



AGROFORESTRY

Poised to Grow Economy and Save Water

The planting of trees that do not deplete available water could be the key to prosperity for South African farmers. Edith Webster reports.

Competition for resources, particularly water, is central to the ongoing fight for survival. Without water, there's simply no arable land and, therefore, no food.

That's why the Water Research

Commission (WRC) is behind research by Dr Colin Everson, senior scientist at Environmentek CSIR, and his team on *The Effect of the Introduction of Agroforestry Species on the Soil Moisture Regime of Traditional Cropping Systems in Rural Areas* (WRC Report No. 780/1/02).

Winter is dry in the Upper Thukela region of KwaZulu-Natal. Farmers find this a particularly difficult season as, without adequate rainfall, they suffer shortages of fodder, land and water.

Agroforestry – the planting of “fodder trees” beside the traditional maize crop – may solve problems associated with the feeding and productivity of dairy cattle but agroforestry could also place undue stress on the precious water resource.

“Efforts to introduce agroforestry systems to small-scale farmers in the Upper Thukela region have largely been delayed in the past. The main reasons being that there was a general belief that agroforestry species reduced the water supply and caused low crop yield – community members had a strong



During winter periods in the Upper Thukela region there is an acute shortage of grazing for cattle.



The green leafy material of Acacia karroo provides an additional source of protein for cattle when the natural veld is dormant.

perception that, in times of drought, trees were responsible for the drying up of streams – and farmers have not participated in the planning of research trials and adapting them to the needs of the people,” says Dr Everson.

That perception has changed since trees like the *Acacia karroo*, *Lucaena leucocephala*, *Morus alba* and *Gleditsia triacanthos* have been planted on certain farms. The trees supplement cattle nourishment, provide firewood for the farming communities and, sold as timber, generate extra income for the farmers.

“Fodder trees with a high nutrient content have been used in other parts of Africa to increase animal production. Growing trees together with crops can greatly enhance productivity of rural farming systems as tree roots can exploit water and nutrients below the shallow roots of crops. Trees can also increase productivity through soil nitrogen fixation and the provision of fodder,” Dr Everson points out.



The alley cropping system showing the trees interplanted with maize.



The potential of agroforestry being discussed with neighbouring communities.

To reassure the farmers that agroforestry would be economically viable, the research team had to first examine the level of competition for water between the trees and crops. They found that all four fodder tree species planted on the trial farms did not compete with the maize crop for water.

Where to now? Initially anxious about the threat to the water resource, the WRC has now realised the urgent need to alleviate poverty in the Upper Thukela.

“We could take agroforestry further by, for example, contributing to SMME (small, medium and micro

enterprise) development,” says Dr Sizwe Mkhize, research manager and head of the WRC’s Water and Society Cross-Cutting Domain.

“Small-scale dairy farmers could grow the trees for their own needs as well as the requirements of other farmers who find the cost of manufactured cattle fodder prohibitive. Fruit-bearing trees could also be planted to feed people.”

The WRC has decided to fund additional research into agroforestry as it could have application in drier areas, other than the Upper Thukela, such as parts of the Limpopo and Eastern Cape provinces.

