Advances in the regulation of weed biological control in South Africa

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Regulation of biological control (biocontrol) is essential to ensure its continued safety and to enhance its acceptability as a key contributor to the management of damaging invasive alien plants in South Africa. Local researchers were concerned that regulators may become risk averse and over-cautious, thus preventing introductions of safe biocontrol agents, as bureaucratic impediments have contributed to the decline in the number of biocontrol releases in several other countries. In South Africa, the introduction of a transparent and inclusive review process has averted these concerns. Legislation in South Africa enables departments concerned with protecting environmental and agricultural resources, to work together to regulate potential risks. An interdepartmental committee, advised by independent specialists, facilitate the review of research into the safety of potential biocontrol agents. Regulators have reviewed and timeously assessed 26 potential biocontrol agents between 2013 and 2020. This has ensured that the considerable benefits from safe biocontrol agents are available for management of some of South Africa's worst invasive alien plants. We review the system in South Africa and suggest possible improvements to the regulatory framework.

Key words: Agent releases, biocontrol, invasive alien plants, regulatory framework, host specificity.

INTRODUCTION

The sustainable future of weed biological control research and practice is highly dependent on accurate assessment of the host specificity of proposed agents and adherence to strict testing protocols that keep pace with increased knowledge of agent-plant interactions. Barratt *et al.* (2021) concluded that over the last three decades there was good progress towards providing regulation of biological control (biocontrol), ensuring adequate risk assessment and sustaining biosafety. Regulatory authorities have the responsibility to protect human livelihoods (agriculture, fisheries, and forestry) and the environment (biodiversity and ecological infrastructure), and therefore must ensure the safety of a proposed biocontrol agent prior to its release.

Sheppard *et al.* (2003) expressed the fear that high risk aversion and slow regulatory processes would bring biocontrol releases to a 'grinding halt', and supporting this, there has been a slowing down in the number of releases globally (Barratt *et al.* 2021; Winston *et al.* 2014, updated on www.ibiocontrol.org/catalog/). Over-regulation and higher risk aversion may be the cause of a decrease in the number of biocontrol releases globally, but this is not the case in South Africa.

Klein *et al.* (2011) provided a review of the regulatory framework for the biocontrol of weeds in South Africa, and its implications, from the inception of biocontrol in 1913 until the end of the first decade of the 21st century, while Zachariades *et al.* (2017) provided some update on progress thereafter. In this paper, we review the regulatory framework that ensures the safety of weed biocontrol in South Africa. We report on the agent release applications that South African regulatory authorities have considered over the last decade and indicate how to improve the efficiency and rigour of this process. We further compare the South African approach to those of other countries.

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