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presentation by

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MARS

Cocoa Genome Project

**African Orphan Crops
Consortium**



The Five Principles



OUR PRINCIPLES IN ACTION

Printed on recycled paper to save natural resources.

Cocoa Genome Project

Cocoa is an important crop to many developing nations, but it's difficult to grow and study, and there hasn't been much progress in research and breeding of cocoa varieties that are highly productive and resistant to pests and diseases. By understanding and characterizing the genome, scientists can help farmers use their natural resources more efficiently and produce more cocoa using less land



In 2008, Mars announced plans to 'unlock' the cacao genome. By analyzing the genome of hundreds of trees in South-America, Mars' scientists identified 10 distinct structure groups of the tree and their exact origins

In 2010, three years ahead of schedule, together with our partners (US Department of Agriculture-Agricultural Research Service (ARS), IBM) we released the cacao genome to the public domain. To allow scientists to apply this knowledge for the benefit of cocoa growers, the genome findings have been shared through the Public Intellectual Property Resource for Agriculture (PIPRA) and the Cacao Genome Database. Our research has identified more than 35,000 unique genes within the cocoa genome. The gene sequences will not be patented

Cocoa Genome Project



The reason behind is to make sure that *all* can benefit from the knowledge, and that scientists can immediately begin using the findings to improve their traditional methods of cultivation, demonstrating the role business can play in addressing global issues. The research will lead to quicker, more accurate breeding and allow farmers to plant better-quality cocoa that is healthier, stronger, highly productive and more resistant to pest and other threats

Farmers can then use the 'extra space' on their land to grow more crops and increase their income

As leaders in cocoa science, Mars felt it as duty and responsibility to help scientists and farmers better understand the plant, so that the millions of cocoa farmers and people who rely on cocoa for their livelihoods can flourish

More information on www.mars.com or www.cocoasustainability.com

African Orphan Crops Consortium

Mars is co-founder of the African Orphan Crops (AOC) consortium to improve Africa's neglected food crops, addressing the global challenge of food security and economic empowerment



The AOC will work with African scientists to identify over the next five years at least two dozen food crops and tree species that have been neglected by science because they are not economically important on the global market

As part of the initiative, AOC plans to sequence the genomes of these so-called 'orphan crops' (neglected by research and breeding) and apply that knowledge, using the most advanced breeding techniques and technologies, to develop new varieties of crops that are more nutritious, produce higher yields, and are more tolerant of environmental stresses, such as drought

African Orphan Crops Consortium

The initiative will also found a plant breeding academy in Ghana to train 250 African scientists and 500 African technicians in plant breeding techniques to improve these newly sequenced crops. AOC will begin to make more widely available genomes already sequenced



A list of 96 crop and tree species - including amaranth, marula, cocoyam, Ethiopian mustard, ground nut tree, African potato, acacia, baobab, matoke bananas, African medlars, African eggplant, and Cape tomato - are being considered for possible genome sequencing. Selection will be based on species' potential to play a nutritionally significant role in the African diet and directly or indirectly improve food security in Africa

Members of the African Orphan Crops consortium include: UC Davis, Mars Incorporated, Life Technologies Corporation, the China-based BGI, the New Partnership for Africa's Development (NEPAD), the World Wildlife Fund-U.S., DuPont's Pioneer Hi-bred International, IBM, the Gates Foundation, the World Agroforestry Centre, Bioversity International, the African Academy of Sciences, and TransFarm Africa at the Aspen Institute