

Title of case study*	Help crops adapt to changing climates
Date of submission*	19/12/2012
Name of organization(s)*	BASF
NWP Objective* <i>Select the objective(s) of the NWP that the case study responds to.</i>	<p>The objective of the Nairobi work programme is to assist all Parties, in particular developing countries, including the least developed countries (LDCs) and small island developing States (SIDS), to:</p> <p><input type="checkbox"/> improve their understanding and assessment of impacts, vulnerabilities and adaptation to climate change; and</p> <p><input checked="" type="checkbox"/> make informed decisions on practical adaptation actions and measures to respond to climate change on a sound scientific, technical and socio-economic basis, taking into account current and future climate change and variability.</p>
Objective of case study* <i>Describe the specific objective of case study.</i>	This case study demonstrates the possibility of enhancement of crops' resistance against changing climates. BASF has developed crops that are tolerant to unfavorable conditions and have high yields at the same time.
Actions* <i>Describe the activities to meet the case study objective, highlighting organizations, communities and/or experts to be engaged.</i>	<p>Climate change is likely to have a negative impact on agricultural yield. Recent studies warn of declining crop yields and global food shortages as a result. The number and duration of dry spells, especially in already drought-prone areas, is expected to increase. Plant biotechnology offers solutions that allow farmers to adapt their agricultural techniques to such shifting climates.</p> <p>Drought-tolerant corn technology is part of BASF and Monsanto's research and development in plant biotechnology, which is aimed at developing higher yielding crops and crops more tolerant to unfavorable environmental conditions. The most advanced product of the companies' pipeline is a drought-tolerant corn, which will be the first biotechnology-derived drought-tolerant crop in the world.</p> <p>The companies' scientists are turning to nature to find mechanisms involved in stress responses. Subsequently, genes responsible for these mechanisms are transferred to staple crops. One discovery is a naturally occurring gene, the <i>cspB</i> gene from <i>Bacillus subtilis</i>, which helps corn plants combat dry conditions and confers yield stability during periods of inadequate water supplies. By reducing the impact of drought on the plant, <i>cspB</i> helps provide yield stability.</p> <p>In addition, BASF supports the Water Efficient Maize for Africa (WEMA) partnership with the aim of providing royalty free new drought-tolerant maize varieties for small-scale</p>
Expected results* <i>Describe the envisaged outputs/benefits of the case study/</i>	Improved yield stability is of significant value to farmers faced with unpredictable rainfall. In any given year, around 4-5 million hectares of corn-planted farmland in the United States may be affected by at least moderate drought. In field trials conducted last year in the western Great Plains, in the U.S., drought-tolerant corn met or exceeded the 6-10% target yield enhancement in some key drought-prone areas, where average yields range from 170 to 320 bushels per hectare.
Indicators of achievement* <i>Describe any quantitative and/or qualitative indicator to show that the objective of the case study has been achieved.</i>	The product is targeted for market launch as early as possible, pending regulatory approvals. It is the first of a multi-generational family of biotech drought tolerant products that is expected to be brought to market in the next decade. BASF plans to continue working with Monsanto to bolster the joint pipeline with other genes for drought tolerance as well as other abiotic stress tolerance traits.
Region(s) relevant to case study*	<p><input checked="" type="checkbox"/> All regions</p> <p><input type="checkbox"/> Africa</p> <p><input type="checkbox"/> Arab States</p> <p><input type="checkbox"/> Asia</p>

	<input type="checkbox"/> Caribbean <input type="checkbox"/> Central America <input type="checkbox"/> Europe <input type="checkbox"/> Least Developed Countries <input type="checkbox"/> North America <input type="checkbox"/> Pacific <input type="checkbox"/> Polar regions <input type="checkbox"/> Small Island Developing States <input type="checkbox"/> South America
Business sector of the organization(s)*	<input type="checkbox"/> Intergovernmental organization <input type="checkbox"/> National/regional programme/initiative <input type="checkbox"/> Non-governmental organization <input checked="" type="checkbox"/> Private sector entity <input type="checkbox"/> Research institute <input type="checkbox"/> UN organization/agency
Adaptation sector relevant to case study*	<input checked="" type="checkbox"/> Capacity building, education and training <input type="checkbox"/> Energy <input type="checkbox"/> Finance and insurance <input checked="" type="checkbox"/> Food, agriculture, forestry and fisheries <input type="checkbox"/> Human health <input type="checkbox"/> Oceans and coastal areas <input checked="" type="checkbox"/> Science, assessment, monitoring and early warning <input type="checkbox"/> Technology and Information & Communications Technology (ICT) <input type="checkbox"/> Terrestrial ecosystems <input type="checkbox"/> Tourism <input type="checkbox"/> Transport, infrastructure and human settlements <input checked="" type="checkbox"/> Water resources
Adaptation activity delivered by case study*	<input checked="" type="checkbox"/> Capacity building <input type="checkbox"/> Climate-resilient development planning <input type="checkbox"/> Communications and awareness-raising <input type="checkbox"/> Disaster risk reduction <input type="checkbox"/> Early warning systems <input type="checkbox"/> Education <input type="checkbox"/> Financial support <input type="checkbox"/> Humanitarian assistance <input checked="" type="checkbox"/> Knowledge management <input type="checkbox"/> Monitoring and evaluation <input type="checkbox"/> Pilot adaptation programmes/projects <input type="checkbox"/> Risk/vulnerability mapping <input type="checkbox"/> Training
Work areas of the NWP*¹ <i>Select among the nine work areas of the NWP that apply to the case study.</i>	<input checked="" type="checkbox"/> Adaptation planning and practices <input type="checkbox"/> Climate modelling, scenarios and downscaling <input checked="" type="checkbox"/> Climate-related risks and extreme events <input type="checkbox"/> Data and observations <input type="checkbox"/> Economic diversification <input checked="" type="checkbox"/> Methods and tools <input checked="" type="checkbox"/> Research <input type="checkbox"/> Socio-economic information <input checked="" type="checkbox"/> Technologies for adaptation
Target group*	<input type="checkbox"/> Academics <input type="checkbox"/> Children

* Mandatory fields

¹ More information on the Nairobi work programme work areas is available at: <<http://unfccc.int/nwp>>

Disclaimer: These business cases have been cited to raise awareness about the engagement of the private sector in climate change adaptation. The information in the business cases has been provided either directly by the organization or obtained from a public source. The UNFCCC Secretariat has not verified the information and takes no responsibility for it. Users are therefore advised to verify the information before they take any action relying on the information provided in the business cases.

	<input type="checkbox"/> Communities <input type="checkbox"/> Policy makers <input checked="" type="checkbox"/> Practitioners <input type="checkbox"/> Private sector <input type="checkbox"/> Women
Link <i>Further information on relevant websites.</i>	http://www.wbcsd.org/Pages/EDocument/EDocumentDetails.aspx?ID=136&NoSearchContextKey=true

* Mandatory fields

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