

The science of landscape restoration



Over the last two decades the ecological restoration of industrial land has developed into a specialist science combined with highly sophisticated management activities. A prime example of this approach is a unique partnership between the CSIR and Richards Bay Minerals (RBM).

Since 2006, sustainability scientists and tree breeders at the CSIR have pooled their expertise to develop sustainable land-use options – including large-scale commercial agricultural production – for coastal sand dunes mined by RBM in northern KwaZulu-Natal.

Sustainability scientist Benita de Wet explains: 'We are conducting crop trials on rehabilitated sand dunes to identify viable and sustainable agricultural and silvicultural land-use options. At the end of the trial period, we will make recommendations on the best crops to grow, based on their performance over several years. The local community can then use these recommendations to engage in sustainable agricultural activities, thereby supporting their livelihoods directly from the land.'

Apart from selecting and testing viable crops, CSIR tree breeder Christopher Komakech explains that the crops were also selected based on their capacity to continuously improve the soil.

'We're testing three agricultural crop types – vegetables, legumes and herbs. The legume species being tested are sugar beans, peanuts or groundnuts, cowpeas and bambara groundnuts. Although sugar beans and peanuts are cash crops, they were chosen for their potential commercial value, their subsistence food value and their potential for improving the soil,' he adds.

Although Chris normally works with plantation forestry, his expertise is being put to good use in this project: 'Apart from the vegetables, we're also testing fruit and nut trees like mangos, litchis, bananas and macadamias and some forestry plantation trees like Eucalyptus and Cassuarina. A range of pasture grasses is also being tested.'



The CSIR and Richards Bay Minerals have pooled their expertise to develop sustainable land-use options for dunes mined in KwaZulu-Natal.

The trials have been planted over the past four to five years and will run until late 2012. Preliminary findings have already indicated which crop types may be suitable for large-scale commercial production. The research team may have to extend the monitoring of crop performance to obtain full results on some of the longer-term crops, such as the fruit and nut and forestry plantation trees.

RBM has been mining the coastal sand dunes of northern KwaZulu-Natal for valuable minerals such as ilmenite, rutile and zircon for the past 35 years. In line with Rio Tinto's biodiversity strategy, the company has a long-term commitment to restoring the mined sand dunes specifically using natural processes. ■

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