**Supplementary material:**

**Supplementary Table S1**: Unofficial consultative consensus list of *“*presumed sterile*”* cultivars and Hybrids (2014).

*\*Number: this refers to the regulatory listing number as listed on the NEMBA 2014 Alien and Invasive Species regulatory list, where there were inconsistencies, numbers were changed accordingly.*

*\*The nomenclature for the species column was adjusted to accepted species names, and the genus and species names were removed to only show cultivar names in the final column.*

*\*NEMBA categories:* ***Category 1a*** *Species which must be combatted or eradicated; Category 1b Species which must be controlled.;* ***Category 2*** *listed species requires a permit issued by the Department of Forestry, Fisheries and the Environment (DFFE) to carry out a restricted activity;* ***Category 3*** *listed species are subject to certain exemptions in terms of section 70 (1)(a) of the NEMBA Act, which applies to the listing of alien invasive species. Any Category 3 listed plant species that occurs in riparian areas, must be considered as Category 1b and the appropriate control measures instituted.*

If there were no submission to the department “none” is flagged

| **Number**  | **Species** | **Common name** | **NEMBA category** | **Sterile cultivars and hybrids** |
| --- | --- | --- | --- | --- |
| 24 | *Ageratum houstonianum* | Mexikaanse ageratum /Mexican ageratum | 1b | F1 High Tide Blue | F1 High Tide White | F1 Blue Danube| F1 Blue Pearl | F1 Horizon Blue | F1 Blue Hawaii 5.0 |
| 56  | *Berberis thunbergii*   | Japanse berberis /Japanese barberry  | 3 | Bagatelle | Golden King | Golden Ring | Green Ring | Harlequin | Kolbold | Nana | Ring of Fire | Rosy Glow | Ruby Gem |
| 61 | *Buddleja davidii* | Chinese sagewood, Summer Lilac | 3 | *Buddleja davidii* Hybrids: Flutterbye Grande Peach Cobbler | Flutterbye Grande Blueberry Cobbler | Flutterbye Grande Sweet marmalade | Flutterbye Grande Tangerine Dream | Flutterbye Grande Vanilla | Pink | Flutterbye Petite Snow White |
| 69 | *Callistemon/Melaleuca viminalis*   | Treurperdestert /Weeping bottlebrush    | 1b in KwaZulu-Natal,Mpumalanga, Limpopo, Eastern Cape; 3 in the rest of South Africa | Burgundy Jack | Captain Cook | Endeavour | Hot Pink | Little John | Violacea |
| 78 | *Catharanthus roseus*  | Begraafplaasblom / Madagascar periwinkle | 1b | Pacifica XP Mix | Pacifica XP Mystic Mix | Pacifica XP Orange | Pacifica XP Polka Dot | Pacifica XP Punch | Pacifica XP White | Pacifica XP Burgundy | Pacifica XP Burgundy | Halo | Pacifica XP Corral | Pacifica XP Cranberry | Pacifica XP Georgia Mix | Pacifica XP | Halo Mix | Pacifica XP Icy Pink | Pacifica XP Lilac | Pacifica XP Merlot Mix | Pacifica XP Raspberry | Pacifica XP Really Red | Pacifica XP Strawberry Shake Mix | Pacifica XP Cherry Red Halo | Mediterranean Deep Orchid | Mediterranean Deep Rose | Mediterranean Lilac | Mediterranean Polka Dot | Mediterranean XP Hot rose | Mediterranean XP Mix | Mediterranean XP Lipstick Mix | Mediterranean XP Peach | Mediterranean XP Red | Mediterranean XP Rose | Mediterranean XP Rose Halo | Mediterranean XP Dark red | Mediterranean XP Strawberry | Mediterranean XP White | Titan Apricot | Titan Blush | Titan Burgundy | Titan Halo Lavender Blue | Titan Lilac | Titan Mixture | Titan Polka Dot | Titan Punch | Titan Pure White | Titan Rose | Titan ROSE Halo | Titan Romance mix | Titan Bubble gum mix | Titan Clear Mix | Titan Cotton Candy mix | Titan Red white mix | Titan Romance Mix | Titan Summer Breeze Mix | Jams ‘n Jellies | Blackberry Jams ‘n Jellies | Blueberry Jams ‘n Jellies American pie Mix | First Kiss Cherry | First Kiss Icy Pink | First Kiss Pink | First Kiss Polka Dot | First Kiss Raspberry |
| 92 | *Cestrum* spp. | Sestrum spp./Cestrum spp. | 1b | none |
| 99 | *Coreopsis lanceolata*  | Coreopsis /Tickseed | 1a | none |
| 101 | *Cortaderia selloana*  | Pampasgras, Silwergras /Pampas grass | 1b | Silver Stripe | Gold Band |
| 122  | *Duranta erecta* | Vergeet-my-nie-boom/Forget-me-not-tree, Pigeon berry  | 3  | Saphire Showers| Gold Mine | Sheena’s Gold | Gold | Aussie | Iceberg  |
| 150 | *Gleditsia triacanthos* (**Excluding cultivars under investigation)** | Amerikaanse driedoring/Honey locust  | 1b  | Emerald Cascade | Inermis | Ruby Lace | Shademaster | Skyline | Sunburst  |
| 162 | *Hedera canariensis*  | Madeiraklimop/Canary ivy, Madeira ivy, Algerian ivy  | 3   | Gloire de Marengo | Mosaik | Variegata |
| 165 | *Hedera helix* | Engelse hedera/English ivy | 3 | Buttercup | Chester | Crispa | Ferny | Golden hart | Jester Gold | Little Diamond | Marmorata | Golden child | Mini kolibri | Birgitte| Mini Wonder | Shamrock | Pittsburg | Tamara | White Ripple | Eva | Golden Cecilie | Mini White Wonder | Rochester |
| 179 | *Ipomoea indica* | Purperwinde/Morning glory | 1b | none |
| 1178 | *Ipomoea purpurea*  | Purperwinde/Morning glory  | 1b   | none  |
| 191 | *Ligustrum lucidum*  | Chinese blinkliguster/Chinese wax-leaved privet  | 1b in KwaZulu-Natal,Mpumalanga, North West, Limpopo,Eastern and Western Cape; 3 in Free State, Gauteng, Northern Cape  | Tricolor  |
| 192 | *Ligustrum ovalifolium*    | Kaliforniese liguster/Californian privet  | 1b in KwaZuluNatal, Mpumalanga, North West, Limpopo, Eastern. Western Cape 3 in Free State, Gauteng ,Northern Cape  | Aurea  |
| 196 | *Limonium sinuatum*   | Statice, Sea Lavender  | 1b Northern Cape Western Cape  | QIS Apricot | QIS Pale Blue | QIS Dark Blue | QIS Lavender | QIS Mix | QIS Pastel | QIS Rose | QIS White | QIS Yellow | Iceberg | Purple Attraction |
| 212 | *Metrosideros excelsa*  | Nieu-Seelandse perdestert/New Zealand Christmas tree | 1a in Overstrand District   | Aurea | Maori Princess | Parnell | Spring Fire | Vibrance | Sunninghill |
| 216 | *Morus alba* | Witmoerbei, Gewone moerbei/White mulberry, Common mulberry  | 3   | none  |
| 217 | *Murraya paniculata*  | Oranjejasmyn /Orange Jessamine  | 1b  | Mini Mike  |
| 227 | *Nephrolepis cordifolia*  | Erect sword fern, Ladder sword fern  | 1b in KwaZuluNatal, Mpumalanga, Limpopo, Eastern;Western Cape; 3 in the rest of South Africa  | Duffi | Kupukupu|  |
| 228 | *Nephrolepis exaltata* (L.) Schott (= *Polypodium exaltatum* L.)  | Swaardvaring /Sword fern, Boston sword fern | 1b in KwaZulu-Natal,Mpumalanga, Limpopo, Eastern and Western Cape;3 in the rest of South Africa:  | Boston Blue Bell | Boston | Corditas | Fluffy Ruffles | Green Delight | Green Moment | Marisa | Montana | Murano | Nevada | Teddy Junior’ |
| 229  | *Nerium oleander* L.  | Selonsroos /Oleander  | 1b   | All double flowering cultivars | Petite Pink  |
| 239 | *Opuntia ficus* | Boereturksvy, Grootdoringturksvy/ Mission prickly pear, Sweet prickly pear  | 1b   | All spineless cactus pear cultivars and selections | cultivars grown for fruit production and fodder | Gymno Carpo | Roedtan | Morado | Tormentosa  |
| 245 | *Opuntia robusta* | Robusta turksvy /Blue-leaf cactus | 1a | none |
| 265 | *Pennisetum setaceum*   | Pronkgras /Fountain grass  | 1b   | *Pennisetum x advena* Rubrum | *Pennisetum x advena*  *Rubrum* Fireworks | *Pennisetum x advena*  *Rubrum* Skyrocket | All hybrids *P. setaceum x machrostachyum* | *Pennisetum* Vertigo   |
| 265 | *Pyracantha angustifolia* | Geelbranddoring /Yellow firethorn | 1b | none |
| 299  | *Pyracantha coccinea* (**Excluding cultivars under investigation)**  | Rooibranddoring / Red firethorn  | 1b   | none |
| 300  | *Pyracantha* *crenatoserrata*  | Chinese firethorn, Broad leaf firethorn | 1b   | none  |
| 300 | *Pyracantha crenulata*  | Rooivuurdoring / Himalayan firethorn  | 1b   | none  |
| 301 | *Pyracantha koidzumii*  | Formosa firethorn  | 1b  | none  |
| 374 | *Vinca major*  | Gewone-opklim/Greater periwinkle  | 1b   | Variegata | Blue Star |
| 375 | *Vinca minor*  | Lesser periwinkle  | 1b   | Alba | Multiplex | Illumination | Variegata  |

**Supplementary Table S2**: Unofficial consultative consensus list of *“*presumed sterile*”* cultivars and Hybrids (2022).

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*\*The nomenclature for the species column was adjusted to accepted species names, and the genus and species names were removed to only show cultivar names in the final column.*

*\*NEMBA categories:* ***Category 1a*** *Species which must be combatted or eradicated; Category 1b Species which must be controlled.;* ***Category 2*** *listed species requires a permit issued by the Department of Forestry, Fisheries and the Environment (DFFE) to carry out a restricted activity;* ***Category 3*** *listed species are subject to certain exemptions in terms of section 70 (1)(a) of the NEMBA Act, which applies to the listing of alien invasive species. Any Category 3 listed plant species that occurs in riparian areas, must be considered as Category 1b and the appropriate control measures instituted.*

*If there were no submission to the department “none” is flagged*

| **Number**  | **Species** | **Common name** | **NEMBA category** | **Sterile cultivars and hybrids** |
| --- | --- | --- | --- | --- |
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| 56  | *Berberis thunbergii*  | Japanse berberis /Japanese barberry  | 3 | Bagatelle | Golden King | Golden Ring | Green Ring | Harlequin | Kolbold | Nana | Ring of Fire | Rosy Glow | Ruby Gem |
| 69 | *Callistemon/Melaleuca viminalis*   | Treurperdestert /Weeping bottlebrush  | 1b in KwaZulu-Natal, Mpumalanga, Limpopo, Eastern Cape; 3 in the rest of South Africa | Burgundy Jack | Captain Cook | Endeavour | Hot Pink | Little John | Violacea |
| 78 | *Catharanthus roseus*  | Begraafplaasblom / Madagascar periwinkle | 1b | Pacifica XP Mix | Pacifica XP Mystic Mix | Pacifica XP Orange | Pacifica XP Polka Dot | Pacifica XP Punch | Pacifica XP White | Pacifica XP Burgundy | Pacifica XP Burgundy | Halo | Pacifica XP Corral | Pacifica XP Cranberry | Pacifica XP Georgia Mix | Pacifica XP | Halo Mix | Pacifica XP Icy Pink | Pacifica XP Lilac | Pacifica XP Merlot Mix | Pacifica XP Raspberry | Pacifica XP Really Red | Pacifica XP Strawberry Shake Mix | Pacifica XP Cherry Red Halo | Mediterranean Deep Orchid | Mediterranean Deep Rose | Mediterranean Lilac | Mediterranean Polka Dot | Mediterranean XP Hot rose | Mediterranean XP Mix | Mediterranean XP Lipstick Mix | Mediterranean XP Peach | Mediterranean XP Red | Mediterranean XP Rose | Mediterranean XP Rose | Halo|Mediterranean XP Dark red | Mediterranean XP Strawberry | Mediterranean XP White | Titan Apricot | Titan Blush | Titan Burgundy | Titan Halo Lavender Blue | Titan Lilac | Titan Mixture | Titan Polka Dot | Titan Punch | Titan Pure White | Titan Rose | Titan ROSE Halo | Titan Romance mix | Titan Bubble gum mix | Titan Clear Mix | Titan Cotton Candy mix | Titan Red white mix | Titan Romance Mix | Titan Summer Breeze Mix | Jams ‘|n Jellies | Blackberry Jams ‘n Jellies | Blueberry Jams ‘n Jellies American pie Mix | First Kiss Cherry | First Kiss Icy Pink | First Kiss Pink | First Kiss Polka Dot | First Kiss Raspberry |
| 122  | *Duranta erecta* | Vergeet-my-nie-boom/Forget-me-not-tree, Pigeon berry  | 3  | Saphire Showers| Gold Mine | Sheena’s Gold | Gold | Aussie | Iceberg  |
| 162 | *Hedera canariensis*  | Madeiraklimop/Canary ivy, Madeira ivy, Algerian ivy  | 3  | Gloire de Marengo | Mosaik | Variegata |
| 165 | *Hedera helix* | Engelse hedera/English ivy | 3 | Buttercup | Chester | Crispa | Ferny | Golden hart | Jester Gold | Little Diamond | Marmorata | Golden child | Mini kolibri | Birgitte| Mini Wonder | Shamrock | Pittsburg | Tamara | White Ripple | Eva | Golden Cecilie | Mini White Wonder | Rochester |
| 192 | *Ligustrum ovalifolium*    | Kaliforniese liguster/Californian privet  | 1b in KwaZuluNatal, Mpumalanga, North West, Limpopo, Eastern. Western Cape 3 in Free State, Gauteng ,Northern Cape  | Aurea  |
| 217 | *Murraya paniculata*  | Oranjejasmyn /Orange Jessamine  | 1b | Mini Mike  |
| 227 | *Nephrolepis cordifolia*  | Erect sword fern, Ladder sword fern  | 1b in KwaZuluNatal, Mpumalanga, Limpopo, Eastern; Western Cape; 3 in the rest of South Africa  | Duffi | Kupukupu|  |
| 228 | *Nephrolepis exaltata* (L.) Schott (= *Polypodium exaltatum* L.)  | Swaardvaring /Sword fern, Boston sword fern | 1b in KwaZulu-Natal,Mpumalanga, Limpopo, Eastern and Western Cape;3 in the rest of South Africa:  | Boston Blue Bell | Boston | Corditas | Fluffy Ruffles | Green Delight | Green Moment | Marisa | Montana | Murano | Nevada | Teddy Junior’ |
| 239 | *Opuntia ficus* | Boereturksvy, Grootdoringturksvy/ Mission prickly pear, Sweet prickly pear  | 1b   | All spineless cactus pear cultivars and selections | cultivars grown for fruit production and fodder | Gymno Carpo | Roedtan | Morado | Tormentosa  |
| 245 | *Opuntia robusta* | Robusta turksvy /Blue-leaf cactus | 1a | none |
| 265 | *Pennisetum setaceum*  | Pronkgras /Fountain grass  | 1b   | *Pennisetum x advena* Rubrum | *Pennisetum x advena*  *Rubrum* Fireworks | *Pennisetum x advena*  *Rubrum* Skyrocket | All hybrids *P. setaceum x machrostachyum* | *Pennisetum* Vertigo |
| 375 | *Vinca minor*  | Lesser periwinkle  | 1b | Alba | Multiplex | Illumination | Variegata |

**Supplementary Appendix: Proposals by Government to the Green Industry (Information obtained from key stakeholder engagement meeting held on the 14th of February 2017)**

*\* The data on the original document was simplified by removing information such as regulatory name, common name, and NEMBA category (as this information was already included in Supplementary Table S1). In certain cases, text was adjusted from direct to indirect speech.*

 **1.** The government should now require permits for the sale of the sterile cultivars and hybrids. This is because of the real difficulties that government are having in identifying the sterile hybrids and cultivars from the listed species. The government is not convinced that all nurseries and landscape architects are able to tell the differences either.

**2.** The following species should be removed from the lists of exempted species. *Coreopsis lanceolata* (tickseed); *Vinca major* (greater periwinkle). This is because tickseed is a hybrids or cultivars of a Category 1a species, and there is no proof of its sterility, and because the greater periwinkle is spreading more vegetatively than by seed, and it too must have a risk assessment before the exemption can be re-established:

 **3.** The industry is given six months (from 14 February 2017) to provide the necessary proof of the sterility of the following cultivars and hybrids, failing which there shall be a withdrawal of the exemptions of sterile cultivars and hybrids:

*Ageratum houstonianum; Ipomoea indica; Ipomoea purpurea; Ligustrum lucidum; Ligustrum ovalifolium; Limonium sinuatum; Limonium sinuatum; Pyracantha angustifolia; Pyracantha coccinea; Pyracantha crenatoserrata; Pyracantha crenulata; Pyracantha koidzumii.*

**4.** The industry is given one year to provide the necessary proof of the sterility of the following cultivars and hybrids, failing which, the government shall withdraw the exemptions as sterile cultivars and hybrids:

*Callistemon viminalis; Canna indica; Catharanthus roseus; Cortaderia selloana; Gleditsia triacanthos; Metrosideros excelsa; Murraya paniculata; Nephrolepis cordifolia; Nerium oleander; Pennisetum setaceum; Vinca minor.*

**5.** The industry is given two years to provide the necessary proof of the sterility of the following cultivars and hybrids, failing which, the government shall withdraw the exemptions as sterile cultivars and hybrids:

*Acer negundo; Berberis thunbergia; Buddleja davidii; Cestrum* species(not specifically listed); *Duranta erecta; Hedera canariensis;* *Hedera helix; Morus alba.*

**6.** Note that *Pinus elliotti* is being changed to being only Category 2 in the upcoming amendments, and this is being addressed with the forestry industry.

**7.** It is also proposed that the government add the following nine species to the regulatory lists (following input from the Department of Agriculture, Forestry and Fisheries, and the Department of Water and Sanitation):

*Cynodon dactylon; Leptospermum scoparium; Lolium perenne; Lolium multiflorum; Morus nigra; Oenothera rosea; Oenothera stricta; Oenothera indecora.*