POLICY BRIEF | ISSUE 002 | OCTOBER 2026

When Rains Fail, Markets Feed

Protecting Uganda's diets from drought through market connectivity

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KEY MESSAGES

- **Drought strips one in five food groups from the family plate.** In a drought year, rural Ugandan households lose 1.2 food groups from their daily diet, a 21% fall in dietary diversity.
- **Families keep their staples and drop the foods that build children.** Vegetables, fruits, meat, fish, eggs and milk vanish first. Calories hold; nutrition collapses.
- **Markets, not farms alone, are the main shock absorber.** Households close to a market lose about 28% less dietary diversity during drought than remote households.
- **On-farm crop diversity matters, but cannot carry the load by itself.** It explains about 8% of the drought loss. More than 90% travels through other routes, chiefly incomes, prices and access to food markets.
- **The policy priority is connection.** Feeder roads, reliable local input-and-food markets, and drought-triggered cash support will protect diets faster than production programmes on their own.

The bottom line: *a drought-resilient diet is built as much on the road to market as on the farm.*

The challenge: fertile land, fragile diets

Uganda has fertile soils and two rainy seasons, yet about 26% of its people are undernourished and 29% of children under five are stunted. Most rural families farm small plots with no irrigation, no insurance and little savings. When the rains fail, their diets fail with them.

Our first brief, Beyond Sachet (Issue 001), made the case that lasting nutrition comes from diverse, everyday diets rather than single-product fixes. This brief asks the next question: **what keeps those diets intact when climate shocks hit?** The answer shapes where governments, development partners and agribusinesses should put their next shilling.

Two routes carry a drought onto the plate:

1. **The production route.** Crops fail, farmers retreat to hardy staples such as cassava and sorghum, and fewer food types are harvested at home.
2. **The market route.** Regional supply falls, prices rise and farm incomes shrink, so families can buy fewer of the foods they no longer grow.

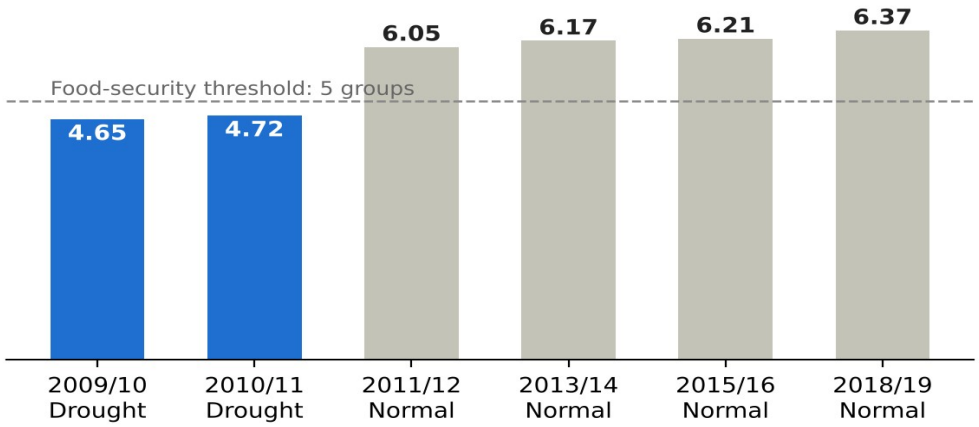
Until now, Uganda has lacked national evidence on which route does more damage. That gap matters: the two routes call for very different investments.

What the evidence shows

Drought costs rural Ugandan households 1.2 food groups a day, and the families with the least reach to markets pay the most. Four findings stand out.

1. Drought cuts diets by a fifth, and severe drought cuts deepest

Figure 1. Diets fell below the food-security line in both drought rounds (mean food groups eaten, of 12)

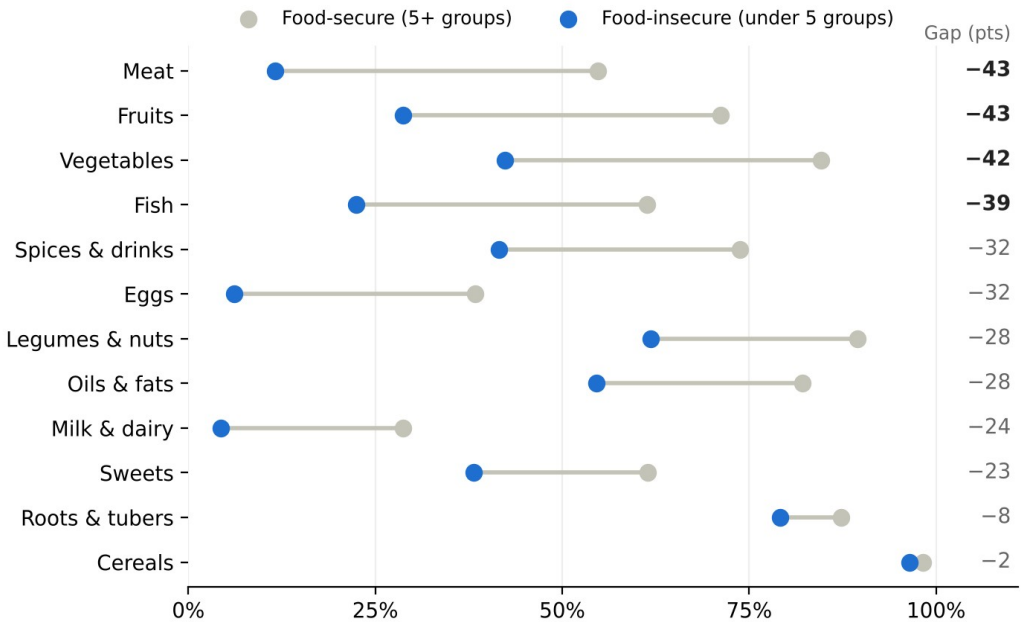


Source: Uganda National Panel Survey, rounds 1–6 (2009/10–2018/19), 8,609 household-round observations. Drought = growing-season rainfall Z-score ≤ −1.5.

After accounting for each household's own circumstances, a drought year removes 1.2 food groups from the average diet, a 21% fall from the usual 5.7 groups. The damage is not linear: once rainfall drops past the drought threshold, small differences in rain no longer help. Diets recover when the rains return, which shows the loss is driven by the shock, not by long-term decline.

2. The nutritious foods go first

Figure 2. Food-insecure families go without the foods that build children (% of households eating each group)



Source: Uganda National Panel Survey 2009–2019; food-secure n = 5,666, food-insecure n = 2,943 household-round observations.

One in three household observations fell below the food-security line. These families still eat cereals and roots, but are 39 to 43 points less likely to eat vegetables, fruit, meat and fish. Six in ten food-insecure households spend their food money on staples only, against about two in ten food-secure households. This is a crisis of vitamins, minerals and protein, not just of calories.

3. Markets cushion the blow

Remote households lose 1.21 food groups in a typical drought; households near a market lose 0.87, about 28% less. The protection rises steadily with market access: the least-connected fifth of households lose 1.35 groups,

the best-connected fifth 1.00. Food-secure households are also far more likely to live within 5 km of a market (58% against 34%). Female-headed and rural households carry slightly larger losses.

4. Farm diversity helps, but is not enough on its own

Drought pushes farmers toward hardy staples and narrows what they grow. Yet this production route explains only about 8% of the dietary loss. Food-secure households do grow far more vegetables (61% against 25%) and fruit (56% against 19%), so diversification lifts diets in normal years. When drought hits a whole area, however, it is income and access to markets that decide what reaches the plate.

What this means for policy

Road and market investment is nutrition investment. Bringing a household within reach of a market saves roughly 0.34 food groups in a drought year. Feeder roads are rarely budgeted as a nutrition intervention; this evidence says they should be.

Production programmes need a market partner. Promoting more crops on the farm raises everyday diet quality, but on its own it buys little protection when drought strikes the whole area. Farm diversification works best when farmers can also sell surplus, buy what they lack, and reach inputs on time.

Protect purchasing power before diets break. Because most of the damage travels through incomes and prices, support that arrives after the harvest has failed arrives too late. Transfers triggered by early-warning signals keep nutritious foods within reach.

Target the most exposed. Remote, rural and female-headed households carry the deepest losses. They should be first in line for road works, market linkages and shock-responsive support.

A caution on prices. Markets protect families who can afford to buy. When drought pushes up food prices, poor market-dependent households can lose ground. Market access therefore needs to come with income support and price information, not instead of them.

Recommendations

Who	Action	Why it matters
Ministry of Works and Transport; district local governments	Prioritise feeder roads in remote, drought-prone sub-counties, aiming for every farming household to be within 5 km of a functioning market.	Market proximity cuts drought diet losses by about 28%.
Ministry of Agriculture (MAAIF) and the extension system	Pair crop diversification with market linkage: legumes, vegetables, fruit and biofortified crops such as orange-fleshed sweet potato and iron-rich beans, plus buyers for surplus.	These are the food groups drought removes first; diversification lifts year-round diet quality.
Ministry of Gender, Labour and Social Development	Link drought early-warning signals (FEWS NET, WFP) to automatic cash or voucher transfers under the Expanding Social Protection framework, starting with remote and female-headed households.	Most of the loss runs through purchasing power; support must arrive before diets break.
Development partners and humanitarian agencies	Fund rural market infrastructure and price-information services within nutrition and resilience portfolios, not only as transport projects.	Connectivity is a proven, scalable resilience lever.
Private sector and agro-dealers	Extend last-mile input and food outlets into underserved parishes; share price and stock information with farmers by mobile phone.	Nearby, well-stocked markets keep diverse foods within reach.
Researchers and statistics agencies	Add local food price data to national panel surveys and track child nutrition outcomes alongside dietary diversity.	This will show how far prices offset the protective value of markets.

Wakhati's role: closing the last mile

Wakhati works where this evidence bites hardest. From our base in Adjumani District, we serve refugee and host communities in a drought-exposed, market-thin part of Northern Uganda, and have supported more than 10,000 smallholder farmers. Our Mungula and ATC outlets bring inputs, advice and market links closer to farming households.

The findings sharpen where we place our effort:

- **Bring the market closer.** Expand last-mile outlets and mobile input services into remote parishes, so farmers can buy and sell without long journeys.
- **Grow the foods drought takes first.** Combine climate-smart and biofortified seed with vegetable, legume and small-livestock support, alongside household nutrition education.
- **Link farmers to buyers.** Aggregate surplus and connect producers to traders, schools and institutional buyers, turning diversity on the farm into income in the pocket.
- **Partner for shock response.** Work with government, UN agencies and NGOs to deliver inputs and support quickly when early-warning systems signal drought.
- **Measure what matters.** Track household dietary diversity in our programmes, so our own results add to the national evidence.

We invite district leaders, development partners and fellow agribusinesses to work with us on these priorities.

About the evidence

This brief draws on original analysis of six rounds of the Uganda National Panel Survey (2009/10 to 2018/19), covering 1,500 rural smallholder households and 8,609 household-round observations. Household diets were measured with the FAO 12-group Household Dietary Diversity Score. Survey data were matched to CHIRPS satellite rainfall records at sub-county level; drought is defined as growing-season rainfall at least 1.5 standard deviations below the 1981–2010 average.

Effects were estimated by comparing each household with itself in drought and normal years (two-way fixed effects), which removes the influence of fixed traits such as soil quality, location and culture. The market finding is robust but not experimental: households near markets may differ in ways not fully observed. The split between production and other routes is descriptive. Local food price data were not available, so the separate role of prices could not be measured directly.

Selected references

Aker, J. C. (2010). Information from markets near and far: Mobile phones and agricultural markets in Niger. American Economic Journal: Applied Economics, 2(3), 46–59.

Dell, M., Jones, B. F., & Olken, B. A. (2014). What do we learn from the weather? The new climate-economy literature. Journal of Economic Literature, 52(3), 740–798.

Fafchamps, M., & Hill, R. V. (2005). Selling at the farmgate or traveling to market. American Journal of Agricultural Economics, 87(3), 717–734.

FAO. (2021). Minimum dietary diversity for women. Rome: FAO.

Funk, C., et al. (2015). The climate hazards infrared precipitation with stations: A new environmental record for monitoring extremes. Scientific Data, 2.

Hirvonen, K., & Hoddinott, J. (2017). Agricultural production and children's diets: Evidence from rural Ethiopia. Agricultural Economics, 48(4), 469–480.

Morrissey, K., et al. (2024). Market engagement, crop diversity, dietary diversity, and food security: Evidence from small-scale agricultural households in Uganda. Food Security, 16(1), 133–147.

Sibhatu, K. T., Krishna, V. V., & Qaim, M. (2015). Production diversity and dietary diversity in smallholder farm households. PNAS, 112(34), 10657–10662.

Usman, M. A., & Haile, M. G. (2022). Market access, household dietary diversity and food security: Evidence from Eastern Africa. Food Policy, 113.

About the author

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About Wakhati Agri Business Ltd

Wakhati Agri Business Ltd is a Ugandan agribusiness and development company strengthening food security, nutrition and resilience in refugee and host communities. It delivers climate-smart and nutrition-sensitive agriculture, urban farming, livelihoods support and veterinary services across Northern Uganda.

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Suggested citation: Alaru, N. (2026). When Rains Fail, Markets Feed: Protecting Uganda's diets from drought through market connectivity. Wakhati Agri Business Ltd Policy Brief No. 002. Adjumani, Uganda.

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