

Australian Group Selection in Farm Forestry

This factsheet provides guidance for landholders and forest managers on managing Australian Group Selection in Farm Forestry under the Northern NSW, Southern NSW and River Red Gum Forests Private Native Forestry Codes of Practice.



What is Australian Group Selection?

Australian Group Selection (AGS) is a silvicultural system where groups (small patches or stands) of trees are harvested, creating an opening in the forest canopy. AGS is usually implemented to support regeneration of shade-intolerant species that may have difficulty regenerating in smaller canopy openings. It may also be used as a strategy to restore productivity to degraded forests, resulting from past high grading (for example), or to re-introduce age, species-and/or structural diversity to monocultural forests that have resulted from past disturbances (Figure 1). If your forest is comprised of shade intolerant species and/or is in poor condition, AGS may be considered appropriate.

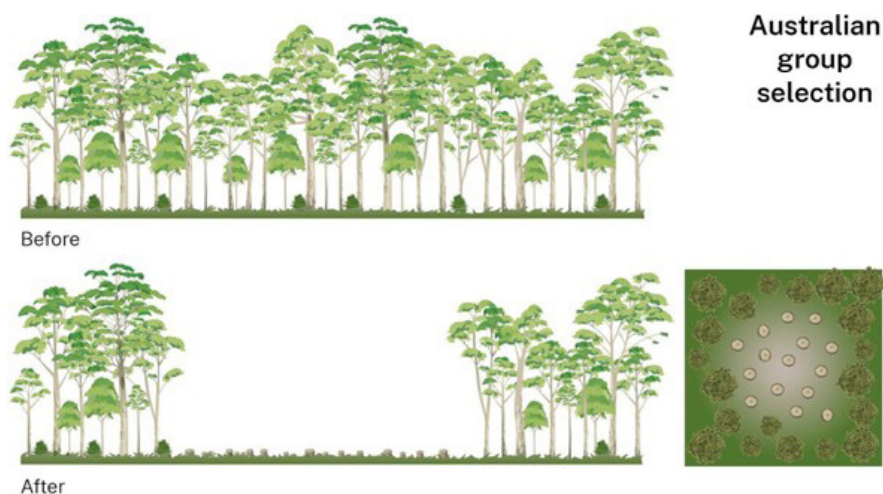


Figure 1: Diagram of Australian Group Selection

Shade Tolerance and Forest Regeneration

AGS is a forest management method suitable for shade intolerant species (for example, those recognised as being very intolerant or intolerant as outlined in Table 1). Trees compete for resources including light, nutrients, and water. Tolerance to competition for resources varies between tree species. Shade tolerance refers to the ability of a species to continue growing, albeit slowly when exposed to limited sunlight and in presence of competition with surrounding trees.

Species that are more tolerant of competition are capable of growing under intact forest canopies or in small canopy openings (for example, those species recognised as being very tolerant as outlines in Table 1). Because they can withstand and regenerate in shade and in the presence of competition for resources with adjacent canopy trees, these trees are classed as shade-tolerant.

Conversely, shade intolerant species may fail to regenerate, demonstrate restricted growth, or become suppressed in the presence of adjacent canopy of trees. Shade intolerant species can establish and grow rapidly when exposed to direct light and where competition is removed.

Eucalypts are typically shade intolerant. While no eucalypt can be classed as truly tolerant, there is a range of tolerance amongst eucalypt species. Understanding shade tolerance of your tree species can help guide the most effective silvicultural treatment to encourage forest regeneration or rehabilitation (Table 1).

Shade Tolerance	Species (examples)	Growth Characteristics	Silvicultural considerations
Very intolerant	Flooded Gum	Rapid growth when given access to a high level of light	Require larger canopy openings that increase light penetration and improve regeneration
Intolerant	Blackbutt, alpine ash, silvertop ash, stringbark	Fast growing but poor development when overtopped by other species	Require larger canopy openings that increase light penetration for regeneration
Intermediate	Spotted gum, river red gum, brown barrel	May establish and persist under canopy trees but can become suppressed or have restricted growth	Require medium sized canopy openings that increase light penetration and improve regeneration
Tolerant	Tallowwood, white mahogany, red mahogany, grey gum, ironbarks	Slow to medium growing species, can establish and persist, but in restricted form under other trees	May develop in small gaps
Very tolerant	Turpentine, brush box, cypress pine	Slow growing species that often exist in growth restricted form in the understory	Able to respond to very small canopy openings after the death or removal of individual trees

Table 1: Shade tolerance and management implications



What are the Australian Group Selection requirements under the PNF Codes of Practice?

The Private Native Forestry Codes of Practice (PNF Codes) outline the requirements for AGS (Section 5.3) and provide guidance for measuring forest regeneration (Appendix C).

Under the PNF Codes, harvest operations that result in canopy openings can be used to encourage the regeneration of forest stands with shade intolerant species.

AGS cannot be used in areas of mass movement of soil or rock. There are also some species prescriptions in Appendix A of the PNF Codes (for example, the black-striped wallaby and eastern pygmy-possum) that limit the use of canopy openings near where species have been recorded.

The maximum area of an individual canopy opening must not exceed 0.5 hectares in area. The sum of canopy openings must at no time exceed 20% of the net harvestable area per landholding for the duration of the PNF Plan. See below for how a canopy opening is defined under the Codes.

AGS cannot occur within 100 metres of the edge of a canopy opening:

- within ten years of the completion of harvest operations, or
- until the forest stand within canopy openings has reached 10 metres or more.

A canopy opening is an area greater than 0.1 hectare in size, measured from the dripline of the trees that form the canopy perimeter. Any vegetation remaining within the opening is less than one half of the stand height (except for significant habitat features within canopy openings, such as hollow-bearing or feed trees).

Canopy openings can be an irregular shape to maximise light penetration and optimise the area to boundary ratio. This encourages forest regeneration and can account for existing landscape features and significant habitat features (such as hollow bearing trees, dead standing trees and feed trees).

Under the PNF Codes, landholders must monitor forest regeneration, composition, and condition at 2, 6 and 10 years after a harvest operation. Where the forest is not regenerating in a way that maintains (or improves on) preharvest forest conditions, landholders must put in place regeneration management actions.

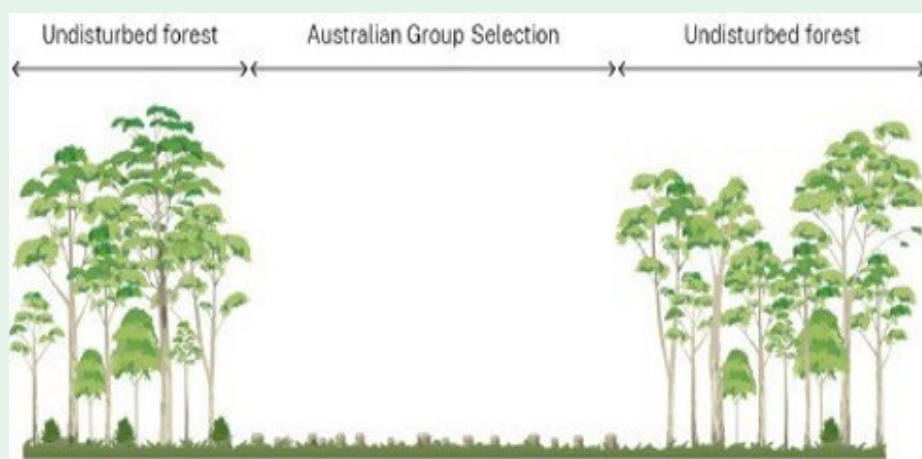


Figure 2: Canopy opening and surrounding forest

What are the benefits of Australian Group Selection?

AGS is suitable for promoting regeneration of shade intolerant species as it eases competition on saplings by enabling more light to reach the forest floor. If your forest is comprised of shade intolerant species and/or is in poor condition (for example, impacted by a history of high-grading), AGS can be an effective forest management method to improve regeneration and help create a mosaic of differently aged trees across the landscape.

What to consider when planning Australian Group Selection operations

Forestry operations are permitted after the approval of a Forest Management Plan (FMP). Your FMP should include a map that highlights the location of silvicultural treatments and a written component outlining details of the proposed AGS operations including the planned activities to promote regeneration and post-harvest management.

Location of operations

When planning forestry operations, consider your long-term forest management objectives remembering that additional canopy openings cannot occur within 100 metres of the edge of an existing canopy opening within ten years of the completion of harvest operations, or until the forest stand within canopy openings has reached 10 metres or more. Limiting operations near canopy openings helps maintain a mosaic harvesting approach that includes undisturbed habitat and maintains structural diversity of the forest.

When planning what size and shape canopy openings will best meet your forest management objectives, consider:

- What is the species composition of my forest and what is the optimal size canopy opening for their regeneration?
- Are there any significant landscape or habitat features in the vicinity of my planned operations that should be avoided?

Irregular shapes may be used to maximise light penetration and optimise the area to boundary ratio, to encourage forest regeneration and account for existing landscape features and significant habitat features (such as hollow bearing trees, dead standing trees, feed trees) (see Figure 3).

During and after operations

When undertaking AGS, use of field and tree markings are recommended to ensure that all parties involved in the operation understand which trees are to be harvested and which are to be retained. For more information on

how to undertake field and tree markings refer to the [Field and Tree Marking in Farm Forestry Field Guide](#).

Following a harvest event, regeneration within gaps must be monitored to ensure good regeneration is occurring. Gaps may warrant additional treatment such as weed control, feral species controls and stock exclusion to ensure competition and damage to young trees is minimised.

Refer to the [Forest Regeneration in Farm Forestry Field Guide](#) for further information about regeneration and the PNF Codes (Appendix C: Calculating Forest Regeneration) for guidance on measuring forest regeneration.

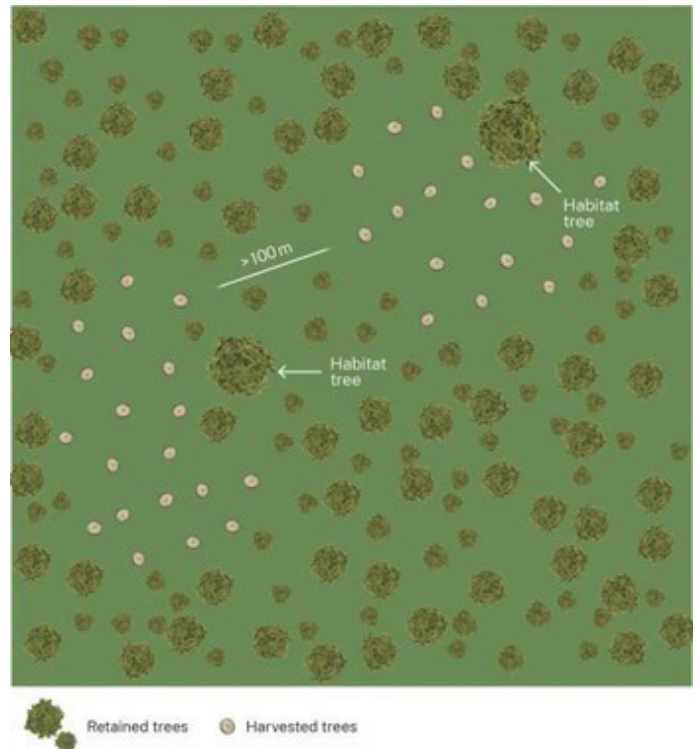


Figure 3: Irregular shaped canopy openings



How can I assist regeneration following Australian Group Selection?

Fire management

After harvesting, the debris in the gap created by AGS may be burnt to create an ash bed in which a future crop of shade-intolerant species can regenerate. Prior to undertaking fire management evaluate whether it is suitable for your forest with consideration to species composition, ground cover and threatened species. Refer to Section 7 of the PNF Codes for further information about fire management in PNF. For advice on conducting fire management contact the [Rural Fire Service](#).

Reducing grazing and browsing pressures

Grazing by stock can impact the growth of new seedlings or young trees, so grazing exclusion by fencing, rotational or tactical grazing can assist the forest to regenerate.

Effective management of pest species such as deer, rabbits and goats may also help reduce browsing pressures on seedlings in early-stage regeneration forests.

Weed management

Weeds compete for resources with native species and can hinder native regeneration. Ensure that you are aware of common weeds in your forest and how to treat them effectively.

Forests can be particularly prone to weeds following disturbances including harvest operations, so consider proactively planning weed control as a part of your forest management planning and ensure appropriate biosecurity measures are undertaken during machinery operations.

For further resources on weed management please refer to your [Regional Strategic Weed Management Plan](#) or contact your nearest Local Land Services office.

Mechanical disturbance

Mechanical disturbance is used to disturb the soil and reduce understory competition which creates a favorable seedbed for regeneration. Mechanical disturbance may be used in place of fire to stimulate seedling regeneration of obligate seeder species, where burning is not desirable or is likely to pose management issues. If undertaking mechanical disturbance, ensure the topsoil is not removed.



Figure 4: Regeneration

Further resources

www.lls.nsw.gov.au/farm-forestry-resources

We're here to help

Find us online: www.lls.nsw.gov.au

Call us: 1300 795 299 and ask for an officer to advise you on Private Native Forestry

Email us: pnf.info@nsw.gov.au

See us: drop into your nearest Local Land Services office



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