

## OUTCOME SUMMARY OF PROJECT BSA 09-011

### **BSA 09-011: Evaluation of the allergenicity of DKC78-15B maize pollen**

**Project Leader:** Dr Harris Steinman

**Research Institution:** Food & Allergy Consulting & Testing Services

**Duration:** 1 years

#### **BACKGROUND**

A maize farmer living in the Hartswater region (Northern Cape, South Africa) was reported as being allergic to pollen of a specific GM maize hybrid cultivated in the area. His local general practitioner referred him to an allergy specialist in Cape Town for further assessment. Subsequent skin prick tests with pollen extracts confirmed a marked positive reaction to the pollen of the specific GM maize cultivar. The aims of this project were therefore to (i) verify the initial sensitisation, (ii) compare the potential allergenicity of pollen from various GM and non-GM cultivars, (iii) determine if the allergic reactions are clinically relevant, (iv) ascertain whether this is an isolated incident and (v) identify the specific allergen(s) responsible for the reactivity.

#### **PROJECT OUTCOMES**

- General maize pollen allergenicity is more prevalent in the study area than previously thought. Thirty six of 45 patients (80%) reacted positively to at least one of six different maize cultivars (three GM hybrids, containing the same GM event, and their respective isolines). Fifteen patients (33%) reacted positively to skin prick tests to all six different maize cultivars.
- The originally identified GM cultivar was the only one which showed a very small, but statistically significant increase in allergenicity in comparison with its isolate. No other significant differences could be detected between samples; i.e. (i) none of the other GM lines vs. their respective isolines, (ii) all GM lines vs. all the isolines, (iii) between the different isolines or (iv) the different GM hybrids.
- The data suggests that up-regulation of an endogenous maize pollen allergen, or expression of an isoform, is responsible for the observed difference in reactivity of one maize cultivar. As all the tested GM hybrids originated from the same GM event (MON810), the data suggest that this allergenicity is not directly related to the Bt protein.
- The specific allergen(s) responsible for the above clinical manifestations could not be detected with commercially available allergen detection assays, suggesting that this allergen is currently not represented in adequate levels in these assays. Work to identify the allergen is still on-going.

## **PRESENTATIONS & PUBLICATIONS**

To date this work has been presented at the following meetings:

- 1) Allergy Society of South Africa congress (October 2011, Sun City, South Africa).
- 2) The American Academy of Allergy Asthma and Immunology (AAAAI) meeting (March 2012, Orlando, USA).