Nurture Revegetation, an Australian owned company, has carefully developed a bentonite clay pellet with embedded native seeds specifically for the revegetation of harsh arid environments.

The method developed by Nurture Revegetation has significant outcome advantages over the use of raw seed due to the following reasons;

- Protection from predation, including ants and birds,
- Able to absorb moisture from infrequent rain events,
- Pellet includes beneficial stimulants to aid seed germination,
- Ease of distribution over difficult terrain,
- Able to be distributed manually or by machinery,
- Can be done progressively over time,
- Seeds are ready for immediate application or can be held for strategic use depending on seasonable or weather conditions,
- Seed selection, scarification and priming has already been done prior to application.

Revegetation projects in arid zones face difficulties with logistics of seed distribution due to seed predation, seed loss by wind and rain, and difficulties of seed establishment in exposed, bare soils.

Rehabilitation of modified landforms resulting from mining activities is a legal obligation on mining companies. This is an expensive process requiring large investments in earthworks to create stable structures that can withstand heavy rainfall events and to replace topsoil that can support the revegetation required for the long-term physical stability and ecosystem functions.

Native seed of appropriate provenance is very expensive and often of limited availability. Direct seeding can be an expensive process and outcomes are often very poor because of a wide range of physical and biological factors.

There is research being undertaken to improve outcomes for direct seeding using methods to stimulate germination and to also protect the seeds from harsh physical conditions and biological constraints, such as seed predation by insects.

Nurture Revegetation has developed a pelleting process to improve the logistics of seed delivery and the survival and recruitment of seeds and seedlings. We have also been working with Kings Park Botanical Authority to enhance the input to achieve optimal outcomes

Seeds embedded in solid carriers can improve seed establishment rates. Seeds are added to a bentonite clay mix and extruded into pellets with various levels of size reduction. Additives to enhance survival are included in the clay mix and tailored to the targeted environment.

Many of the seeds used in revegetation of arid lands, especially the various grasses, herbaceous plants and small shrubs are very small, less than 1mm, with a very low seed mass. On bare soils these seeds can be blown or washed away from target areas with subsequent low germination. Small seeds are also subject to predation by insects, particularly ants. Small seeds need adequate and sustained moisture to complete the

germination process and get roots established; the seed embedding matrix can assist by retaining moisture in the seed micro-zone

In an arid environment with unpredictable rainfall it is particularly useful to be able to undertake seeding without waiting for rain. Dry seeding is a useful method when rainfall is unpredictable and because these areas may be inaccessible following rain. Dry seeding requires that seeds can survive and persist in a viable state until the rain makes the environment conducive to germination and seedling survival

The finished pellets can be sown by hand or air dropped, with improved survival prospects for revegetation and rehabilitation of mining, agricultural and other degraded lands.

Planning and seed selection

Nurture Revegetation will assist in the assessment and selection of the appropriate native species required in a particular geographical area to meet local provenance. We can utilise existing Ecosystem Function Analysis (EFA) assessments to aid in the species selection.

Seeds held in a mine's own seed bank collection can contribute to the seeds used in our processes or sourced from recognised native seed merchants.

Our planning takes into consideration any desire or requirement to stage revegetation over a period of time.

Seed preparation and pelletisation

Seeds that are sourced with from the mines own reserves or from commercial sources are tested for viability. Only pre-tested seeds with correct quality and viability parameters are used in the seed embedding process.

The process involves applying the appropriate growth stimulants to ensure optimum germination of the viable seeds.

The various species of native seed are batched into bags (i.e. 5kg bags) on the basis of the assessment of the required distribution for specific areas. This enables the end user or distributor of the seeds to apply the pelleted seeds directly.

Application of seeds to the sites

Whilst we are available to assist with the distribution of the pelleted native seeds to the respective sites, one of the benefits of this product is that we are not necessarily required to be involved for the distribution stage.

Seeds can be supplied as blended mix of selected species; bagged and ready for immediate application.

Onsite distribution can be managed by the mine staff or local rangers. It is our experience that one person can spread embedded seed at 0.25 hectares per hour over prepared difficult terrain, and more on easy terrain.