

CONTRIBUTIONS OF BIOTECH CROPS TO FOOD SECURITY, SUSTAINABILITY, AND CLIMATE CHANGE SOLUTIONS

INCREASE CROP PRODUCTIVITY



BIOTECH CROPS CONTRIBUTE TO FOOD, FEED, AND FIBER SECURITY

US\$261.3 BILLION

FARM INCOME GAINS IN 1996-2020 FROM PLANTING **BIOTECH CROPS**

REDUCED PRODUCTION COSTS



LESS PLOWING
LESS PESTICIDE SPRAYS
LESS LABOR

MORE AFFORDABLE FOOD



PROVIDE A BETTER ENVIRONMENT



IN 1996-2020, BIOTECH CROPS HELPED REDUCE PESTICIDE APPLICATION BY

748.6 MILLION KGS

DECREASED ENVIRONMENTAL IMPACT FROM HERBICIDE & INSECTICIDE USE BY **17.3%**

INSECT RESISTANT COTTON
LARGEST CHANGE IN PESTICIDE USE
SAVED 339 MILLION KG INSECTICIDES

CONSERVE BIODIVERSITY



BIOTECHNOLOGY IS A **LAND-SAVING TECHNOLOGY** INCREASING YIELDS WITH LESS LAND

183 MILLION HECTARES

CONSERVED LAND DUE TO PRODUCTIVITY OF BIOTECH CROPS



PREVENTS DEFORESTATION



PROTECTS BIODIVERSITY

REDUCE CO2 EMISSIONS



BIOTECH CROPS HELPED SAVE **39 BILLION KGS CO2**

REDUCED FUEL USE **14.6 BILLION LITERS** EQUIVALENT TO REMOVING

25.9 MILLION CARS OFF THE ROAD FOR 1 YEAR



REDUCED RELEASE OF **GREENHOUSE GASES** FROM GM CROPPING AREAS



HELP ALLEVIATE POVERTY AND HUNGER



BIOTECH CROPS UPLIFTED THE LIVES OF **17 MILLION FARMERS**

AND THEIR FAMILIES TOTALING **>65 MILLION PEOPLE**

SINCE 1996, BIOTECH CROPS HAVE PROVIDED FOOD, FEED, AND SHELTER TO THE WORLD'S **8.2 BILLION POPULATION**



BIOTECH CROPS HELP FARMERS **EARN REASONABLE INCOMES**

BETTER LIVELIHOODS FROM HIGHER YIELDS

IN 2019, BIOTECH CORN WAS PLANTED IN **14 COUNTRIES**, BENEFITTING SMALL, RESOURCE-POOR FARMERS

SOURCES:

Graham Brookes. 2022. Genetically Modified (GM) Crop Use 1996–2020: Impacts on Carbon Emissions. *GM Crops & Food* 13:1, pages 242-261.
Graham Brookes. 2022. Genetically Modified (GM) Crop Use 1996–2020: Environmental Impacts Associated with Pesticide Use Change. *GM Crops & Food* 13:1, pp 262-289.
ISAAA. 2019. Global Status of Commercialized Biotech/GM Crops in 2019. ISAAA Brief No. 55. ISAAA: Ithaca, NY.



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