

Stone lines against desertification

Burkina Faso is already using all its possible farmland. In future the only way to feed the rapidly growing population will be by increasing yields on existing land. Building stone contour lines enables rainwater to be better used and slows erosion.

During the four-month rainy season in Burkina Faso there are bursts of very heavy rain. The downpours are often destructive rather than useful. After the long dry season the surface of the bare soil is hard and the rainwater cannot infiltrate into the ground sufficiently quickly. Torrents form on the slightest slope and carry away any fertile soil that still remains.

But with a simple yet ingenious system of stone contour lines the farmers of Burkina Faso are taming the destructive downpours, collecting the rainwater and putting it to good use.

These stone lines, combined with greater use of compost as fertiliser, have enabled the cereal harvest on the central plateau of Burkina Faso to double within a few years. This is necessary, because without intensification of agriculture the population in Burkina Faso will be unable to feed itself. The rural population will double in the next thirty years from 12 to 24 million. So far the rapidly growing population has been able to grow enough food by increasing the area of land under cultivation. Without intensification of

agriculture an additional four million hectares of farmland would be needed by 2040 – but the supply of potentially usable land has already run out.

■ The farmers' success story

The farmers know that they must protect their existing farmland from erosion and increase yields, because their livelihood is at stake. With the aid of various international projects – including the successful Burkinabé-German PATECORE project between 1987 and 2006 – they have already tackled more than 100,000 hectares of land, stacking more than 2.5 million cubic metres of stone (the volume of the Pyramid of Cheops) to create around thirty thousand kilometres of contour stone lines. It is an impressive achievement, yet the farmers want to complete the task by

working on the very much larger area where stone lines have not yet been built, and it is imperative that they do so. They are prepared to put in hours of unpaid work but without help they have no means of financing the transport of the stones.

With a startup subsidy of around 250 euros per hectare the largest employment and investment programme in West Africa could get under way. The PATECORE project has already shown how it can be done. During the dry season the project helped up to 20,000 men and women daily to invest in their most important asset – the land. Between 1987 and 2006 the project involved more than ten million person-days (neither food-for-work nor cash-for-work) and was an outstanding example of a pro-poor and environmentally oriented growth programme.

■ Measurable and cost-effective impacts

The impacts of the soil- and water-conserving measures (especially the building of stone lines) are numerous and can be measured in terms of progress towards the Millennium Development Goals (MDGs):

30 to 50 tonnes of stones are needed per hectare. This means 100 to 150 person-days of labour input for the farmers.

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Photo: M. Landolt

How contour lines work

Stone lines are built along the contours. The lines are between 0.5 and 1.5 metres high, depending on the gradient of the slope. The distance between stone lines ranges from 25 to 40 metres. Each hectare needs between 30 and 50 tonnes of stones, which are built into contour lines about 300 metres long. The stone lines slow the fast-flowing rainwater, thereby reducing erosion. This allows up to 200 more litres of water to penetrate the soil per square metre. The amount of work involved is considerable: to quarry the stone, load it onto lorries and ligne it on the fields farmers put in between 100 and 150 unpaid person-days per hectare. For each hectare, transport and other project costs amount to around 250 euros.

Contribution to MDG 1:

Poverty and hunger

- Even in the first year after the stone lines were built agricultural yields rose by up to 50 percent.
- When combined with use of organic fertiliser yields doubled and in many places it is now possible to grow maize and other cash crops.
- This improved both food security and agricultural earnings.

Contribution to MDG 7:

The environment

- The stock of trees on the farmland in question has increased by between 25 and 50 percent.
- The widespread construction of contour stone lines raises the water table and encourages vegetation growth both on and outside the farmland.
- The intensification of agriculture reduces the pressure to convert existing savannahs into farmland and helps to conserve species diversity.
- The increase in biomass improves carbon sequestration.

Excellent return on investment. The annual yield increase (500 kg millet at 0.22 euros/kilo) raises the capital

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value of farmland by more than 2,000 euros/ha. The internal rate of return (IRR) is 44 percent by a 20 years life span of stone lines.

To this must be added the social, economic, ecological and global benefits, which include food security, poverty reduction, reduction in rural-to-urban migration, prevention of urban food crises, biodiversity, carbon sequestration.

Scaling up best practices

PATECORE was phasing out in 2006 without any form of replacement. In 2006, to conserve the knowledge and experience that had been gained and continue the provision of support to farmers, five former PATECORE staff members and farmers' representatives founded the two organisations Terra-Verde e.V. (www.terra-verde.de) and ALCD (*Association Lutte contre la Désertification*) with more than 10,000 members. Since then the two organisations have with their partners mobilised more than two million euros. However, this is not nearly enough to meet the demand from farmers for more stone contour lines. The common aim of the two organisations is to convince policy-makers in Burkina Faso and various donor countries to commit more resources to soil- and water-conservation measures. While waiting for this aim to be achieved, Terra-Verde and ALCD are continuing to pursue both small-scale and large-scale projects, either alone or in cooperation with partners such as Welthungerhilfe.



Photo: M. Landoit

Zusammenfassung

In Burkina Faso ist das Potenzial geeigneter Ackerflächen ausgeschöpft. Die schnell wachsende Bevölkerung kann zukünftig nur ernährt werden, wenn die Erträge bestehender Ackerflächen gesteigert werden. Mit dem Bau von Kontursteinmauern kann das Regenwasser besser genutzt und die Erosion gestoppt werden. Zusammen mit organischem Dünger verdoppeln sich die Getreideerträge. Die Bauern investieren hierfür unentgeltlich viel Arbeit, brauchen aber Unterstützung für den Transport der Steine. Die Aktivitäten erfolgreicher Projekte sollten daher nicht eingestellt, sondern weitergeführt und ausgedehnt werden.

Resumen

En Burkina Faso se ha agotado el potencial de superficies adecuadas para uso agrícola. La población – en rápido aumento – sólo podrá ser alimentada en el futuro si se incrementan los rendimientos por unidad de superficie cultivada. Al construir cercos perimetrales de piedra, se podrá aprovechar mejor el agua de lluvia y detener la erosión. Junto con el uso de abonos orgánicos, estas medidas logran duplicar las cosechas de cereales. Los agricultores invierten una gran cantidad de trabajo sin retribución monetaria, pero también necesitan apoyo para el transporte de las piedras. Las actividades de los proyectos exitosos no deberían detenerse, sino más bien deberían continuarse y expandirse.