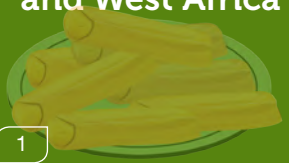
TOP 10 FACTS

about VIRCA Deployment Project in Kenya

FACT 1

VIRCA Deployment project aims to improve cassava harvests and provide better nutrition in East and West Africa

- VIRCA Plus project, now dubbed VIRCA Deployment, is developing disease resistant and nutritionally enhanced cassava varieties that will empower African smallholder farmers and improve health status of consumers.
- The project was launched in 2016 and builds on the success of two previous projects, the VIRCA and the BioCassava (BC) Plus.
- The VIRCA project successfully developed a cassava variety with robust and durable resistance to cassava brown streak disease (CBSD), validated over multiple cropping cycles in several locations in Kenya and Uganda. The BC Plus project developed and tested cassava plants with 10 times more iron and zinc than comparable varieties.



FACT 2

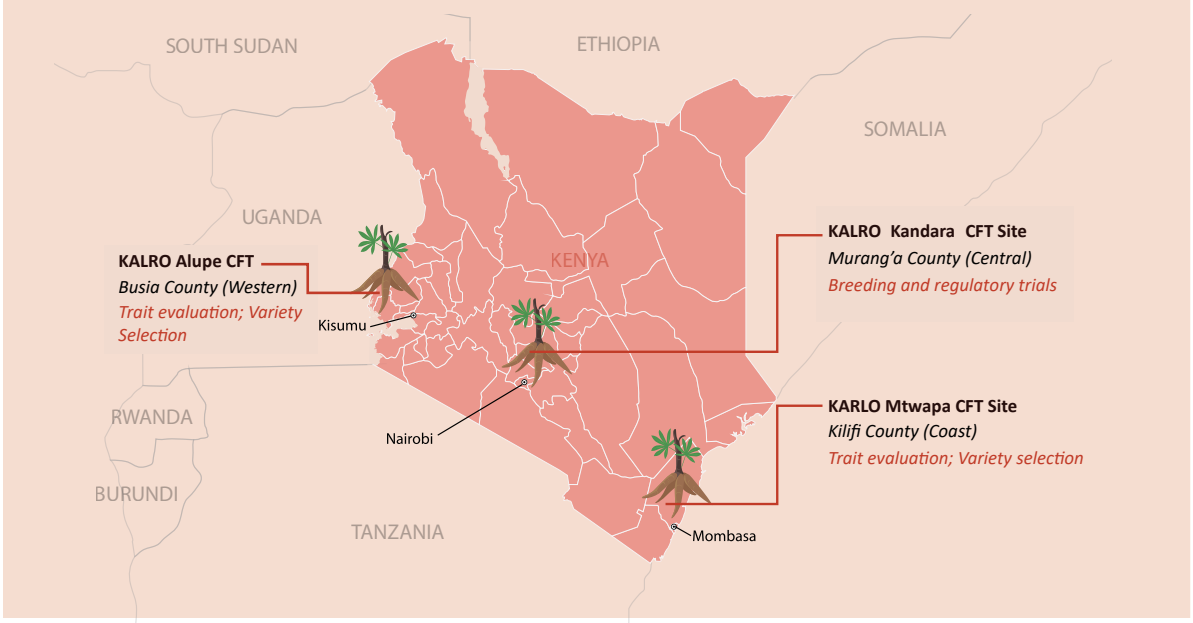
VIRCA Deployment will significantly contribute to Kenya's Food Security Agenda

- Cassava is the second most important food crop after maize in the coastal and western regions. The crop can immensely contribute to increased food security in Kenya in line with the Government's Agenda.
- In severe infections, CBSD can result in up to 100% loss of usable storage roots. Disease resistant cassava will increase production and contribute towards actualization of the anticipated flour-blending policy.
- Cassava is a potential industrial crop, especially in production of animal feed, starch, flour and ethanol, hence its contribution to the manufacturing pillar of the Government's Agenda.

FACT 3

VIRCA Deployment embraces teamwork and collaboration

- VIRCA Deployment is a collaborative program between the Kenya Agricultural and Livestock Research Organization (KALRO), and several public and non-governmental organizations working in Nigeria, Uganda and USA.
- KALRO is composed of semi-autonomous institutes established under the Kenya Agricultural and Livestock Research Act of 2013. The Act recognizes the role of universities in research and provides for partnerships with them as associate research institutes.
- The Kenya project team comprises KALRO and University of Nairobi scientists, International Service for the Acquisition of Agri-biotech Applications (ISAAA) AfriCenter, which provides communications support, and International Institute for Tropical Agriculture (IITA) for technical backstopping.



- Since 2011, project researchers have been growing and evaluating disease resistant cassava in three diverse locations in Kenya - Kandara, Mtwapa and Alupe.
- KALRO Kandara hosted regulatory and breeding trials due to its suitability as a no-disease site.
- KALRO Mtwapa is an experimental site with high disease incidence of both CBSD and CMD. The site was used for trait and yield selection trials.
- KALRO Alupe is a hot spot for CMD and CBSD. This site was also used for yield selection and trait selection trials.
- National Performance Trials (NPTs), a routine requirement for all new crop varieties and an essential step in demonstrating value for cultivation and use prior to registration and release to farmers, have been completed across 7 sites in eastern, western and coastal Kenya.

FACT 4

VIRCA Deployment research trials were carried out in several sites across the country

FACT 5

VIRCA Deployment uses a range of proven technologies to improve cassava

- VIRCA Deployment researchers used conventional plant breeding, and modern biotechnology tools to improve cassava.
- The researchers introduced a small component of two viruses that cause CBSD into the plants to make them resistant. This process activates a naturally occurring mechanism present in plants called RNA interference (RNAi).
- RNAi technology has been used to develop a number of products resistant to viral diseases. ‘These products have been authorized by regulatory agents globally for example, beans, papaya, plum, potato, cucumber, zucchini and watermelon.

- VIRCA Deployment has successfully developed a CBSD cassava line 4046 with resistance to CBSD and other desirable agronomic characteristics.
- The line has been evaluated in multiple regulatory field trials in Kenya and Uganda. The necessary regulatory studies have been completed and an application for environmental release (open field cultivation) was submitted to NBA in March 2019. An approval to proceed to National Performance Trials was granted by NBA in June 2021, and the NPTs successfully established by and completed,following approval by the National Environment Management agency.
- The line is successfully being used in conventional breeding to develop varieties with resistance to CBSD, CMD and other desirable agronomic characteristics. Because the line is not yet approved for placing on the market, this work is taking place in regulated confined field trial conditions authorised by the Kenyan National Biosafety Authority (NBA).

FACT 6

VIRCA Deployment has made steady progress towards delivering CBSD resistant cassava

FACT 7

CBSD resistant cassava line 4046 developed by VIRCA Deployment is safe for the environment

- In compliance with regulatory requirements, all genetically modified (GM) crops must be assessed for environmental safety before they are released to farmers. VIRCA Deployment confined field trials (CFTs) are monitored by the National Biosafety Authority (NBA) and other regulatory agencies as stipulated by Kenya's Biosafety Act of 2009.
- The CBSD resistant cassava line 4046 does not have a fitness advantage over conventional cassava that would render it more weedy, or invasive in natural habitats. In addition, GM cassava is developed for disease resistance meaning there are no non-target species.
- There is no potential of cross-pollination from CBSD resistant cassava line 4046 to conventional cassava because cassava cultivars are propagated exclusively from stem cuttings.

FACT 8

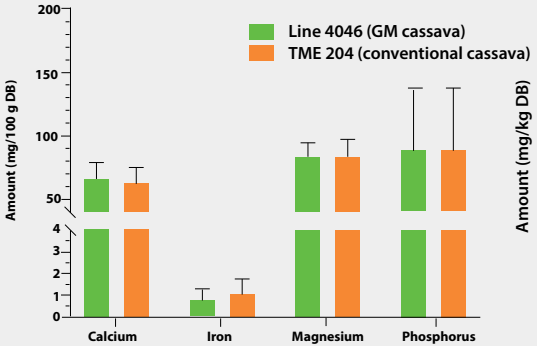
CBSD resistant cassava planting material, dubbed KingaKUU, will be accessible to farmers

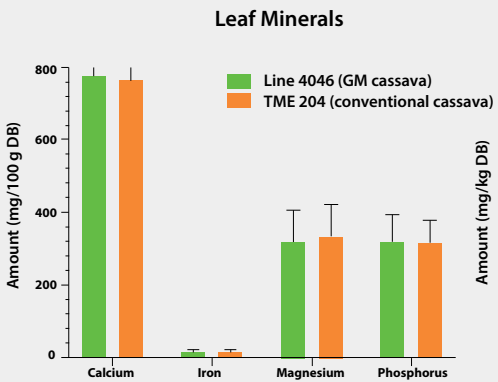
- KALRO breeders are developing new farmer preferred varieties using CBSD resistant cassava line 4046 under regulated confined field trial conditions authorised by the Kenyan National Biosafety Authority (NBA).
- If and when NBA approves CBSD cassava line 4046 for placing on the market, and if the National Variety Release Committee grants an approval for release and commercialization, KingaKUU cassava, will be readily available at a comparable cost to conventional cassava.
- VIRCA Deployment had established a sustainable and efficient cassava seed production and distribution system through Cassava Seed Entrepreneurs, meaning KingaKUU cassava will be accessible to farmers.

FACT 9

VIRCA Deployment has incorporated public participation in line with Kenya's Constitution

- Public participation forms an integral component of VIRCA Deployment, as the project believes in community ownership of public decisions in accordance with the Kenyan Constitution. Close to fifty public engagement activities have been carried out in the last three years alone.
- Farmers, youth, policy/decision makers and value-chain actors have been sensitized about GM cassava through appropriate awareness platforms and field visits to experimental sites. Innovative approaches to public participation include seeing-is-believing tours, real-time process documentation, scientists-journalists mentorship, Science Cafes and grassroots outreach.
- The project led Africa's first-ever virtual public participation process in May/June 2020. This followed NBA's call for public comments after submission of an application for environmental release of CBSD resistant cassava line 4046. The virtual approach, authorized by the Kenyan government to help continue with official business, was necessitated by the COVID-19 pandemic. An SMS system that factored in farmers' needs was also developed to complement the virtual process. Farming communities were also extensively engaged during the conduct of an Environmental and Social Impact Assessment (ESIA), in accordance with the law.





- Research on GM crops has indicated that incorporation of disease resistant traits has insignificant biological impact on the composition of key nutrients and anti-nutrients.
- Compositional assessment was carried out on KingaKUU cassava and conventional cassava in compliance with the Organization for Economic Cooperation and Development (OECD) guidelines, international guidelines on food safety which Kenya has domesticated.
- No changes were observed in nutrient composition/nutritive value when sample leaves and storage roots of KingaKUU cassava and conventional cassava were analyzed.

FACT 10

CBSD resistant cassava line 4046, also known as KingaKUU, is safe for human and animal consumption

more food | better nutrition | higher incomes

KALRO
Kenya Agricultural & Livestock Research Organization
www.kalro.org
@kalromkulima

UNIVERSITY OF NAIROBI
www.uonbi.ac.ke
@uonbi

VIRCA DEPLOYMENT
www.kingakuucassava.org
#KingaKUUCassava

DONALD DANFORTH PLANT SCIENCE CENTER
DISCOVERY | COMMUNITY | IMPACT
www.danforthcenter.org
@DanforthCenter

ISAAA AfriCenter
www.africenter.isaaa.org
@afri_isaaa

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