

Climate smart mid-altitude potato varieties

TECHNOLOGY DESCRIPTION

The International Potato Center (CIP) focuses its potato breeding strategies on resilience to the abiotic and biotic stresses most likely to challenge production in the near future. CIP has developed sets of robust candidate varieties with combinations of traits such as heat tolerance, water-use efficiency, earliness and late blight and virus resistance. In a series of adaptive participatory trials, some advanced clones with wide adaptation to stresses of climate change have been identified and in some countries these have already been registered as varieties.



Figure 1. Participatory evaluation of mid-altitude potato clones at 1,396 masl in Kutus, Kenya

END USERS AND BENEFITS

Climate smart clones have shown great adaptability to erratic weather conditions often present in SSA. Tolerance to drought and heat (+2-3 C°), reduced risk of losses due to climate change and offers farmers in mid-altitude to integrate potato into their farming system to diversify production for improved food supply and income generation.

SCALING STRATEGY

Close collaboration with NARS will ensure that locally-selected elite clones will be entered into variety release processes in at least 15 countries globally. CIP and partners will create awareness about newly released varieties through variety catalogues, ICT platforms and demonstration plots. For effective scaling enough seed has to be produced. We will work with partners on the development of effective seed systems under PO 2.4 and PO 2.5 to ensure large scale access to climate smart varieties. As warm mid-altitude agroecologies are prone to pest and disease pressure, it is essential to diffuse varieties accompanied with a well described agronomic package.



TRAIT OBSERVATION AND DISCOVERY NETWORK (TON)

CIP's BMZ funded project: 'Accelerating the Development of Early-Maturing-Agile Potato for Food Security through a Trait Observation and Discovery Network' builds capacity of NARS to identify new trait sources and methods to select and release early-maturing climate smart varieties to end-users in a reduced time frame. It provides access to a panel of 360 diverse tropically adapted clones and standardized protocols for phenotyping crop duration, performance under moisture stress, and late blight and virus resistance in and across diverse representative environments of Africa, Asia and South America. GxE analysis and genome-wide association studies are informative on stability and genetics of multiple key sustainability traits. Participatory Variety Selection including both men and women farmers shall ensure better uptake of varieties released from the Diversity Panel by NARS.

LEVEL OF ADOPTION OR USE

In Africa evaluation and selection of potato clones have been conducted in different mid – altitude agro-ecological zones in Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda. In Kenya and Tanzania some varieties have already been recommended for variety release whereas for the other countries this is expected in the coming two years.

CRITICAL GAPS AND NEXT STEPS

Farmers have shown interest in adopting the new climate smart varieties where they have access to those and are aware of the varietal benefits. The biggest bottleneck for effective variety diffusion in sub –Saharan Africa are the still underdeveloped seed production and distribution systems. We propose further multi-environment and participatory evaluation of climate smart potato clones where we will capture traits from demand driven evaluations supported by phenotyping and genotyping tools to inform future breeding. It will be important to integrate tests for anti-nutrient components to ensure safety of potato crops grown in heat and drought-prone ecologies. Agronomic packages will be validated. Additionally, a close link with seed system interventions combined with a combination of measures to create awareness and demand as described in the scaling strategy. Is needed

KEY PARTNERS FOR SCALING

NARS for variety release and public and private seed producers, national stakeholder platforms for information and coordination and ICT based knowledge and information portals.