

PICOGRAM v. 104

with Call for Papers



ACS FALL 2023

Elevating Chemistry

Denver, Colorado, USA – Hybrid

August 18 – 22, 2024



Call for Papers

ACS Fall 2024 Meeting, Elevating Chemistry

August 18 – 22, 2024

Denver, Colorado, USA

Each year, in addition to our traditional award/tribute symposia, the AGRO Division programs specific symposia in most, but not all, of our standing programming areas. Presentations for those standing program areas not included in listed symposia will be grouped in AGRO's general poster session.

Agricultural Biotechnology

- Expanding Strategies of Biotechnology for Pest Management: *Early Career Symposium*

Agrochemical Residue, Analytical and Metabolism Chemistry, and Metabolomics

- Elevating Analytical Chemistry in Agriculture Research and Development
- Radiolabeled Metabolism Studies: Execution, Trends, and Challenges
- Agrochemical Residue Analytical Methods: Regulation and Methodologies Across Global Platforms

Agrochemical Toxicology and Mode of Action

- New Modes of Action from Bench to Market
- Getting out of the Toxicology Rat Race: Development to Adoption of New Approach Methodologies (NAMs)

Air Quality and Agriculture

- Measuring, Modeling, and Mitigating Airborne Transport of Pest Control Products

Biorationale Pesticides, Natural Products, Pheromones, and Chemical Signaling in Agriculture

- AGRO International Award: Symposium in Honor of Dr John M Clough for his Contributions to the Discovery of Natural Product-Inspired Agrochemicals
- Discovery, Development, and Usage of Essential Oils in Agricultural Applications
- Semiochemicals for Sustainable Agroecosystems: Early Career Symposium
- Exploring Microbial Metabolites for Pest Management

Discovery and Synthesis of Bioactive Compounds

- Polymorphism Challenges and Opportunities in Active Ingredient Development

Ecosystem Exposure and Ecological Risk Assessment

- Elevating Knowledge from the Informed Local Community to the National FIFRA/ESA Assessment Platform
- Evaluation of Pesticide Mitigation Effectiveness for Endangered Species Risk Assessments
-

Environmental Fate, Transport, and Modeling of Agriculturally related Chemicals

- Environmental Fate, Transport, and Modeling of Agriculturally related Chemicals
- Carbon and Nitrogen Dynamics in the Unsaturated Zone

Formulations, Process Chemistry, and Application Technology

- Formulation: Advances, Boundaries and Future

Human and Animal Health Protection: Vector Control, Veterinary Pharmaceutical, Antimicrobial, and Worker Protection Products

- Identifying and Developing New Tools for the Sustainable Control of Disease Vectors

Human Exposure, Health, and Risk Management Impact of Climate Change on Agriculture and Food Security

- Adapting Agriculture Chemistry to a Changing Climate- Impact of Climate Change on Ag Food Security
- Food Security: Tackling World Hunger CCC: Highlighting Chemistry from Multiple Divisions

Non-Food/Feed Production and Uses of Ag Commodities and Byproducts

- Update on Cannabis as an Agricultural Crop and Beyond
- Assessment of Effects of Sulfoxaflor and Related Insecticides on Hymenopteran Pollinators and Aquatic Invertebrates
- Beyond Honeybees: Exposure, Toxicity and Risk Assessment for Pollinator Insects, Including Species of Conservation Concern

Regulations, Harmonization, and MRLs

- Elevating Regulatory Harmonization to Reduce World Hunger and Increase Food Security

Technological Advances and Applications in Ag Science

- Precision Application of Agricultural Pesticides for the Benefit of Society and the Environment
- Unmanned Aerial Systems (aka Drones): Pesticide Spraying and Other Agricultural Applications

Special Topics and General Symposium

- Protection of Agricultural Productivity, Public Health, and the Environment (General Session)
- Good Laboratory Practices (GLP) – How to Conduct Studies Under the Regulatory Environment

Awards Co-sponsored with AGFD and Others

- USDA-ARS Sterling B. Hendricks Memorial Lectureship Award
- ACS Kansas City Division Kenneth A. Spencer Award
- Journal of Agriculture and Food Chemistry Article Award



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Adapting Agriculture Chemistry to a Changing Climate: Impact of Climate Change on Ag Food Security

Purpose of Symposium

This symposium will focus on the adaptations needed in agriculture to address climate change and feed an increasing population. Effects of climate change on crop production through changes in temperature, precipitation, extreme weather events, and pest pressure; altering trade and regulations; and the impacts of cultural practices used to sequester carbon in crop production and the development of carbon incentives will be explored. Farming practices, trends in climatology and historical evidence will be examined. Modifications to agricultural chemistry and adaptation practices for agronomic and specialty crop production systems will be investigated.

Regulatory authorities and international agencies such as EPA, PMRA, EFSA and FAO are addressing climate change and have begun implementing plans and approaches to guide agriculture towards best practices. This symposium is designed to not only highlight and discuss regulatory advances but also research related to climate change.

Presentations will be organized under the sub-topics of (a) Climate Change Effects on Crop Protection, (b) Climate Change and Food Safety, (c) Climate Change and Pesticide Environmental Fate and Risk Assessment, and (d) Climate Change and Carbon Sequestration in Crop Production. This symposium may be of interest to the ACS divisions AGFD, CELL, ENFL, ENVR, and TOXI.

Suggested Topics

- Impacts on crop distribution: historical trends and projections
- Evolution and adaptations of agronomic and specialty crop system
- Evolution and changes in pest complexes and geographic ranges
- Changes in pest control practices and pesticide use, including market response
- Impacts on pesticides in the environment (leaching/runoff/erosion/degradation)
- Risks to beneficial insects and endangered species from climate change and associated adaptation practices
- Impacts on soil, air, and water quality
- Adapting models for pesticide environmental risk assessments
- Impact of carbon sequestration practices in crop production on pests, pesticide use, and the environment
- Modifications in agricultural chemistry to adapt to climate change

For further information, contact the organizers

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ACS International Award for Research in Agrochemicals Symposium in Honor of John M. Clough for his Contributions to the Discovery of Natural Product-Inspired Agrochemicals

Purpose of Symposium

This symposium is in honor of John M. Clough, recipient of the 2024 ACS International Award for Research in Agrochemicals.

The world is facing increasing global challenges in ensuring a sustainable food supply, with climate change, limited land and water resources, and pressure on existing crop protection solutions from resistance and changing regulations. We will need to combine the best of traditional and new approaches in crop protection R&D to discover and develop new products that will address these challenges and ensure the security of global food supplies,

This symposium will bring together the leaders in these fields to discuss both historical perspectives and cutting-edge new technology and approaches. It will be of interest to anyone working in the field of agrochemistry, as well as those in medicinal chemistry (MEDI), organic synthesis (ORGN) and computational chemistry (COMP).

Suggested Topics

- Natural products as a source of inspiration for disease, insect and weed control, and in crop enhancement – new methods and historical perspectives
- New chemistry and targets for disease, insect and weed control, and crop enhancement – discovery, synthesis, and structure-activity relationships (SAR)
- New modalities in crop protection (e.g., peptides, PROTACs, biologicals) – opportunities and challenges
- New and sustainable approaches to the discovery, synthesis, and development of agrochemicals
- Application of AI, machine learning and data science to agrochemical discovery
- Novel approaches to tackling the development of resistant pests and weeds
- Future trends, challenges, and opportunities in agrochemistry

For further information, contact the organizers

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Agrochemical Residue Analytical Methods: Regulation and Methodologies Across Global Platforms

Purpose of Symposium

Development of residue analytical methods is facing increasing challenges as regulatory guidelines demand greater sensitivity, selectivity, and lower limits of quantitation. These demands align with global regulatory requirements for comprehensive analysis. These methods of analysis play a crucial role in data generation for risk assessment and post registration monitoring, encompassing both consumer safety (food and feed) and environmental fate (soil, sediment, water, and air) sample analyses.

This symposium aims to focus on recent advances in analytical methods which offer innovative, cost-effective, high through-put and high-quality solutions. It will delve into the development of challenging analytical methods, driven by evolving regulations, such as the requirement for lower limits of quantitation, i.e., 25 ng/L water method, and the analysis of complex matrices, e.g., tea, hops, pollinator matrices such as honey and pollen. Additionally, the growing emphasis on detecting lower abundance degradates in environmental matrices, e.g., soil/sediment, surface waters, and groundwater, will be discussed.

Representatives from industry, academia, and government are invited to share their perspectives on analytical method development and validation approaches. The symposium will encourage valuable discussions and debates concerning the diverse strategies employed to provide analytical data for global safety assessments. Furthermore, this symposium holds relevance for various ACS Divisions including ANYL, ENVR, and AGFD.

Suggested Topics

- Innovative analytical methods exploring the application of cutting-edge technologies
- Challenges in methods developments and analyzing complex matrices, i.e., tea, hops, bee honey and pollen, processed food items, body-fluid methods
- High through-put methods with automation for routine analysis
- Selexlon, HRMS, Flow Injection Method, SFC, Dart MS/MS
- Multi-residue methods for residue analysis – advantages and limitations
- The role of multi-residue methods, e.g., AOAC, EN QuEChERS, and S19, in meeting global residue monitoring requirements
- Extraction efficiency testing for residue methods using radiolabeled metabolism samples and non-radiolabeled incurred field samples
- Method development and validation, such as crop grouping strategies, and application of novel technologies to align with global regulatory guidelines, e.g., SANTE
- Instrumentation utilization for data generation and enforcement leveraging technology for effective analysis
- Residue methods with isomeric separation techniques, i.e., use of chiral column, normal phase HPLC, etc.

For further information, contact the organizers

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Assessment of Effects of Sulfoxaflor and Related Insecticides on Hymenopteran Pollinators and Aquatic Invertebrates

Purpose of Symposium

Insecticides used to protect crops from damage by sap feeding insects, e.g., sulfoxaflor, are essential for efficient food production, but effects on nontarget species must be minimized. The assessment of potential effects of pesticides on nontarget species, risk assessment, is a complex scientific endeavor that requires the conduct and critical evaluation of standard regulatory tests. Risk assessment must also consider the results of innovative non-standard tests, including those in the open published literature. The significance of both standard and nonstandard test results can be judged using systematic validity rating criteria.

In this symposium, the standardized analysis of the quality and relevance of available studies on two groups of species: Hymenopteran pollinators and aquatic invertebrates will be presented and discussed, using the example of sap-feeding insect control products.

Suggested Topics

- Reports of systematic study quality and relevance rating systems
- Quality criteria for judging the validity of reports for use in risk assessment
- Sequential or tiered approach to risk assessment
- Conceptual models of routes of exposure in the agroecosystem
- Comparison of margins of exposure for pollinators or aquatic species for sulfoxaflor and other relevant insecticides used for control of sap-feeding insects, e.g., neonicotinoids, organophosphates, and pyrethroids
- Critiques of standard and nonstandard test methods
- Interaction of biological behavioral and ecological factors in risk assessment

For further information, contact the organizers

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Beyond Honeybees: Exposure, Toxicity and Risk Assessment for Pollinator Insects, Including Species of Conservation Concern

Purpose of Symposium

Pesticide risk assessment must extend to all pollinator species affected by agricultural activities. Honey bees are used as a surrogate species to represent insects in the early stages of risk assessment, but where there is an indication of specific concern or where there may be unique routes of exposure, the testing of other species of insects is desirable.

While non-target arthropod (NTA) studies provide some information that may be useful for assessing risks, the routes of exposure, species, and life stages assessed in current studies are of limited value.

In this symposium we are seeking presentations on methods and test results for a wider range of insects to facilitate advances to the risk assessment approaches for pollinators. Other ACS Divisions that might be interested included ANYL and ENVR

Suggested Topics

- Pesticide toxicity test methods and results with bees other than honey bees
- Extrapolating across pollinating insects
- Standardization and ring test validation of methods
- Probabilistic approaches to multispecies risk assessment
- Multispecies sensitivity screening methods and results
- Population modeling for risk assessment
- Landscape-level risk assessment methods
- Updates in risk assessment approaches for pollinators by regulators
- Methods of reducing exposure to pollinators

For further information, contact the organizers

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Carbon and Nitrogen Dynamics in the Unsaturated Zone

Purpose of Symposium

This symposium aims to foster a deeper understanding of the intricate biogeochemical processes beneath the earth's surface. Outcomes will include promoting awareness and elucidating the mechanisms governing carbon and nitrogen cycling in the vadose zone, assessing the impact of these dynamics on groundwater quality and ecosystem health, identifying current challenges and opportunities for sustainable management, remediation of subsurface environments leading to the development of vadose zone-centric technologies, and encouraging interdisciplinary collaboration among participants.

Environmental scientists (ENVR), biogeochemists (GEOC/BIOL), agronomists (AGRO), and policymakers should attend this symposium. Policymakers can learn about sustainable land use practices, nitrogen pollution mitigation, and carbon sequestration strategies. Environmental scientists will benefit from cutting-edge research on carbon and nitrogen dynamics, while agronomists can better understand nutrient management for sustainable crop productivity.

Biogeochemists will find relevance in subsurface biogeochemistry and resource exploration. International and national issues to be discussed include the transboundary movement of pollutants through groundwater, shared management of natural resources, and global climate change mitigation through carbon sequestration in the vadose zone.

Attendees will address policy challenges related to land-use planning, pollution control, and sustainable agriculture. Ultimately, the symposium will provide dynamic networking opportunities to address these pressing scientific, environmental, and policy concerns.

Suggested Topics

- Biogeochemical Cycling: Explore processes governing carbon and nitrogen cycling in the subsurface.
- Land-use Impacts: Impacts of land use and land management practices (agricultural, forestry, and urban) on subsurface carbon and nitrogen dynamics
- Groundwater Contamination: Advances in monitoring and modeling subsurface soil to understand potential carbon, nitrogen, or contaminant migration into groundwater.
- Soil Management: Implications for sustainable agriculture, ecosystem health, and environmental management
- Carbon Sequestration: Biogeochemical implications of subsurface carbon storage.
- Emerging Technologies: Explore innovative technologies on subsurface nitrate mitigation and carbon sequestration.
- Climate Change: Analyze the impacts of climate change on carbon and nitrogen dynamics in the vadose zone and explore potential mitigation strategies.
- Policy and Regulation: Examine the policy and regulatory frameworks related to vadose zone management, addressing pollution control, sustainable land use, and carbon trading.

For further information, contact the organizers

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Discovery, Development, and Usage of Essential Oils in Agricultural Applications

Purpose of Symposium

This symposium is intended to provide a platform for reporting recent discoveries, development, and application examples of how essential oils can be used for the management of various agricultural and household pests. Pest management applications will include insects, fungi, and weeds with an added interest in potato sprout control and CIPC essential oil replacement alternatives.

This symposium will include new discoveries as well as adaptations and repurposing of readily available and scalable essential oils.

Suggested Topics

- Biogeochemical Cycling: Explore processes governing carbon and nitrogen cycling in the subsurface.
- Commercial usage of essential oils in pest management
- Usage as insecticides, fungicides, and herbicides
- Development to commercialization/EPA registration
- Utilization of essential oils for the control of potato sprout inhibition
- Field studies on the use of essential oils as herbicides
- Bioassay-directed isolation and identification of bioactive constituents present in essential oils
- Novel essential oil investigations and discoveries
- Repurposing commercially available essential oils for pest management usage.

For further information, contact the organizers

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Elevating Analytical Chemistry in Agriculture Research and Development

Purpose of Symposium

This symposium will bring together scientists to discuss emerging trends, applications, and advances in analytical method in support of sustainable and productive agriculture research and innovation.

Suggested Topics

- Sample preparation
- High throughput workflows
- Innovative chromatography techniques
- Chiral analysis
- High resolution mass spectrometry application

For further information, contact the organizers

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Elevating Knowledge from the Informed Local Community to the National FIFRA/ESA Assessment Platform

Purpose of Symposium

For a number of years, the FIFRA Endangered Species Task Force (FESTF) has co-organized ACS AGRO sessions to address the complicated and challenging issue of Endangered Species Act Consultation on pesticide registration under the Federal Insecticide, Fungicide, Rodenticide Act. Despite many scientific approaches to refined risk assessment, consolidated risk evaluation (grouping species and/or products), and spatial modeling of species range or suitability of that range to species needs, the core issue remains the same: the underlying data is massive on a national scale, always changing and resource intensive to access, keep updated and manage in an assessment process.

This symposium explores access and exchange of such data can be tapped by inviting Fish and Wildlife Service species experts from Western states and USDA agricultural experts from those areas that the FWS-speaker covers to address species and agricultural intersections. Other possible presenters are invited to share their ideas of what data are important, how or if data can be rapidly gathered and represented or assessed, and what attributes of data are most impactful to the evaluation process.

Pesticide registrants, users, regulatory and wildlife management agencies, and NGOs attending AGRO and ENVR sessions will have an interest in the program.

Suggested Topics

- Stakeholder engagement
- Risk assessment documentation
- Critical species and agricultural data access and management
- Employment and improvement of datasets
- Applying improved datasets
- Identifying data important to endpoints and protection goals
- Data aggregation and update timing

For further information, contact the organizers

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Elevating Regulatory Harmonization to Reduce World Hunger and Increase Food Security

Purpose of Symposium

As registrants, regulators, and academics we are all dedicated to providing the most efficient means of producing food and feed to meet the predicted increase in the global population, while ensuring the environment, population, and consumers are free from harm of any kind. What if science allows for advances to feed the hungry and provide a nutritious diet but regulatory difference amongst nations was the biggest obstacle to feeding the hunger?

Agricultural science can and will expand its toolbox to increase production of major crops and specialty crops by incorporating new emerging technologies. However, a critical component will be the streamlined national regulatory processes, as well as harmonization of standards for food trade. This symposium will discuss options for further harmonization practices when setting trade standards and implementation policies for enforcement across countries. International best practices will be presented and their ability to enhance trade of food with friendly policies and solid scientific, risk-based policies. Other ACS Divisions that might be interested in this symposium: ANYL, ENVR, ORGN, and AGFD.

Suggested Topics

- Role of agricultural science in meeting the demand for sustainable agricultural chemistry products
- Evolution of US export markets over the past 60 years
- Row crop challenges and asks of chemical registrants; what is needed?
- Biggest hurdles for specialty crops growers trading produce around the world
- Impact of non-scientific restrictions on pesticides on food security and affordability
- Freedom to trade for food processors in channels of trade (not raw agricultural commodities)
- Uniting testing standards for OECD and Codex members
- Use on compliance residue testing information for trade and consumer confidence.
- What is Codex's role in feeding the world in the new paradigm?
- Success in Asian markets; how do we make it easier to farm and trade to Taiwan, Japan, and Korea?
- Implementation of OECD Mutual Acceptance of Standards for food trade

For further information, contact the organizers

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Environmental Fate, Transport, and Modeling of Agriculturally Related Chemicals

Purpose of Symposium

Effective risk assessment and risk characterization of pesticides and other agriculturally-related chemicals requires detailed measurement and prediction of their distribution and fate in the environment. Spatial and temporal differences, fate process coupling and interaction, cultural practice implementation and changing climates add substantial variability to pesticide fate assessments. This symposium will improve knowledge and identify research needs to address this critically important topic. Results are expected to improve the accuracy and confidence in pesticide exposure and risk assessments, further increasing their regulatory utility.

Presentations describing original research, case studies, and literature review which address these, and related topics are encouraged. Scientists and regulators engaged in all aspects of pesticide exposure assessment, modeling, and fate evaluation will benefit by active participation. Other ACS divisions that may benefit from attending and participating in this symposium are ANYL, ENVR and AGFD.

Suggested Topics

- Relating laboratory and field fate measurements
- Environmental monitoring study conduct and interpretation
- Novel laboratory or field fate study designs
- Bioavailability and bound residues investigation
- Novel kinetic descriptions of degradation pathways
- Regulatory relevance of modeling, monitoring, and environmental fate measurements
- Policy implications of modeling, monitoring, or environmental fate
- Modeling of exposure mitigation practices
- Measurement or modeling of exposure from precision farming applications (e.g., drones, smart sprayers)
- Utilization of geospatial techniques for fate evaluations

For further information, contact the organizers

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Evaluation of Pesticide Mitigation Effectiveness for Endangered Species Risk Assessments

Purpose of Symposium

There is a pressing need for more holistic data on the effectiveness of mitigation practices in reducing runoff, erosion, and associated pesticide losses from agriculture under different conditions and for different pesticides. This symposium aims to bring together researchers from industry, government, consulting, and academia who wish to fill that knowledge gap. The objective will be to produce collaborative efforts focused on supporting the implementation of targeted quantitative mitigation practices that will reduce pesticide losses and increase protection of vulnerable species. Highlighted research areas might include quantification of the effectiveness of pesticide mitigation practices (via field, laboratory mesoscale or modeling/numerical study designs), improvement or expansion of existing methods for quantifying effectiveness of practices, evaluation of geographic variability in feasibility/applicability of mitigation practices, and/or development of strategies that incorporate the targeted quantitative mitigation effectiveness into the risk assessment process. This topic is relevant not only to agricultural lands in the United States, but also to the European Union (EU), Latin America, and other governments with goals that include optimizing pesticide use and reducing offsite loss and impacts.

Suggested Topics

- Scalable field and laboratory measurement of pesticide mitigation effectiveness
- Quantification of pesticide mitigation effectiveness
- Variability in feasibility and applicability of pesticide mitigation practices
- Strategies for incorporating quantitative mitigation effectiveness metrics into exposure modeling and risk assessment.
- Exchange on existing policies from different countries and regions
- Modeling tools to simulate the effectiveness of mitigation measures
- Mitigation effectiveness and climate change

For further information, contact the organizers

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- Rafael Muñoz-Carpena, University of Florida, carpena@ufl.com

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Expanding Strategies of Biotechnology for Pest Management: Early Career Symposium

Purpose of Symposium

Pest management strategies are urgently needed to help feed a growing global population. Such strategies need to maintain natural communities while addressing public, animal, and plant health needs. Exciting biotechnological advances are being made for pest management that provide safer and sustainable alternatives to conventional control strategies. Biotechnology-based pest control approaches focus on molecular biology and genetic engineering techniques and include products that utilize *Bacillus thuringiensis* (Bt) toxins and RNA interference (RNAi). But also, Omics (genomics, transcriptomics, proteomics, and metabolomics) where studies are uncovering the challenges of pest management at varying molecular levels. Additionally, small peptides provide an exciting alternative management strategy with the ability to block arthropod-vectored viral diseases. To address this burgeoning area, this symposium will merge established and early career scientists in the fields of biotechnology, chemistry, and biology to discuss exciting data that advances crop protection and supports public health. Considering that biotechnology is multidisciplinary covering diverse areas with practical applications, this symposium will be of wide interest to the members AGRO and beyond, but also an international network of scientists.

Suggested Topics

- RNA interference for pest and disease management
- Advancing the Omics (genomics, transcriptomics, proteomics, lipidomics, and metabolomics)
- Small peptide pesticides
- Pesticidal proteins
- Transgenic plants/crops

For further information, contact the organizers

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Exploring Microbial Metabolites for Pest Management

Purpose of Symposium

The purpose of this symposium is to advance the understanding and application of microbial metabolites in pest management, ultimately fostering sustainable and environmentally friendly solutions to global pest challenges.

Through this symposium, attendees will gain insights into cutting-edge research, innovations, and practical applications of microbial metabolites for pest management. Outcomes include the dissemination of knowledge on how microbial metabolites can replace or complement traditional chemical pesticides, reducing environmental harm and promoting healthier ecosystems. Policy implications and regulatory aspects associated with adopting these sustainable pest management strategies will be explored.

Attendees will find this symposium invaluable as it provides a platform for networking, knowledge exchange, and a deeper understanding of the ecological and economic benefits associated with microbial metabolites in pest management towards a more sustainable and pest-resistant world.

Suggested Topics

- Microbial metabolite discovery and characterization.
- Biological mechanisms.
- Field applications and case studies.
- Ecological impacts.
- Regulatory and policy considerations.
- Commercialization and industry integration

For further information, contact the organizers

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Food Security: Tackling World Hunger CCC: Highlighting Chemistry from Multiple Divisions

Purpose of Symposium

Zero Hunger is one of the U.N. Sustainable Development Goals (SDG-2). This symposium will highlight how early career investigators from Food Security CCC divisions (AGFD, AGRO, ANYL, ENVR) address global hunger challenges. The goal is to illustrate how early career investigators are applying chemistry to explore and overcome challenges in alleviating world hunger. It aims to cover sustainable agricultural practices, innovative food safety techniques, better environmental strategies, and more.

We invite researchers, policymakers, industry professionals, and educators interested in chemistry's role in food security to attend. The event will facilitate interdisciplinary networking, promote scientific-policy integration, and explore international cooperation in food security. This symposium represents a vital platform for advancing global food security solutions through scientific collaboration and innovation.

Travel awards are available for a total of 8 awardee duos (Principal Investigator for an oral presentation AND a graduate/undergraduate student for a poster presentation, 2 for each division). Details can be found on the Division websites.

Suggested Topics

- *Optimizing Current Production:* Enhance efficiency and yield in existing agricultural systems using advanced techniques and sustainable practices
- *Minimizing Loss:* Implement strategies to reduce post-harvest losses through improved storage, transport, and packaging methods
- *Minimizing Waste:* Develop strategies to decrease food waste at all stages from production to consumption
- *Adapting Production to Environmental Stress:* Develop and apply resilient farming methods to counteract climate change impacts like drought and heat
- *Selection and Design of New Varieties:* Use genetic engineering and traditional breeding to create crops with better yields, nutritional profiles, and disease resistance
- *Exploring Alternative Nutritious Food Sources:* Investigate sustainable, less resource-intensive food sources such as legumes, insects, and algae to diversify diets

For further information, contact the organizers

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Mike Morello, PepsiCo (retired), mjmorello226@gmail.com

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January 8 – April 1, 2024



Call for Papers

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Denver, Colorado, USA

Formulation: Advances, Boundaries, and Future

Purpose of Symposium

Formulation science plays a pivotal role in various industries by providing innovative solutions to enhance the performance, stability, and usability of products. It entails all aspects of product formulation from initial concept, simulation, through pilot production, the development of prototypes, to farm or market testing.

This symposium aims to explore new avenues in formulation science through the development of advanced formulations, pushing the boundaries of current knowledge and capabilities. Identify current challenges in formulation science across different industries.

The objective is to address existing challenges and discover new and current formulation methods that offer improved properties, enhanced efficacy, and reduced environmental impact. Opportunities to collaborate with industry partners in testing and validating formulations in real-world applications will be explored. Participants are invited from government, academia, private, industry, and others to join in this discussion which is intended to be multi-disciplinary. ACS divisions interested may be ENVR and ORGN.

Suggested Topics

- Nanoformulation synthesis and applications trends
- Fundamental of various state of formulations
- Trends in encapsulations
- Development of advanced formulations with improved performance attributes
- Modeling, digitalization, and simulation in formulation

For further information, contact the organizers

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Getting out of the Toxicology Rat Race: Development to Adoption of New Approach Methodologies (NAMs)

Purpose of Symposium

Despite the rapid development of methods and technologies for evaluating chemical safety, the adoption of New Approach Methodologies (NAMs) in regulatory contexts has been relatively slow. This may be due in part to the need to adapt relevant legislation, the lengthy process to validate NAMs, limitations of the context of use of alternative methods, or lack of confidence that alternative data are good predictors of toxicological responses and protective of human and environmental safety.

The purpose this symposium is to bring together innovative leaders to highlight new testing and assessment strategies that incorporate the use of NAMs as well as identify opportunities and strategies that advance the adoption of NAMs in safety assessment frameworks. Presentations are encouraged that 1) evaluate the utility of NAMs with case studies defining their scope of application in regulatory decision making or 2) address aspects of policy and regulations that would increase adoption of NAMs and shorten transition times for their acceptance in regulatory frameworks.

Suggested Topics

- Linking NAMs to adverse outcomes within tiered assessment schemes
- Case studies using NAMs in a weight of evidence for regulatory decision making
- Addressing limitations and barriers to NAMs acceptance for regulatory decision making and chemical safety
- Communicating safety in the NAM paradigm
- Strategies for public acceptance products based on NAM safety assessments
- Ensuring NAMs validated for the proper context of use, including approaches for characterizing sensitivity/specificity of NAMs and optimizing approaches for validating NAMs
- Use of NAMs in early safety assessments and improving our understanding of their possible applications
- Strategies for incorporating NAMs into next generation risk assessment schemes (NGRA)
- Increasing applicability and reliability for quantitative *in vitro* to *in vivo* extrapolation (QIVIVE)
- Approaches for testing “difficult” substances (e.g., volatility, solubility) with NAMs

For further information, contact the organizers

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Identifying and Developing New Tools for the Sustainable Control of Disease Vectors

Purpose of Symposium

New public health and veterinary diseases are becoming more prevalent with global climate change and the continual encroachment of human habitation into new sylvatic environments. To make matters worse, resistance to legacy chemical pest control technologies continues to burgeon in disease vectors, making it even more difficult to deal with this growing threat. Therefore, it is imperative that new and innovative vector control tools and strategies are continuously developed.

This symposium will highlight research and development of novel control tools and the field deployment of new and previously utilized strategies in innovative ways. This will include both chemical and non-chemical control technologies, as both strategies will be essential in future pest control regimens. It is our hope that the presentations and discussions part of this symposium will inspire future technologies and research consortia that can better develop viable solutions into the future.

Suggested Topics

- Tick control
- Mosquito control
- New technologies for public health vector control
- Field application of new tools
- Veterinary/agricultural pest control
- Repurposing insecticides for new pests
- Insecticide resistance in vectors
- Insect-host interactions and repellents

For further information, contact the organizers

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Measuring, Modeling, and Mitigating Airborne Transport of Pest Control Products

Purpose of Symposium

Preventing or minimizing the effects of pest control products on non-target areas has become of more interest with the EPA releasing the draft Herbicide Strategy Framework to Reduce Exposure in response to the Endangered Species Act.

Methods for measuring and modeling the movement and mitigating the impact will continue to be the subject of research and regulation. Research has focused on characterizing and quantifying pesticide drift and volatility, and its underlying causes, or on technologies to reduce, eliminate, or mitigate its effects. Injury to non-target crops from herbicide applications has received the most attention, but the environmental impact from other classes of pesticides, while less noticeable, is also important.

The purpose of this symposium is to discuss current research including refinements in understanding the underlying causes, modeling movement, solutions including management and mitigation technologies, environmental impact, directions for future research, and the perspective from regulatory agencies. Other ACS Divisions that may be interested are ANYL, ENVR, and AGFD.

Suggested Topics

- Method and techniques to measure off-site movement of pesticides
- Modeling airborne transport of pesticides
- Development of tools for management and mitigation
- Effect of new application technologies (UAV, See and Spray, spot treatment, etc.) on drift and volatility
- Comparison of drift potential from various application systems
- Bystander exposure
- Regulatory agency perspectives
- Role of technology manufacturers in mitigating off-site movement

For further information, contact the organizers

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New Modes of Action from Bench to Market

Purpose of Symposium

This symposium brings together all players—from discovery to formulator to regulator to end-user—challenged to provide growers new means of tackling global pest issues through new modes of action. Through their science, and perspectives in meeting those challenges, this symposium aims to give the audience a fuller appreciation and perspective of what a novel mode of action means, and how different roles and missions create interesting challenges.

Speakers will include those involved with new modes of action who:

- discover active substances,
- formulators and applications scientists who make them work,
- scientists who identify their market,
- regulators who weigh their risks, and
- end users who are ultimately looking for them

Everyone excited to learn about the challenges of bringing the next big thing to the world of agrochemicals to come and hear from our speakers is invited to participate. Speakers and audiences from BMGT, BIOL, ENVR, MEDI, and SCHB can add to the sharing and learning potential of this symposium.

Suggested Topics

- Discovery of new modes of action
- Challenges encountered in formulating and delivering new modes of action
- Challenges in promoting and marketing new modes of action
- Regulatory risks specific to new modes of action
- Resistance management: are we solving a problem or creating another?
- End-user needs for new modes of action

For further information, contact the organizers

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Polymorphism Challenges and Opportunities in Active Ingredient Development

Purpose of Symposium

Polymorphism is the existence of different crystalline forms of the same molecular entity. In a broader, colloquial sense, polymorphism encompasses all solid forms of a given molecule, including hydrates, solvates, salts, and amorphous solids.

The purpose of this symposium is to raise awareness of the implications of polymorphism for the development of crop protection active ingredients and provide scientific insight into the observed impact of polymorphism on bioefficacy, formulation stability, and regulatory studies. This symposium also aims to provide practical guidance for navigating the challenges and opportunities presented by polymorphism.

This symposium is of particular interest to scientists working in the development and commercialization of crop protection active ingredients, either as a biologist, formulation scientist, chemist, process development engineer, or regulatory scientist. It is also of interest to those exploring fate process known and yet to be discovered. Other ACS Divisions that may have interest in this symposium include I&EC, ENVR, COMP, TOXI, ANYL, and ORGN.

Suggested Topics

- Impact of polymorphism on bioefficacy: mechanistic insights, and case studies
- Formulation design for actives exhibiting polymorphism
- Implications of polymorphism for regulatory studies and registration
- Intellectual property considerations for polymorphs
- Polymorph control strategies for crystallization process development and manufacturing
- Stabilization of amorphous or metastable solid forms
- Analytical techniques for solid form characterization, including quantitative analysis of mixtures or amorphous content
- Experimental and computational solid form screening strategies

For further information, contact the organizers

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Precision Application of Agricultural Pesticides for the Benefit of Society and the Environment

Purpose of Symposium

Precision application of pesticides is gaining broad attention in North America and globally as environmental, societal, and business demands increase the pressure on farming and its potential impacts. Many definitions are used to describe this method of application, from targeted, spot, patch, or banded applications to the intelligent identification of specific pests and/or crop area and subsequent real-time spraying; the key common denominator being a less-than-whole-field approach for herbicides, fungicides, insecticides, and/or other foliar product applications. Some estimates suggest that by utilizing smart systems pesticide usage can drop by approximately 75% compared to broadcast application, making it highly versatile in various site-specific crop and usage scenarios. Precision application falls under the broader umbrella of Precision Agriculture, a field leveraging location-specific data to enhance agricultural efficiency, leading to improved and tailored productivity, quality, profitability, and sustainability.

Due to the interdisciplinary nature of Precision Application, many stakeholders are separately active in this space, from governmental bodies (regulatory and research sectors), the pesticide industry, academia, equipment manufacturers, and farming associations. This symposium aims to begin to break down these silos to encourage cross pollination of knowledge of the technology and collaboration in this space.

Suggested Topics

- Current technology overview of precision application devices/systems/approaches
- Key equipment technology cornerstones that determine performance outcomes of precision application systems
- Evaluation of the performance of precision application systems with respect to efficacy, off-target spray drift, operator exposure, etc.
- Demonstration of data linking to clear societal and environmental benefits of precision application approaches
- Regulatory risk assessment and possibilities for incorporating precision application into risk mitigation strategies and policies (for example the Sustainable Use Regulation and the Endangered Species Act)
- Regulatory aspects, including permitting, labeling, consideration of drift-reducing technology, and best management practices
- Obstacles, opportunities, and approaches for grower adoption of precision application

For further information, contact the organizers

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Protection of Agricultural Productivity, Public Health, and the Environment: General Session

Purpose of Symposium

The AGRO Division currently has programs in a number of topic areas, but not all topics are developed into a technical symposium at every meeting.

The General Session therefore allows our members and other scientists to submit papers even though a specific symposium topic is not offered

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
- Environmental Fate, Transport, and Modeling of Agriculturally-related Chemicals
- Formulations and Application Technology
- Human and Animal Health Protection: Vector Control, Veterinary Pharmaceutical, 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)

For further information, contact the organizer

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Radiolabeled Metabolism Studies: Execution, Trends, and Challenges

Purpose of Symposium

The purpose of this symposium is to discuss radiolabeled plant, animal, and environmental fate metabolism studies that are required for the registration of Plant Protection Products (PPPs). This symposium will include presentations of research related to study design, guidelines, (radio)labeling strategies, technological innovation, and current and future approaches using both advanced instrumentation and sample preparation techniques.

Industry, academia, and government representatives are invited to share their perspectives on radiolabeled metabolism studies. The symposium will encourage discussion and debate about these core metabolism studies that are foundational to global safety assessments. Other ACS divisions that may benefit from this symposium are ANYL, ENVR, and AGFD.

Suggested Topics

- Revised/updated test guidelines and the impact on studies.
- Studies conducted with the application of new technologies, i.e., SFC, smaller sample size
- High through-put HPLC methods and/or automation
- Utilization of new technology, i.e., SelexION, HRMS, Flow injection method; SFC, Dart MS/MS
- Studies with isomeric separation techniques, i.e., use of chiral column, SFC, normal phase HPLC, 2-D HPLC
- Extraction efficiency testing for residue methods using radiolabeled metabolism samples
- Challenges for structure identification due to the presence of low radioactivity in the test samples
- Challenges in identification of small, polar transformation products
- Methodologies for post extracted solids (PES), i.e., enzymatic extractions, mild and harsh acid/base extraction
- Bound residue analysis for aerobic/anaerobic soil and aquatic metabolism studies

For further information, contact the organizers

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Semiochemicals for Sustainable Agroecosystems: Early Career Symposium

Purpose of Symposium

Sustainable agroecosystems are important for providing sufficient food for a growing population without adversely impacting the environment. Crops are exposed to a range of pests and pathogens which reduce crop quality and yield, therefore sustainable crop protection methods are needed.

Semiochemicals are development- or behavior-modifying chemical signals produced by a range of organisms including plants, insects, and microorganisms, enabling them to communicate intra- and inter-specifically. Semiochemicals can be exploited to benefit crop production through mechanisms including induced crop defense against pests, enhancing crop biomass, and signaling to beneficial predators/parasitoids for pest control. Identifying semiochemicals involved in these biological activities and developing an understanding of their biological roles can enable the development of novel, sustainable tools to increase crop productivity and address the need to provide sufficient food for an increasing population.

This symposium will highlight the research of early career researchers (e.g., Ph.D. graduate students, post-doctoral researchers, and early-career scientists), across academia, industry, and government. The aim of the symposium is to provide a way for early career researchers to build international networks, and develop research collaborations, to help address future challenges facing food security. The symposium welcomes participants from other ACS divisions, including AGFD, ANYL, BIOT, and ENVR.

Suggested Topics

- Chemically mediated interactions between plants, insects, and microbes; above and below ground interactions
- Analytical tools to identify novel semiochemicals, including gas chromatography (GC) coupled with flame-ionization detector (GC-FID), GC-Mass Spectrometry (GC-MS), GC-Electroantennography (GC-EAD), and thin-layer chromatography (TLC)
- New or improved headspace volatile collection methods
- Natural products and biological control of crop pests and pathogens in agricultural and forestry ecosystems
- Application of semiochemical-based strategies for the management and control of pests, from lab to field, such as, attractants, repellents, oviposition deterrents, push-pull systems
- Isolation, structural elucidation, and synthesis of novel semiochemicals
- Formulation aspects of semiochemicals for crop protection

For further information, contact the organizers

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Unmanned Aerial Systems (aka Drones): Pesticide Spraying and Other Agricultural Applications

Purpose of Symposium

This symposium is intended to facilitate dialogue among scientists in agriculture-related fields to examine the opportunities and challenges in technical and regulatory areas associated with the use of unmanned aerial systems (UASs, aka drones) in agriculture. Presentations related to pesticide spraying or spreading, pollination, field scouting, and related topics are encouraged.

The symposium will provide a forum for interactions and exchange of latest developments among academic, industry, and government experts. It will enhance understanding of UAS spraying and related activities that may have implications for agriculture and related industries, public interest, and the environment, as well as stimulating progress toward developing this new technology on a sustainable path. This symposium may be of interest to other ACS divisions such as Environmental Chemistry (ENVR) and Analytical Chemistry (ANYL).

Suggested Topics

- Development of UAS technology for use in agriculture, public health, and industrial vegetative management including integration of a spraying module into UAS design
- UAS utilization in the end-to-end agricultural supply chain
- UAS integration with generative AI
- UAS spraying – evaluation of in-field performance, off-target spray drift, operator exposure, etc.
- Scouting and remote sensing facilitated by UASs
- Unconventional uses of UASs in agriculture (e.g., pollination, non-liquid applications, etc.)
- Evaluation of different UAS design factors affecting performance in the field
- Model development for evaluating UAS performance for off-target exposure and risk assessment
- Regulatory aspects, including permitting, labeling, consideration of drift-reducing technology, and best management practices
- Addressing challenges associated with payload/power constraints and ultra-low volume spraying
- Socio-economic factors, including challenges and opportunities (e.g., labor, public support, etc.)

For further information, contact the organizers

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Update on Cannabis as an Agricultural Crop and Beyond

Purpose of Symposium

This symposium will explore the intersection of regulation, analysis, research efforts and utility of cannabis as an agricultural crop. Recent market trends will be discussed through scientific and regulatory lenses.

Suggested Topics

- Update on international standards and regulations
- US Federal and State regulatory updates and considerations (movement towards harmonization)
- Hemp and the 2018 Farm Bill: loophole interpretations.
- Delta 8, 10, HHC (synthetic, semi-synthetic, THCA flower)
- Expectations of the 2025 Farm Bill
- You can do more than smoke it: building materials, soil remediation, terpenes for cloud/rain nucleation, textiles, 500000 other things
- What cannabis is learning about pesticides testing-legacy pesticides, e.g., need expanded screens, DDT use in WA
- Molecular plant health screening technologies
- HPLVd
- New and novel research, e.g., what can we add to make this less generic
- Realities of cannabis compliance testing, i.e., overview, lab shopping, potency inflation, life since CA method, MU

For further information, contact the organizers

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