

## Multipurpose benefits of *Acacia saligna* in the drylands of northern Ethiopia

Land degradation in dryland areas is closely associated with high rates of rural poverty, which threatens rural livelihoods. Trees are well-known agents for ameliorating degradation; could they also integrate readily into existing farming systems and support smallholder livelihoods?

Six years of research supports the view that when managed as a multipurpose agroforestry tree, *Acacia saligna* can meet these requirements in northern Ethiopia. This work examined tree benefits and determined suitable management approaches. Initial on-farm and research station trials were established by World Vision and the Tigray Agriculture Research Institute, with further studies through a partnership with Mekelle and Wageningen Universities.

Genetic testing of naturalized populations found a high degree of genetic diversity, suggesting that selection might unlock potentially valuable ecotypes. Multi-year provenance resource stands were established using local selections and some Western Australia provenances, to conduct farmer-led selection of two promising forms: a pole ecotype with a straight form, and a multipurpose ecotype with a tendency to produce extensive foliage.

Trees were integrated readily into farming systems in various forms. Pruning to 1.8 to 2.3 metre height

prevents goat damage, and provide valuable dry season feed in January–May. An *A. saligna* – wheat alley cropping trial showed that overall production including fodder and fuelwood from hedgerows, was greater than from wheat alone. Seeds also provide a high-protein supplement and improved egg production of laying hens. Beekeepers noted that *A. saligna* flowers in the hot months of March and April, provided bee fodder when few other species are flowering. Wood quality meets the standard required for the manufacture of medium-density particleboard, generating more income for smallholders.

The use of *A. saligna* is scalable, with seedlings raised in nurseries. In conservation areas, trees had beneficial effects on native herbs, grasses, shrubs and macro- and microorganisms. Potential invasiveness was not confirmed, but trees favour the recovery of undergrowth and act as nurse trees for indigenous species. In addition to multipurpose benefits, the tree's drought tolerance, fast growth and high biomass production could encourage wider adoption, once invasiveness risks are mitigated, but will require the support of policy makers and the availability of the two ecotypes to improve smallholder income and livelihoods.

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Photo: *Acacia saligna* for reclamation of gullies as woodlots. Niguse Hagazi

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