

Pioneer Hi-Bred: Investing In Africa

Africa Biofortified Sorghum

Africa Biofortified Sorghum (ABS) Initiative

This African-led public-private collaboration is focused on improving the nutrition and digestibility of sorghum, an affordable, African staple for more than 300 million people in Africa, many of whom reside in the drier, more vulnerable areas, such as the Sahel. Sorghum, however, is deficient in most essential nutrients, and is difficult to digest when cooked. The ABS project seeks to improve nutrition and overall health across the African continent by using science and technology to enhance sorghum's nutritional content, particularly in terms of protein digestibility, iron and zinc bioavailability and pro-vitamin A. In addition, the ABS project is developing mutually beneficial science partnerships and local research capacity in key sub-regions of Africa.

Investment

Leading the consortium has been Africa Harvest, a Kenya-based non-profit organization that promotes the use of advanced science and technology products to improve agricultural productivity among Africa's farmers. Pioneer donated the original technology and has contributed technical support and to capacity building.

- Phase I was funded by the Bill and Melinda Gates Foundation under the Grand Challenges in Global Health initiative at a value of more than \$18.6 million.
- The technology development aspects of Phase II are supported by the Howard Buffett Research Foundation through the Danforth Center.

Pioneer, the primary technology provider, will continue to focus on further development of the technology and delivery of the biofortified sorghum to farmers in Africa. Africa Harvest will continue to provide leadership for the consortium's vision of effectively tackling food and nutrition security.

Consortium Goals:

Develop a nutritionally enhanced sorghum for an initial target of 30 million farmers

- Increased levels of pro-vitamin A
- More bioavailability of iron and zinc by reducing phytate levels in seed
- Increased protein digestibility

Develop mutually beneficial science collaborations and research capacity in key sub-regions of Africa

- The majority of consortium members include African universities, governments, foundations and private industry
- Fellowship program sponsored by Pioneer brought 13 African scientists to its U.S. headquarters to work on the project side-by-side with Pioneer researchers

Foster societal benefits such as:

- Educating farm households on the use of healthier food products derived from ABS grain
- Develop enterprise-driven product delivery to provide incomes for small and medium-sized African enterprises



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Project Snapshot:

Phase I Accomplishments:

- The world's first "golden" sorghum
- Increased zinc and iron bioavailability through phytate reduction
- No reduction of protein digestibility as a result of cooking
- Nutrition stability in six sorghum genotypes
- Improved sorghum transformation system
- Transgenic biosafety principles and best practices specific to Africa
- African-led initiation of a transgenic regulatory framework development in Africa



Phase II Objectives:

- Develop and deploy a final trait stack for improved protein digestibility, enhanced levels of pro-vitamin A, and increased bio-availability of iron and zinc
- Address any outstanding science questions and regulatory concerns
- Incorporate traits into locally adapted varieties for use by African farmers
- Develop seed production and product dissemination through both farmer and commercial systems
- Increase productivity of sorghum
- Farmer and consumer education programs
- Work with commercial enterprises to develop food and beverage products

