Confirming the lack of interaction of Mpp51Aa2, Cry1Ac, Cry2Ab2 and Vip3Aa19 in the combined trait product Bollgard® 3 ThryvOn™ cotton with XtendFlex® technology, using sensitive species bioassays

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Abstract

Bollgard® 3 ThryvOn™ cotton with XtendFlex® technology (MON 88702×MON 15985×COT102×MON 88701× MON 88913) was developed to provide protection against targeted hemipteran, thysanopteran and lepidopteran insect pests and confer herbicide tolerance to glyphosate, glufosinate and dicamba. The insect protection trait is provided by the expression of four plant-incorporated protectants (PIPs), specifically the modified Mpp51Aa2 (previously referred to as Cry51Aa2.834_16 or mCry51Aa2) protein produced in event MON 88702 and the combination of Cry1Ac and Cry2Ab2 proteins produced by event MON 15985 and the Vip3Aa19 (herein referred to as Vip3A) protein produced by event COT102. The modes of action of these four PIPs are different and therefore no interaction between the proteins is expected. The lack of interaction between the PIPs was confirmed experimentally to support the regulatory submission process, using two sensitive target species, the western tarnished plant bug (WTP) *Lygus hesperus* and the cotton bollworm (CBW) *Helicoverpa zea*. Concentration-dependent responses for mortality and growth inhibition to WTP and CBW, respectively, confirmed the independent action between the Mpp51Aa2 protein and the mixture of Cry1Ac, Cry2Ab2 and Vip3A proteins. These results demonstrate that, since the proteins act independently, the safety assessment for the combined-trait product can rely on the existing individual assessments used to support the registrations of the individual PIPs.

Key words: Interaction, Cry51Aa2, Cry1Ac, Cry2Ab2, Vip3Aa19**,** *Lygus hesperus, Helicoverpa zea*