

## Future of Adjuvants symposium highlights the latest in adjuvant and formulation trends

Adjuvants are increasingly prized. Adjuvants are also subject to discussion. With a one-day symposium [SURfaPLUS](#) contributes to this exchange of ideas and views and stimulates the development and transfer of adjuvancy knowledge. On 20 November 2015, eight presenters gave their views on the future of agrochemical adjuvants and formulations.

What does the future hold: mainly multi-purpose adjuvants, or typically tailor-made products? With this clear contrast, organiser Hans de Ruiter expresses a main thread at the closing of the stimulating SURfaPLUS symposium on adjuvants in agrochemistry. Both kinds of additives were emphatically discussed during this one-day symposium on adjuvant innovations in agrochemistry. Novel adjuvant chemistries and adjuvant performance are the topics of this second SURfaPLUS symposium. Adjuvant specialists and formulators discuss all kinds of aspects of these additives for actives, whether built-in or tank-mixed.

### ADJUVANT AND FORMULATION AID

Some additives could be used for both applications. Take for instance the new BREAK-THRU SP adjuvants, presented by [Evonik](#)'s marketing manager agro [Carsten Riedl](#). He positions these novel polyglycerol esters as widely applicable sticker/penetrant additives. Both adjuvants improve drift control, spreading, retention, penetration and uptake of agrochemicals, according to this German presenter. Derived from renewable resources, these products have no hazardous or tox classification. The "performance enhancer" [Exilva](#) too is applicable as adjuvant and in formulations, says [Harald Rønneberg](#). Exilva (Latin for from the forest) is a [patent pending](#) product from the Norwegian company [Borregaard AS](#), made from microfibrillated cellulose. Borregaard's business director for Exilva says that this additive is a three dimensional network of cellulose microfibrils with a high surface area and a large amount of accessible hydroxyl groups. With the new Synergen ME, [Clariant Crop Solutions](#) also has a multi-purpose adjuvant. Global technical marketing manager [John Aponte](#) presented performance studies of this microemulsion of oil, nonionic surfactant, ammonium

sulphate (or other salt) and water. One of the effects of Synergen ME is a faster uptake of the herbicide safener [cloquintocet mexyl](#) in Broadway Star WG, relative to the uptake of the active ingredients [pyroxsulam](#) and [florasulam](#).

### COMPLEXED WITH CYCLODEXTRINS

Cyclodextrins can significantly improve the efficacy of active ingredients, [Ingo Jeschke](#) ([Wacker Chemie AG](#)) demonstrates by means of experiments with cyclodextrin complexes of lambda-cyhalothrin. The German chemist tested the mortality of cyclodextrin complexes of this insecticide versus the pure active ingredient and one commercial product on the rape pollen beetle. Currently he runs tests on cyclodextrin complexes of deltamethrin on cockroaches, houseflies and *Aedes aegypti* mosquitos, where he wants to test the residual efficacy. Cyclodextrins are already used in various fields of applications such as food products, cosmetics and pharmaceuticals. With active ingredients, Jeschke examines different aspects of complex-forming cyclic oligo-saccharides, such as improved water solubility, enhanced bioavailability and prolonged residual efficacy.

### TAILORED TO PESTICIDE CHEMISTRY

[Croda Crop Care](#) develops novel surfactants by exploring structure-function activity, says lead application scientist [Caroline Freier](#). "We correlate chemical structures to performance through structure-activity-relationship studies," according to the British chemist. With the new range of polysorbate surfactants as example, she explains her audience how Croda relates surfactant molecular structure to physical properties, which in turn are related to adjuvant performance. "We have explored and advanced this polysorbate chemistry to allow the formulator more options to select the most appropriate adjuvant". Starting from the well-known Tween 20 (polyoxyethylene (20) sorbitan monolaurate), Croda has developed a range of surfactants with different HLB's to offer a better match to the chemical characteristics of a pesticide. These novel surfactants have the same chemical identity (CAS number) to Tween 20 to minimise the regulatory process.

### INCREASINGLY STRICT REGULATIONS

The future legislation for adjuvants and pesticides is another recurring theme during the *Future of Adjuvants*

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The presenters had an attentive audience



Hans de Ruiter (SURfaPLUS)



Ingo Jeschke (Wacker Chemie)



Caroline Freier (Croda Crop Care)



John Aponte (Clariant)

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symposium. Companies explain how they search for greener adjuvants and more environmentally benign solutions. "It has to be better (than current adjuvants, Ed.) and it has to be natural", so expresses Harald Rønneberg the requirements for new adjuvants.

[Ingo Fleute-Schlachter \(BASF SE\)](#) states that the hazard symbol Xi (irritant) will often be a limit for new adjuvant chemistry. In his lecture he presents two new stand-alone spray tank mix adjuvants based on branched alcohol alkoxyates: Agnique TXI and Agnique LVA. Both products are REACH and EPA exempt, according to the global technical key account manager for agricultural additives. He expects other companies will also bypass REACH with appropriate polymers.

Tightening up the regulations for pesticides can be favourable for the sale of tank-mix adjuvants, is the experience of Hans de Ruiter. In this regard, he points to the increasingly strict pesticide regulations in The Netherlands, which has resulted in an increase in demand for these additives by growers.

**NOZZLES**

Adjuvants can significantly affect the performance of spray nozzles, according to spray technology researcher [Jan van de Zande](#) from Wageningen UR [Plant Research International](#). Effects of adjuvants on spray drift also depends on the nozzle type used and turns out to be not identical for the different nozzle types, the Dutch researcher reported at the meeting in Amsterdam. Thus, addition of adjuvants to the tank mix can influence the classification of spray drift reducing techniques.

**BIOPESTICIDES**

Adjuvants can greatly enhance the performance of biocontrol agents. A well-chosen adjuvant, for instance, retains water in drop deposits after application of the spray solution. Antagonistic fungi or other biocontrol agents can survive in these tiny drops on the crop's canopy. And so they can make a good start in controlling the pest or pathogen to combat. All adjuvants, however, are not equally effective in improving the robustness of biocontrol agents, says Hans de Ruiter (SURfaPLUS). Elsewhere in this issue of *Adjuvants & Formulations* he presents information about the selection adjuvants for biocontrol products and results of just finished projects on the enhancement of biopesticide performance. These experiments have yielded surprising results, according to the Dutch adjuvant expert. And with respect to his its own presentation on biopesticides, he added a second contrast to the multi-purpose versus

tailor-made contradistinction: Innovations come from big companies, but also from small regionally operating enterprises.

**NEED FOR KNOWLEDGE**

The well-attended SURfaPLUS symposium – held in between two ISAA symposia – reflects the intense need for information and knowledge concerning adjuvants and formulations. From at least thirteen countries attendees went to conference centre [De Balie](#) in Amsterdam, The Netherlands to join this symposium on the development and application of adjuvants for agrochemicals. With this symposium on Friday 20. November 2015, SURfaPLUS gave follow-up to the successful jubilee meeting of November 2011. Sharing of adjuvancy and formulation knowledge is a core business of this Wageningen-based company.

**More symposium pictures on page 6**



[Team Myra de Groot](#) invites the participants to lunch



## The Future of Adjuvants Amsterdam, November 20, 2015

