



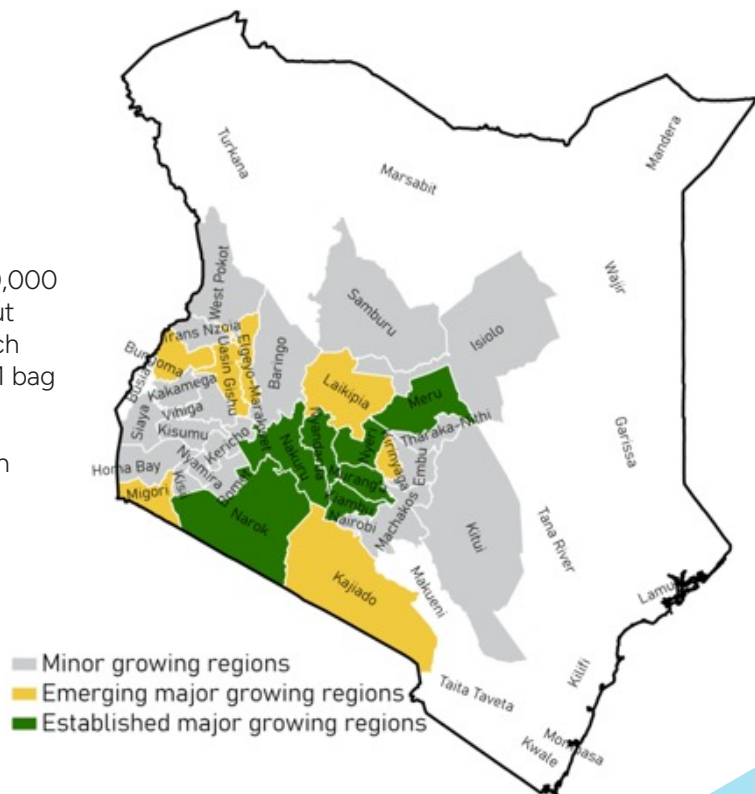
Climate Risk and Opportunities Potato in Kenya

In Kenya, potato is an important food crop, second after maize and most farmers allocate more than 25% of their farms to potatoes. Potato is produced both for food and cash.

It is estimated that Kenyan farmers grow potatoes on approximately 120,000 to 150,000 ha annually. The total annual output is about 1.5 to 2 million metric tonnes annually, which translates to approximately 70 bags/acre (1 bag represents to 100kg).

The market value of this annual production is about KES 50 billion (US\$500 million).

Of all potato growers in Kenya, 98% are characterised as small-scale farmers, producing less than 0.4 ha of potatoes per year per farm (total of two planting seasons). They produce 83% of the national production.



Notes:

- (a) Data source: Ensembled CORDEX data.
- (b) SSP3-RCP 8.5 emission scenario has been used to assess the climate change projections and impacts.
- (c) MAM refers to March, April, and May. OND refers to October, November, and December.

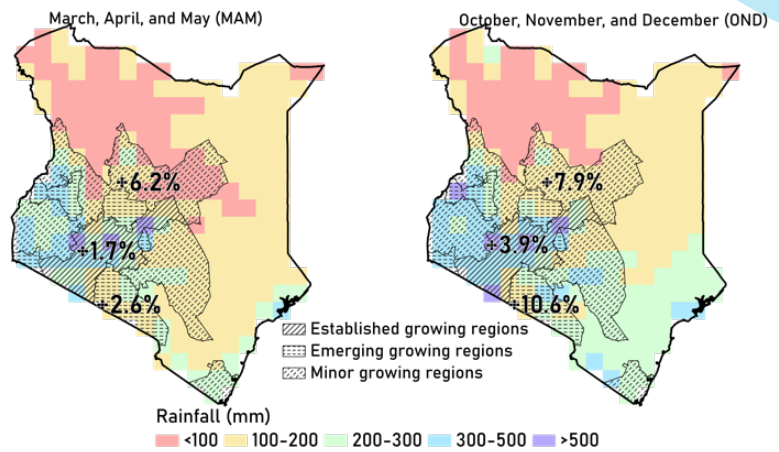
Future climate under climate change

Overall, it an increase in rainfall is expected especially in the OND season, but the size of the change will vary across different growing regions. The established areas will probably experience a relatively smaller rise compared to the emerging and minor potato growing regions in the both seasons.

Due to an increase in seasonal mean rainfall and consecutive wet days in both seasons, extreme flooding events are projected to increase in the country in the 2050s, especially in the west and northeast.

In the potato-growing regions in the country, temperature projections indicate an anticipated increase of up to 3.1°C during the MAM season and up to 2.8°C during the OND season by the 2050s.

Additionally, the number of hot days and nights will increase, with 'hot days' projected to occur on 19%–45% of days by mid-century. Hot nights are expected to increase more quickly, projected to occur on 45%–75% of nights by mid-century and on 64%–93% of nights by end of century



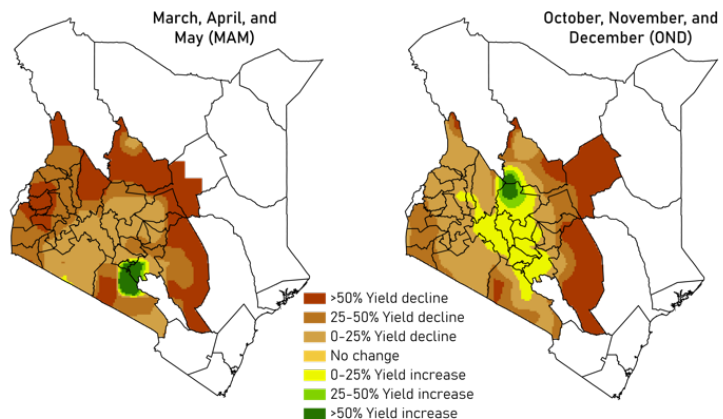
Note: The map shows current seasonal rainfall (mm) and the changes (%) in the future (the 2050s) for the SSP3-RCP8.5 climate change scenario for various crop-growing regions

Potato crop productivity changes (%) in the future

Projected declines of over 75% in potato yields are anticipated for both seasons throughout the country.

MAM season yield losses are projected to be more severe than OND season yield losses.

Certain regions in major potato-growing counties may experience positive yield outcomes compared to the overall projected decline due to relatively higher rainfall in the OND season.

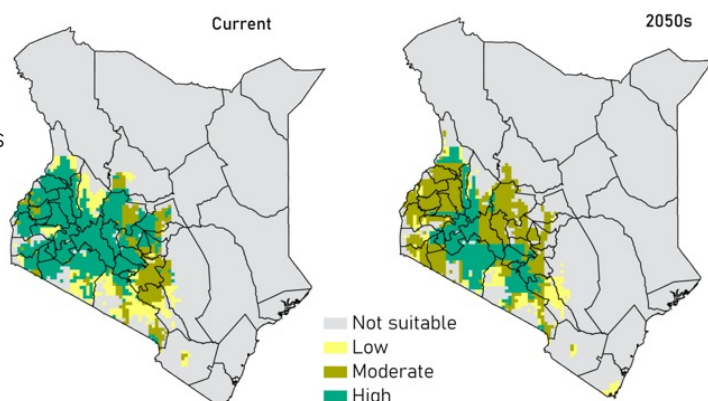


Potato crop-growth suitability

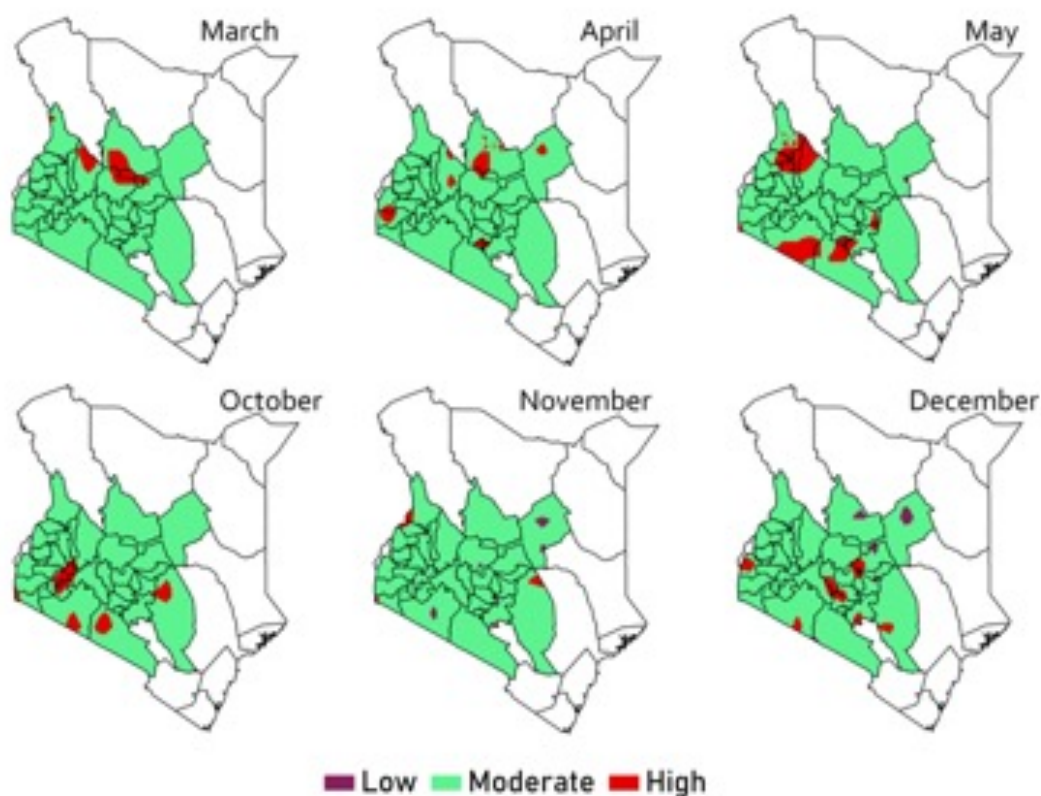
Overall, the projected suitability for potato cultivation is expected to decrease from high to moderate overall.

Approximately 22.5% of the area remains highly suitable for potato cultivation, while 19.3% of the area is deemed low suitable from the current in the future.

In specific regions such as Embu (19.6%), Meru (28.9%), Nyeri (20.62%), and Tharaka-Nithi (14.5%), have been projected to be low suitable from high suitable.



The probability of drought risks



In March, Baringo and Laikipia counties are projected to have >20% of the area under high drought risk.

In April, significant parts of Homa Bay, Nairobi and West Pokot counties will probably face high risk of drought.

In May, significant parts of Baringo, Embu, Narok, Trans Nzoia, Uasin Gishu and West Pokot are likely to experience high drought risk.

In October, Bomet, Kericho and West Pokot counties are projected to have about half or more of the area under high risk.

In November, Migori, Trans Nzoia, and West Pokot are projected to have small parts of the county under high drought risk.

In December, especially Kiambu, Nyandarua, and Siaya counties are expected to have a significant part of the area under high risk of droughts.






In October, November and December most potato-growing districts are expected to experience moderate drought risk.



Climate change adaptation strategies

Adaptation measures are listed based on the discussion with the CRAFT team from Uganda under the following objective, "To establish suitable adaptation strategies that will increase the adaptive capacity and resilience of the actors within the value chains." The listed adaptation measures mainly focus on the potato value chain in Uganda.

Potato is sensitive to heat stress but does better than other crops in shorter rainfall regimes (due to shorter growing period and a higher water use efficiency).

Climate risks	Impacts	Adaptation measures	Impacts of adaptation measures
 <p>Drought</p>	Moisture stress, stunted growth, crop loss, reduced product quality, increased incidence of pests and diseases, high rate of pest/disease control application, soil erosion, and moisture stress	Drought tolerant seeds, high yielding & early maturing seeds, soil water conservation measures (mulching, hilling/earthing up, terracing), cover crops, mechanization (ridging, chiseling), and seasonal forecast	<ul style="list-style-type: none"> Increased resilience to drought conditions Improved crop yields and early harvesting Enhanced soil water retention and conservation Reduction in soil erosion and nutrient loss Enhanced soil structure and fertility
 <p>Intense rainfall (Floods)</p>	Destruction of crops delayed land preparation, increased incidence of soil-borne diseases, increased application of pest and disease-control chemicals, poor quality and low quantity of harvested products, high post-harvest losses, and reduced shelf life	Early planting, use of IPM, GAP strategies for disease and pest control (e.g., deep ploughing, uprooting, and roguing of affected crops), and Integrated land and water management (hilling/earthing up, cut-off drains, and terraces).	<ul style="list-style-type: none"> Increased resilience Sustainable pest management Disease control Enhanced soil fertility Improved water management
 <p>Increase in Temperature</p>	Poor tuber formation, reduced germination, and growth rate, scorching, increased incidences of pests and diseases, intense pesticide use, and poor soil conditions (loss of soil cover)	Conservation agriculture (mulching/cover crops/crop rotation, intercropping), use of heat tolerant varieties, use of IPM techniques, and pesticides application	<ul style="list-style-type: none"> Soil conservation Biodiversity promotion Climate resilience Enhanced soil moisture retention Drought tolerance Pest control efficiency Reduced chemical usage
 <p>Soil degradation</p>	Crop stress, reduced product quality, and crop loss	Fertilization, manure application, conservation agriculture (mulching/cover crops), crop rotation, and intercropping	<ul style="list-style-type: none"> Soil enrichment Nutrient replenishment Improved soil structure Enhanced water retention Biodiversity promotion Reduced erosion Pest and disease control
 <p>Pest and diseases</p>	Reduction of yield and quality, and increased application of pest and disease control	Drought/pest and disease tolerant seeds, management practices such as volunteer plants, deep ploughing, uprooting, roguing etc., crop rotation, intercropping, farm hygiene, mulching.	<ul style="list-style-type: none"> Resilient seeds Pest and disease resistance Soil cultivation techniques (deep ploughing, uprooting, roguing) Crop diversity Intercropping benefits Hygienic farming practices Soil moisture retention

Acknowledgment

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