

Brush Disposal Guidebook

March 2005



Manitoba Conservation
Forest Practices
Guidebook

BRUSH DISPOSAL

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Manitoba Conservation
Forestry Branch

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PREFACE

MANITOBA FOREST PRACTICES

This guidebook has been developed as part of the Forest Practices initiative of Manitoba Conservation. The Forest Practice initiative of Manitoba Conservation, led by the Forestry Branch, is intended to provide consistent operational direction for resource managers, timber operators, natural resource officers, and auditors to conduct or assess forestry activities.

One of the primary goals of the Forest Practice initiative is to advance “best” practices through guidelines and standards for sustainable forest management activities in Manitoba. Guidelines present alternative procedures or standards that can be applied to satisfy the principle upon which the guidelines are based. Guidelines are used to develop prescriptions in the Annual Operating Plan and are enforceable by a Work Permit. Forest Practice Guidebooks ensure all forest resource values are appropriately addressed during the full range of forest activities.

Forest Practices Guidebooks are one of several references available to resource managers, timber operators, natural resource officers, and auditors. References include provincial guidelines as well as Forest Management Plans (FMP), Annual Operating Plans (AOP) and Standard Operating Procedures developed by each forest company.

Representatives from several branches of Manitoba Conservation (Forestry, Wildlife and Ecosystems Protection, Parks and Natural Areas, Environmental Approvals, etc.), Manitoba Water Stewardship (Fisheries), the three major Forest Management Licensees in Manitoba (Tembec Industries Inc., LP Canada Ltd., Tolko Industries Ltd.), and the Forest Industry Association of Manitoba (representing timber quota holders) cooperate in a consensus seeking manner to develop Forest Practice Guidebooks. Regional specialists participate when meetings are held in their respective regions.

All guidelines for a specific forest practice are contained in a single guidebook. Each guidebook also contains pertinent references to science, legislation, policy, agreements, and licences. Recommendations for the planning, implementation, monitoring, and enforcement of the specific forest practice in question are included.

As much as possible the recommendations within each Forest Practice Guidebook:

- are based on scientific evidence
- are measurable
- are practical
- are flexible and applicable in a variety of ecological conditions
- are clearly presented to enable consistent interpretation and application
- contain accepted terminology and definitions

Forestry practices within Manitoba will be continuously monitored and appropriately amended when necessary.

Guidebooks can be found on the Manitoba Conservation Forestry Branch web site at: www.gov.mb.ca/conservation/forestry/forest-practices/fpp-contents.html. The public is encouraged to submit comments and recommendations.

TABLE OF CONTENTS

Preface	ii
Brush Disposal	1
Purpose	1
Background	1
Goal	1
Objectives	1
In-block Limbing	2
Debris Management Alternatives	4
Stand Type/Site Conditions Which May Necessitate Alternative Debris Management	5
Acceptable Alternatives to In-block Limbing	7
Limbing at staging areas	7
Roadside limbing	7
Coarse Woody Debris Piles for Wildlife Habitat	8
Debris Pile Burning Procedure	9
Manitoba Conservation Approval Process	10
Future Studies	11
Glossary	12
References	13

TABLES and FIGURES

Table 1. Reasons in-block limbing is preferred.....	2
Figure 1 An example of in-block limbing.....	3
Figure 2 An example of slash piling.	4
Figure 3 An example of excessive slash loading.	5
Figure 4 An example of a roadside chipping operation.	6
Figure 5 An example of roadside limbing.....	7
Figure 6 Signs of wildlife using debris piles.....	8
Figure 7 Debris pile burning.	10
Figure 8 Examples of FML Annual Operating Plans.....	10
Figure 9 Spruce and jack pine regeneration.	11

BRUSH DISPOSAL

Purpose

The purpose of this document is to provide guidelines for the effective management of logging debris that accumulate during the course of timber operations.

Background

In Manitoba, limbing within the harvest block is preferred and considered to be the best practice. Table 1 provides an explanation of why limbing within the block is the preferred practice for dealing with tree limbs and tops.

Prior to 1993 full tree length timber harvesting operations, with bucking and limbing at roadside, were generating excessive amounts of slash along roadsides. Debris piles were not being managed adequately. In order to improve debris management Forestry Branch Circular FEM 18 *Brush Disposal All Timber Harvesting Operations* was created and came into effect May 1, 1993. This policy required limbing within the harvest block, as near as possible to the stump, in all situations. The Forestry Branch and Forest Industry representatives reviewed the policy in 2000 and an amendment was produced describing acceptable reasons to deviate from the brush disposal policy.

This guidebook has been developed to address those sites where in-block limbing may not be the most appropriate action. On these sites alternative procedures and flexibility are preferred. This Brush Disposal Guidebook will replace the Forestry Branch Circular C-3 (FEM 18) entitled *Brush Disposal All Timber Harvesting Operations November 2002*.

Goal

To actively manage the impacts of debris accumulated during timber harvesting.

Objectives

- To enhance economic viability of a harvest area
- To maintain soil fertility and site productivity
- To minimize heavy accumulations of debris that result in loss of productive land
- To reduce fire hazard
- To incorporate cover for small wildlife species
- To enhance the potential for natural regeneration
- To enhance silvicultural activities and reduce pest concerns on a site-specific basis
- To protect understory regeneration, advanced growth or retained tree cover
- To make residual wood available for fuelwood

In-block Limbing

The preferred brush disposal method will continue to be in-block limbing where trees are limbed and topped within the harvest block, as near as possible to the stump. Whole tree harvesting, or the removal of branches and foliage from the site, can have a negative effect on the balance of the soil nutrient budget. The in-block method of brush disposal allows for the movement of harvested trees to facilitate efficient limbing and topping and/or to move equipment off of unsafe or fragile ground. Examples of this include: aligning bundles of trees in rows, moving trees and equipment off steep, rocky terrain, or moving trees and equipment away from the trees that will not be harvested. In these instances, debris should be spread to a depth that will not restrict silvicultural activities.

Table 1. Reasons in-block limbing is preferred.

Stand Type/Site Condition	Why In-block Limbing Preferred
All sites	<ul style="list-style-type: none"> - Large debris piles at roadside lead to a loss of productive land - Debris piles cause an increased fire risk due to unauthorized/accidental burning - Improper burning of debris piles causes an increase in fire hazards - Maintaining coarse woody debris is important for maintaining biodiversity - Alternatives that involve debris burning release greenhouse gases
Jack pine and upland spruce sites	<ul style="list-style-type: none"> - Promotes natural regeneration, lack of cone bearing slash decreases natural regeneration
Shallow soils or coarse textured dry sites (frequently dominated by jack pine)	<ul style="list-style-type: none"> - Promotes natural regeneration, lack of cone bearing slash decreases natural regeneration - Attempting to mitigate road-side limbing by spreading slash may increase traffic, which would negatively effect survival and productivity on dry, fragile sites - Removal of debris may affect soil fertility



Figure 1. An example of in-block limbing.

Debris Management Alternatives

Where limbing within the harvest block, as near as possible to the stump, is not appropriate, other debris management strategies will be recommended. When determining how to manage slash within the harvest block, consideration must be given to:

- the type of reforestation method to be used
- slash loading impacts on regeneration
- site sensitivity to nutrient loss
- wildlife habitat and travel
- the potential for escaped fires or fire spread

In general a combination of spreading some material and burning larger accumulations is preferred over burning all piles at roadside. The effectiveness of spreading debris should be monitored to ensure the thickness of debris will not impede silviculture activities.



Figure 2. An example of slash piling.

Stand Type/Site Conditions Which May Necessitate Alternative Debris Management

Upland softwood and mixedwood forest stands

When artificial regeneration is prescribed and there is a concern that excessive slash loading would obstruct silvicultural activities like site preparation and planting.



Figure 3. An example of excessive slash loading.

Hardwood forest stands

When limbing debris may contribute to soil cooling and obstruct natural regeneration from root suckering or when limbing debris may contribute to heavy slash reducing the opportunity for area plant. The application for this deviation must be accompanied by an indication of the number of seedlings to be planted, the approximate area to be planted and a map or photograph showing the location of proposed planting areas.

Black spruce forest stands on deep organic soils and/or semi-permafrost

When limbing debris may negatively affect microsite development (moss) and contribute to excessive cooling of the site. On these site types roadside delimiting is considered the preferred brush disposal prescription provided that there is adequate standing black spruce seed source that is capable of regenerating the majority of the site.

Sites with significant understorey

When in-block limbing would damage understorey trees, or limbing debris would interfere with understorey growth.

Where softwood understorey densities exceed 250 stems per hectare designated skid trails are required. Where the conifer understorey densities are less than 250 stems per hectare, grouped in

patches, or where an avoidance strategy can be used, alternative brush disposal methods will not be approved.

Chipping Operation

Where in-bush chipping occurs or chipperwood is to be forwarded to another site, the majority of the limbing may occur at the stump, however the tops may remain on harvested trees to facilitate wood handling and maximize the use of wood fibre. Exception to this statement requires approval by the Director of Forestry.



Figure 4. An example of a roadside chipping operation.

Upland Black Spruce Strips

On sites where this harvest system is used conditions will favour successful natural regeneration of black spruce and the limited suppression of pioneer grasses and other competitive vegetation. Strip cuts may benefit from the removal of heavy slash which may inhibit successful natural regeneration.

Salvage harvesting

Harvested areas damaged by fire, blow down, insects, or disease may not require in-block limbing. On these sites where infected or infested debris is encountered sanitation burning may be required.

Clearing road right-of-way, borrow pits and quarries

When the area needs to be cleared for a roadway etc. This does not require specific mention in the AOP.

Harvesting agriculture crown lands coded for development

When harvesting lands that are not going to be returned to a forested state limbing in the block is not required.

Acceptable Alternatives to In-block Limbing

Limbing at Staging Areas

Staging areas for limbing groups of trees may be established within the cut block. Debris in staging areas must still be effectively spread throughout the cut block. Some debris pile(s) may be maintained or created on site to provide wildlife habitat. Large accumulations of debris may be piled and burned.

Roadside Limbing

Full tree lengths with branches may be pulled to roadside where limbing and topping will occur. Debris must be disposed of by one or more of the following practices:

- pile and burn debris
- spread debris back into the cut block
- maintain or specifically create some debris pile(s) for wildlife habitat
- spread debris onto in-block roads



Figure 5. An example of roadside limbing.

Coarse Woody Debris Piles for Wildlife Habitat

Integrated Resource Management Teams may allow or require the creation/retention of coarse woody debris piles in cutblock areas with significant marten (and other small mammal) populations in order to retain habitat and help maintain their numbers. Literature review recommends that piles should be 1 to 2 metres in height, 3 to 5 metres in width and 5 to 10 metres in length. The piles should be located about 50 to 100 metres from edges (cutblock, riparian or residual patches of trees) and distributed at a density of one pile for every 5 hectares. These piles would consist of logging slash, including a mixture of tops, limbs and larger logs.



Figure 6. Signs of wildlife using debris piles.

Debris Pile Burning Procedure

Burning of debris piles will be required when large accumulations of limbs and tops are not desired as fuelwood or for use as alternate forest products. If these debris piles are not disposed of productive land will be lost and forest renewal will be effected. Piles left for a long period of time will become a fire hazard.

1. The burning of debris piles should not occur in the spring or early summer to avoid disturbing small wildlife species which may have young in the piles or may have prepared nesting sites. The best and preferred option for wildlife is burning in the late summer or fall.
2. Burn piles as soon as feasible so that the land is put back into production. Piles may be left until the year following piling to allow adequate drying for clean burning. Burning should occur within three years of harvest. Debris and chipperwood piles located near habitation or highways should be burned only when weather conditions are favourable to ensure the safe dispersal of smoke (ex: no temperature inversions). To reduce the liability of burning debris piles adjacent to highways alternatives should be considered.
3. Debris piles scheduled for burning should be piled on in-block roads, mineral soil, or on areas having an average maximum depth of less than 15 cm of duff. No burning of piles shall occur on deep organic soils. Piles should be a minimum of 15 m away from standing timber and the high water mark of any waterbody.
4. Windrows should be no more than 100 m in length, with a minimum of 15 m between windrows. Round piles should be at least 15 m apart.
5. Slash should be piled in a manner that allows for clean, efficient burning of all material. Avoid mixing soil into the slash. Any residue or unburned materials remaining post-burn should not encumber renewal activities.
6. Burning will be authorized between October 1st and November 15th by a burning permit. Burning between November 16th and March 31st does not require a burning permit; however, the supervising Officer must be advised prior to any burning. Written notification must be given to the District Office for any burning that takes place between March 1st and March 31st. All fires must be completely extinguished by March 31st. If a pile is still burning past March 31st, it should be identified immediately to the District Supervisor. The District Supervisor can then either issue a burning permit to allow the pile to burn out, or require that the fire be extinguished, depending on circumstances.
7. Ensure safety precautions are taken to keep the fire under control. Burn piles must be monitored, to ensure that subsequent fire hazards are not present. Upon completion of the burn, burn piles must be completely extinguished.
8. All occurrences of fire spreading beyond the debris piles must be reported to the District Supervisor.



Figure 7. Debris pile burning.

Manitoba Conservation Approval Process

1. The Annual Operating Plan (AOP) should describe brush disposal strategies and alternatives to be used.
2. Within the AOP provide the supporting information for recommending an alternative to limbing in-block.
3. The Regional Forester will consider the merits of each specific request. This may involve a joint site inspection if pre-harvest survey information is inadequate.
4. When a site-specific alternative strategy has been demonstrated to be effective in several cases, Manitoba Conservation will consider adopting a general practice for those site types.
5. If amendments are required to the original debris disposal plan in an approved AOP, Manitoba Conservation approval through Regional Foresters will be required.



Figure 8. Examples of FML Annual Operating Plans.

Future Studies

Long term studies are required in the boreal forest to quantify the effects of whole/full-tree harvesting methods on the nutrient cycling, forest soils, long-term productivity and sustainability of the site. Currently, several studies (across Canada) are underway to compare the effects of full-tree, tree-length and in-block harvesting systems on forest soils and site productivity. As research results become available, brush disposal management strategies will be modified by way of adaptive forest management practices.



Figure 9. Spruce and jack pine regeneration.

GLOSSARY

Forest Practices - Activities that are conducted in the forest during all stages of forest management operations (ex: surveys, harvesting, road construction, silviculture).

Guidebook - A collection of policies, guidelines, procedures and standards related to a specific Forest Practice.

Guideline - Alternative procedures or standards that can be applied to satisfy the principle upon which the guidelines are based. Specific guidelines are enforceable when identified on Work Permits.

Integrated Resource Management Team (IRMT) – A regional team organized to review natural resource issues and comprised of members of Manitoba Conservation: Forestry, Wildlife and Ecosystems Protection, Regional Operations, Lands, Parks and Natural Areas and Manitoba Water Stewardship (Fisheries and Water).

Policy - A deliberately chosen course of action. Policy in this document refers to governing principles and corresponding procedure and standards of the Provincial government.

Procedures - A step or series of steps taken to put into practice a policy or guideline.

Salvage Harvesting – The utilization of standing or down trees that are dead, dying, or deteriorating, for whatever reason, before the timber values are lost. (Dunster, 1996)

Standards - Descriptions of targets or goals used to measure the success of procedures. They may be general or specific.

Tree Length Harvesting - Extraction of the complete tree length, minus top and branches, from the stump to the landing. (Dunster, 1996)

Whole/Full Tree Harvesting - Extraction of the complete tree, including tops and branches, from the stump out to the landing. (Dunster, 1996)

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