

Consumer assurance Tackling invasive alien plants

Biological diversity (biodiversity) is complex: it comprises many interlinking biochemical processes that range from the grandest of trees to the microscopic soil organisms. By Paula Bester (in consultation with Adrian Robinson, Henko Vlok and Retha Louw)



Considering the crucial role of pollinators, seed dispersal via birds, earthworms in the soil and the humble dung beetle, you can start to imagine how life's cycle would be broken without one of the role players. Even life sustaining oxygen is graciously supplied to us by a vast majority of different plant species, while at the same time removing global warming carbon from the air. Without biodiversity, we would cease to exist (or at least have a surplus of elephant dung).

The single biggest threat to South African biodiversity is invasive alien species (IAS)¹. They are introduced plants, animals and micro-organisms that are non-native to SA and may have tremendous adverse economic and environmental impacts. And they can negatively affect native biodiversity through competition and disrupt local ecosystems and their function. Invasive alien plants (IAPs) deplete underground water sources, while taking growing space from indigenous plants and trees. Furthermore, they intensify the impact of wild fires, floods and soil erosion and ultimately, disrupt the

natural balance in our eco-systems.^{1,2,3} So, not only do they threaten our indigenous species, but also our increasingly scarce natural water sources. According to Dr Heidi van Deventer, lead scientist of the freshwater component for the National Biodiversity Assessment (NBA) at the Council for Scientific and Industrial Research (CSIR), SA is among the most water scarce countries per capita in the world¹. We just can't afford to lose precious natural water supplies. The NBA shows that fresh water ecosystems are being compromised by invasive alien species.^{2,4} Invasive alien trees like pines (*Pinus* species), wattle (*Acacia* species) and gum trees (*Eucalyptus* species) for example, tend to consume much more water compared to indigenous trees.⁵

Currently, there are 2 033 listed invasive alien species in SA that include marine organisms, fresh water fish, insects and plants. From this grand total, 107 were found to have a major environmental impact and of the 107 problematic species, 80 are plants (75%). Many invasive alien plants in South Africa are from Europe, Australia, North and South America. They usually spread rapidly and thrive in the environment where they are introduced into. Because these species are introduced into ecosystems by humans, they have not naturally evolved with the rest of the

environment. Their numbers are usually controlled in their habitat of origin by surrounding pests and diseases that feed on them, while on the contrary their natural enemies are often missing in the new environment, enabling them to thrive.⁵

Although mandatory, removing IAPs from your land can be challenging in many ways. We reached out to SIZA environmental specialist, Henko Vlok, for more insight on the legal aspects of the process, and farmer Adrian Robinson for some practical tips.

According to the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) Regulation 75, all landowners are under legal obligation to control the IAP species occurring on their properties. This act categorises invasive plants into four different categories, namely 1a and 1b, 2, and 3.6 Landowners or workers are encouraged to consult this act to establish the categories of present IAPs, as the legal requirements differ amongst the groups.

Henko further elaborated on the cost implications of removal projects. Invasive Alien Plant control, especially for well-established populations, can become a severe drain on landowners' budgets and resources. On a national scale, this comes with huge economic implications, reaching an estimated annual cost of R600 million to clear more than 10 million

hectares of land in SA (Department of Environmental Affairs, 2019). The cost of controlling IAPs will continue to rise as these invaders spread, therefore immediate action is required. The most efficient way of reducing the future costs of IAP clearing, is through suitable planning, investing in the early detection and removal of emerging weeds, and controlling well-established populations of IAPs. According to NEMBA, it's a minimum requirement to have an invasive alien clearing plan, after which, once formalised, preparation for clearing can begin. A suitable IAP clearing plan should contain a map of IAP coverage, as well as a worksheet with the following basic information: dominant alien species present, density, maturity, and methods of clearing. This data will be useful when it comes to prioritising the phasing of IAP clearing. Areas that should be prioritised are mountain catchment areas, riparian areas, and areas that pose a fire risk. Lighter infested areas should also be prioritised in order to prevent the build-up of seed banks. If IAPs are located within or alongside a river, it's recommended to start clearing in the headwaters, moving downstream. Ideally, dense, mature stands should be cleared last, as their density is unlikely to increase.

The control methods of alien invasive plants can be broadly classified into these three categories: mechanical (e.g. felling, strip-barking, hand-pulling, and mowing), chemical (e.g. the foliar spray of herbicides on targeted plants) and biological (e.g. release of natural enemies that will reduce population vigour to a level comparable to that of the natural vegetation). Take note: When making use of herbicides for alien control, environmental safety should be prioritised. Managers and herbicide operators must have a basic understanding of herbicides and their functions, as this will guide the correct selection of herbicides for the targeted plant. If used incorrectly, the use of herbicides can do more harm than good, especially when working in a riparian area.

Having experienced the process of removing invasive alien trees from his farm, Adrian Robinson shared a few practical tips.

The cheapest option is to cut the cleared trees into manageable lengths (no machinery required) and to stack them to be burned later. Please note that burning permits are required from your local fire protection association. The second option is to cut all trees into smaller sections as the clearing takes place, ready to be made into fire wood. This takes about three times longer than option one, so it has some cost implications. The wood can be sold to help with costs. The third option is to only cut trees once and to let them lie in situ until they can be chipped. This is very quick and chipping is especially viable if the trees are big (yielding a lot of chips). He managed to

sell the wood chips for R70/m³, excluding transport. This will help with costs, but in his experience this only covers about 20% of the cost of chipping. Environmentally, this is the best option as you are recirculating the nutrients, instead of burning them. Chipping is really expensive and terrain dependant, as you need equipment and machinery access to move the trees to the chipper.

Importantly, indigenous plant rehabilitation needs to be considered when planning the alien clearing project. If you just cut down, you leave a massive fuel load for potential wild fires. It is also vitally important to use the correct weed killers to stop regrowth once clearing has been done. Adrian had to do three follow-up sprays after clearing blue gums in their river bed. The time between follow-up spray applications is also crucial, between 3-5 months is ideal since you use fewer chemicals (which helps with costs). They used four men with backpack sprayers to apply agrochemicals across 4 km of river bed in three days.

Robinson advises asking your local chemical supplier for help, to get this right the first time.

With blue gum trees it is critical to cut them as close to the ground as possible, as this slows down regrowth and needs fewer follow-up sprays. He also recommends visiting the site daily for inspection, as chainsaw operators don't always like to bend down. Stumps must be painted immediately after cutting with weed killer for maximum effect and he always adds a dye to help see which trees have been treated. Robinson prefers using paint brushes instead of backpack sprayers, to minimise chemical wastage.

After clearing the alien species, they cut water wastage dramatically (a big blue gum tree can use ~ 1000 l of water per day and if you live in a dry area like Robertson, this is significant). He has seen a considerable increase in the river stream that supplies their water after they'd completed the alien clearing project two years ago.

Invasive alien species – the single biggest threat to South African biodiversity – deplete underground water sources, while 'crowding' indigenous plants and trees.





There is a global effort to alleviate the problem of IAS. In SA, there are multiple on-going projects driving IAS awareness, control and removal, including WWF SA, Department of Water and Sanitation's Working for Water Programme (WWF currently runs over 300 projects in all nine of SA's provinces), Cape Nature's Alien Vegetation Removal Programme, The Greater Cape Town Water Fund, SANBI Invasive Species Programme (includes Eastern Cape Invasive Species Forum) and Midlands Conservancies Forum in KZN, amongst others. It will of course, require a

collective effort to tackle IAS in SA. Besides doing the responsible thing, landowners or workers need to actively respond to IAPs on their territory to comply to SIZA environmental standards and to maintain market access, which is fundamental from a sustainability point of view (both

environmentally and economically). Taking on an IAP removal project is not a quick and easy job, but very rewarding when complete, knowing that you contributed positively to the environment. It's truly a long-term investment for our next generation. After all, we are just borrowing the land from them. 

Sources:

1. "Working for Water Programme." Department of Agriculture, Forestry and Fisheries and the Environment. <https://www.environment.gov.za/projectsprogrammes/wfw>
2. "Carving out a career through alien vegetation management." Cape Nature. <https://www.capenature.co.za/projects/clearing-alien-vegetation-project>
3. "The Greater Cape Town Water Fund. Assessing the return on investment for ecological infrastructure restoration." 2018. The Nature Conservancy, Business Case, November. https://www.nature.org/content/dam/tnc/nature/en/documents/GCTWF-Business-Case_2018-11-14_Web.pdf
4. "SA's wetlands and rivers are crucial for water security." 2019. South African National Biodiversity Institute, blog post, October 16. <https://www.sanbi.org/news/sas-wetlands-and-rivers-are-crucial-for-water-security/>
5. "A practical guide to managing invasive alien plants. A concise handbook for land users in the Cape Floral region." 2021. World Wildlife Fund. https://wwwfafrica.awsassets.panda.org/downloads/a_practical_guide_to_managing_invasive_alien_plants_web.pdf
6. "Invasive Alien Plant Alert." South African National Biodiversity Institute. <https://www.sanbi.org/resources/infobases/invasive-alien-plant-alert/>

Logistics

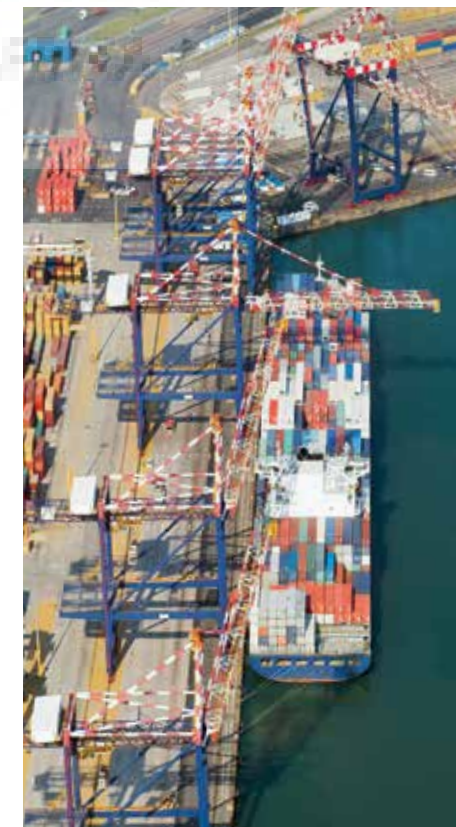
What is at stake if SA does not fix the ports?

This year many citrus growers suffered significant losses, directly or indirectly, due to the operational challenges at the ports. If we do not address these issues and work collectively towards fixing them, citrus growers will continue to bear the brunt. By Mitchell Brooke

These are tough topics to raise and deal with. But the alternative – where the industry faces the same situation next year and is unable to get sufficient product through to the market – is when the real impact will be felt. Citrus fruit is grown across SA, eSwatini and Zimbabwe, supporting hundreds of thousands of people and bringing much needed economic benefits and hope to rural areas that would otherwise have no access to economic opportunities, healthcare, schooling and everything else that the farmers contribute. And the citrus export industry is in a rapid growth cycle, growth that will only add benefits to Southern Africa and its people, especially those in the rural areas where economic stimulus is most needed. If the citrus industry does not thrive and the growth that is inevitable is not maximised, the industry may eventually face collapse and Southern Africans will be left in dire straits.

The way forward

The CGA continues to engage with Transnet executives and government representatives. Problems that are being reported in the media need to be looked at and if true, dealt with effectively. Every effort must be made to prevent Transnet following the same path as other State Owned Enterprises (SOEs). The reality is the citrus industry is compelled to use the only (monopoly) port terminal operator and if they are ineffective, all up- and downstream players are severely impacted. 



The citrus industry of Southern Africa has the largest (by infrastructure), most diversified and complex logistics chains on the African continent.

The harrowing question is: What will happen next year when potentially 180 million cartons of citrus are expected to descend upon our malfunctioning ports for export?

The citrus industry of Southern Africa has the largest (by infrastructure), most diversified and complex logistics chains on the African continent, using five seaports and 12 export terminals to export roughly four million tons of fruit to global markets. On top of this, the citrus industry uses four rail terminals to transport roughly 4 000 12m reefer containers to seaports for export. Billions of rand have been invested in orchards, packing and cold storage facilities by foreign and local investors (including major banks), and by farmers themselves.

The Citrus Growers Association of Southern Africa (CGA) represents the growers and stakeholders that have made these investments, and is obliged to advise them about the state of the ports and whatever impacts on the effectiveness of the logistics chain.

Seasons greetings and best wishes for a fruitful season. from all of us at



Vitroplant and Ruvalabs have been providing Italian experience and solutions to South African challenges for almost 10 years.

We mass produce young plants through tissue culture propagation for South Africa's deciduous fruit nursery industry and currently supply SAPO's entire selection of Cornel Geneva® apple rootstock & Atlas, Viking, GF677 and Flordagard stone fruit rootstocks.

In addition, a wide range of Cherry and Kiwi fruit rootstocks, Blueberries, Blackberries and Raspberries.



How can we help you?

Contact +27 71 421 0025 info@vitroplantsa.com

www.vitroplantsa.com

www.vitroplant.it

