



# Climate risk management for the roots and tubers sectors in Africa

Root and tuber crops are highly tolerant to poor soils and droughts. However, among them, the production of cassava, yam and potato can be negatively affected by climate variability and change. Irish potato, for example, which is generally grown in mountainous areas, is vulnerable to landslides and drought-sensitive.

Furthermore, unpredictable climate shocks can lead to other production related issues, such as plant diseases, with potential dramatic consequences on the entire food system of a country.

To address climate risks, value chains' actors require timely and accurate information systems, including data on market prices, and a set of crop-specific climate risk management strategies.

## Root and tuber crops: an alternative crop to cope with changing climate?

Crops like cassava perform optimally with mean temperatures between 25 and 29 °C, and with soil temperature of about 30 °C, while below 10 °C the plant stops growing. Cassava can tolerate semi-arid conditions, with rainfall as low as 500 mm, because it absorbs water slowly from the ground and reduces the size of its leaves during water shortages. These resilient physical characteristics represent an advantage if compared to other crops in climate adverse conditions. The same applies to taro, which is grown in warmer areas of tropical regions in upland ecosystems, and which can withstand waterlogging.

## Impact of climate variability on roots and tubers

Quantitative analyses carried out by the FAO African Roots and Tubers Project,<sup>1</sup> found that in Benin, the dramatic increase in mean annual temperatures that the country experienced over the past 20 years (+0.8 °C) was actually positively correlated

<sup>1</sup> Funded by the European Union (EU) and the African and the Caribbean group of states (ACP) (find out more at [www.fao.org/in-action/african-roots-and-tubers](http://www.fao.org/in-action/african-roots-and-tubers)).



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## KEY MESSAGES

- ▶ Despite the tolerance of root and tuber crops to high temperatures and water stress, increasing climate anomalies are threatening their production.
- ▶ Climate information services and risk management become therefore crucial to reduce the exposure of producers of roots and tubers to climate hazards, and also to mitigate the potential food insecurity which would result from the reduced production.

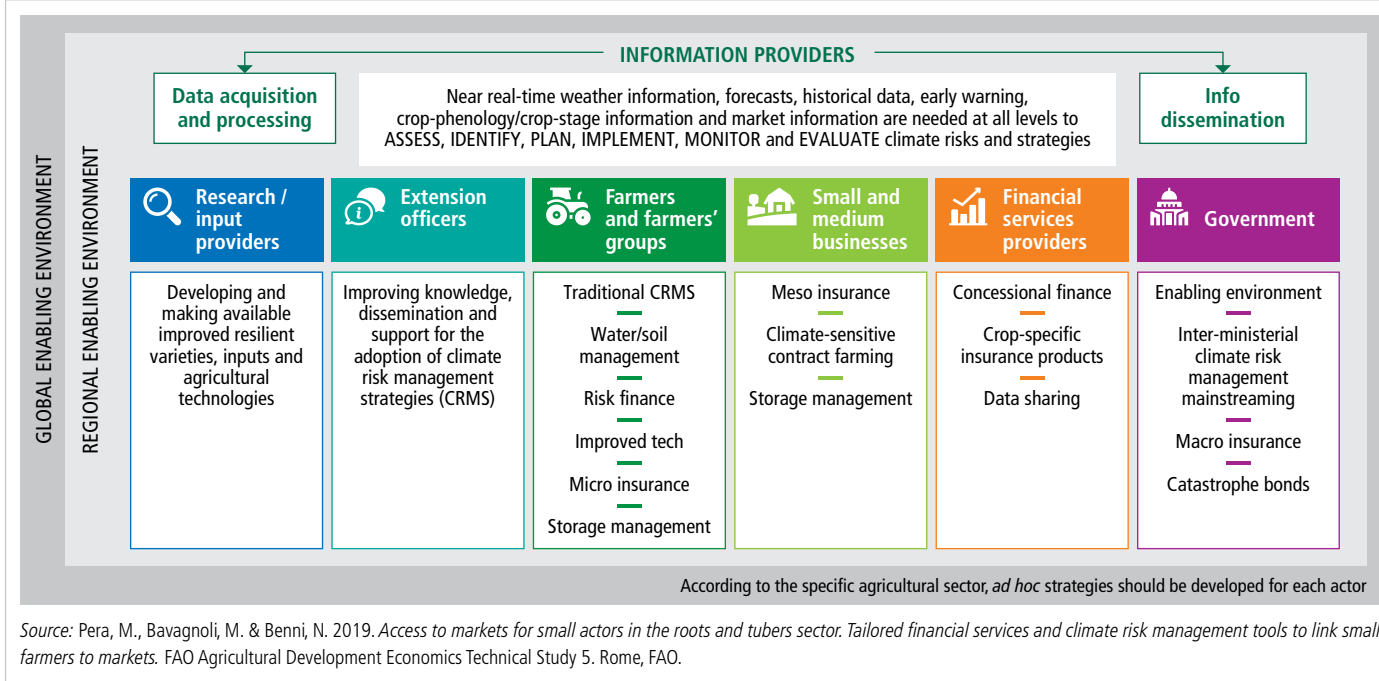
with cassava yield, as well as production, respectively 61 percent and 40 percent. Similar results were found in several districts of Ghana showing that cassava could resist, in some cases, water stresses.

## Climate risk management strategies for the roots and tubers sector

Since 2015, the FAO African Roots and Tubers Project has supported the value chains of cassava, yam and potato in vulnerable African countries. Thanks to the capacity built, and the institutional support provided by the project, small roots and tubers producers increased their production and income, and increased and diversified their access to market outlets and financial services. However, given the severity of climatic events, the project found that in countries like Uganda, droughts and floods cause high losses in the value of the majority of food and cash crops. In the district of Kabale, in South-eastern Uganda, in 2017, small potato producers lost 80 percent of their production.

The sustainability of the roots and tubers industries strongly depends on the improved management of climate risks. General climate risk management practices, such as: (i) the provision of climate information services and climate education

FIGURE 1. Agricultural value chain framework for climate risk management mainstreaming



through Farmer Field Schools (FFS); (ii) the integration of climate risk management into Local Development Plans; and (iii) contract farming arrangements based on the adoption of climate-smart agricultural practices, are all strategies which can facilitate the adaptation climate variability, benefiting different actors of the value chain, especially small producers and processors. In addition to this, there are also specific targeted strategies, which include the adoption of heat sensitive food packaging materials for processed roots and tubers; the adoption of improved roots and tubers varieties and agricultural products; and the provision of inclusive crop-specific insurance products.

## Lessons learned and policy considerations

### Integrate climate risk management (CRM) into agricultural development policies and planning, particularly when value chain mainstreaming is targeted.

To move from emergency to development, agricultural ministries at all levels needs greater collaboration with the National Meteorological Agencies (NMA), to receive climate data and build their capacity on access and utilization of climate modelling results, as well as risk assessment and management tools for policy integration.

### Develop an inclusive strategy for the provision of climate related services.

Investments in new and improved central and synoptic weather stations should be combined with collaborations with International Climate Services Organizations to improve access to accurate satellite data, as well as with local actors (e.g extension officers, sectoral platforms, community religious leaders, cooperatives and FFS). Such collaborations should ensure that climate related information are disseminated in local languages and translated into adaptive farming practices. Lastly, downscaled climate forecasts should be integrated into annual extension advice.

### Facilitate contract farming arrangements to promote CRM strategies.

Public-private partnerships should be facilitated, to enable farmers to access input credit and technical support and increase in turn the adoption of coping and adaptation strategies.

### Mainstream agricultural insurance schemes against climate risks along existing value chains.

Consultation fora among roots and tubers value chain actors, NMAs, financial institutions, services providers and insurers is crucial to develop and disseminate climate insurance products that are tailored on the specific needs of roots and tubers actors, stimulating the creation of inclusive and equitable financial markets.