FIRST ACS AGRO DIGITAL CONFERENCE

Emerging Directions in Agrochemical and Crop Protection Science

Advancing chemical and biological innovation for food production, food security, health, and environmental stewardship

FEBRUARY 23–26, 2027

FIVE MAIN TOPIC AREAS (More details available at: www.agrodiv.org)

01 **Pesticide Science and Global Food Trade: Practical Solutions for Regulatory Synergies**

02 **Artificial Intelligence, Automation, and Data Science across Agricultural and Food Chemistry**

03 **Emerging Agricultural Inputs and Precision Applications**

04 **Nature-Inspired Macromolecules for Health across Food, Agriculture, and the Environment**

05 **Protection of Agricultural Productivity, Public Health, and the Environment**

CALL FOR ABSTRACTS

Submit abstracts by December 7, 2026 • https://agro2027.abstractcentral.com/

If prompted, log in or select "Create an Account" if you do not yet have an ACS account. Then select the "Submission" tab to review the main topics and submit your abstract.

Presented by the American Chemical Society Agrochemicals Division (AGRO)

Co-sponsor: **ACS Nature-Inspired Macromolecules for Health Convergent Chemistry Community**

Program chairs: Dena Barrett • dbarrett@agrodiv.org; Ed Norris • Edmund.Norris@usda.gov

CONFERENCE PROGRAM / CALL FOR PAPERS

Five Main Topic Areas

Emerging Directions in Agrochemical and Crop Protection Science

February 23–26, 2027 • Digital conference

(Session times will vary daily to maximize worldwide participation. Registered attendees will have on-demand access for 45 days to talks that have the author's permission for this feature.)

Presented by the American Chemical Society Agrochemicals Division (AGRO), with co-sponsorship from the ACS Nature-Inspired Macromolecules for Health Convergent Chemistry Community (NIM4H). This international conference brings together scientists working across chemical, biochemical, biological, computational, and hybrid approaches to agricultural and food systems, public health, and environmental stewardship.

The following five Calls for Papers describe the purpose and suggested subjects of each main topic. Researchers in academia, industry, government, and other sectors are invited to submit abstracts and contribute to cross-disciplinary scientific exchange.

01	**Pesticide Science and Global Food Trade: Practical Solutions for Regulatory Synergies** Crop protection, pesticide residues, food safety, regulatory harmonization, and resilient global trade.
02	**Artificial Intelligence, Automation, and Data Science across Agricultural and Food Chemistry** AI and automation for molecular discovery, analytical chemistry, environmental assessment, and regulatory science.
03	**Emerging Agricultural Inputs and Precision Applications** Novel biological inputs, peptides, RNAi, engineered microorganisms, and precision delivery technologies.
04	**Nature-Inspired Macromolecules for Health across Food, Agriculture, and the Environment** Nature-inspired proteins, peptides, polymers, and hybrid systems for agricultural, food, and health applications.
05	**Protection of Agricultural Productivity, Public Health, and the Environment** Broad agricultural science, analytical methods, toxicology, biotechnology, environmental fate, and health protection.

SUBMIT AN ABSTRACT BY DECEMBER 7, 2026

https://agro2027.abstractcentral.com/

CALL FOR PAPERS / MAIN TOPIC 01

Pesticide Science and Global Food Trade: Practical Solutions for Regulatory Synergies

FEBRUARY 23–26, 2027 • ACS AGRO DIGITAL CONFERENCE

PURPOSE OF SYMPOSIUM

Feeding an expanding global population requires sustainable agricultural productivity and resilient international food trade. Crop protection chemistry is vital to securing global food supplies and preventing harvest loss. However, diverging national Maximum Residue Limits (MRLs) and missing standards create non-tariff trade barriers that disrupt commodity distribution, challenge farm economies, and threaten food security. Reconciling regional pest management realities—such as critical crop protection in tropical climates—with international import requirements demands collaborative, science-based solutions.

This digital symposium convenes international regulatory authorities, research scientists, trade policy experts, and agricultural producers to examine practical approaches for facilitating trade while safeguarding public health. Participants will explore new assessment methodologies, residue deferral policies, and risk-based frameworks that reconcile divergent regional standards. By providing an accessible virtual forum, this session enables international stakeholders to overcome travel constraints and share actionable insights on harvest-planning compliance tools, global MRL establishment, and import tolerance policies. Attendees will gain practical strategies to maintain market access and deliver safe, abundant food worldwide.

SUGGESTED TOPICS

- Regulatory strategies and deferral policies addressing misaligned or missing MRLs across international trading regions.
- Practical compliance solutions and pre-harvest planning tools for growers navigating complex export market residue standards.
- Science-based approaches to trade facilitation for commodities originating from tropical climates requiring specialized pest management treatments.
- Regional import tolerance success stories and data acceptance across major commodity-importing markets.
- Dietary exposure methodologies and consumption model variations influencing international MRL establishment and consumer safety standards.
- Food processing factors and residue degradation behavior impacting compliance verification and commercial commodity trade flows.
- Collaborative partnerships among regulatory agencies, growers, and industry to resolve global trade barriers and data gaps.
- The role of the Codex Alimentarius Commission in harmonizing international food standards and facilitating global trade.
- Evolving analytical monitoring methods for official and private residue testing.

ORGANIZERS / CONTACTS

Heidi Irrig, Syngenta Crop Protection, (336) 601-2611, heidi.irrig@syngenta.com
Carmen Tiu, Global Food Standards Consulting, (317) 372-4215, carmentiu62@gmail.com
Julie L. Van Alstine, USDA, Office of Pest Management Policy, (202) 731-6477, Julie.VanAlstine@usda.gov
Arion Leahigh, U.S. Environmental Protection Agency, OPP, (202) 566-1894, leahigh.arion@epa.gov

Submit abstracts of 2,500 characters or fewer | November 9–December 7, 2026

https://agro2027.abstractcentral.com/

CALL FOR PAPERS / MAIN TOPIC 02

Artificial Intelligence, Automation, and Data Science across Agricultural and Food Chemistry

FEBRUARY 23–26, 2027 • ACS AGRO DIGITAL CONFERENCE

PURPOSE OF SYMPOSIUM

This main topic area invites contributions on artificial intelligence, machine learning, automation, and data science across agricultural and food chemistry. Applications include molecular design, crop protection discovery, formulation development, analytical measurements, food safety and quality, and environmental fate and transport. Research and case studies may address exposure and toxicity prediction, laboratory automation, robotics, experimental design, and automated pipelines, alongside generative artificial intelligence and language models for literature analysis and knowledge extraction.

The symposium brings together researchers, data scientists, laboratory practitioners, regulators, technology developers, and end users from academia, industry, and government. Participants will discuss the evaluation of methods and the integration of digital tools into research and regulatory science workflows, including evidence synthesis, study evaluation, and documentation. Discussion will emphasize data quality, standardization, integration, model validation, uncertainty, and interpretability in the context of scientific and regulatory decision-making and regulatory acceptance. Contributions are welcome to highlight operational needs, implementation challenges, and lessons learned, connecting computational capabilities with reproducible research and practical adoption.

SUGGESTED TOPICS

- Artificial intelligence and machine learning for molecular design, crop protection discovery, and formulation development.
- Machine learning and predictive modeling of environmental fate and transport, exposure, ecotoxicity, and human health endpoints.
- Laboratory automation, robotics, and experimental design for reproducible workflows and efficient data generation.
- Data science for analytical chemistry, residue detection, chemical identification, and interpretation of complex measurements.
- Artificial intelligence for food safety, authenticity, quality assessment, and contaminant prediction.
- Generative artificial intelligence and language models for literature analysis, knowledge extraction, and scientific workflows.
- Data quality, standardization, and integration to support reliable artificial intelligence applications.
- Model validation, uncertainty quantification, interpretability, and use cases in scientific and regulatory decision-making.
- Automated pipelines for research and regulatory science: evidence synthesis, study evaluation, regulatory documentation, workflow integration, end-user needs, and lessons learned.

ORGANIZERS / CONTACTS

Chris Hassinger, BASF, 919-317-2634, christopher.hassinger@basf.com
Yaoxing Wu, Syngenta, yaoxing.wu-1@syngenta.com

Submit abstracts of 2,500 characters or fewer | November 9–December 7, 2026

https://agro2027.abstractcentral.com/

CALL FOR PAPERS / MAIN TOPIC 03

Emerging Agricultural Inputs and Precision Applications

FEBRUARY 23–26, 2027 • ACS AGRO DIGITAL CONFERENCE

PURPOSE OF SYMPOSIUM

Agriculture is in a period of rapid innovation in which new classes of crop protection tools and biologically inspired solutions are emerging alongside advances in precision application and digital agriculture. This symposium will explore the science, development, regulation, and practical implementation of emerging agricultural inputs and approaches to enhance yield and lower environmental impact. The session will examine how these innovations open possibilities to improve pest management, sustainability, resource efficiency, biodiversity outcomes, and resilience of agricultural production systems.

The symposium will bring together researchers, product developers, regulators, growers, technology providers, policy specialists, and other stakeholders from around the world to discuss scientific advances, regulatory considerations, adoption challenges, and future opportunities. Particular emphasis will be placed on the intersection of novel crop protection technologies with precision application, digital agriculture, risk assessment, stewardship, and evolving regulatory frameworks. International perspectives are especially encouraged to compare approaches across regions and identify opportunities for harmonization and collaboration. This virtual-only symposium is intended to foster dialogue across sectors and disciplines while providing accessible participation for scientists and practitioners, supporting broader engagement in shaping the future of agricultural innovation.

SUGGESTED TOPICS

- Novel biological and nature-inspired molecules
- Engineered microorganisms
- Peptides
- RNAi technologies
- Precision application technologies enabling optimized input delivery
- Digital agriculture tools supporting input stewardship
- Regulatory frameworks for novel agricultural technologies
- Sustainability, biodiversity, and environmental performance assessments
- International perspectives

ORGANIZERS / CONTACTS

Sarah Hovinga, Bayer Crop Science, 916-524-8164, sarah.hovinga@bayer.com
Keith Wing, Agriculture, Keith D. Wing Consulting, retired, 302-740-6683, kdw85@verizon.net

Submit abstracts of 2,500 characters or fewer | November 9–December 7, 2026

https://agro2027.abstractcentral.com/

CALL FOR PAPERS / MAIN TOPIC 04

Nature-Inspired Macromolecules for Health across Food, Agriculture, and the Environment

FEBRUARY 23–26, 2027 • ACS AGRO DIGITAL CONFERENCE

PURPOSE OF SYMPOSIUM

Nature-inspired macromolecules, including proteins and peptides, polysaccharides, polyesters, and hybrid bio-based materials, are creating new opportunities across human and animal health, food systems, crop protection, controlled delivery, and environmental stewardship. This symposium will connect scientists and practitioners who design, characterize, manufacture, regulate, and apply these materials. Presentations will examine how molecular structure and processing control performance, how biological and cell-free production can enable scalable manufacturing, and how analytical tools, artificial intelligence, and life-cycle assessment can guide safer and more effective products.

The symposium welcomes researchers, product developers, regulators, growers, food and health professionals, standards organizations, and sustainability leaders from academia, industry, government, and nonprofit organizations. International perspectives are encouraged, especially on regulatory alignment, access to enabling technologies, and region-specific agricultural and public-health needs. The intended outcomes are practical connections across disciplines, clearer development and regulatory pathways, and new collaborations that translate macromolecular science into solutions for health, food security, agricultural productivity, and environmental protection.

SUGGESTED TOPICS

- Nature-inspired proteins, peptides, polysaccharides, polyesters, and hybrid macromolecular systems
- Macromolecular carriers for controlled delivery of agricultural, nutritional, and health-related active ingredients
- Renewable feedstocks, biomanufacturing, cell factories, and enzymatic synthesis for scalable production
- Analytical characterization of molecular structure, heterogeneity, stability, degradation, and biological interactions
- Artificial intelligence and computational tools for macromolecular design, function prediction, and formulation
- Food, crop, animal-health, therapeutic, diagnostic, wound-care, and antimicrobial applications
- Safety, risk assessment, biodegradation, environmental fate, life-cycle analysis, and sustainability performance
- Regulatory, standards, commercialization, and international perspectives for responsible market adoption
- Translating nature-inspired macromolecules research into commercial and societal impact
- Improving the quality of natural and nature-inspired macromolecules.

ORGANIZERS / CONTACTS

Wei Gao, ACS NIM4H CCC, 646-894-5912, weigao@acs-np-ccc.org
Jun Wang, ACS NIM4H CCC, 718-568-4970, junwang@acs-np-ccc.org
Lingyun Chen, University of Alberta, lingyun1@ualberta.ca
Michael Appel, U.S. Department of Agriculture (Retired), michael.appell@gmail.com
Charlie Fehl, Wayne State University, Charlie.fehl@wayne.edu
Rachelle Bienstock, RJB Computational Modeling LLC, rachelleb1@gmail.com

Submit abstracts of 2,500 characters or fewer | November 9–December 7, 2026

https://agro2027.abstractcentral.com/

CALL FOR PAPERS / MAIN TOPIC 05

Protection of Agricultural Productivity, Public Health, and the Environment

FEBRUARY 23–26, 2027 • ACS AGRO DIGITAL CONFERENCE

PURPOSE OF SYMPOSIUM

This general session provides an opportunity for scientists to submit papers on topics that are not covered by the four main topic areas that are the focus of this digital conference.

SUGGESTED TOPICS

- Advances in Agrochemical Residue, Analytical and Metabolism Chemistry, and Metabolomics
- Agricultural Biotechnology
- Agriculture in Urban and Peri-urban Environments: Food Production, Structural Protection, Turf and Ornamentals, Water Reuse, and Down-the-Drain Chemistries
- Agrochemical Toxicology and Mode of Action
- Air Quality and Agriculture
- Bioenergy, Bioproducts, and Biochars: Advances in Production and Use
- Biorational Pesticides, Natural Products, Pheromones, and Chemical Signaling in Agriculture
- Communication
- Developments in Integrated Pest Management and Resistance Management
- Discovery and Synthesis of Bioactive Compounds
- Ecosystem Exposure and Ecological Risk Assessment
- Formulations and Application Technology
- Human and Animal Health Protection: Vector Control, Veterinary Pharmaceuticals, Antimicrobial, and Worker Protection Products
- Human Exposure, Health, and Risk Assessment
- Non-Food/Feed Production and Uses of Ag Commodities and Byproducts
- Regulations, Harmonization, and MRLs
- Technological Advances and Applications in Agricultural Science (e.g., nanotechnology, genetically modified organisms, and biocontrol agents)

ORGANIZERS / CONTACTS

Dena Barrett, dbarrett@agrodiv.org
Beth Lorsbach, beth.lorsbach@nufarm.com
Edmund Norris, Edmund.Norris@usda.gov

Submit abstracts of 2,500 characters or fewer | November 9–December 7, 2026

https://agro2027.abstractcentral.com/