

**DOW**

POWERBLOX™ RF-212 Rainfastness Adjuvant for biopesticides



Increased demand for organic food, awareness of environmental challenges and use of integrated pest management systems (IPM) have led to a rising interest and need for biopesticides.

Typically, biopesticides have limited residual activity on plants due to sensitivity of the active ingredient (A.I) to environmental conditions, such as rain and sunlight. For instance, Cry Protein retention for a *Bacillus thuringiensis* (*Bt*) formulation is 0% after 5 minute exposure to simulated rain with a flow rate of 6L of water/hour.

POWERBLOX™ RF-212 is a low foam, liquid adjuvant that offers exceptional rainfastness to your biopesticide.

This innovative rainfastness adjuvant enhances the coverage and attachment of A.I on the leaf surface, making it less susceptible to removal by rain. It can be used as an In-Can or Tank-Mix adjuvant. Additionally, it can be added to liquid *Bt* formulations that are further spray-dried to produce wettable powder formulations. POWERBLOX™ RF-212 has inert clearance 40 CFR 180.910 (pre-and post-harvest).

Physical properties*

Acrylic copolymer content	35%
Solvent	60/40 water/propylene glycol
Color	Light yellow/clear to slightly hazy liquid
Viscosity	2,000-12,000 mPa.s
Density (g/mL)	1.0810
pH	9.3-9.8

*Typical values not to be construed as specifications

Enhanced Rainfastness of *Bacillus Thuringiensis* (*Bt*)

Protein retention is significantly higher when compared to multiple commercial benchmark adjuvants for both liquid and dry flowable *Bt* formulations. Specifically, a dry flowable *Bt* formulation and a liquid *Bt* formulation containing POWERBLOX™ RF-212 offered respectively 40% and 80% protein retention after exposure to simulated rain for up to 2h. While 0% protein retention was obtained with the control *Bt* formulation, as shown in Figure 1 and 2.

In addition, a liquid *Bt* formulation containing POWERBLOX™ RF-212 delivered 61% protein retention after exposure to simulated rain, even after spray-drying and re-dispersion in water. While 0% protein retention was obtained with the control spray-dried *Bt* formulation, as shown in Figure 3. Spray-drying yield can increase 3.3x when using POWERBLOX™ RF-212.

Proven, enhanced protein retention

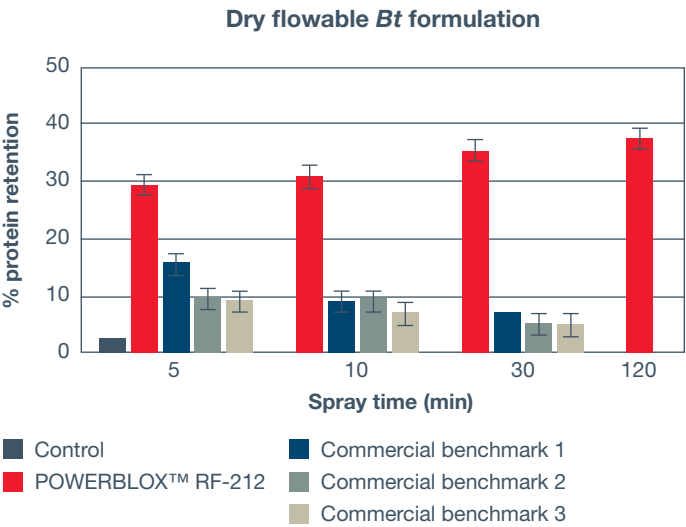


Figure 1. Percentage of protein retention after exposure to simulated rain for dry flowable *Bt* formulation containing POWERBLOX™ RF-212, 7.0 wt%. 6L/h simulated rain flow rate, two replicates for each treatment.

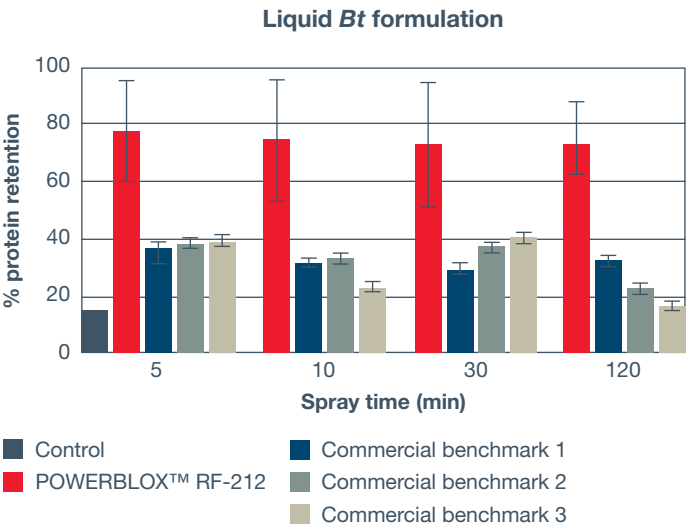


Figure 2. Percentage of protein retention after exposure to simulated rain for liquid *Bt* formulation containing POWERBLOX™ RF-212, 7.0 wt%. 6L/h simulated rain flow rate, two replicates for each treatment.

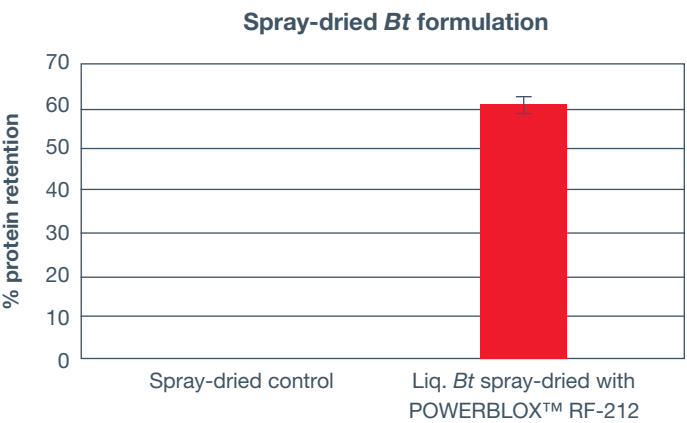


Figure 3. Percentage of protein retention after exposure to simulated rain for a wettable powder *Bt* formulation. POWERBLOX™ RF-212 was included in the liquid *Bt* formulation before the spray-drying process. 6L/h simulated rain flow rate, two replicates for each treatment. Under Dow experimental spray-drying conditions.

The graphic representations are presented here for illustrative purposes only and should not be construed as product specifications.

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