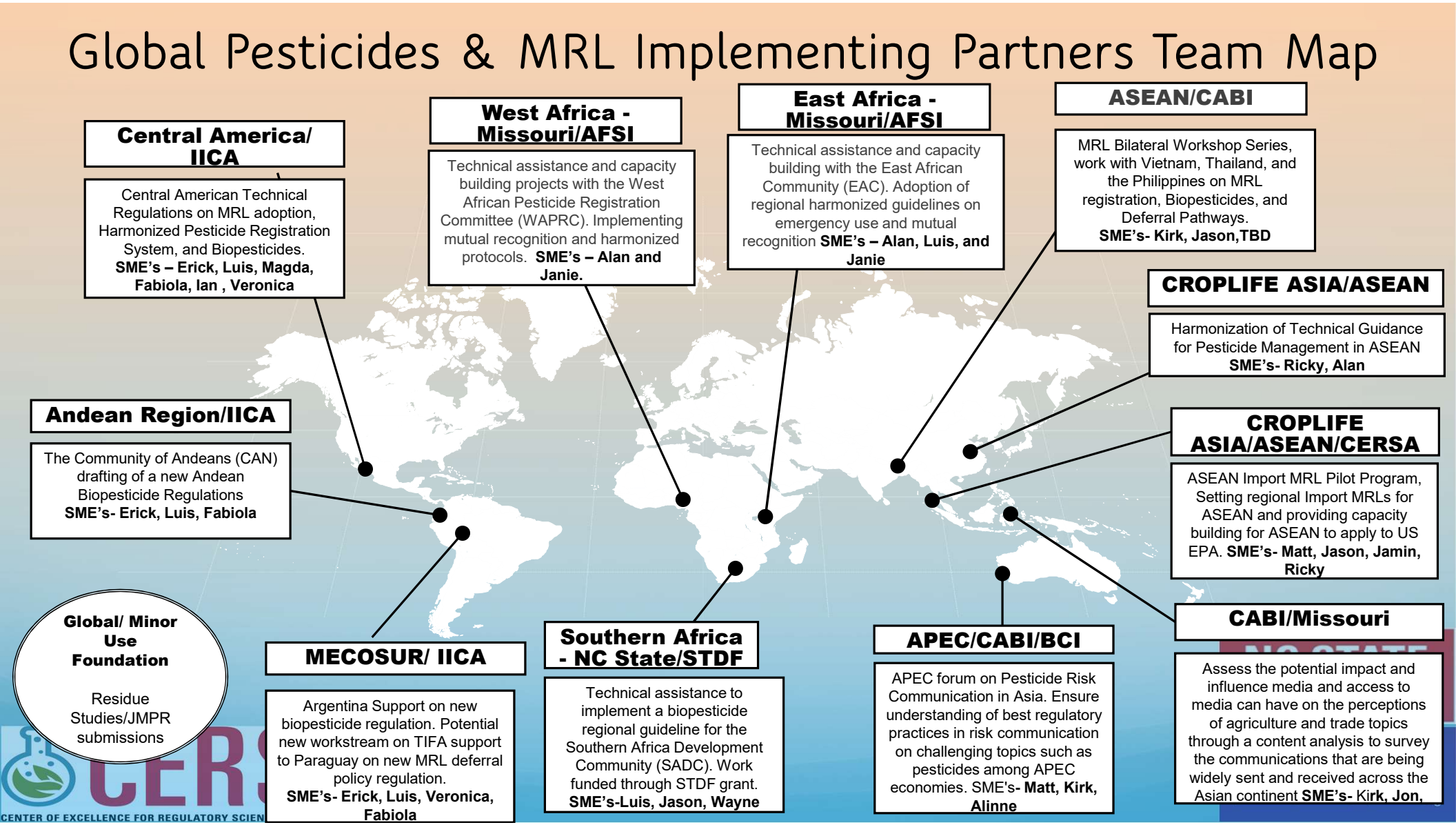


CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

Global Pesticides & MRL Implementing Partners Team Map



Central America/ IICA

Central American Technical Regulations on MRL adoption, Harmonized Pesticide Registration System, and Biopesticides.
SME's – Erick, Luis, Magda, Fabiola, Ian , Veronica

West Africa - Missouri/AFSI

Technical assistance and capacity building projects with the West African Pesticide Registration Committee (WAPRC). Implementing mutual recognition and harmonized protocols. **SME's – Alan and Janie.**

East Africa - Missouri/AFSI

Technical assistance and capacity building with the East African Community (EAC). Adoption of regional harmonized guidelines on emergency use and mutual recognition **SME's – Alan, Luis, and Janie**

ASEAN/CABI

MRL Bilateral Workshop Series, work with Vietnam, Thailand, and the Philippines on MRL registration, Biopesticides, and Deferral Pathways.
SME's- Kirk, Jason,TBD

CROPLIFE ASIA/ASEAN

Harmonization of Technical Guidance for Pesticide Management in ASEAN
SME's- Ricky, Alan

Andean Region/IICA

The Community of Andeans (CAN) drafting of a new Andean Biopesticide Regulations
SME's- Erick, Luis, Fabiola

CROPLIFE ASIA/ASEAN/CERSA

ASEAN Import MRL Pilot Program, Setting regional Import MRLs for ASEAN and providing capacity building for ASEAN to apply to US EPA. **SME's- Matt, Jason, Jamin, Ricky**

Global/ Minor Use Foundation

Residue Studies/JMPR submissions

MECOSUR/ IICA

Argentina Support on new biopesticide regulation. Potential new workstream on TIFA support to Paraguay on new MRL deferral policy regulation.
SME's- Erick, Luis, Veronica, Fabiola

Southern Africa - NC State/STDF

Technical assistance to implement a biopesticide regional guideline for the Southern Africa Development Community (SADC). Work funded through STDF grant.
SME's-Luis, Jason, Wayne

APEC/CABI/BCI

APEC forum on Pesticide Risk Communication in Asia. Ensure understanding of best regulatory practices in risk communication on challenging topics such as pesticides among APEC economies. SME's**- Matt, Kirk, Alinne**

CABI/Missouri

Assess the potential impact and influence media and access to media can have on the perceptions of agriculture and trade topics through a content analysis to survey the communications that are being widely sent and received across the Asian continent **SME's- Kirk, Jon,**

CENTER OF EXCELLENCE FOR REGULATORY SCIEN

Global MRL Project Accomplishments

- Technical Regulations for Central America (CA) for pesticide registration.
- Harmonized pesticide registration system in CA
- Technical regulations for biopesticides
- Adoption pathways developed for CA and Andean region
- Pesticide Risk Communication Needs Survey - Globally!
- West Africa – Agreement to engage with new WAPRC coordinator.
- ASEAN iMRL workshops and training conducted - 2 iMRL packages submitted to EPA.
- ASEAN Risk communication workshops

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

Project Impacts

- Conducted 111 events (virtual and in-person meetings and workshops, and online trainings) in the last 3 years across the 3 regions.
- Total of 3,911 persons in our database who have engaged in some way on this project since 2019.
  - the number is likely higher due to incomplete data during CoVID.
- Two training modules developed for Regulators, with 4 more in the pipeline.

Global MRL Alignment - Future

- Technical regulations Andean region (CAN) for registration and biopesticides
- Laboratory training and capacity building
  - Launch of regional training center of excellence in Colombia (June 2023).
  - Additional training opportunities

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU

Thank You!!!

For more information:

https://cersa.cals.ncsu.edu

CERSA
CENTER OF EXCELLENCE FOR REGULATORY SCIENCE IN AGRICULTURE

NC STATE UNIVERSITY

LSU