Planning Farm Woodlots

Introduction

Woodlots can raise the productivity of difficult-to-manage areas on livestock farms. A farm study in central the Bay of Plenty indicates that planting the least productive third of a hill country grazing property can more than double the net farm income.

Choosing where to plant and which species to use needs to be thought through carefully to ensure forestry will be a profitable farm venture. Other benefits such as shelter, erosion control and an improvement in landscape values can also result from well planned woodlots.

Soil conservation retirements provide woodlot opportunities

Choosing the Site

Site access has a major impact on the viability of the woodlot venture. Extensive roading costs at the time of harvest will erode the profit margin. Scale of planting also has an effect—per unit overhead costs are less if spread over higher volumes of production. Siting a woodlot near a public road will reduce extraction costs.

Access within the site also has an impact on profitability, and steep or broken terrain calls for careful woodlot planning. For skidder extraction, tracks should be placed to facilitate downhill pulling. Where slope angles exceed 25° (47% slope), a land use consent for construction of tracks is required in the Bay of Plenty, and consent conditions will require installation of suitable run-off controls to prevent sediment entering waterways.

Site Checklist

- Is there good access and reasonable ease of harvest?
- Are there other site limitations—powerlines, risk of spray drift, interference with flight paths?
- What are the local bylaws regarding boundary and roadside plantings?
- Can the woodlot be located within existing fencelines?
- Is the woodlot fence completely stockproof?
- Will the woodlot location interefere with stock management?
- Can the woodlot be sited for other advantages e.g. to provide shelter?

Choice of Species

Selecting which species to plant is a decision best made in consultation with a forestry management specialist, who will have knowledge of timber markets and an appreciation of how different species perform under local conditions. Factors to consider are:

- End uses for timber
- Potential markets
- Volume of production
- Site access
- Site limitations—terrain/ soils/climate
- Plant or animal pests
- Tending and cultural requirements

Radiata pine is the primary choice for woodlot planting in the Bay of Plenty, being adapted to a wide range of sites, and supported by a well developed infrastructure. To maximise wood quality and price on the local market, a minimum rotation of 28 years is desirable. Crops produced in short rotations (20-25 years), and usually sold for export on a log grade/volume basis, require reasonably large plantings (10 ha or more) to give the best return .

High value timbers are a viable choice for small woodlots, and include *Cupressus* and *Eucalyptus* species, or *Acacia melanoxylan* (Tasmanian/ Australian Blackwood). These species require a rotation of around 40 years, and are more specific in their site requirements and marketing opportunities than Radiata pine.

Choose *Eucalyptus* species with known sawing/seasoning abilities and sufficient frost tolerance. Tasmanian Blackwood requires side shading (close planting densities also provide a good selection ratio when thinning to final spacing. It is more tolerant of wet sites than Radiata pine or most *Eucalyptus* series.

Establishment Considerations

Forestry operations are seasonal and have to be accommodated within the regular farm workload. Before planting, the landowner should draw up an establishment (and tending) schedule, with

associated costs and labour requirements. For woodlots up to 3 ha, the landowner can usually manage the labour requirements. For plantings of around 4 ha or more, the use of contractors is advisable. In this case the landowner will need to be familiar with pricing levels and quality control standards. A forestry consultant is the best source of guidance. Otherwise, confer with experienced neighbours, members of the local Farm Forestry Association or Environment Bay of Plenty's local soil conservator.

Site Preparation

Brush weed species may require repeated control operations as a new generation of seedlings is likely to emerge after the initial knockdown. Depending on brush weed type, the forestry crop may be sufficiently competitive to establish quickly and shade out an emerging generation of weed seedlings. High stocking rates, i.e. 1200 stems per hectare (sph) assist this process. Sites with extensive scrub (manuka/kanuka) cover can be used to nurse the establishment of woodlot species such as *A. melanoxylon* or *C. macrocarpa,* planted in cut lines.

Animal pests also need to be considered before planting the woodlot as these pose a significant threat to new plantings. Environment Bay of Plenty pest animal officers are available to visit sites and will advise on infestation levels, control options and costs.

Control of competing vegetation at each planting spot is essential. A pre-plant application of herbicide using a knapsack sprayer is recommended. Use a knockdown herbicide (e.g. glyphosphate) to kill existing vegetation, and a herbicide with a strong residual action (e.g. terbuthylazine) to give ongoing weed control throughout the growing season. A spot size of approximately one metre square is recommended, which will require 50-60 ml of spray solution where pasture is short. Rank growth, rushes or similar may require 80-100 ml per spot. On most terrain it is possible to spray 100 spots per hour.

Planting

The number of trees will depend on site conditions and the species being planted. As a general rule, most woodlots are established at 800-900 sph, although a species such as *A. melanoxylon* benefits from close spacing, like 1,000 – 1,200 sph. High planting densities are recommended on sites where recurrent brush weed infestation is likely.

Work rates will depend on the type of plant stock. Bare rooted stock is easier to handle than container grown stock, and takes less time to plant. An experienced planter working on reasonably easy terrain can plant up to 200 bare-rooted tree seedlings per hour. A beginner may only manage half this rate. Planting rates for containerised stock will vary depending on the size of the container. Root-trainer stock has a small root ball and can be handled almost as easily as bare-rooted stock – planting rates of up to 150/hour are possible.

While bare-rooted stock is generally cheaper and easier to handle, its planting season is restricted to mid-winter. It requires planting within a day of being lifted in the nursery, and must be kept cool, shaded and moist when out of the ground. Container stock offers more flexibility and can be held over for late planting with little risk of transplant shock.

Woodlot sites on farms with a regular pasture fertiliser programme have good fertility and no additional applications are required at establishment. On harder sites, establishment will be aided by the use of some fertiliser in the planting hole, such as 50-60 g of coarse 'MagAmp' granules.

After Care

A release spray to control weed/pasture growth around trees may be necessary later in the growing season, and will probably be required in the following spring. Work rates are approximately the same as for pre-plant spraying in most cases, but are about 25% faster for 'over the top' herbicides where these can be used.

Records

These will provide data for costing of future woodlot plantings, and should be maintained as a record of plant type (seedline) stocking rate and silviculture (tending). This record assists stand management and will support the value of the crop when negotiating its sale.

Environment Bay of Plenty
REGIONAL COUNCIL

For further information and advice, contact your local soil conservator at Environment Bay of Plenty:

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