

A Weed or a Rose? The New Zealand Hazardous Substances and New Organisms Act[®]

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INTRODUCTION

Williams et al. (2001) estimates that there are approximately 160 alien species that require some form of control in New Zealand, 1,900 adventive species whose weed risk status needs assessing, and a further 18,000 species in cultivation, of which at least 4,000 are listed as weeds in other countries. In 2002 Timmins and Popay estimated that 240 species of invasive weeds were threatening indigenous biodiversity and that 75% of New Zealand's environmental weeds were originally introduced as garden plants. They also estimated that there is a pool of 20,000 to 25,000 introduced plants in cultivation of which 2,100 have become naturalized, and Essler (1988) calculated that four new species are naturalised every year in the Auckland urban area. It is further estimated that:

- 1%–2% of all introductions will become significant environmental or agricultural weeds (Williams et al., 2000);
- Weeds have invaded nearly all types of indigenous plant communities (Williams, 1997);
- Over one-third of off-shore islands have a weed problem (Atkinson, 1997);
- Weeds will degrade approximately 575,000 ha within 10–15 years if no controls are implemented (Buddenhagen et al., 1998);
- Weeds are a direct threat to one-third of all New Zealand's nationally threatened plant species (Reid, 1998);
- Of 117 taxa recorded as naturalised between 1988 and 1993 16% were probably accidental contaminants, while 84% were horticultural escapees from gardens and amenity plantings (Lee, et al., 2000);
- It has been conservatively estimated that the cost of managing weeds and pests is \$840 million or 1% of gross domestic product (GDP) (Hackwell and Bertram, 1999).

THE ACTS

It was with this knowledge that both the Biosecurity Act 1993 (BA, 1993) and Hazardous Substances and New Organisms (HSNO) Act 1996 (HSNO, 1996) were drafted and passed by the New Zealand Parliament. The purpose of the HSNO Act "is to protect the environment, and health and safety of people and communities, by preventing or managing the adverse effects of new organisms." The HSNO Act is effects-based, and decisions are made by weighing up positive (benefits) and adverse effects (risks or costs). However, the Act requires that a precautionary approach be taken where there is scientific and technical uncertainty about adverse effects. Further there is a set of minimum standards that require an application to be declined if there is likely to be:

- Any significant displacement of any native species within its natural habitat,

- Any significant deterioration of natural habitats, and
- Any significant adverse effects to New Zealand's inherent genetic diversity, or
- A disease or parasite, or a vector of a disease or parasite of humans, animals, or plants unless that is the purpose of its introduction.

This was a significant change in policy at least in regards to the introduction of new plant species, which had been virtually uncontrolled for the previous 150 years.

NEW PLANT INTRODUCTIONS

Since the New Organisms component of the HSNO Act came into force in 1998 there have been only two applications for plants species to be unconditionally released, using the rapid assessment provisions, into the New Zealand environment. These were for *Xanthorrhoea glauca* and *X. johnsonii*, Australian grass trees, and 11 species of *Agathis*. The former was approved while the latter was not approved due to the uncertainty surrounding the cultural dimension of risk to kauri (*Agathis australis*). In the latter case the applicant did not pursue any of the other available avenues of release. The lack of applications is thought to be a result of the plantmen perceiving that the HSNO Act process is too difficult and too expensive. While the Act is demanding, a part of the failure has been on the part of the plantmen not engaging with the HSNO Act and of ERMA New Zealand not communicating the possibilities that the provisions of the Act provides. These provisions are the determination of the new organism status of a species, and the successive steps of importation of new species into containment, field trial, conditional release, and release.

Many plantmen's first contact with ERMA New Zealand is when their importation of seeds or plants are stopped at the border by Ministry of Agriculture and Forestry's Quarantine officials because the species being imported does not occur on the Plant Biosecurity Index (PBI) (MAF, 2005). Justifiable criticism can be leveled at the implementation phase of the HSNO Act in that no provision was made to create a definitive list of all the plant species that occur in New Zealand. The PBI was an 11th hour attempt to at least have a rudimentary list in place when the HSNO Act came into force. When an importation of plants is stopped at the border for this reason the importer will be referred to ERMA New Zealand for a statutory determination as to whether or not it is a new organism under the Act. A statutory determination although free in the past will probably incur a \$1000 application fee. However, where the evidence for its presence in New Zealand is incontrovertible ERMA New Zealand has instituted a free, nonstatutory or informal process by which the evidence is evaluated and the Chief Executive issues a letter stating that the organism is not new. Where the evidence is ambiguous or lacking a statutory determination is likely to be unsuccessful.

Where a statutory determination of the new organism status of a species is unlikely to succeed or has been unsuccessful, i.e., the organism is still considered to be "new," there is a tendency for the importer to fall-back into a pre-HSNO Act mode of thinking. This usually results in the importer pursuing an application for a full release despite the high hurdles created by the precautionary principle and the minimum standards. A better, but more circuitous, approach might be to apply for an importation into containment. In containment the plant could be trialed for suitability for its intended purpose and more data gathered to assist the release application process. This could be then followed by an application to field trial or

for a conditional release. Again at each step more data could be gathered as to the suitability of the plant for its intended purpose and to gather further data pertinent to the next step. Moving through such a process will act as a sieve for species that have undesirable environment or commercial traits.

Each step in the process described will incur an application fee which will progressively increase from \$1000 through to a maximum of \$35,000, as well as infra-structural and compliance costs to maintain containment. This could be overcome by plantmen acting in the sector interest and pooling resources through an association, such as the Nursery and Garden Industry Association (NGIA), to cover the costs of applications, establishing national containment facility, and regional field trial and conditional release trial sites. Taking a generic approach to applications rather than a species-by-species approach could further enhance this. Such an approach would be welcomed by ERMA New Zealand, but it can only succeed if the sector developing a cohesive strategy.

An example of such an approach might be for an application to import into containment the hypothetical plant genus *Ermanzia* which might consist of species *E. alpha*, *E. beta*, *E. gamma*, and *E. delta*. In containment *E. alpha* is found to have weedy characteristics and is eliminated from any further consideration. A field trial application is then made to carry out the trial at a nationally established field trial site. As a result of the field trial species *E. beta* is eliminated because it has undesirable commercial traits, e.g., it is poor flowering. This is followed by an application for conditional release in regionally established trial sites in Auckland, Christchurch and Dunedin. The results of the trials are that species *E. gamma* performs well in all three sites but *E. delta* only does well in Christchurch and Dunedin. The developer of these plants may then choose to pursue full release with the knowledge that the *E. gamma* will only be made commercially available in the South Island while *E. delta* will be commercially released nationally, or the release of *E. gamma* will not be pursued, as it is not economically viable. Such an approach is both commercially and environmentally sensible when compared with the non-evaluated release of a plant species.

Another possibility might be where species traits allow the conditions to be placed on what would be to all intents and purposes a release. Such controls would be to mitigate any risk that the species might become invasive. One example of this would be a dioecious species, in which there are separate male and female plants as in the case of the maidenhair tree (*Ginkgo biloba*). A condition that could be put on such a species would be that no female plants were to be imported or released. The result would be species that could not become invasive. Such controls would satisfy many of the hurdles created by the precautionary principle and minimum standards.

CONCLUSION

In conclusion, the HSNO Act was implemented for the purpose of protecting New Zealand from the importation of further undesirable plant species. As such it needs to be noted that the Act is now part of the horticultural landscape and needs to be engaged by those who wish to pursue the importation of new species. It is believed that by taking a strategic sector approach to the HSNO Act rather than an individual approach many of the obstacles, both real and perceived, created by the precautionary principle and the minimum standards can be used to the advantage of the sector and the individual plantmen.

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