

GRAVEL PIT RECLAMATION

by John McCormick

Gravel pits are a scar on the landscape yet with a little imagination they can be put to good use as sites for the display and conservation of native wildflowers. Looking ahead, they can provide an easily accessible seed source. Such seed may in turn be sold to those who commit acts of vandalism within the forest under the guise of progress.

The first thing that comes to mind when dealing with gravel pits is compaction; that is to say, has been compacted by heavy vehicles until it resembles a concrete pad. Plant colonisation, even after many years, is all but non-existent.

Another form of compaction is present where tree cover has been removed and areas left exposed to the elements for some considerable time. Again, colonisation is sparse. This form of compaction appears to be caused by rainfall, thus forming a thin crust which in turn presents an impermeable barrier to the roots of newly germinated seed.

Fortunately the compaction barrier is easily removed by ripping to a depth of around 30 centimetres. It is not necessary to rip the complete pit area; single rip-lines at four to five metre spacing will suffice; rip-lines being in a direction parallel to the adjacent road. To prevent erosion, rip-lines should go with and not against the contour.

A formula for rehabilitation of gravel pits would run thus:

1. Stack and burn all wood slash.
2. Take the safety measure of battering down steep pit banks. This work should be minimal since ultimately it adds little to aesthetic value.
3. Put in rip-lines.
4. Seed and fertilise along rip-lines. Broadcast seed and fertiliser over sloping pit banks.

Seed Variety and Treatment

Native wildflowers fall roughly into two categories: fireweed and non-fireweed species. Fireweed species seed, i.e. acacias and papilionates require treatment before sowing. Non-fireweed seed does not require treatment, i.e. seed of the plant genera Hakea, Calothamnus, Callistemon, Kunzea, Melaleucas, etc.

The treatment of fireweed seed is simple. Place seed in a container and pour on boiling water. Use three parts water to one part seed by volume. Allow to soak for five or ten minutes then strain off

water. Seed can be sown immediately or air dried and stored until sowing time. Seed thus treated has been stored for one year at room temperature with no apparent detrimental effect on viability.

The Seed Mix

The type of seed generally used in reclamation work is that which is more readily collected in quantity. Unfortunately this can lead to monotony in variety, colour and strata. Even small amounts of the more difficult to collect species can break this monotony and produce good seed collection areas for future use. An admixture of fireweed and non-fireweed species is the more useful for general work. However, each area to be sown should be considered on its own merits. A few minutes thought by one person can prevent a decade of unsightliness for many.

A seed rate of two kilograms of mixed fireweed seed plus 100 grams of non-fireweed seed, e.g. bottlebrush per hectare should suffice. Experience gained will lead to a reduction in seed requirement. A small amount of tree seed can be included in the mix.

Sowing Time

Root box studies gave a shoot-root ratio of one to eleven for mixed fireweed species, i.e. when the seedlings were two centimetres high the roots had penetrated vertically into the soil to a depth of 22 centimetres. This indicates the need for new seedlings to establish a deep root system prior to the onset of dry summer conditions. Seed sown late in season will be largely or wholly eliminated by natural selection. Throughout the jarrah and karri forest regions the first of June would be the best commencing time for sowing. Sowing can take place throughout May, June, July and August, with June and July as the best months.

Germination

Wildflower seed is extremely hardy and retains its high viability even after a long time in storage. Germination failure with open sowings is not unknown but can generally be traced back to unripe seed. Lesser causes are, of course, parasitism of the seed by fungi and insects but these are easily avoided by proper seed storage.

NOTE: An insect parasite eats out the seed of the species Albizia lophantha whilst it is still on the tree. At seed collecting time, infested plants should be avoided.

Seeding and Fertilising the Rip-Lines

A two-man team is best for rip-line seeding. The fertiliser is applied firstly by the operator who throws (underhand) a good handful of fertiliser near the plant but not on top of it. The second operator follows and throws (underhand) a pinch of seed along the rip-line at seven pace intervals thus creating a continuous

fertilised rip-line at five pace intervals. The pinch of seed amounts to 20 to 30 seeds.

The Fertiliser

Any general purpose fertiliser will suffice, whilst superphosphate and Agras 12-50-0 have both proved satisfactory. Cheapness and availability are the best guide.

Selection by Fertiliser

If one year after treatment it is desired to favour one or several species above others sown, this may be done by applying ten grams of fertiliser to the plants to be favoured. If trees are to be favoured, apply 50 to 100 grams of fertiliser per tree. Plants thus treated will soon become dominant.