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Pesticide Formulation and Delivery Systems:

39th Volume, Innovation Formulation,
Application and Adjuvant Technologies
for Agriculture



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Douglas J. Linscott



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Foreword

THIS COMPILATION OF Selected Technical Papers, STP1619, *39th Symposium on Pesticide Formulation and Delivery Systems: Innovative Formulation, Application and Adjuvant Technologies for Agriculture*, contains peer-reviewed papers that were presented at a symposium held October 23–25, 2018, in Washington, DC, USA. The symposium was jointly sponsored by ASTM International Committee E35 on Pesticides, Antimicrobials, and Alternative Control Agents, and Subcommittee E35.22 on Pesticide Formulations and Delivery Systems.

Symposium Chair and STP Editor:

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Overview

The 39th Annual Symposium on Pesticide Formulation and Delivery Systems was held in Washington, DC, on October 23–25, 2018. The program was sponsored by the ASTM E35 Committee on Pesticides, Antimicrobials, and Alternative Control Agents and organized by subcommittee E35.22.

The symposium was titled “Innovative Formulation: Application and Adjuvant Technologies for Agriculture.” Twenty-seven presentations were delivered across multiple technical disciplines during the three-day program.

This symposium brought together many different stakeholders, including pesticide producers, suppliers, students, academia, governmental agencies, technology businesses, equipment suppliers, dealer/distributor representatives, and adjuvant producers. The symposium drew 200 attendees.

The program included presentations related to:

- Regulatory trends impacting agrochemical formulations
- Application technologies related to drift control
- Product stewardship, sustainability and safety
- Product development technology advancements
- Physical and chemical test methods related to crop protection products
- Adjuvant technology
- UAS and aerial application advancements

Kerry Leifer, Acting Branch Chief for Inert Ingredients with the US EPA Office of Pesticide Programs, served as our keynote speaker. The symposium attendees appreciated his address and subsequent hosting of the participant Q&A session. We also want to share our best wishes to retiring US EPA Branch Chief Dr. P. V. Shah, with our thanks for his engagement with E35.22.

Dr. Bradley Fritz (USDA-ARS) delivered a presentation and a subsequent Q&A session that proposed leveraging a drift reduction program employed in Australia as a framework for future spray drift regulations. Spray drift reduction standards remain an important regulatory priority and concern for pesticide and adjuvant producer stakeholders.

Dr. Dennis Wujek (Corteva Agriscience), shared his approach for designing sustainability into a new active ingredient herbicide formulation. These efforts earned the 2018 ACS Green Chemistry Challenge and an R&D 100 award recognition for corporate social responsibility.

Dr. Fred Whitford (coordinator for Purdue Pesticide Programs) was invited to share his wealth of extension service experience. He delivered an informative overview for safe and effective pesticide uses, including many farm safety practices. Fred also engages many E35.22 members to serve as subject matter experts for developing their high-quality extension service educational publications.

Dr. Durham Giles (UC Davis Biological & Agricultural Engineering) shared insightful application research with remotely-piloted aircraft for agricultural spraying across multiple settings and learnings about some airspace regulatory constraints for safe application practices. The topics presented at the conference were, as usual, wide-ranging and representative of the diverse stakeholder participation in E35.22, combined with the multi-disciplinary nature for pesticide formulation and application methods. Ten papers were chosen for inclusion for this group of Selected Technical Papers (STP).

The most prevalent topic for this STP involve aerial application technology advancements, which are represented by papers from Dr. Giles, Dr. Fritz, Mr. Wayland Singh, and Mr. Guilherme Sousa Alves.

Dr. Logan Dempsey's paper explores spray drift reduction technology advancements as related to oil-phase viscosities in emulsion-based systems.

Several papers shared useful formulation technology advancements, such as those by Dr. Jason Wall, whose paper is related to fertilizer compatibility aids, and Dr. Alan Stern, whose paper regards a novel formulation approach to combine a water conditioning agent with an adjuvant surfactant.

A paper on useful adjuvant technology developments for tank mixtures with glufosinate is included, authored by Dr. Fernanda Costa. A paper on the topic of fundamental physical property assessments for adjuvant mixtures with glyphosate/PPO herbicide mixtures by Miss Jesaelen Gizotti de Moraes is also included.

In the area of new ASTM standards development, Dr. Daniel Wright presents test results evaluating the utility of a new water conditioner test method that is currently under subcommittee review.

I want to express my thanks to the ASTM staff for their support that enabled both a successful symposium program and this STP publication. I'd also like to share my appreciation for the past chair-persons who have fostered, grown, and sustained the E35.22 symposium over its past 38 years.

In closing, thank you to all the authors, invited speakers, presenters, session chairmen, and reviewers whose efforts made this symposium possible. It was a privilege to be afforded the opportunity to serve as your 2018 chairman.

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