

## Trees and pasture – An overview

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New Zealand's hill country landscape is a volatile mixture of steep slopes, tectonic activity, relatively new soils, and intensive grazing systems. This has created a range of pressures on the landscape necessitating careful consideration of the long-term effects of the various land use options.

Widespread soil erosion is the result of such pressures. In many situations forestry and natural reversion have provided the answers for long-term sustainable use. There are, however, large tracts of land where pastoral farming continues being practised on land classes that require some land-use change to occur. This change can be as dramatic as the cessation of pastoral farming, such as a change to forestry or allowing scrub reversion. However, much of the land can sustain pastoral farming with the inclusion of wide spaced trees planted for land stability.

In this regard, poplars and willows hold a unique place. They can be easily established from poles, can be easily protected from grazing animals, exhibit good survival rates, and grow fast in most climates. Additionally, and this is where this trial work comes into its own, they can provide a very valuable source of fodder.

Poplars and willows have been planted throughout large areas of New Zealand's hill country environment. Since the inception of the Soil Conservation and Rivers Control Act 1941, and more latterly the Resource Management Act 1991, catchment boards and regional councils have promoted them as a soil conservation tool. In the Wairarapa region alone it is estimated that around one million trees have been established since the early 1950s. While age, siting and species may preclude many of these being considered for fodder, there are still enough of them left to provide any amount of fodder during the dry summer seasons that are so prevalent throughout New Zealand.

Besides this resource sitting untapped on our hill country, poplars and willows have been used in a variety of other situations that should not be forgotten. Shelterbelts are another significant source of livestock fodder. Management of shelterbelts is essential for their longevity and effectiveness, and managed trimming of these belts also can provide an effective source of fodder.

Many landowners have used poplar and willow fodder during times of drought. Indeed, some landowners use this resource regularly through the summer months. Droughts need not be the stimulus for action – there are very good reasons why it should become part of an annual plan.

You will hear about many of these benefits in today's programme. Documenting these benefits has been a major challenge. While landowners can allude to better productive performance, reduced live weight loss, or an improvement in tree management, very little recorded information was available.

Trees on landscapes offer a very good example of two-tier farming, where the trees are managed for a variety of uses, and pasture production is maximised within the context of the two-tier system. In the past we have tended to focus on establishing the trees for soil conservation purposes and have forgotten the effect on pasture production.

A key part of the management of trees for fodder is the strategic removal of trees less than ten years old to maximise the pasture growth. The effect on pasture growth from space-planted trees has been well documented in previous research, and the reduction pasture growth is often minimal. In some landforms in Wairarapa, annual pasture production estimates have increased because of the reduction in soil loss as a result of tree planting.

One of the very interesting outcomes of work in this area has been the realisation that poplars and willows need to be treated much like any other species, such as *Pinus radiata*, *P. macrocarpa*, acacias or

eucalypts. The resident tree population on a farm needs a management plan of its own, including when to prune, how to prune, when to thin and when to replace. Such a plan would provide considerable opportunity to provide large quantities of fodder, either on an annual basis or during times of drought.

Joint trials funded mainly by the Ministry of Agriculture and Forestry and supported by several other organisations, have involved several relevant groups working together to answer those questions and provide missing data. I believe this effort has been most successful in that respect up to now.

The challenge that lies ahead will be to collate these findings, and information obtained from practising tree fodder farmers, into effective, practical tools for the landowner. The Tree Fodder Project has also proven a winner for the Government's Sustainable Farming Fund, in that inter-agency cooperation has been evident from the start with land owners, Crown Research Institutes, Massey University, Regional Councils and farm management consultants all providing key elements of the programme.

This workshop aims to provide a useful reference on how farmers are using their trees on farms to provide supplementary fodder, shelter and shade for their livestock, and added beauty to their land, as well as conserving the soils and countryside for future generations. These trees are also being used to help maintain a cleaner farm environment by preventing waste products from entering waterways, and reducing harmful emissions, a subject that has recently claimed national attention. I hope today's workshop helps future farmers and others to manage the countryside better than in the past.