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Proposed Re-evaluation Decision

PRVD2022-09

***Bacillus amyloliquefaciens* strain MBI600 and *Bacillus* *subtilis* strain QST 713 and the Associated End-use Products**

Consultation Document

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Proposed Re-evaluation Decision

Under the *Pest Control Products Act*, all registered pesticides must be re-evaluated regularly by Health Canada's Pest Management Regulatory Agency (PMRA) to ensure that they continue to meet current health and environmental safety standards and continue to have value. The re-evaluation considers data and information from pesticide manufacturers and other regulatory agencies. Health Canada applies internationally accepted risk assessment methods, risk management approaches and policies to all re-evaluations.

This document presents the proposed regulatory decision for the re-evaluation of *Bacillus amyloliquefaciens* strain MBI600 and *Bacillus subtilis* strain QST 713, including any proposed amendments (risk mitigation measures) to protect human health and the environment, as well as the science evaluation on which the proposed decision is based.

Bacillus amyloliquefaciens strain MBI600

Bacillus amyloliquefaciens strain MBI600 is a naturally occurring bacteria which suppresses plant diseases by preventing growth of pathogenic fungi through displacement and direct antagonistic action. *Bacillus amyloliquefaciens* strain MBI600 (formerly *Bacillus subtilis* MBI600) has been registered in Canada since 2004 as a treatment of plant growing media such as soil and peat moss-based mixtures to suppress seedling and root diseases caused by various fungal pathogens. It is also registered for foliar use on greenhouse and/or field vegetables and fruits, in-furrow application on potatoes, as a soil drench to greenhouse cucurbits, fruiting vegetables and ornamentals, and as a seed treatment on canola, corn, soybean, dried shelled peas and beans. Currently registered products containing *Bacillus amyloliquefaciens* strain MBI600 are listed in Appendix I, Table 1.

Bacillus amyloliquefaciens strain MBI600 has a non-toxic mode of action and has value in providing pest management solutions. Based on the current use pattern of *Bacillus amyloliquefaciens* strain MBI600 the potential health (occupational, dietary, residential, and bystander) and environmental (aquatic and terrestrial) risks are considered to be acceptable when products are used according to label directions. As a result of re-evaluation, no additional mitigation measures are proposed, however, updates to product labels as per current labelling standards are proposed (Appendix II, Table 2).

Under the authority of the *Pest Control Products Act* and based on the evaluation of currently available scientific information, products containing *Bacillus amyloliquefaciens* strain MBI600 (Appendix I, Table 1) are being proposed for continued registration in Canada, with the proposed updates to label directions (Appendix II).

All products containing *Bacillus amyloliquefaciens* strain MBI600 registered in Canada are subject to this proposed re-evaluation decision. This document is subject to a public consultation,¹ during which written comments and additional information may be submitted to [PMRA Publications](#). The final re-evaluation decision will be published taking into consideration the comments and information received during the consultation period.

Bacillus subtilis strain QST 713

Bacillus subtilis strain QST 713 has been registered in Canada since 2007. *Bacillus subtilis* strain QST 713, is antagonistic toward fungal and bacterial plant pathogens and is a microbial pest control agent for agricultural use, as well as for home garden use on ornamentals, fruits and vegetables. It is used to suppress a number of bacterial and fungal plant pathogens. It is registered for commercial use on a variety of crops, including greenhouse vegetables/herbs (including wasabi), greenhouse ornamentals, corn (for soil pathogens only), herbs and spices, canola and oilseeds, mushroom production, vegetables (asparagus, Brassica, bulb, cucurbits, fruiting, leafy, root and tuber, stem and petiole), potato, pulses (beans, chickpeas, lentils, peas), peanut, soybean, sugarbeet, grape, pome fruit, stone fruit, cane berries, bush berries, small fruit, tobacco (for soil pathogens), outdoor ornamentals and turf. Currently registered products containing *Bacillus subtilis* strain QST 713 are listed in Appendix I, Table 2.

Bacillus subtilis strain QST 713 has a non-toxic mode of action and has value in providing pest management solutions. Based on the current use patterns of *Bacillus subtilis* strain QST 713 the potential health (occupational, dietary, residential, and bystander) and environmental (aquatic and terrestrial) risks are considered to be acceptable when products are used according to label directions. As a result of re-evaluation, no additional mitigation measures are proposed, however, updates to product labels as per current labelling standards are proposed (Appendix II).

Under the authority of the *Pest Control Products Act* and based on the evaluation of currently available scientific information, products containing *Bacillus subtilis* strain QST 713 (Appendix I, Table 2) are being proposed for continued registration in Canada, with the proposed updates to label directions (Appendix II).

All products containing *Bacillus subtilis* strain QST 713 registered in Canada are subject to this proposed re-evaluation decision. This document is subject to a public consultation,² during which written comments and additional information may be submitted to [PMRA Publications](#). The final re-evaluation decision will be published taking into consideration the comments and information received during the consultation period.

¹ “Consultation statement” as required by subsection 28(2) of the *Pest Control Products Act*.

² “Consultation statement” as required by subsection 28(2) of the *Pest Control Products Act*.

Next steps for *Bacillus amyloliquefaciens* strain MBI600 and *Bacillus subtilis* strain QST 713

The public, including the registrant and stakeholders, are encouraged to submit written comments and additional information during the 90-day public consultation period upon publication of these proposed re-evaluation decisions.

All comments received during the 90-day public consultation period will be taken into consideration in preparation of the re-evaluation decision document,³ which could result in revised risk mitigation measures. The re-evaluation decision document will include the final re-evaluation decision, the reasons for it and a summary of comments received on the proposed re-evaluation decision with Health Canada's responses.

Other information

When Health Canada makes its re-evaluation decision, it will publish a Re-evaluation Decision on *Bacillus amyloliquefaciens* strain MBI600 and *Bacillus subtilis* strain QST 713 (based on the Science Evaluation of this consultation document). In addition, the test data referenced in this consultation document will be available for public inspection, upon application, in the [PMRA's Reading Room](#).

Additional scientific information

Additional scientific data are not required at this time.

³ "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

Science Evaluation

1.0 *Bacillus amyloliquefaciens* strain MBI600 Assessments

1.1 Human health assessment

The PMRA has previously conducted reviews of the toxicological database for *B. amyloliquefaciens* strain. Refer to PRD2018-10 (foliar use), PRD2009-17 (seed treatment use), and PRD2007-05 (application to the soil) for the toxicity and infectivity summary.

B. amyloliquefaciens strain MBI600 products are formulated as liquids or wettable powders and applied as the following:

- a seed treatment to canola, corn, legumes and soybean using commercial and on-farm seed treatment equipment,
- a foliar spray to greenhouse and/or field vegetables and fruits
- in-furrow to potatoes or;
- a soil drench to greenhouse cucurbits, vegetables and ornamentals.

Due to the absence of toxicological concerns, no quantitative exposure and risk assessments have been required for *B. amyloliquefaciens* strain MBI600 (no significant toxicity and no signs of causing disease were observed).

Occupational exposure and risk to *B. amyloliquefaciens* strain MBI600 products has been previously assessed and is detailed in PRD2018-10 (foliar use), PRD2009-17 (seed treatment use), and PRD2007-05 (application to the soil). The potential for dermal, eye and inhalation exposure for applicators, mixer/loaders, and handlers exists, with primary exposure routes being dermal and inhalation. Risk mitigation measures include the following personal protective equipment (PPE) on labels: a long-sleeved shirts, long pants, waterproof gloves, shoes and socks, eye goggles, and a NIOSH-approved particulate filtering facepiece respirator with any N, R or P filter, to minimize exposure and protect commercial applicators, mixer/loaders, and handlers. In addition, all unprotected workers are prohibited from entering treated areas where product has been applied for 4 hours or until the sprays have dried. Risk mitigation measures for use as a seed treatment include the following PPE on labels: a long-sleeved shirt, long pants, waterproof gloves, shoes and socks, and a NIOSH-approved particulate filtering facepiece respirator with any N, R, or P filter when handling, mixing/loading or applying the product and during all clean-up/repair activities. For the end-use product which can be applied to plant growing media (soil drench) in greenhouses PPE on the label includes: a long-sleeved shirt, long pants, waterproof gloves, socks with shoes, eye goggles, and use a NIOSH-approved mist filtering respirator or NIOSH-approved mist filtering mask when mixing/loading, applying and during all clean-up and repair activities.

To minimize post-application exposure, unless wearing the appropriate PPE as described, workers are prohibited from entering treated areas where product has been applied for 4 hours or until the sprays have dried. To minimize bystander exposure following commercial application of *B. amyloliquefaciens* strain MBI600, the spray drift advisory statement is included on end-use product labels.

Direct residential exposure is not expected as there are no domestic end-use products registered containing *B. amyloliquefaciens* strain MBI600. There is potential for residential exposure to treated greenhouse soils during transplanting of greenhouse ornamentals, however levels of *B. amyloliquefaciens* strain MBI 600 in soil are expected to return to sustained background levels over time. The risks from potential residential exposure are considered acceptable under the current conditions of use.

Potential dietary risk (food and water) from use of *B. amyloliquefaciens* strain MBI600 is considered acceptable based on the current use directions and the low toxicity profile of the active ingredient. Drinking water exposure is expected to be negligible and the labels for *B. amyloliquefaciens* strain MBI600 include the necessary mitigation measures to limit contamination of drinking water. No additional mitigation measures are proposed and the specification of a maximum residue limit (MRL) is not required.

Aggregate exposure is the total exposure to a single pesticide that may occur from food, drinking water, residential, and other non-occupational sources, and from all known or plausible exposure routes (oral, dermal, and inhalation). The risks from dietary and residential exposure are considered acceptable, and the label includes directions to minimize bystander exposure from commercial applications. Based on this, under the current conditions of use, aggregate risk from *B. amyloliquefaciens* strain MBI600 is considered acceptable.

The occupational and non-occupational risks are acceptable when the current mitigation measures on product labels are followed. No additional risk mitigation measures are proposed. However, label updates are proposed to meet the current standards. Refer to Appendix II for the proposed label amendment.

1.2 Environmental assessment

B. amyloliquefaciens strain MBI600 is a naturally occurring microorganism in the environment (PRD2018-10 and PRD2009-17). Environmental fate data are not required, due to the absence of significant toxicological effects in non-target organisms. *B. amyloliquefaciens* strain MBI600 is not expected to result in a sustained increase of populations of the microbial pest control agents (MPCA) beyond those of naturally occurring soil dwelling *Bacillus* species found in the environment. *B. amyloliquefaciens* strain MBI600 is not considered a Track 1 substance, as the active ingredient is a biological organism, it does not meet all the Track 1 criteria as per the Toxic Substances Management Policy.

When the current label directions are followed, potential risk to the environment (terrestrial and aquatic non-target organisms) from *B. amyloliquifaciens* strain MBI600 is considered acceptable. As a general precaution, the standard label statement prohibits handlers from contaminating irrigation water and aquatic habitats. In addition, for the end-use products which can be applied to plant growing media in greenhouses, the standard statement to protect waters from effluent and runoff is included on the label.

1.3 Value assessment

Bacillus amyloliquifaciens strain MBI600 is of value as it is a biofungicide and is allowed for use in organic production of various crops. This microbial product provides an additional option for managing plant soil pathogens and grape foliar pathogens as part of an integrated pest management strategy. There is value to *B. amyloliquifaciens* in the ready to use planting medium products as it eliminates an additional step in greenhouse production while reducing damping off and root rots.

1.4 Incident reports

As of 3 March 2022, no human, domestic animal or environment incident reports involving *B. amyloliquifaciens* have been submitted to the PMRA.

2.0 *Bacillus subtilis* strain QST 713 Assessments

2.1 Human health assessment

The PMRA has previously conducted reviews of the toxicological database for *B. subtilis* strain QST 713. Refer to ERC2007-06 for the toxicity and infectivity summary of *B. subtilis* strain QST 713.

B. subtilis strain QST 713 commercial products are formulated as a wettable powder or suspension and could be applied as the following:

- a foliar spray using ground equipment to a wide range of crops prior to infection (preventative spray) or to canola and oilseeds as an aerial application.
- to the soil including in-furrow, band or broadcast incorporated spray, transplant water drench, overhead and surface irrigation (chemigation) to a wide range of crops.
- incorporation into compost at spawning (start of production cycle) using sprays or as a spray/chemigation application to mushroom beds, and
- postharvest to potatoes using sprayers mounted to conveyors.

Due to the absence of toxicological concerns, no quantitative exposure and risk assessments have been required for *B. subtilis* strain QST 713 (no significant toxicity and no signs of causing disease were observed).

Occupational exposure and risk to *B. subtilis* strain QST 713 products has been previously assessed and is detailed in ERC2007-06. Subsequently, uses were expanded (for example, aerial application, mushroom beds, postharvest use on potato) and new products were registered. Qualitative risk assessments were conducted and were considered to be acceptable with the existing precautions on the label.

The potential for dermal, eye and inhalation exposure for mixer/loaders, handlers and early-entry workers exists, with the major source of exposure to workers being dermal and inhalation. Risk mitigation measures on commercial product labels include the following PPE to minimize exposure and protect applicators, mixer/loaders, and handlers, including for postharvest use (during sorting/culling-related activities and during potato processing): waterproof gloves, a long-sleeved shirt, long pants, a NIOSH-approved particulate filtering facepiece respirator with any N, R or P filter, and socks with shoes. To minimize post-application exposure, for products that are not soil-injected, soil-incorporated, or applied in-furrow, all unprotected workers are prohibited from entering treated areas where product has been applied for 4 hours or until the sprays have settled. To minimize exposure to bystanders following commercial application of *B. subtilis* strain QST 713, the spray drift advisory statement is included on product labels. *B. subtilis* strain QST 713 domestic end-use products that are formulated as ready to use liquids in trigger spray bottles for use on a wide range of vegetables and ornamentals. Domestic users are directed to avoid inhaling or breathing spray mists given that all microorganisms, including *B. subtilis* strain QST 713, contain substances that are potential sensitizers. There is also potential for residential exposure during transplanting of ornamentals or exposures from treated turf, however the domestic products intended for residential uses pose comparable exposure and the risks associated with the domestic end-use products is considered acceptable.

Potential dietary risk (food and water) from use of *B. subtilis* strain QST 713 is considered acceptable based on the current use directions and the low toxicity profile of the active. Drinking water exposure is expected to be negligible and the labels for *B. subtilis* strain QST 713 include the necessary mitigation measures to limit contamination of drinking water. No additional mitigation measures are proposed and the specification of a maximum residue limit (MRL) is not required.

Aggregate exposure is the total exposure to a single pesticide that may occur from food, drinking water, residential, and other non-occupational sources, and from all known or plausible exposure routes (oral, dermal, and inhalation). Based on the acceptable risks from dietary, residential, and non-occupational exposures and the fact that product labels include mitigation measures to minimize exposures from drinking water and non-occupational sources, risks from aggregate exposures of residues of *B. subtilis* strain QST 713 are considered acceptable, under the current conditions of use.

The occupational and non-occupational risks are acceptable when the current conditions of use are followed. No additional risk mitigation measures are proposed.

2.2 Environmental assessment

B. subtilis strain QST 713 is a naturally occurring microorganism in the environment. Environmental fate data are not required, due to the absence of significant toxicological effects in non-target organisms. *B. subtilis* strain QST 713 is not expected to result in a sustained increase of populations of the MPCA beyond those of naturally occurring soil dwelling *Bacillus* species found in the environment. Refer to ERC2007-06 for details. *B. subtilis* strain QST 713 is not considered a Track 1 substance, as the active ingredient is a biological organism, it does not meet all the Track 1 criteria as per the Toxic Substances Management Policy. *B. subtilis* strain QST 713 is not expected to pose a risk to terrestrial and aquatic non-target organisms when the directions for use on the label are followed. As a general precaution, the standard label statements prohibit handlers from contaminating irrigation water and aquatic habitats. For consistency, as there is one commercial end-use product label missing the standard statement, updates are proposed to include the mitigation measure to limit contamination of aquatic systems. Refer to Appendix II for the proposed label amendment.

2.3 Value assessment

Bacillus subtilis strain QST 713 is of value as it is a biopesticide and is allowed for use in organic production of fruits and vegetables. As it has multi-site mode of action and development of resistance is not known, it is of value for use as a rotational fungicide in pest management programs to delay the development of resistance. This microbial product provides an additional option for managing plant pathogens as part of an integrated pest management strategy. *Bacillus subtilis* is of particular value for control of silver scurf post-harvest on potatoes as this serious storage pest of potato results in storage losses.

2.4 Incident reports

As of 3 March 2022, the PMRA received one human incident involving the active *Bacillus subtilis* (strain QST 713). In this incident, a person reported minor symptoms of rash and cough following product application. Based on the low severity of the reported incident, no additional risk mitigation measures are recommended.

3.0 Cumulative risk assessment

The PMRA has determined that *B. amyloliquefaciens* strain MBI600 and *B. subtilis* strain QST 713 share a common mechanism of toxicity with the registered microbial pest control agents (MPCAs) *B. amyloliquefaciens* strain D747, *B. subtilis* strain GB03, *B. subtilis* strain BU 1814, *B. subtilis* strain RTI1477, *B. amyloliquefaciens* strain F727, *B. amyloliquefaciens* strain PTA4838, *B. subtilis* strain FMCH002, *B. licheniformis* strain FMCH001 and *B. subtilis* var. *amyloliquefaciens* strain FZB24. The potential health risks from cumulative exposure of *B. amyloliquefaciens* strain MBI600 and *B. subtilis* strain QST 713 and these other registered MPCAs are not of concern when used as labelled given their low toxicity and pathogenicity.

Appendix I Registered products containing *Bacillus amyloliquefaciens* strain MBI600 or *Bacillus subtilis* strain QST 713

Table 1 Registered Products Containing *Bacillus amyloliquefaciens* strain as of MBI600 22 March 2022, excluding discontinued products or products with a submission for discontinuation.

Registration number	Marketing class*	Registrant	Product name	Formulation type	Guarantee (CFU/g)
29452	T	BASF Canada Inc.	Bacillus amyloliquefaciens, strain MBI600 technical	Live organism	Bacillus amyloliquefaciens strain MBI600 - 5.0E+11;
29453	C	BASF Canada Inc.	Integral	Live organism	Bacillus amyloliquefaciens strain MBI600 - 2.2E+10;
30054	C	BASF Canada Inc.	Serifel	Live organism	Bacillus amyloliquefaciens strain MBI600 - 5.5E+10;
33251	C	BASF Canada Inc.	Velondis Extra	Liquid	Bacillus amyloliquefaciens strain MBI600 - 1.76 E10; Bacillus subtilis (strain BU 1814) - 1.76 E8;
33252	C	BASF Canada Inc.	Bas 154 U ST	Liquid	Bacillus amyloliquefaciens strain MBI600 - 1.4 E10; Bacillus subtilis (strain BU 1814) - 1.4 E10;

33256	C	BASF Canada Inc.	Velondis Plus	Liquid	Bacillus amyloliquefac iens strain MBI600 - 1.4 E10; Bacillus subtilis (strain BU 1814) - 1.4 E9;
33351	C	BASF Canada Inc.	BioTAK	Wettable powder	Bacillus amyloliquefac iens strain MBI600 - 5.5E+10;

*T= Technical, C = Commercial

Table 2 Registered Products Containing *Bacillus subtilis* strain QST 713 as of 22 March 2022, excluding discontinued products or products with a submission for discontinuation.

Registration Number	Marketing Class*	Registrant	Product Name	Formulation Type	Guarantee (CFU/g)
28548	T	Bayer CropScience Inc.	Bacillus Subtilis QST 713 technical powder	Live organism	BACILLUS SUBTILIS STRAIN QST 713 - 7.3E+09;
33650	T	Bayer CropScience Inc.	Bacillus Subtilis QST 713 technical 2	Suspension	BACILLUS SUBTILIS STRAIN QST 713 - 1.0E10;
33990	T	Bayer CropScience Inc.	Bacillus Subtilis QST 713 technical 1	Suspension	BACILLUS SUBTILIS STRAIN QST 713 - 3.5E+08;
28549	C	Bayer CropScience Inc.	Serenade MAX	Wettable powder	BACILLUS SUBTILIS STRAIN QST 713 - 7.3E+09;

Registration Number	Marketing Class*	Registrant	Product Name	Formulation Type	Guarantee (CFU/g)
28626	C	Bayer CropScience Inc.	Serenade ASO	Live organism	BACILLUS SUBTILIS STRAIN QST 713 - 1.0E+09;
28627	C	Bayer CropScience Inc.	Rhapsody ASO	Live organism	BACILLUS SUBTILIS STRAIN QST 713 - 1.0E+09;
29725	C	Bayer CropScience Inc.	Jazz	Wettable powder	BACILLUS SUBTILIS STRAIN QST 713 - 7.3E+09;
30143	C	Bayer CropScience Inc.	Serenade CPB	Live organism	Bacillus subtilis strain QST 713 - 1.0E+09;
30647	C	Bayer CropScience Inc.	Serenade Soil	Live organism	Bacillus subtilis strain QST 713 - 1.0E+09;
31666	C	Bayer CropScience Inc.	Serenade OPTI	Wettable Powder	Bacillus subtilis strain QST 713 - 1.31E10;
33035	C	Bayer CropScience Inc.	Bacillus Subtilis QST 713 liquid	Live organism	Bacillus subtilis strain QST 713 - 1.0E+09;
33651	C	Bayer CropScience Inc.	Minuet	Suspension	Bacillus subtilis strain QST 713 - 2.7E10;

Registration Number	Marketing Class*	Registrant	Product Name	Formulation Type	Guarantee (CFU/g)
33991	C	Bayer CropScience Inc.	Jazz OPTI	Wettable Powder	Bacillus subtilis strain QST 713 - 1.31E+10;
28628	D	SBM Life Science Corp.	Natria Disease Control Concentrate	Live organism	Bacillus subtilis strain QST 713 - 1.0E+09;
28629	D	SBM Life Science Corp.	Natria Disease Control Ready-to-Use	Live organism	Bacillus subtilis strain QST 713 - 1.0E+08;

*T= Technical, C = Commercial, D = Domestic

Appendix II Label amendments

The label amendments presented below do not include all label requirements for individual end-use products, such as first aid statements, disposal statements, precautionary statements, and supplementary protective equipment. Information on labels of currently registered products should not be removed unless it contradicts the label statements provided below.

1.0 *Bacillus amyloliquefaciens* strain MBI600

Human health

For commercial end-use products containing *Bacillus amyloliquefaciens* strain MBI600 replace respirator PPE to the current standard:

- “...a NIOSH-approved particulate filtering facepiece respirator with any N, R or P filter...”

2.0 *Bacillus Subtilis* Strain QST 713

Environment

For PCP# 33651 (*Bacillus Subtilis* Strain QST 713 commercial end-use product) addition of the following under DIRECTIONS FOR USE:

- “DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wash water.”

References

Published information

Bacillus amyloliquefaciens strain MBI600

PMRA Number	Reference
2884404	PRD2018-10, Proposed Registration Decision, <i>Bacillus amyloliquefaciens</i> strain MBI600 and Serifel
2884406	RD2018-15, Registration Decision, <i>Bacillus amyloliquefaciens</i> strain MBI600 and Serifel
1846654	PRD2009-17, Proposed Registration Decision, <i>Bacillus subtilis</i> strain MBI600
1973423	RD2010-04, Registration Decision, <i>Bacillus subtilis</i> strain MBI600 Integral Liquid Biological Fungicide
1693639	PRD2007-05, Proposed Registration Decision, <i>Bacillus subtilis</i> strain MBI600
1693641	RD2007-07, Registration Decision, <i>Bacillus subtilis</i> strain MBI600
3158382	Evaluation Report for Category B, Subcategory 3.1, 3.11, 3.12, 3.4 Application, Application Number: 2020-0815
3079094	Evaluation Report for Category B, Subcategories 3.11, 3.12, 3.13 Application, Application Number: 2019-1375
2698053	Evaluation Report for Category B, Subcategory 3.10 and 3.12 Application, Application Number: 2016-1989
2121979	Evaluation Report for Category B, Subcategory 3.12 Application, Application Number: 2011-2369

Bacillus Subtilis Strain QST 713

PMRA Number	Reference
1753711	PRD2009-16, Proposed Registration Decision, <i>Bacillus subtilis</i> strain QST 713
1867115	RD2010-03, Registration Decision, <i>Bacillus subtilis</i> strain QST 713
1494808	ERC2007-06, Evaluation Report <i>Bacillus subtilis</i> strain QST 713, Serenade MAX, Serenade ASO, Rhapsody ASO, Serenade Garden Concentrate, Serenade Garden Ready To Use
3068821	Evaluation Report for Category B, Subcategory 1.1, 2.1 Application, Application Number: 2019-2122 / QST 713 Technical 2 and 2019-2123 / QST 713 SC
2953329	Evaluation Report for Category B, Subcategory 3.12 Application, Application Number: 2018-1939
2953422	Evaluation Report for Category B, Subcategory 3.12 Application, Application Number: 2018-1940
2953432	Evaluation Report for Category B, Subcategory 3.12 Application, Application Number: 2018-1941
1891991	Evaluation Report for Category B, Subcategory 3.11, 3.12 Application, Application Number: 2009-3793

1759372	Evaluation Report for Category B, Subcategory 3.1 Application, Application Number: 2008-2627
1759375	Evaluation Report for Category B, Subcategory 3.1 Application, Application Number: 2008-2628
1759380	Evaluation Report for Category B, Subcategory 3.1 Application, Application Number: 2008-2629