

LAND MANAGEMENT

CONSERVATION TREES

Fodder willows for Hawke's Bay

Main Points

- Willows are an ideal fodder and soil conservation tree.
- They are reliable to grow and easy to manage for drought fodder.
- Feed value is well above maintenance requirements.
- Tangoio is the preferred fodder clone.
- Operator safety is paramount when harvesting tree willows.

Willow Pruning for drought fodder

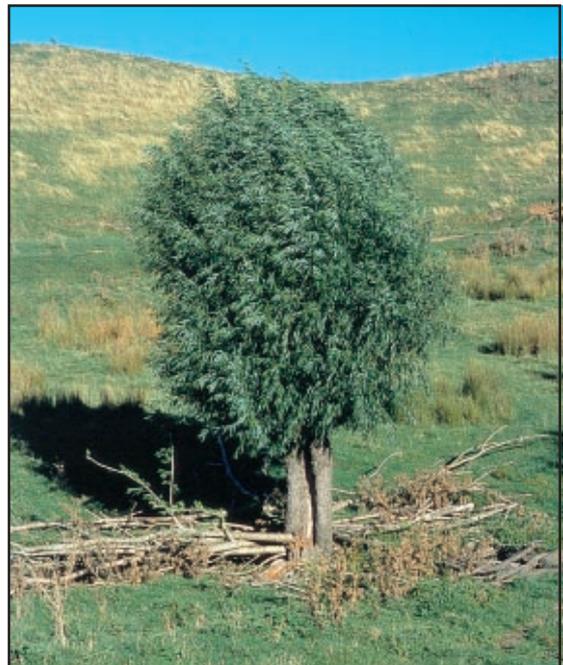


Introduction

Willows have been harvested successfully on the East Coast for emergency drought feed since early this century. Few farmers have established and managed willows as a serious drought fodder bank, but instead have used trees already growing on their farms when they needed to.

Hill country farmers are now realising the huge advantages of having willows as a multi-purpose conservation, shelter and feed reserve tree. Examples of their use on hill country properties during the droughts of 1982/83 and 1989 have encouraged other farmers and has led to research on the feed quality of willows.

The same tree with one season's coppice regrowth.



What is the feed value of trees?

Research has shown the feed value of willows to be 65-70% dry matter digestibility, which is about the same as lucerne hay. A crude protein level of 15% is well above that required for livestock maintenance.

Willow leaves are also high in zinc and magnesium, which are both important animal health elements. However sodium (salt) levels can be low in willow leaves, and, if little or no pasture is on offer, a salt block should be available.

How much feed is there in a willow tree?

Yields of up to 7 tonnes/hectare a year of edible dry matter have been obtained from direct-grazed or cut and carry coppice willows.

There is little information on yields from larger and longer rotation willows which are cut every two to five years. This is the preferred practical way of giving emergency feed for stock in hill country. For example, one Wairoa farm manager fed seventy 18-month bulls through April and May 1989 on Matsudana willow leaves. Every second day he felled five or six eight-year-old trees.

Leaf production in Otago is at least 60kg of dry matter a tree after five years of growth on established trees. The same growth may occur in three years in northern Hawke's Bay. The equivalent of 2400 bales of lucerne hay should be produced by 1000 trees every three to five years.

How practical are trees for fodder?

Key factors are

- safety during harvesting
- access
- the number of trees to harvest.

It is both dangerous and illegal to use a chainsaw above shoulder height. With the right management, trees can be harvested safely. Trees intended for fodder should be planted in accessible gullies and on lower

hill slopes so daily harvests are easy. Difficult access makes slow work, increases risk to the operator, and lowers the utilisation of feed.

Several hundred well-managed trees will probably be needed on the average hill country sheep and beef-breeding property. This number should give two to three months of extra flexibility to a farm which may otherwise face severe production losses, high supplementary feed costs or even the sale of capital stock in a severe drought.

Safety management guidelines

- Use safety equipment, ie hard hat and normal chainsawing gear.
- Large branches are dangerous to fell, so use safe methods and make sure regrowth is never more than three to four years old.
- If using willows often, buy a pole chainsaw.
- Form a nest during the first harvest by trimming branches 0.5 to 1.0 metres out from the top of the main trunk. Cut away central leaders and leave an area to stand on and work from when felling branches next time. (See photo)

Tree survival

- All branches can be cut completely off without ill effects.
- Trees should be cut off above cattle browse height.
- Branches should be cut off cleanly to prevent goats from walking up and eating regrowth.

Damage from trimmings

- Felled willow branches often block waterways, culverts and bridges, so branches should be cut into short lengths or removed from the area which floods.
- Large branches will damage fences, so trees near fences should be left or harvested regularly to keep branches small.

Establishment guidelines

Willows managed for drought fodder should ideally be planted on deep, moist (but not swampy) soil, for example a valley floor, gully or lower hill slopes with good access. It is ideal for the trees to be acting as a soil conservation tool, livestock shelter and shade, or pole nursery for further planting at the same time.

Planting

Poles are available from the Hawke's Bay Regional Council. They should be planted as 3m poles from June to August. For trees to be harvested every three to five years, plant them 6-10m apart. (See the Environment Topic on Planting Poplar and Willow Poles).

Which willow to plant?

Moutere and Tangoio appear to be the best performing clones over a range of sites. Tangoio is recommended for fodder plantings because it has the highest leaf protein analysis of all tested willows, grows very fast from a 3m pole, and is the most drought tolerant of the hybrid willows. Moutere has a leaf fall two weeks later, and performs very well on most normal willow planting sites.

Another option is *Salix kinuyanagi*, the Japanese willow. It has a very late leaf fall in mid-June which has benefits during an autumn drought. However, supplementary feeding through this time should only be done to help build up autumn-saved pasture, as willow fodder may give a false sense of security if pasture covers for winter are inadequate.

What other fodder trees can be used?

Poplars have similar feed value to willows, and are preferred for fodder in cooler areas, such as Otago. In Hawke's Bay, the best willow clones grow faster, producing more edible foliage than poplars, and willows are very reliable to establish. Other practical fodder trees for Hawke's Bay include Tree Lucerne (*Tagasaste*) and possibly Honey Locust.

For further information

For information on sustainable land management, ask for the other titles in this series, or contact Land Management staff at Hawke's Bay Regional Council for advice.

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