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Water, Land and Ecosystems

Corralling: A Solution for Improving Livestock Productivity in Pasture Lands Affected by Termites

HIGHLIGHTS

- ✓ The technical solution to termite problems provided opportunities for a more systems-oriented approach to improving livelihoods
- ✓ Demonstrated importance of taking an ecosystems approach to understanding ecological shifts
- ✓ Discovery sparked a collective spirit among pastoralists, assisting other initiatives requiring community engagement and cooperation

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Outcome Stories

Researchers from the Department of Animal Science in Makerere University were excited, and with good reason, as they surveyed pasture land that had been corralled off in Nakosongala in the cattle corridor of Uganda. The team had been looking at options to improve livestock water productivity (LWP) in the Nile Basin. To their surprise, a carpet of solid vegetation now covered the expanse of land, affirming their Ethiopian colleague's suggestion that corralling cattle every night over a two-week period would allow the desertified grassland to recover. This simple solution was a breakthrough on a problem that had eluded ecologists and put livestock keepers under scrutiny for their role in accelerating land degradation.

The completely degraded and desertified pasture land in Nakosongala had been the subject of repeated rehabilitation efforts, which failed when large termite populations destroyed young grass seedlings. Soil erosion resulting from this degradation caused nearby water sources to become heavily silted and impaired.

People and livestock now travelled long distances to access water sources in valley tanks, wells, boreholes, ponds, swamps, rivers and lakes, particularly in the dry season. In addition, livestock from large areas concentrated around the watering sites and rapidly depleted nearby feed

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Fence post after six months, Nakosongala, Uganda

Photos: CPWF

"Corralling of cattle in the night diverts termites from eating pasture seedlings to eating manure. Pasture seedlings can now grow undisturbed, offering a solution for the re-greening of degraded pasture lands."

supplies. Thus, animals suffered from feed shortages. Furthermore, the mixing of herds in these areas, which are highly conducive to disease transmission, resulted in high rates of animal morbidity and mortality.

The corralling of cattle helped because the termites were diverted, preferring to eat the manure, which allowed the pasture seedlings to grow undisturbed to a point at which they could no longer be destroyed by termites. It is also possible that re-establishment of vegetative cover may have caused a shift in the mix of termite species and possibly reduced the numbers that feed on pasture grasses. Termites also reduced their attack on the wooden fence posts of the corral.

For the practice to work, the villagers had to collectively agree to corral their animals at night for two weeks to obtain sufficient quantities of cattle manure in an area before moving elsewhere. Soon after vegetative pasture grass cover was restored, surface water runoff and evaporation was reduced. Less silt and sediment of tanks and water reservoirs resulted in improved water quality. In response to the development of these new technologies, local communities have passed by-laws to protect the riparian vegetation and water quality. The impact of traditional livestock keeping on runoff and soil erosion levels vary with scale, cropping patterns, land use and tenure arrangements of the pasturelands.

Communally owned pasturelands and lands under open unrestricted grazing management were found to be the most susceptible to erosive runoff. There is considerable opportunity to improve this situation through altering the way communal grazing lands are managed and utilized. In some cases, collective action in managing the resource - supported by local by-laws in this case - improved productivity of natural pasturelands. In others, ranchers have

adopted the technology because they don't need to worry about collective action. Local livestock keepers are now investing their own resources in the development and maintenance of common property pasture and water resources. The joint efforts of the research team and the local community contributed significantly to the ongoing search for solutions to soil and water degradation, resulting in this practical innovation to re-green Uganda's extremely degraded pasture lands.

Team technical solution to systems-oriented approach

A technical solution to the termite problem opened up opportunities for a more systems-oriented approach, set to improve livelihoods while protecting the environment from desertification and water degradation. The wider research study highlighted the need for: improvements in legislative structure and institutional arrangements; understanding where private land tenure is appropriate and when promotion of community-based natural resources management is; more appropriate marketing opportunities; and provision of better veterinary services to help increase Livestock and Water Productivity (LWP) in these parts of the Nile Basin. With this new development on corralling, the team realised that termites, once considered foes, had become allies in reversing the process of desertification and, ultimately, in improving water quality in the reservoirs. This is because termites promote soil fertility and infiltration when in balance with nature.

The discovery, which sparked the collective spirit among the pastoralists, may bode well for other initiatives requiring community engagement and cooperation.

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Project Partners

International Livestock Research Institute (ILRI)
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International Water Management Institute (IWMI)
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Animal Resources Research Corporation, Sudan

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About CPWF

The CGIAR Challenge Program on Water and Food was launched in 2002, with the aim to increase the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). We do this through an innovative research and development approach that brings together a broad range of scientists, development specialists, policy makers and communities, in six river basins, to address the challenges of food security, poverty and water scarcity.

The CPWF is part of the CGIAR Research Program on Water, Land and Ecosystems. WLE combines the resources of 11 CGIAR centers and numerous international, regional and national partners to provide an integrated approach to natural resource management research. The program goal is to reduce poverty and improve food security through the development of agriculture within nature. This program is led by the International Water Management Institute (IWMI).

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