



78th Plenary Meeting – Brisbane (Australia)

MINUTES

Eighth Open Session

Insect and weed resistance management - The role of good governance

Speaker: Dr Sharon Downes

Dr Sharon Downes spoke on the socio-ecological comparison of insect resistance management (IRM) for *Bt* crops among four continents. Governance in Australia is characterized by many linkages, with a strong top down approach facilitated by a peak industry body, and a streamlined system of a single technology provider. Brazil is characterized by a lack of mandate for IRM and remedial actions, and fewer linkages. Recommendations for IRM are actively promoted by technology providers, but the extent of their adoption by growers is unclear and could be as low as 20%. In India government regulators mandate the use of refuges for Bt cotton but technology providers are not required to monitor or report data on refuge adoption. Most growers do not plant refuges. In USA, the government mandates resistance management strategies and registrants or seed licensee companies use contracts with growers to enforce these mandates and must cancel agreements with growers that don't comply with refuge requirements. Resistance management can be improved by either fostering linkages among participants or by matching incentives to different social and ecological contexts in terms of a "carrots or stick" approach.

Speaker: Ms Sally Ceeney

Ms. Sally Ceeney spoke on Managing resistance collaboratively: the Australian experience. The Transgenic and Insect Management Strategies (TIMS) committee was set up in 1994. RMP plans are developed by technology providers, evaluated by a tech panel, endorsed by the TIMS committee for submission by the tech provider for final approval by the regulators. The RMP is based on the product, resistance genetics, pest ecology and compliance of IRM. RMP key principles are Plant in a defined window, kill last generation moths, mandatory refuge crops and monitor for resistance. RMP for HT cotton is similar to IR cotton. RMP in Australia is ensured to be scientifically robust while achievable and practical for the grower. There are two other key factors in the success of resistance management plans in Australia in both weeds and insect management. The first is that the plans are supported by science and second is the stewardship supported by an industry extension and communication program.

Speaker: Dr Nancy Schellhorn

Dr Nancy Schellhorn spoke on 'Real-time insect monitoring: Breaking barriers to area-wide management of pests. Insects do not recognize borders, therefore area-wide management is very important. RapidAim is a commercial sensor-based trap that has an attractant plus insecticide to detect and conduct real-time monitoring of fruit flies in a rapid 2-3 days loop. The technology reduces time that the Government spends on checking traps by 90%; it saves 35% of surveillance costs and reduces the cost of responding to an outbreak by 60%. The case-studies highlight that innovation in digital technology is removing barriers, new Industries are being created and that the promise of long-term suppression is real.

Questions and Answers

QUESTION: Ms. Susan Maas. How do you ensure that single toxin varieties are phased out after the introduction of pyramided Bt varieties?

REPLY: Dr Sharon Downes. In Australia, single gene varieties were replaced with pyramided varieties in two years. It took 7-8 years in the United States. In India unauthorized variants of the single gene varieties are available, while Brazil has large areas under both forms. Bollworm resistance to single toxins has been detected in the USA and India.

QUESTION: Is there a place where growers can be trained on IRM?

REPLY: Dr Sharon Downes. Growers need to be trained on IRM.

REPLY: Ms. Sally Ceeney: All growers in Australia are trained before the technology is introduced.

QUESTION: Can you comment on the movement of insects in thermal gradients?

REPLY: Dr. Nancy Schellhorn: Stratification of grids helps to track the movement of insects.

QUESTION: What is potential application of RapidAim for cotton?

REPLY: Dr. Nancy Schellhorn. As of now, fruit and nut crops provide more margins for the technology due to high demand. We do a demand driven market. Companies would consider developing such technologies for cotton if there is a demand for them.

QUESTION: Delegate from Mali. Do you apply insecticides to control cotton bollworms in Australia?

REPLY: Dr Sharon Downes: insecticides are not applied on cotton for bollworm control. The total insecticide use ranges from 2-3 sprays in a year, most of which is targeted for the control of mirid bugs.

QUESTION: Delegate from Burkina Faso. How can you align all the technologies with biosafety? Does the RapidAim technology have any impact on human safety?

REPLY: Dr. Nancy Schellhorn. The traps use attractants + insecticides. The trap does not pose any exposure risk of insecticides.

QUESTION: Dr. Michel Fok. Has the use of neonicotinoids increased in Australia as a consequence of general reduction in other groups of insecticides?

REPLY: Ms. Susan Ceeney: Broad spectrum insecticide usage has decreased, and neonicotinoids are used mainly for seed treatment.