

Biotech *Traits*

Annual Updates

2013

Herbicide Tolerance

Herbicide tolerance (HT) is deployed in soybean, maize, canola, cotton, sugarbeet and alfalfa.

HT crops are planted in 100.5 million hectares or 59% of the 170.3 million hectares of biotech crops planted globally, compared with 93.9 million hectares planted on 160 million global biotech hectareage in 2011.

An increase of 7% from 93.9 million to 100.5 million hectares was achieved in 2012.

Insect Resistance

Insect resistance (IR) is deployed in cotton and corn.

Hectareage featuring insect resistance increased from 23.9 million by 9% to 26.1 million hectares in 2012.

Stacked Traits

The stacked traits for herbicide tolerance and insect resistance are deployed in both cotton (Bt/HT) and maize (Bt/Bt/IR, Bt/HT, and Bt/Bt/HT).

The Bt/Bt/IR stack refers to different Bt or other IR genes that code for different traits, for example above ground pests and below ground pests in maize.

Stacked traits increased from 42.2 million hectares in 2011 to 43.7 million hectares in 2012 – an increase of 1.5 million hectares equivalent to 4%.

Stacking is a very important feature of the technology with SmartStax™ comprising 8 genes coding for three traits, launched in the USA and Canada in 2010.

The deployment of stacked traits is most prevalent in the USA which had approximately 70% of the 43.7 million hectares as “stacked traits” in 2012, this compares with 73% in 2011. US adoption of stacked traits dropped as the trait became more prevalent in other countries.

The other seven principal countries, of a total of 13, which deployed stacked traits in 2012 were: Brazil (5.6 million hectares), Argentina (3.4 million hectares), Canada (1.3 million



hectares), South Africa (1.2 million hectares), Australia (0.5 million hectares), Philippines (0.7 million hectares) and Mexico (0.2 million hectares).

Uruguay, Chile, Honduras, Paraguay, and Colombia, planted less than 0.1 million hectares each.

Trends in Biotech Trait Adoption

The large increases in all three traits were due largely to significant increases in soybean and maize hectareages in Brazil, but also in other countries that contributed strong growth in 2011 including Canada, South Africa and smaller countries like Paraguay.

Benefits from Biotech Crops, by Trait

Distribution of economic benefits at the farm level by trait, for the first sixteen years of commercialization of biotech crops 1996 to 2011 was as follows: all herbicide tolerant crops at US\$40.8 billion and all insect resistant crops at US\$57 billion, with the balance of US\$0.4 billion for other minor biotech crops.

For 2011 alone, the benefits were: all herbicide tolerant crops at US\$6 billion, and all insect resistant crops at US\$13.6 billion plus a balance of US\$0.09 billion for the minor biotech crops for a total of ~US\$19.7 billion (Brookes and Barfoot, 2013).

Excerpts from:

James, Clive. 2012. Global Status of Commercialized Biotech/GM Crops: 2012. ISAAA Brief No. 44. ISAAA: Ithaca, New York.

Other Sources:

Brookes, G and P Barfoot. 2013. <http://www.pgeconomics.co.uk/publications.php>
The World Bank. <http://www.worldbank.org/>

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