



Rwanda Agri-Biotech Programme



**Biotech Maize in Rwanda:
Questions & Answers**



Q1. What is biotech (Bt) maize?

Biotech maize is a maize variety that can protect itself against fall armyworm and stem borers, as well as moderate drought conditions. These destructive insect pests cause severe losses for Rwanda's farmers.

Q2. How will Rwandan farmers benefit from biotech maize?

Biotech maize hybrids offer 3-in-1 protection:

- **Fall armyworm-resistance**
- **Stem borer-resistance**
- **Moderate drought-tolerance**

This triple protection assures the farmer of better yield while reducing the use of expensive pesticides.



This 3-in-1 protection delivers benefits:



More reliable harvests



Reduced crop losses



Improved food security and income for farm families

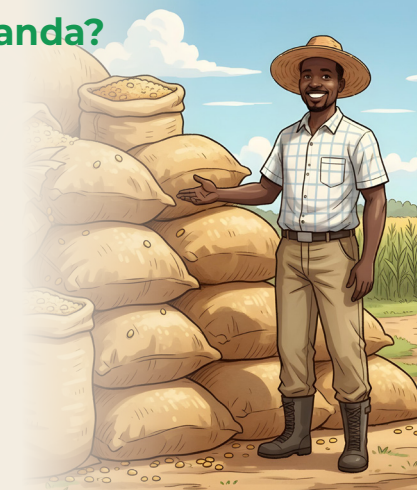
Q3. Why are biotech maize varieties being grown in Rwanda?

The Rwanda Agri-Biotech Programme, with the support of the Government of Rwanda, is improving maize, cassava, and potato to protect these important foods against the insect pests and diseases that destroy crops. Currently, farmers try to control these threats by spraying the plants numerous times with pesticides that are costly, not easily available, and often ineffective. *Biotech maize has in-plant protection, which offers more widespread and consistent control of insect pests.*

The Rwanda Agri-Biotech Programme is using the modern tools of biotechnology to:

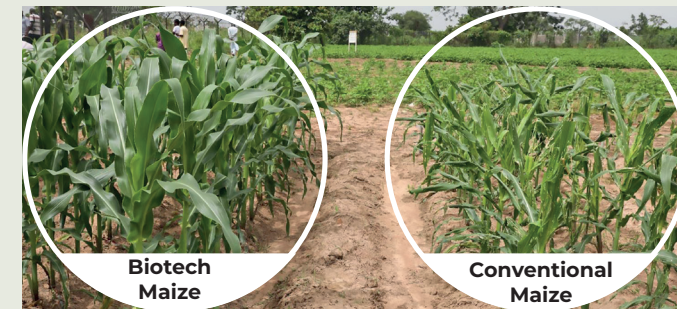
- **Reduce maize yield losses by up to 75%**
- **Cut potato yield losses by more than 70%**
- **Protect cassava farmers from total (100%) yield loss**

This will benefit more than 500,000 farmer households through higher yields, food security, reduced pesticide use, and economic growth.



Q4. What is the difference between conventional and biotech maize?

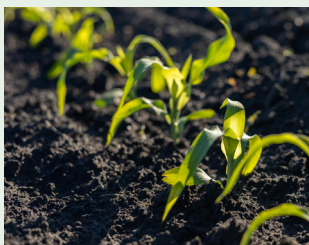
They are mostly the same. But biotech maize offers in-plant protection from harmful insect pests, so farmers enjoy better harvests with less pesticide use.





Q5. Can farmers replant biotech maize?

Biotech maize is usually sold as hybrid seed, which has a special strength called hybrid vigor. It is possible to save and replant grain from hybrid maize. However, the seed loses its hybrid vigor after the first planting, so the next crop will not be as strong, uniform, or high yielding as the first one. For the best harvest and most reliable results, it is recommended to plant new certified hybrid seed each season.



Q6. How does insect protection work in biotech maize?

A naturally occurring soil bacterium called *Bacillus thuringiensis* (Bt) provides insect protection in biotech maize. Farmers may already know about Bt because it is also used in organic farming as a natural spray against pests. Scientists have used advanced breeding technology to place a modified Bt gene inside the maize plant. This approach enables the plant to defend itself against these insects, reducing insecticide applications, saving costs, and helping the environment.



Q7. Can the insect pests become resistant to Bt over time?

Yes. Insects can develop resistance to Bt. That's why biotech crop development includes an Insect Resistance Monitoring Plan to ensure Bt maize continues to benefit smallholder farmers. Insect-protected crops are deployed with extensive farmer education and communication programmes that explain the importance of good stewardship.

Q8. How will farmers in Rwanda know how to manage resistance?

For Rwanda, the biotech maize seed has been specially packaged with 20% conventional maize already mixed in (pre-mixed). Farmers simply plant the seed as it comes in the bag, making resistance management easy, practical, and effective.



Q9. Does the Bt technology harm other organisms?

No. Extensive studies have demonstrated that Bt proteins are safe for humans, livestock, wildlife, non-target organisms, and beneficial insects. Bt proteins have been safely used in organic farming for over 50 years to control insect pests.



Q10. Are biotech maize varieties safe?

Yes. Biotech maize varieties are safe for both human and animal consumption. Bt maize products have been safely deployed and used for almost three decades in various parts of the world. Biosafety committees in Ethiopia, Kenya, and Mozambique have approved Bt maize for environmental release, while Nigeria has approved commercial use, which means farmers are already growing the crop.





Q11. How does Rwanda review the safety of biotech maize?

The Government of Rwanda has adopted a robust legal and institutional framework for the safe and responsible use of modern biotechnology. The Rwanda Environment Management Authority (REMA) conducts safety assessments before any biotech varieties can be grown and used. REMA considers changes in the Bt crop compared to conventional varieties; any potential risk to the environment where the Bt crop would be released; and the food and feed safety of the Bt crop and any products derived from it. The variety evaluation is done by the Rwanda Inspectorate, Competition and Consumer Protection Authority (RICA).



Q12. Is biotech maize approved in Rwanda?

Yes. Research partners, working with REMA and RICA, are currently conducting field trials for improved biotech maize hybrids. Research is ongoing to select the varieties that are most suitable for different farming conditions in Rwanda. They will be registered on the variety catalogue.



Q13. When will farmers in Rwanda have access to biotech maize seed?

Farmers will get access after RICA has cleared the varieties for release and registration.

Q14. How much will biotech maize seed cost in Rwanda?

Biotech maize seed will be priced similarly to other maize varieties on the market.



Q15. Who owns biotech maize varieties in Rwanda?

The Rwanda Agriculture and Animal Resources Development Board, in collaboration with its partners in the Rwanda Agri-biotech Programme, a public-private partnership, has negotiated access to the biotech maize varieties for Rwanda's farmers.



Q16. Are biotech crops already being grown in Africa?

Yes. In Nigeria, farmers began planting Bt maize in 2024 and 2025. They have been growing Bt cowpea and Bt cotton since 2020. Ghana farmers have been growing Bt cowpea since 2024. In South Africa, Bt cotton, Bt maize, and soybean have been grown since the late 1990s, covering millions of hectares. Kenya, Ethiopia, Eswatini, and Sudan grow Bt cotton. Several other African countries are conducting field trials on rice, maize, wheat, sorghum, bananas, cassava, and sweet potato.

Globally, approximately 176.85 million hectares of land were planted with enhanced crops by 2021.



Q17. Is it stem borers or fall armyworm?

Both stem borers and fall armyworm are moths. Their caterpillar (larvae) damage maize in different ways. Stem borer larvae start by eating small holes in the leaves, then burrow into the maize stem, making tunnels inside the plant. This weakens the plant and can cause it to break or produce smaller cobs. **Stem borers cause yield loss of 10-20% in Rwanda.**



Fall armyworm larvae chew leaves, leaving them with a ragged, torn look. They usually hide deep inside the leaf whorl (the funnel at the center of the plant). They leave behind yellow-brown frass (sawdust-like waste), which often covers them and makes spraying less effective. As they grow, they move to new parts of the plant, destroying the growing point, tassel, and even the cob. **Fall armyworm can cause yield loss of 15%-73%.**



Seeing is believing

Nigerian farmers began growing biotech (Bt) maize in 2024. A new scientific study* of 134 farm plots across six states found they experienced **88% higher yields** than non-biotech varieties.

Another benefit: the biotech maize generated net revenue equivalent to approximately 2,383,170 Rwanda francs (USD\$1,644) per hectare. That's a **137% revenue advantage** over other varieties.

** Enhancing farm-level yield and revenue using TELA® maize in Nigeria. African Journal of Agricultural Research. September 2025.*



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For more information, contact: The **Rwanda Agriculture and Animal Resources Development Board (RAB)**,
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