

How small holder farmers can strength

Small holder farmers have been advised to embrace improved and sustainable farming practices to cope with prolonged dry spells and become better prepared to withstand, adapt to and recover from drought and other climate shocks without losing their livelihoods.

BY DAPHINE NAKABIRI

In a recent weather forecast press statement, the Ministry of Water and Environment warned that much of Uganda will continue to experience prolonged hot and dry conditions throughout February, with only isolated showers expected in certain regions. These persistent dry spells are said to pose a significant threat to water availability, crop production, and the livelihoods of farmers.

Across Uganda, during the December–January–February dry season, farmers have reported wilting crops, stunted growth, and reduced yields. In several areas, seasonal crops that would normally be harvested in the coming months have already failed.

Yet, while smallholder farmers make up the majority of Uganda's agricultural sector, accounting for approximately 70 percent, many still rely entirely on rain-fed agriculture and lack alternative water sources, leaving them highly vulnerable to climate variability. The prolonged dry spell as a result lead to reduced yields, income losses, and poses a threat to both household food security and local markets.

However, Emmanuel Kasumba, an agriculturalist based in Kambugu, advises small holder farmers to embrace improved and sustainable farming practices to cope with prolonged dry spells and become better prepared to

withstand, adapt to and recover from drought and other climate shocks without losing their livelihoods. This can be done through the following ways.

Irrigation technologies

Irrigation remains one of the most effective tools for improving agricultural productivity and strengthening farmers' resilience to climate variability as opposed to manual watering.

This practice provides a reliable and controlled water supply, which enables farmers to grow crops throughout the year, reducing dependence on unpredictable rainfall, and stabilises yields during prolonged dry periods.

However, access to affordable and efficient irrigation systems remains a major challenge for many smallholder farmers.

According to the Ministry of Agriculture, only about five to 10 percent of arable land in the country is equipped with irrigation facilities, with most systems concentrated in large-scale commercial farms and in a few specific regions.

Joel Muhumuza, an irrigation systems supplier, notes that small holder farmers need to consider using irrigation technologies designed to suit their needs, resources, and production capacities.

He encourages farmers to understand their crops and choose irrigation systems that suit their specific needs, starting small

with simple options such as manual or petrol-powered pumps, before gradually scaling up as their operations grow.

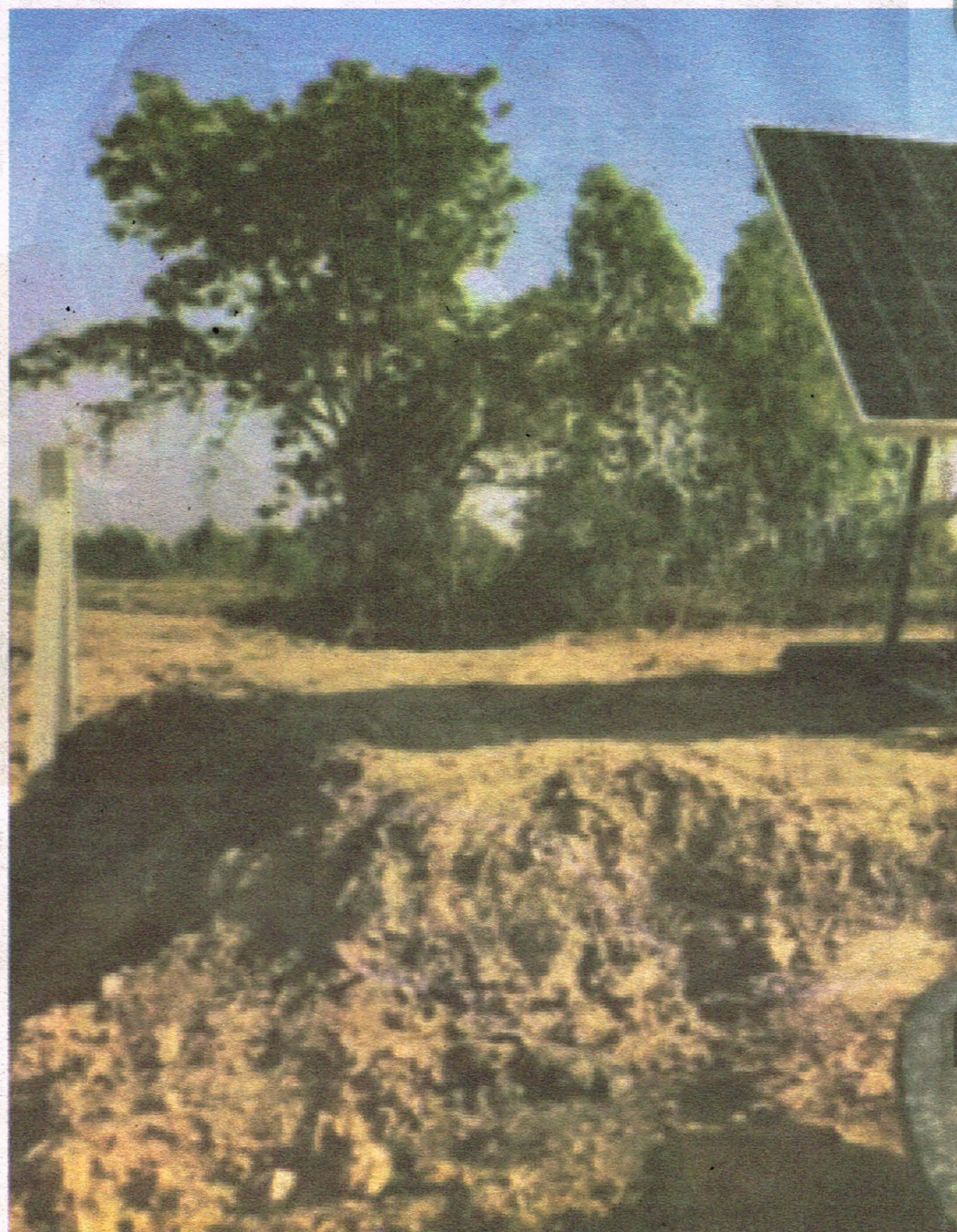
Muhumuza says, "There are several irrigation options available, and it is important for farmers to choose what they can manage at each

stage. These include low-cost solutions such as drip irrigation kits, sprinkler systems, treadle pumps, and solar-powered water pumps, which are suitable for small plots and can be expanded over time."

These not only offer practical alternatives to expensive conventional sys-

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Sprinkler irrigation in operation on a smallholder farm, helping crops survive prolonged dry conditions and reducing dependence on rainfall.



tems, but they are also relatively easy to install, require minimal maintenance, and can be adapted to small plots of land commonly used by smallholder farmers.

There are also movable irrigation kits that allow farmers to irrigate different sections of their land using the same equipment. Depending on the system type, capacity, and supplier, these kits can cost from about Shs500,000 to over Shs1.5m per acre.

In addition, modern irrigation systems promote efficient water use.

Drip irrigation, for example, delivers water directly to plant roots, reducing wastage through evaporation and runoff. This is particularly important in regions facing water scarcity, as it ensures that limited resources are used responsibly and sustainably.

To be able to scale irrigation technologies, strong institutional and community support like government agencies, non-governmental organisations, and private sector need to work together to subsidise equipment, provide technical training, and establish demonstration farms where farmers can learn best practices.

Farmers can also form community-based irrigation schemes, where farmers share water sources and infrastructure, to further reduce costs and improve access.

Muhumuza adds, "Farmers need con-

tinuous training on system installation, maintenance, and water management to ensure long-term effectiveness."

Furthermore, as sustainability and technology continue to shape modern agriculture, integrating renewable energy solutions such as solar-powered pumps can help farmers overcome challenges related to high fuel and electricity costs.

These systems not only lower operational expenses, but also promote environmentally sustainable farming practices.

Adopt climate smart farming practices

These practices focus on optimising resource use, protecting soil health, and ensuring sustainable agricultural production even under adverse climatic conditions.

They thus help farmers improve crop yields, maintain soil fertility, and reduce vulnerability to erratic rainfall. Practices such as mulching, minimum tillage, intercropping, crop rotation, and agroforestry help conserve soil moisture, reduce erosion, and enhance nutrient availability.

Despite their benefits, adoption of climate-smart farming is often limited by insufficient knowledge, lack of training, and limited access to appropriate tools or inputs.

However, extension services, farmer

en resilience during extended dry spells



A solar-powered water pump supplies irrigation water to farmland, offering an affordable and sustainable solution for smallholder farmers during dry spells.

Below: Increasing the types of crops present in an area can provide numerous ecological and economic benefits.

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DAPHINE NAK-
ABIRI

field schools, and demonstration plots play a crucial role in equipping farmers with the skills and information needed to implement these practices effectively. Farmers also benefit from guidance on selecting suitable crop varieties, adjusting planting schedules, and integrating soil and water conservation measures into their farming systems.

In addition, climate-smart agricul-

ture encourages the use of drought-tolerant and early-maturing crop varieties. These crops are better suited to withstand extended dry periods, providing food security and stable income for households dependent on small-scale farming.

Improve water management

Effective water management is a key

strategy for building resilience among smallholder farmers, particularly during prolonged dry spells. With rainfall becoming increasingly unpredictable, relying solely on natural precipitation exposes you to the risk of crop failure and reduced household food security. As such, water harvesting and storage techniques offer practical solutions by capturing and conserving water for use



He says...



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Joel Mukumuza, irrigation systems provider

during dry periods.

Water harvesting involves collecting rainwater from surfaces such as rooftops, farm plots, or catchment areas, and directing it into storage structures like tanks, ponds, or small dams. When properly stored, the water can then be used for irrigation, livestock, or household needs, reducing dependence on erratic rainfall. These methods are relatively low-cost, adaptable to small farms, and can be implemented with locally available materials.

In addition, water harvesting and storage improve the efficiency of water use. Farmers can manage irrigation more effectively, by applying water when crops need it most and minimizing wastage.

This contributes to sustainable farming and ensures that limited resources are used responsibly, even in water-scarce areas.

Community-based water management initiatives can also enhance access and sustainability. Farmers can build shared storage facilities through pooling resources and this helps in reducing individual costs, and ensuring equitable water distribution.

Crop and farm diversification

Diversifying crops and farming systems is a critical strategy for smallholder farmers to reduce vulnerability to prolonged dry spells. This includes cultivating a mix of crops and selecting varieties that can withstand harsh conditions.

In regions prone to water scarcity, farmers can choose drought-tolerant and early-maturing crop varieties. These crops require less water; they are more resilient to heat stress, and mature faster, allowing farmers to harvest even under shortened or unpredictable rainy seasons.

Common examples include early-maturing maize, sorghum, millet, cassava, and drought-resistant beans. Planting these crops alongside traditional staples also spreads risk, ensuring that if one crop fails, others can provide food and income.

Farm diversification can also include integrating livestock, vegetables, and agroforestry systems. This system commonly known as mixed farming improves soil fertility, reduces pest and disease pressure, and allows farmers to generate multiple sources of income. For example, planting trees on farms can provide shade, reduce evaporation, and improve soil moisture retention, while livestock provide additional food and income options during crop shortages.

Utilize financial support systems

Access to financial resources is a key factor to adoption of resilience-building strategies. This is because, without sufficient funding, even well-designed interventions such as irrigation systems, water harvesting structures, and climate-smart farming practices remain out of reach for many farmers.

Financial support can take multiple forms, including low-interest loans, grants, subsidies, insurance schemes, and cooperative-based savings. These tools provide farmers with the capital needed to purchase equipment, invest in drought-tolerant seeds, and implement improved farming practices.