

Applied Biosystems™ Axiom™ Genotyping Solution: High-throughput genetic testing for agriculture

Accelerating Precision Breeding for Sustainable Food Security and Resilient Agriculture.

Applied Biosystems™ Axiom™ Genotyping Solution is an advanced genetic testing technology that helps breeders and researchers quickly and accurately identify the best plants, animals, or fish for breeding. It can process thousands of samples per week, is customizable for different species and traits, and delivers precise, reliable results. The system supports faster development of high-yield, disease-resistant, and climate-adapted varieties, making agriculture and aquaculture more productive and sustainable. Its automated workflow makes it easy to use and cost-effective, benefiting large-scale breeding programs and food security efforts.

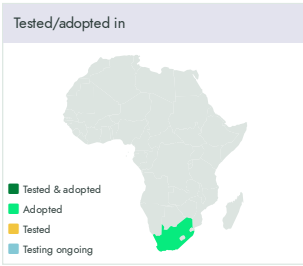


Thermo Fisher Scientific
Dr Thulile Nhlapo

Commodities
Aquaculture, Livestock, All Crops

Sustainable Development Goals

Categories
Pre-production, Practices, Biological control



Target groups
Breeders, Seed companies,
Researcher center

This technology is **pre-validated**. 9·8 Scaling readiness: idea maturity 9/9; level of use 8/9

Inclusion assessment 4

Climate impact 2

Problem

- **Low productivity:** Traditional breeding is slow and imprecise.
- **Disease and pests:** Crops and livestock lack resistance.
- **Limited genetic diversity:** Reduces adaptability and resilience.
- **High costs and inefficiency:** Field trials are time-consuming and expensive.
- **Complex traits:** Hard to track traits controlled by many genes.
- **Food insecurity:** Low yields and poor nutrition in staple crops.
- **Manual errors:** Workflows are slow and prone to mistakes.
- **Inbreeding risks:** Leads to harmful mutations and reduced performance.

Solution

- **Boosts productivity:** Uses genetic markers to accelerate breeding of high-yield crops and livestock.
- **Improves resistance:** Detects genes for disease and pest resistance, reducing outbreaks.
- **Preserves diversity:** Analyzes genetic variation to prevent inbreeding and support adaptation.
- **Cuts costs:** Automates high-throughput genotyping, reducing labor and per-sample costs.
- **Decodes complex traits:** Identifies key genes for traits like drought tolerance and nutrition.
- **Strengthens food security:** Breeds nutrient-rich crops and improves livestock yields.
- **Streamlines workflows:** Offers full automation from DNA extraction to data analysis.
- **Prevents inbreeding:** Ensures pedigree accuracy and healthy genetic diversity.

Key points to design your project

Applied Biosystems™ Axiom™ Genotyping Solution helps improve agricultural productivity, livestock health, and genetic resilience, supporting sustainable development and food security.

To implement this technology:

- Assess your project's scale, costs, and product availability.
- Plan budget including procurement, shipping, and maintenance.
- Provide training and ongoing support for local staff.
- Develop communication materials to raise awareness and ensure proper use.
- Collaborate with research institutes, labs, agro-dealers, and extension services for effective distribution and adoption.

This approach enables governments to accelerate breeding programs, enhance disease resistance, and promote sustainable agriculture.



Unknown



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