

Revegetation practice improvements in kwongan of the Mid West

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Seedling emergence rates from broadcast seed are notoriously low in revegetation. At Iluka Resources Limited's Eneabba mine in the Mid West of Western Australia, eight-fold more seedlings emerged under ideal nursery conditions in 2015 than when that seed was broadcast in the field. Unlocking this potential in broadcast seed is critical to establishing the desired plant density and species diversity of the kwongan shrubland revegetation, and is one focus of R&D at Iluka's Eneabba mine.

Erosion, both wind and water, is a major factor affecting seedling emergence in newly prepared sites. To control wind erosion at Eneabba, Iluka applies a crust of dilute, non-toxic bitumen emulsion to the sandy soil surface. This crust degrades over a few years but does not inhibit germination. It allows seedlings to emerge and establish under windy conditions, common at Eneabba, holding the seed in the soil matrix for germination to occur and eliminating the sand-blasting that kills newly emerged seedlings. Combining this crust application with ripping-mounding to prevent water erosion in 2016 increased seedling establishment almost two-fold.

Soil imprinting, a practice developed in the 1970s, reduces rainfall run-off and increases infiltration and nutrient/organic matter accumulation thereby improving seedling emergence and establishment. However, the imprints erode too quickly in sandy soils such as found at Eneabba. A trial combining soil imprinting and bitumen emulsion crust improved seedling emergence more than two-fold for broadcast seed and three-fold for topsoil derived seed.

Data from large-scale field trials of these practices and the innovative combinations of them will be presented to illustrate their effectiveness and applicability to other revegetation projects.