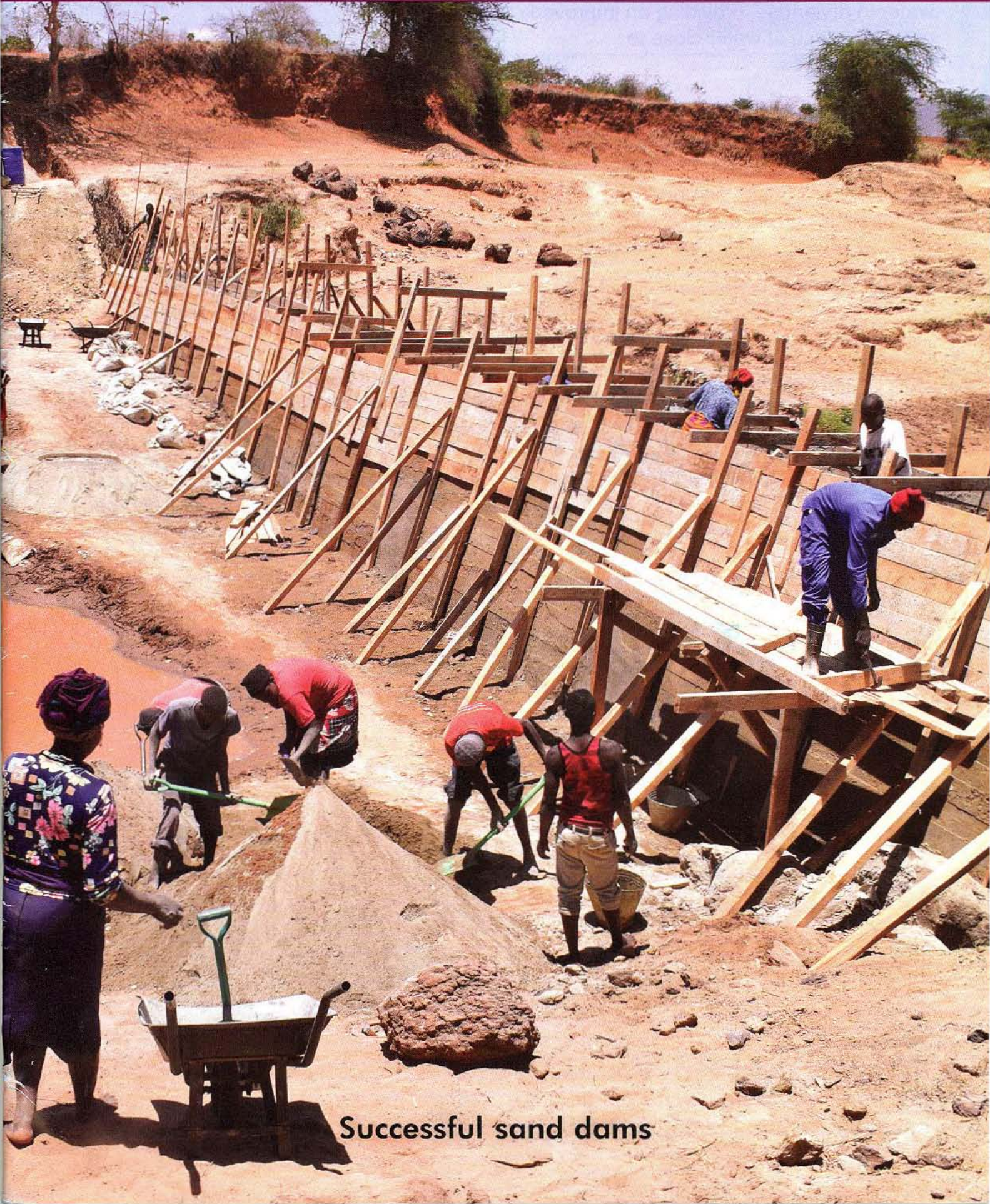


Appropriate Technology



Successful sand dams

'Contour bunding' preserves soils and boosts farmers' incomes by 20% in Mali

A simple innovation can go a long way to help lives and livelihood of farmers in the drylands. A team of scientists from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in Mali have found that 'contour bunding', a technique that helps retain moisture and nutrients while preventing soil erosion also brings as much as 20% increase in net income. A report by Jayashree Balasubramanian.



Farmers planting *Andropogon* grass on contour bunds

Credit Dr Birhanu, ICRISAT

The study, in Kani watershed, about 450 km from Bamako, was carried out between 2014 and 2016. The research also looked at land use data between 1986 and 2014 to show the impact of Soil and Water Conservation (SWC) practices.

Contour bunding technique reduces water runoff and controls soil erosion through ridges covered with perennial grasses such as *Andropogon* and *Vetiver*. Farmers use the ridges for crop production.

Says Dr Birhanu Zemadim Birhanu, Senior Scientist, ICRISAT who led the study, "We need to balance natural resource use. Areas that were natural forests have been converted into agricultural land without increase in crop yields per unit area. Contour bunding, a low-cost technique has dual benefits of



One Year old *Andropogon* grass and other tree species planted on crest of contour.

Credit Dr Birhanu, ICRISAT

soil conservation and sustainable agricultural intensification. It helps increase crop yield, without actually expanding farmlands."

The region under study, is an area of

5780 ha, that receives just about 800 – 1100 mm average annual rainfall between July to September, struggling to retain even this. A constructed dam here, dries up after two months. During



Maize field in a constructed ACN and Andropogon

Credit Dr Birhanu, ICRISAT



One Year old Andropogon grass planted on crest of contour

Credit Dr Birhanu, ICRISAT



Andropogon Grass growing in between sorghum fields

Credit Dr Birhanu, ICRISAT

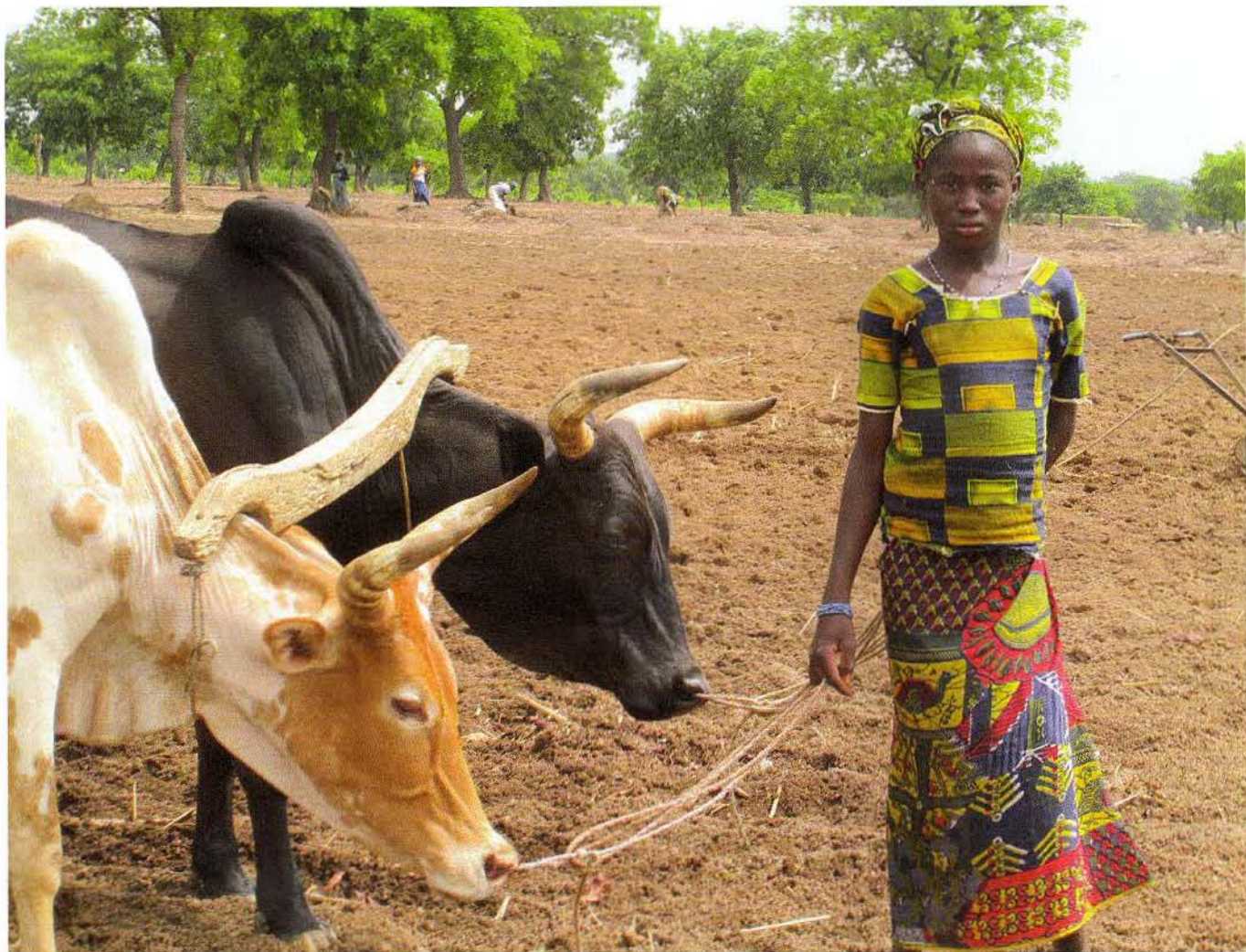
rainfall, flooding causes loss of topsoil and nutrients. Due to low productivity, land under natural vegetation gives way for farming, to increase production. This is a matter of concern, both from the environmental as well as economic perspective.

This is why a comprehensive watershed approach is important. During the study, participatory watershed management helped identify challenges in land and water practices. An evaluation of historical changes in land use and water consumption for major crops was carried out. The benefits of SWC practices were also evaluated through field experiments. By leaving upland areas in a watershed, forested, natural resources degradation can be greatly reduced. The contour bunding practice now could be scaled up at watershed, landscape or basin level through collective action of researchers, agricultural extension workers, NGOs and local community based organisations.

Results showed that erosion through rainfall, reduced considerably due to contour bunding. Also, farmers reaped as much as 20% net benefit increase from sorghum production with this technique.

Farmer Mr. Sekou Berthe of Kani village who used contour bunding, says, "I have been contacted by other farmers now, who also wish to have this in their fields. An NGO, AMEDD put this together for us at a cost of \$US 10 per hectare of land. I am more than willing to pay this cost, since we have seen the benefit", he says. More than 250 farmers implemented contour bunds in their farmlands echo Mr Berthe, that they were willing to pay for this, making it a sustainable model.

Malian Association of Awakening to Sustainable Development, (AMEDD), is an NGO working with research institutes and farmers in Mali to promote technologies among smallholder farmers. Says Mr Bougouna Sogoba Director, AMEDD, "Our technicians are well trained to demarcate contour lines in farmers' fields at a minimum affordable price which is US\$10 per hectare of land. Our market-driven approach and increased benefits from farm fields treated with contour bunds were key



A young lady leading farm animals in preparation for contour bund construction.

Credit Dr Birhanu, ICRISAT

large scale benefits to farmers in the region.

Jayashree Balasubramanian works at ICRISAT

The full paper may be accessed at: oar.icrisat.org/10512/

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Farmers in Kali village in a collective effort to make contour bunds

Credit Dr Birhanu, ICRISAT

factors that influenced the success of this application in many farm fields.”

In the context of crop land expansion and low productivity in Mali, use of

SWC practices is crucial to ensure that land degradation is curbed and productivity increased. The study recommends scaling up contour bunding to help bring