

MANAGEMENT OF RETIRED AREAS

Introduction

Retirement of critical areas on pastoral land is an effective soil and water conservation strategy. When retired from livestock, erosion prone areas such as steep gullies or stream banks are more stable and also act as interception zones to absorb runoff of sediment and nutrients. This interception role is largely performed by the vegetation within the retirement area, which requires some degree of management if it is to remain effective in its soil conservation role.

Fences

Stockproof fences are essential to the health of the retirement vegetation. Retirement fences are often regarded as a low maintenance priority compared with other farm fences, but will give long service with minimal maintenance if well sited and properly constructed (see *Sustainable Options SC03/98 Retirement Fences*). Retirement fences may not always be sited on stable terrain, which will make them more vulnerable to stock pressure. The addition of an outrigger electric wire in these circumstances will help to protect the fence.

Routine maintenance should include the prompt repair of windfall or slip damage, and the monitoring of other stock barriers such as flood gates. Posts or battens should be replaced as required and wire tension checked periodically. In time, staples may loosen or corrode and will require replacement.

Vegetation

There are a number of factors to consider when managing retirement vegetation.

Selection

Choosing the appropriate species for planting in a specific retirement situation has a major impact on subsequent vegetation management. Generally, evergreen woody shrubs, especially colonising indigenous species, are preferred when grazed areas are being converted to permanent retirement. Invasive deciduous species such as naturalised willow are not recommended because of their limited ability to suppress brush weeds, and a tendency to congest stream channels with debris and seedlings. Improved selection (male) varieties of willow with a non-invasive habit are now available for control of localised erosion features. (See *Sustainable Options*

SC07/98 Plant Selection for Retirement Areas).

Be careful about using retirement areas as dumps for other unwanted vegetation. Highly invasive exotic species such as lantana or wandering jew can rapidly invade retirement areas, suppressing native regeneration.



Low growing herbaceous species are preferred in floodways

Siting

While it is important to establish a reasonably dense vegetation canopy over the retirement, care should be taken to avoid future problems by overplanting certain areas. Streambanks will benefit from the anchoring effect of plant roots, but spreading shrubs with a large crown mass close to ground level will impede high flows and may contribute to streambank erosion in small streams. Tree species of any sort should not be sited directly on stream banks, except where a localised erosion problem might justify the limited use of an improved selection willow variety. Any tree with an intended production role should be sited for access, and such that harvest operations or slash do not interfere with the natural functioning of waterways. Woodlot or firewood species with a suckering habit are potentially invasive, and should also be confined to the outer margin (fenceline) side of streambank retirements.

Silviculture

Erosion control species benefit from some initial form pruning to maintain a vigorous central leader, followed by some side pruning between the fifth and tenth years after planting, to reduce shading of the under-storey shrub vegetation. Species planted for timber production should be pruned for maximum log production i.e. form pruned to prevent double leaders, and side pruned to at least 6 m to produce clear (knot free) wood. For species such as Radiata Pine or hybrid poplar the time to side prune is when the

diameter of the tree trunk, inclusive of the pruned branch stump, is around 150 mm. Small pine woodlots may be planted at a stocking rate of 600-800 per hectare, but only the best 450 trees require low pruning. This equates to spacings between trees of approximately 4-5 metres. The final stocking of trees should be the equivalent of between 300 and 350 per hectare.

A canopy of native shrubs planted for retirement purposes will require little tending once established (see *Sustainable Options SC15/98 Establishment Techniques for Revegetation Projects*). Where tree species have been planted for specific purposes—erosion control and/or wood production—tending is necessary.

Weed Control

Existing pasture actively competes for moisture and nutrients, while rank growth suppresses small plants. Weed control is critical for high survival and maximum growth rates. For vigorous species, weed control may only be required in the first year, while slower growing species will require extra releasing. Herbicides generally offer the most efficiency in terms of labour, material costs and period of control. Hand weeding is laborious and repetitive and suitable only for small plantings. Likewise mulching with organic materials, although proprietary synthetic mulching products offer good weed control if properly installed. Herbicides are also useful for controlling brush weed infestations that may arise in the retirement zone, which should be dealt with promptly (and easily) before they become well established. For more information on weed control, see the *Sustainable Options PP (Plant Pest) Series*.

Pest Control

Rabbits, hares and possums can cause considerable damage to newly planted seedlings, and an eradication campaign prior to planting is strongly recommended. Protective strategies such as the use of repellents or cages should be regarded as secondary options, and emphasis given to reducing pest numbers. Retirement zones can actually provide a focus for farm pest control operations, where livestock will have no exposure to poison baits. Environment B·O·P Animal Pest staff are available to provide advice and assistance with pest control. On-farm pest status and suggested control strategies are an integral part of a Property Plan, and associated control operations may qualify for a degree of grant assistance.

Production species in riparian (streambank) retirement zones are best sited in a single row along the retirement fence line for access, and can be managed as a 'timber belt'—a shelter belt that produces timber. The layout options for a timber belt are alternating fully pruned and fan pruned/side trimmed trees at 2.5 m spacings; or a main row of pruned production species at 2.5 – 3.0 m spacings with a secondary row (about 1 m away) of a less vigorous, unpruned supplementary species. Often a retirement

species can be used for the supplementary row, providing it is adapted to an understorey environment e.g. a shade-tolerant species such as korokio. (See *Sustainable Options SC12/98 Native Plants for Revegetation Projects*.)

Channel Maintenance

In streambank retirement zones, some attention should be paid to channel management to ensure a clear floodway is kept open. Prior to retirement, heavy debris in the channel, and mature/deteriorating trees on the immediate streambank, should be removed. Unwanted coppicing species—poplar, willow, *Acacia*, *Robinia* and some *Eucalyptus* species—should have stumps poisoned with herbicide. The channel should be monitored regularly to remove debris that is forming dams, or is blocking culvert pipes. Material of the crack willow (*Salix fragilis*) is especially prone to taking root when deposited on mid-channel sandbars, which will eventually cause flow to deflect into streambanks. Obstructions such as these should be hauled out by tractor and cable before they become too established and difficult to remove. While layering of heavy plant material is used to combat streambank erosion on major rivers, the practice must be used with caution in minor streams to avoid congesting the channel and deflecting flow into the opposite streambank. Heavy plant material—tree trunks, heavy branches and stumps—should not be dumped into streams of any size. This material impedes natural flow and will contribute to erosion of the streambanks and streambed throughout the length of the downstream channel.

Further Reading

Plant Materials Handbook for Soil Conservation, Volume I-II, edited by CWS Van Kraayenoord and R L Hathaway. NWASCO Soil and Water Miscellaneous. Publication Number 93.

Riparian Management Guidelines, Volume I-III, edited by K Collier, Department of Conservation.

For further information contact a local Environment B·O·P soil conservator on freephone 0800 ENVBOP (0800 368 267)

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