

How Zambia's small-scale farmers can adapt to a changing climate - and how policy-makers can help

Climate change – bringing increased flooding, drought and disease – is damaging and destroying farmers' crops, making farmers hungrier, sicker and less financially secure. But it's possible to fight back.

Climate change is bringing flooding as well as drought

Climate change is any change in the interconnected elements of weather over time, either due to natural variability or as a result of human activities. Weather is always changing and every year the weather is different, greatly affecting farming and livelihoods. It may mean higher average temperatures, changing rainfall patterns, increase in frequency and intense extreme events such as droughts and floods. Climate change normally occurs over a period of many years, normally 30 years. The most important features of climate change for farmers in Zambia are prolonged dry spells causing water shortages and flooding due to heavier rains.

Climate change arises due to the warming of the earth caused by the excessive accumulation of the greenhouse gases in the atmosphere. Among the predominant factors behind the accumulation of these gases is the burning of fossil fuels especially by developed nations, and deforestation, which reduces the earth's ability to capture carbon.



"Farming has now become completely different and difficult. Sometimes rains start in late November or later instead of October as in the past. When it comes, it rains and rains continuously for almost the whole day, which is bad for our crops. The weather patterns have gone completely mad here. When we expect a drought there is too much rains and floods and vice versa. The rains destroy houses and wash away fields, roads and bridges."

- Dickson Siangoma, Headman, Malundu Village, Lusitu, Siavonga

Policy-makers and other development actors can help

There are three main ways policy-makers could help farmers adapt to a changing climate:

1 Recognise and build on community adaptation mechanisms. Local communities in Zambia have for a long time used coping mechanisms for most climatic risks. Such mechanisms include using a range of crops and sites; adjusting land and crop management to suit prevailing conditions, for instance hunting wildlife; and gathering honey, edible wild fruits, mushrooms and caterpillars for home consumption and sale as a way of dealing with crop failures. Sustainable community adaptation strategies need to be identified, recognised and supported in the development and implementation of adaptation plans of action.

2 Go beyond traditional knowledge systems, which are vital but not adequate given the magnitude of the problem. Based on experience and traditional knowledge systems, farmers have been predicting rainfall patterns using indicators such as plant, insect and animal behaviour in order to inform their decisions on labour and other resource allocations.

Traditional knowledge systems alone are not enough to adequately respond to climate change impacts but do serve as vital entry points for interventions by government, NGOs and other stakeholders.

3 Understand that appropriate agricultural policies and a conducive institutional environment are a prerequisite for increasing the resilience of farming communities.

Compiling adaptation measures alone is not enough. What is crucial is to ensure that there is the development and implementation of appropriate policies and institutional environment in order to drive agricultural transformation for sustainability in the face of climate change.

Farming adaptations

Common climate change features	Effects on crops/livestock/humans	Possible local adaptation measures
Prolonged droughts, erratic rains, delayed or early but short rain seasons coupled with high temperature	Water stress, high pests and disease incidences leading to poor yields or total crop failure, high livestock and human mortality	<ul style="list-style-type: none"> • Rescheduled or staggered planting dates • Livestock and crops that are tolerant to disease, pest and drought and are fast maturing, such as millet and sorghum • Crop/livestock diversification, including small livestock types which are suitable for women • Conservation tillage, terracing, contour planting, agroforestry, rain water harvesting, storage and conservation, including small-scale irrigation technologies, and sustainable utilisation of wetlands • Early tillage. Farmers should not lose any rainy day. Tilling should start long before the rains start, even directly after harvest in April-June. • A mix of agro- and non-agro activities that bring in extra income • Environmentally friendly control measure for pests, weeds, parasites and diseases • Low-cost, improved post-harvest technologies, such as drum storage, solar disinfection, and bagging, grain bins and use of ash for grain storage
Very stormy downpours and flooding	Physical crop damage	<ul style="list-style-type: none"> • Diversification, planting crops and plant varieties that withstand physical damage, like tree crops, cane sugar and tuber crops • Wind breaks and storm drains
	Crop damage or failure due to water logging	<ul style="list-style-type: none"> • Diversification, planting crops and varieties that withstand excessive water conditions (such as sugar cane, wheat and rice) • Adjust timing of farming operations and change the farming practice to counter logging • Aquaculture
	Increased livestock and crop disease & pest outbreaks	<ul style="list-style-type: none"> • Environmentally friendly control measure for pests, weeds, parasites and diseases
	Crop failure due to soil degradation – erosion	<ul style="list-style-type: none"> • Diverse vegetation to control run-off and storm drains to control erosion • Soil drainage practices • Avoiding locating crop fields in flood-prone areas and very steep landscapes
	Crop failure due to soil degradation – leaching	<ul style="list-style-type: none"> • Sustainable agricultural farming that reduces leaching and increases the soil's organic matter (such as agroforestry and organic manure) • Improved but low-cost agro-storage technologies, such as drum storage, solar disinfection and bagging, grain bins and use of ash for grain storage)



Water harvesting combined with treadle pump irrigation supports off-season vegetable production in Lusitu.



For more information

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