The benefits of biotech: How GM crops benefit farmers and the developing world

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The biotech industry boosted farming across the globe to the tune of almost $65 billion during the period 1996 to 2009, according to the latest analysis published in the *International Journal of Biotechnology*. $65 billion is the increase in net farm income, the farm level benefit after paying for the seed and its biotech traits. The study's authors estimate that almost half of that was derived by farmers in the developing world.

Graham Brookes and Peter Barfoot of PG Economics Ltd., in Dorchester, UK, have investigated the economic impact at the farm level of agricultural biotechnology, looking at yields, key costs of production, direct farm income, indirect (non-pecuniary) farm level income effects and impacts on the production base of the four main crops of soybeans, corn, cotton and canola. Biotech has added 83 million and 130 million tonnes, respectively, to global production of soybeans and corn, they estimate. Net farm level economic benefits amounted to almost $11 billion in 2009 alone.

"Biotech, and specifically genetically modified (GM) crops has had a significant positive impact on farm income derived from a combination of enhanced productivity and efficiency gains," the team estimated. It has added 5.8% to the value of global production for the four main crops investigated, with cost savings being greatest for soy. In terms of the division between different parts of the world, the team reports that in 2009, 53.1% of the farm income benefits went to developing country farmers and the vast majority of those income gains were from GM insect-resistant cotton and GM herbicide-tolerant soybeans.

The team concedes that their estimate of benefits amounting to $65 billion is based on the assumption of average levels of weed and pest pressure. If the assumptions are varied to assume extremes of low weed and pest pressure in all years and high weed and pest pressure in all years, then then the farm level benefits from using biotech in agriculture during the period studied would fall within a range of about $58 billion to $73 billion.

More information: "The income and production effects of biotech crops globally 1996-2009" in Int. J. Biotechnol., 2011, 12, 1-49

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