

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

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 corraling 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 supplies. Thus, animals suffered from feed shortages. Furthermore, the mixing of

Fence post after six months, Nakosongala, Uganda



"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."

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.

References

Peden, D., et al. 2009. *Nile basin livestock water productivity*. CPWF Project Report PN37. Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food.

http://mahider.ilri.org/bitstream/handle/10568/3927/PN37_ILRI_Project%20Report_Nov09_final.pdf?sequence=1

Leon, C. de, Douthwaite, B. and S. Alvarez. 2009. *Most significant change stories from the Challenge Program on Water and Food (CPWF)*. CPWF Working Paper 03. Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food.

http://mahider.ilri.org/bitstream/handle/10568/16767/CPWF_Working_Paper_03.pdf?sequence=1

Woolley, J. 2010. *Legacy: Livestock water productivity*. Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food.

CPWF. 2009. Annual report. Colombo, Sri Lanka: CGIAR Challenge Program on Water and Food.

http://mahider.ilri.org/bitstream/handle/10568/5409/CPWF_Annual_Report_2009.pdf?sequence=1

Project Partners

International Livestock Research Institute (ILRI)

Ethiopian Institute of Agricultural Research

International Water Management Institute (IWMI)

Agricultural Economics and Policy Research Center and the Department of Animal Science, Makerere University
Animal Resources Research Corporation, Sudan

About CPWF Outcome Stories

The CPWF Outcome Stories document changes in knowledge, attitudes and practices that have emerged through CPWF-funded research. Outcomes occur when research outputs foster engagement processes that result in changes in practice or changes in behavior. These stories capture outcomes at a specific point in time; outcomes may have evolved since the completion of these projects.

Andes • Ganges • Limpopo • Mekong • Nile • Volta

About CPWF

The Challenge Program on Water and Food was launched in 2002. CPWF aims to increase the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF currently works in six river basins globally: Andes, Ganges, Limpopo, Mekong, Nile and Volta.

CPWF is a member of the CGIAR Water, Land and Ecosystems Research Program. The program focuses on the three critical issues of water scarcity, land degradation and ecosystem services, as well as sustainable natural resource management. CGIAR is a global agriculture research partnership for a food secure future. Its science is carried out by the 15 research centers who are members of the CGIAR Consortium in collaboration with hundreds of partner organizations.

www.cgiar.org

Mailing address

CGIAR Challenge Program on Water and Food

P.O. Box 2075

127 Sunil Mawatha

Pelawatta, Battaramulla,

Sri Lanka

T: +94 11 288 0143

F: +94 11 278 4083

E: cpwfsecretariat@cgiar.org