

Climate change has been a major menace to agricultural production especially for Rwanda which is fighting hard to produce enough food for its growing population.

Irish potato as one of the most important crops grown in Rwanda, it's the country's six priority crops supported under the Crop Intensification Program (CIP).

The total area of Irish potato production increased from 130,000 hectares in 2013 to 200,000 hectares in 2023.

Also, Irish potato yields increased from 2.4 million tons to 6 million tons in the same period; however, production is still stuck by potato bacterial wilt.

Jerome Mbarushimana, an Irish potato farmer in Kayonza district says that the crop is an important food commodity but still faces several constraints, including unavailability of clean pathogen free seeds, lack of access to high yielding varieties and a range of diseases.

To try and overcome these constraints, the Rwanda Agriculture and Animal Resources Development Board is waiting for legislation related to GMO so it can employ and safeguard biotechnology while maintaining the integrity of the environment.

The bill passed by Cabinet on July 13, 2023 aims to address potential concerns related to GMOs, safeguard biodiversity, and maintain the integrity of the environment.

When passed, farmers like Kwizera will have the option of growing GMO by obtaining permission from REMA but they will also have to comply with the directives or else be punished and sanctioned with fines.

Jean Claude Kwizera, who owns two acres of land, says that every season his maize crop is affected by green stalk mites, an infection of armyworm and he usually gets stung when it comes to getting rid of these pests.

Kwizera who is searching for a solution adds that the pest is migratory since it rapidly moves through fields eating young plant stems at lightning speed.

The agriculture sector remains the backbone of the Rwandan economy and the largest source of employment countrywide.

During Fiscal Year 2021/22, the share of agriculture in Rwanda's gross domestic product was 23 percent according to the National Institute of Statistics Rwanda (NISR).

While advocates call the bill a necessity, saying that it will protect farmers by promoting sustainable farming practices, others think it could put them out of business.

Dr Athanase Nduwumuremyi of the Rwanda Agriculture and Animal Resources Development Board says "We have conducted enough studies on Irish potato and cassava but we can't go beyond trials because there is no law regulating the use of biotechnology."

Dr. Nduwumuremyi, who is the coordinator of the Roots and Tubers Program at RAB, reveals that they have biologically engineered Irish potato which can resist pests and diseases and is also suitable for the climatic conditions in Rwanda.

"We have done all the in-house trials. We're only waiting for the law to allow us to conduct field trials which we believe will be the final stage of allowing genetically modified seeds to be used by farmers in Rwanda" he added.

For Kwizera, using GMO seeds that are pest resistant will eliminate the pests, but experts in the field note that the GMO crops should be grown carefully since cross pollution can take place between non-GMO maize crops and GMO maize crops.

On the other hand, some small-scale farmers think that passing the bill is a risk. One such farmer is Mediatrice who prefers to be called by her first single name.

The 52-year-old runs her farm based on innovative and radical farming techniques. She says that there is a healthy market for her meat and produce and she does not put faith in GMO foods.

"Every time you see new penetration in the market, just know it's favoring the larger players. With GMO in Rwanda, we're now wondering who the next bureaucrat invading life is. They want to put us out of business." She adds.

She acknowledges that agricultural biotechnology can be a solution to mitigate climate change through the use of climate smart crops, energy efficient farming, and reduced synthetic fertilizer usage but she also calls on the government to share the risks involved in GMO crops as well.

In Rwanda, some farmers do not use fertilizers because they can't afford it. So they stick to organic or compost manure from livestock.

"They should let us [farmers] to decide, we need guarantees with complete risk assessments as well as effective risk management plans to know the dangers and how expensive it can get otherwise it's only for those who want to expand on commercial large scale." Innocent Budoni, a livestock farmer in Kayonza district points out.

"My worry is that, such crops will flood the market but consumers will have no choice in what they buy to eat, so we need a regulatory system based on science evidence." He adds.

Farmers have to make a fateful choice, they will have a choice between GMO and non-GMO crops since both have benefits.

Divine Mukandayisenga, farmer and agricultural extension officer in the Nyamirama sector, Eastern Province says that GMO crop seeds tend to be pest-resistant and more convenient to grow. They have larger, bigger grains and the ability to produce more food.

"Other consumers prefer eating organic crops because they believe it is cleaner and greener, and chemical free," She notes.

"The adoption of GMO crops in Rwanda will reduce the amount of chemical spray, while at the same time, it will make some farmers accountable for their practices. So it will be upon each farmer to make their choice." She adds.