

Would a Kitui rainfall index have paid out in Mwingi's bad years?

A Kitui rainfall index would have paid out in 5 of Mwingi's 7 worst droughts

We compared October to December rain at Mwingi with the Kitui average for every season from 1991 to 2025. With a 1-in-5-year trigger, the index pays in its 7 driest seasons.

It would have missed 2 of Mwingi's 7 driest seasons (1999 and 2007), and paid in 2 seasons that were not among Mwingi's worst (1995 and 2017).

Season rain at Mwingi and across Kitui move together very closely (correlation 0.94, where 1 is a perfect match).

Droughts the index caught

5 of 7

Mwingi's driest seasons, 1991 to 2025

Missed payouts

2

farm dry, index did not pay

Payouts in other years

2

index paid, farm not in its driest 7

How closely they match

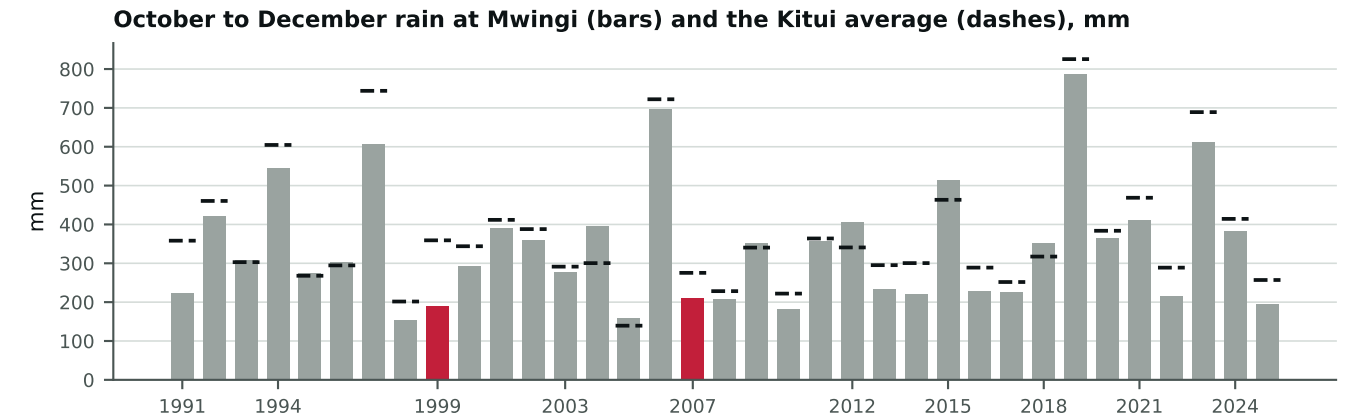
0.94

very closely (1 is perfect)

Good for judging rainfall basis risk; it does not cover the policy's own data source, crop losses from pests or prices, or the exact payout scale.

The driest seasons

Season	Farm rain	District rain	Index
1995	273 mm	268 mm	Paid, farm not at
1998	154 mm	202 mm	Paid, rightly
1999	188 mm	359 mm	Missed payout
2005	157 mm	139 mm	Paid, rightly
2007	209 mm	275 mm	Missed payout
2008	207 mm	228 mm	Paid, rightly
2010	181 mm	222 mm	Paid, rightly
2017	226 mm	252 mm	Paid, farm not at
2025	195 mm	257 mm	Paid, rightly



Data sources and licences

CHIRPS v3 rainfall. CC BY 4.0. UCSB Climate Hazards Center CHIRPS version 3.0, processed by dynamical.org. Funk, C. et al. (2026), Sci Data 13, 718. <https://doi.org/10.15780/G2JQ0P>. CC BY 4.0.

geoBoundaries Kenya ADM1 (2020). Public Domain. Boundary source: RCMRD GeoPortal, Africa GeoPortal. Runfola, D. et al. (2020) geoBoundaries: A global database of political administrative boundaries. PLoS ONE 15(4): e0231866.

Index insurance guidance: Global Inclusive Insurance Facility (World Bank Group): <https://www.globalinclusiveinsuranceforum.org/>

Rainfall for any place and season: TechnicalGIS rainfall tool: <https://www.technicalgis.com/climate-tools/>