

Thriving in the Sahel

What is the truth about the drylands region south of the Sahara desert? Is the desert creeping inexorably south, as the rains become increasingly unreliable and desperate farmers wring the final nutrients from the soil? And in these remote regions where relatively few people live, does it make economic sense to invest scarce resources against this seemingly inevitable decline?

This is a commonly accepted image of the Sahel, and a sadly common response to it, but the reality of the situation is very different. The rains are certainly unreliable - that has always been a defining feature of the region, and droughts are common - but farmers are far from victims of this difficult environment. Instead, they are responding with more intensive farming systems that save water, get the very best out of admittedly poor soils, and even replenish soil nutrients. Populations in the region are increasing, and, where these systems are in place, productivity of both crops and livestock are keeping up with demand.



credit: IITA

Kano, Nigeria

This is nowhere better illustrated than in northern Nigeria, in the dusty fields around the city of Kano. Here, more than 85 percent of the land is under continual cultivation - fallow periods are a distant memory for most farmers. Chemical fertilisers are hard to come by in this area, but with a variety of traditional methods, boosted by new, appropriate technologies, soils are holding their own.

The successful farming systems are low-tech, but clever. Everything has its use, and nothing goes to waste. Most farmers keep livestock, and the crops and livestock support each other in a neat circle. Animal manure is collected and used as fertiliser for the crops, and the animals are fed on the stalks and haulms after the crops have been harvested. One hectare of land can provide fodder for eight sheep or goats, which produce up to one tonne of manure in a year. A simple improvement has been to pen the animals rather than allowing them to roam and graze as in the past. With the need to bring former grazing land under agriculture, this was an obvious solution, but it has other advantages. Animals expend less energy seeking food, and manure is easier to collect; but perhaps most importantly, children who previously spent their days herding animals now have the time to go to school.

But applying manure to soils is not enough to keep them productive; the other crucial input comes from the crops themselves. Farmers include nitrogen-fixing legumes, such as cowpeas or soybeans, among their crops which add this vital element to the soil. The legume is usually intercropped with a cereal such as millet, sorghum or maize, so that the cereal benefits too. More and more farmers are growing cowpea in northern Nigeria, especially the so-called dual-purpose varieties which provide good animal fodder as well as much-needed high-protein food.

4 x 2 = 300 percent!

Farmers have been responsible for many of these adaptations and improvements, but they have also been supported by science. Improved varieties of both cereals and legumes have been developed and disseminated, and give higher yields, resistance to some pests, and in some cases have a degree of drought tolerance. Other research - led by B.B. Singh at the International Institute of Tropical Agriculture

- has looked at cropping patterns, and found that a simple rearrangement of the crops can have surprisingly large benefits: planting in a two rows cereal, four rows cowpea pattern, using improved varieties and some minimum inputs, can increase yields by 300 percent over the traditional one row, one row pattern.



credit: IITA

Against the odds then, farmers are recovering poor soils at the edges of the desert and making them highly productive. Some scientists think that these improved soil management practices may be contributing to the observed 'greening' of the Sahel region, evident over the last few decades from satellite data. The desert, it seems, is being held in check.

But climate remains the wild card, particularly in view of climate change, and small-scale farmers are still highly vulnerable to the inevitable droughts. When the rains fail, farmers often have no choice but to sell off their assets, which reduces their productive capacity the following year. This is where, some argue, development support could have huge benefits. The threat of drought and catastrophic crop failure leads to a low-risk approach that stifles expansion and development. With support to reduce this vulnerability, farmers could afford to invest more in their production systems, and diversify their livelihood strategies, further reducing their vulnerability. Improving access to markets, better infrastructure, and improving water management, for example, would all contribute to farmers' resilience. Farmers have shown their abilities to innovate and intensify in this difficult and unpredictable environment; effective drought policies, and investment, are now what is needed.

Article written by Anne Moorhead

[Back to Menu](#)

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