Landscape homogenization	Simplification and reduction of biotic components inside an area of land, which leads to a community of similar functional and structural traits.
Natural habitat	Pristine environment inhabited by native species.
Organic agriculture	agricultural scheme that does not use fertilizers and pesticides.
Patch	Area of land with the same characteristics, regardless of its size.
Seminatural habitat	A native environment partially modified by human activities.
Sustainable agriculture	Agricultural scheme that efficiently maximizes production while protecting the habitat and natural resources from which it depends, safeguarding biodiversity in the long term.

Appendix A

Table A1. Active ingredients with effects in bees still used in Chile and not approved by the European Union.

Use Classification in Chile [1]	Active Ingredient [2]	Pesticide Class	Effect [3]	Reference
I, R, A	Acephate	Organophosphate	Highly toxic to bees and other beneficial insects.	[298]
H	Atrazine	Triazine	Oxidative stress responses and alteration acetylcholinesterase activity in honeybees; pesticide detected in native bee tissue; found in stored pollen of honeybees; decreases survival, reduces food consumption, and negatively affects behavior in stingless bees.	[137,299–302]
H	Atrazine/S-metolachlor	Triazine/ Chloroacetamide	Oxidative stress responses and alteration acetylcholinesterase activity in honeybees; pesticide detected in native bee tissue; found in stored pollen of honeybees; decreases survival, reduces food consumption, and negatively affects behavior in stingless bees.	[137,299–302]
F, B	Benomyl	Benzimidazole	Moderately toxic to honeybees	[303]
I, R, A	Cadusafos	Organophosphate	Highly toxic to bees	[304]
I, R, A	Carbaryl	Carbamate	Highly toxic to honeybees; found in stored pollen of honeybees	[299,305]
F, B	Carbendazim	Benzimidazole	May alter the immune response and P450-mediated detoxification of honeybees	[306]
F, B	Carbendazim/ Epoxiconazole	Benzimidazole/ Triazole	May alter the immune response and P450-mediated detoxification of honeybees; detected in corbicular pollen loads of honeybees	[306,307]

Table A1. *Cont.*

Use Classification in Chile [1]	Active Ingredient [2]	Pesticide Class	Effect [3]	Reference
F, B	Carbendazim/ Mancozeb	Benzimidazole/ Carbamate	May alter the immune response and P450-mediated detoxification of honeybees	[306]
F, B	Tebuconazole/ Carbendazim	Triazole/ Benzimidazole	May alter the immune response and P450-mediated detoxification of honeybees; pesticide detected in native bee tissue	[137,306]
I, R, A	Cartap hydrochloride	Carbamate	Toxic to bumblebees	[308]
I, R, A	Cartap monohydrochloride	Carbamate	Highly toxic to insects	[309]
I, R, A	Chlorfenapyr	Pyrrole	Highly toxic to honeybees	[310]
F, B	Chlorothalonil/ Carbendazim	Chloronitrile/ Benzimidazole	May alter the immune response and P450-mediated detoxification of honeybees; found in stored pollen of honeybees	[299,306]
F, B	Copper 8-quinolinolate/ Carbendazim	Organometallic compound/ Benzimidazole	May alter the immune response and P450-mediated detoxification of honeybees	[306]
F, B	Copper oxychloride/Dibasic copper sulfate/Iprodione/ Sulphur	Copper salt/Copper salt/Dicarboximide/ Chalcogen	Decrease in honeybees' forager survival; found in stored pollen of honeybees	[299,311]
I, R, A	Diazinon	Organophosphate	Precocious foraging in honeybees; Impaired olfactory learning in honeybees; found in stored pollen of honeybees	[299,312,313]
I, R, A	Fenpropathrin	Pyrethroid	Highly toxic to honeybees	[314]
I, R, A	Fenvalerate	Pyrethroid	Highly toxic to honeybees; hazardous to leafcutter bees	[315]
I, R, A	Fipronil	Phenylpyrazole	Highly toxic to honeybees; Impaired olfactory learning in honeybees; toxic to leafcutter bees; pesticide detected in native bee tissue; found in stored pollen of honeybees; causes lethargy, motor difficulty, paralysis and hyperexcitation in stingless bees	[137,299,316–319]
H	Glufosinate-ammonium	Phosphinic acid	Low toxicity in honeybees	[320]
H	Imazamox/Imazapyr	Imidazolinone/ Imidazolinone	Low toxicity in honeybees	[321]
F, B	Iprodione	Dicarboximide	Decrease in honeybees' forager survival; found in stored pollen of honeybees	[299,311]
F, B	Iprodione/Propiconazole	Dicarboximide/ Triazole	Decrease in honeybees' forager survival; pesticide detected in native bee tissue; detected in corbicular pollen loads of honeybees; found in stored pollen of honeybees	[137,299,307,311]

Table A1. *Cont.*

Use Classification in Chile [1]	Active Ingredient [2]	Pesticide Class	Effect [3]	Reference
F, B	Iprodione/Sulphur	Dicarboximide/ Chalcogen	Decrease in honeybees' forager survival; found in stored pollen of honeybees	[299,311]
H	Isoproturon	Phenylurea	High mortality in honeybees; detected in corbicular pollen loads of honeybees	[307,322]
I, R, A	Methidathion	Organophosphate	Highly toxic to honeybees; found in beeswax of honeybees	[323,324]
I, R, A	Novaluron	Benzoylurea	Highly toxic to honeybees	[325]
H	Paraquat dichloride	Bipyridylium	Highly toxic to honeybees; changes the size of honeybee oenocytes	[326,327]
H	Paraquat dichloride/Diquat (dibromide)	Bipyridylium/ Bipyridylium	Highly toxic to honeybees; changes the size of honeybee oenocytes	[326,327]
I, R, A	Permethrin	Pyrethroid	Highly toxic to honeybees; disorientation and disruption of normal behavior in honeybees; pesticide detected in native bee tissue	[137,328–330]
F, B	Tebuconazole/ Propiconazole/Permethrin	Pyrethroid	Highly toxic to honeybees; disorientation and disruption of normal behavior in honeybees; pesticide detected in native bee tissue	[137,328–330]
F, B	Procymidone	Dicarboximide	Low toxicity to bees; found in stored pollen and beeswax of honeybees	[299,323,331]
I, R, A	Profenofos	Organophosphate	Highly toxic to honeybees; high mortality in honeybees	[332,333]
H	Saflufenacil	Pyrimidinedione	Low toxicity to honeybees	[334]
I, R, A	Thiocyclam hydrogen oxalate	Oxalate salt	Highly toxic to bees	[335]
I, R, A	Acetamiprid/Novaluron	Neonicotinoid/ Benzoylurea	Highly toxic to honeybees; detected in corbicular pollen loads of honeybees; impaired long-term retention of olfactory learning and increased locomotor activity in honeybees; ataxia in bees; slow to no movements and ataxia in bumble bees and leafcutter bees; occur in sufficient quantities in natural bee food to have adverse effects on bees.	[307,325,336,337]

Table A1. *Cont.*

Use Classification in Chile [1]	Active Ingredient [2]	Pesticide Class	Effect [3]	Reference
I, R, A	Dinotefuran	Neonicotinoid	Highly toxic to honeybees; higher number of bouts of behavior in honeybees	[338,339]
I, R, A	Fipronil/Imidacloprid	Phenylpyrazole/ Neonicotinoid	Highly toxic to honeybees; impaired olfactory learning in honeybees; honeybees line up in perfect rows or clusters; pesticide detected in native bee tissue; found in stored pollen of honeybees; honeybees loose postural control and spent more time laying on their backs; inhibited grooming, reduced walking and lower righting reflex in honeybees; increased foraging and homing flight times in honeybees; detected in corbicular pollen loads of honeybees; trembling, excessive grooming, uncontrolled proboscis extension, slow to no movements, ataxia and reduced survival in bumble bees and leafcutter bees; toxic to leafcutter bees; occur in sufficient quantities in natural bee food to have adverse effects on bees.	[137,299,307,317–319,336,339,340]
I, R, A	Fipronil/Thiamethoxam	Phenylpyrazole/ Neonicotinoid	Highly toxic to honeybees; Impaired olfactory learning in honeybees; toxic to leafcutter bees; pesticide detected in native bee tissue; found in stored pollen of honeybees; honeybees loss postural control and spent more time laying on their backs; honeybees spend more time grooming; impaired homing ability in honeybees; hyperactivity, ataxia, excessive grooming, permanent late-onset neuromuscular dysfunction and reduced survival in bumble bees and leafcutter bees; occur in sufficient quantities in natural bee food to have adverse effects on bees.	[137,299,317–319,336,339,341]
F, B	Orthoboric acid/Borax	Inorganic compound/Inorganic compound	Toxic to honeybees	[342]

Table A1. *Cont.*

Use Classification in Chile [1]	Active Ingredient [2]	Pesticide Class	Effect [3]	Reference
F, B	Orthoboric acid/Fenpropimorph/ Propiconazole	Inorganic compound/Morpholine/ Triazole	Toxic to honeybees; detected in corbicular pollen loads of honeybees; found in stored pollen of honeybees	[299,307,342]
F, B	Picoxystrobin/ Cyproconazole	Strobilurin/Triazole	Decreased survival, slight changes in pericardial cells and fat bodies in africanized honeybees; detected in corbicular pollen loads of honeybees	[307,343]
F, B	Tributyltin naphthenate/Permethrin	Organotin/ Pyrethroid	Highly toxic to honeybees; found in honeybees and beeswax; associated with winter losses of honeybee colonies; disorientation and disruption of normal behavior in honeybees; pesticide detected in native bee tissue	[137,328–330,344]

[1] A = acaricide; B = bactericide; F = fungicide; H = herbicide; I = insecticide; R = rodencitide; [2] Mixed active ingredients were considered not approved with one active ingredient not approved by the EU; [3] Effect can correspond to one or more of the mixed active ingredients. NA = Not Applicable.

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