Appendix 1

Light Brown Apple Moth (LBAM)
Host/Commodity List Exempted from Federal Quarantine Order

August 2007 (Revised November 2016)

The host commodities, listed below, are exempt from the conditions required in the LBAM Federal Domestic Quarantine Order for interstate movement of regulated articles. The exemption is applicable only to commercially-produced commodities based on the pest mitigations provided through industry standards of production, harvesting, and packaging practices for each of the exempted commodities. Commodities that are not produced using these industry practices remain subject to the program requirements for interstate movement. New commodities added to the list are in **bold** font.

Host (Scientific Name)	**Host (Common Name)**	**Justification for Exemption**
Brassica spp.	Broccoli Brussel sprouts Cauliflower Cabbage Kale Bok choy Kohlrabi	Integrated Pest Management (IPM) practices implemented by producers, including the use of routine chemical applications that are designed to suppress Lepidoptera pests, also target LBAM. In addition, harvesting and packaging practices provide the safeguard necessary to eliminate the risk of harboring LBAM. As each of the listed Brassica spp. commodities is handpicked, the outer leaves are removed, and inspected for quality, as well as ensuring freedom from pests and diseases before packing and storage. Blemished commodities do not leave the production area and are either disked into the ground or consumed locally.
Brassica spp.	Mustard Collards	In addition to the above practices, mustard leaves and collards are carefully washed and inspected again prior to packing and storage.
Petroselinum crispum	Parsley	IPM practices implemented by producers, including the use of routine chemical applications that are designed to suppress Lepidoptera pests, also target LBAM. Harvest practices focus heavily on visual inspection of leaves in the field before packing and any blemished product does not leave the production site. Leaves are washed and inspected again before packing.
Apium spp.	Celery	Same as parsley

Host (Scientific Name)	**Host (Common Name)**	**Justification for Exemption**
Lactuca sativa	Head Lettuce	IPM practices implemented by producers, including the use of routine chemical applications that are designed to suppress Lepidoptera pests, also target LBAM. In addition, harvesting and packaging practices provide the safeguard necessary to eliminate the risk of harboring LBAM. Each head of lettuce is handpicked; the outer leaves are removed, and inspected for quality, as well as ensuring freedom from pests and diseases before packing and storage. Blemished lettuce heads do not leave the production site and are either disked into the ground or consumed locally.
Lactuca sativa	Leaf Lettuce	IPM practices implemented by producers, including the use of routine chemical applications that are designed to suppress Lepidoptera pests, also target LBAM. In addition, leaf lettuce is mechanically harvested, thoroughly washed, and then inspected before shipping from the regulated area.
Spinacia oleracea	Spinach	Same as leaf lettuce
Asparagus officinalis	Asparagus	Only the asparagus spears are harvested. After harvest they are washed, inspected and bundled before packing and shipping. Any blemished spears would be culled in the field.
Cucurbita spp.	Squash Pumpkin	Only the squash and pumpkin are harvested (no leaves) and the product is inspected thoroughly before shipping from the field.
Capsicum spp.	Peppers	Only the peppers are harvested (no leaves) and the product is inspected thoroughly before shipping from the field.
Solanum lycopersicum	Tomato	Only the tomatoes are harvested (no leaves) and the product is inspected thoroughly before shipping from the field.

Host (Scientific Name)	Host (Common Name)	Justification for Exemption
Cynara scolymus	Globe artichoke	Only artichoke thistle flower heads are harvested and are inspected twice before packing and shipping from the field to the cooler. They are inspected again at the cooler before final packing and shipping to market.
Raphanus spp.	Radish (w/o tops)	This root crop is generally harvested mechanically with leaves removed in the field. Radishes are processed through packing plants where they are washed, brushed, inspected and packaged before shipping.
Solanum spp.	Potato	This root crop is generally harvested mechanically with no leaves attached. Potatoes are processed in packing plants where they are washed, brushed, inspected and packaged before shipping.
Beta spp.	Beet	This root crop is generally harvested mechanically with leaves removed in the field. Beets are processed in packing plants where they are washed, brushed, inspected and packaged before shipping.
Olea spp.	Olive	The product is handpicked and placed in bins that are immediately taken to packing plants where the olives are placed in a brine solution for curing.
Juglans spp.	Walnuts	All commercial walnuts are mechanically harvested free of husks and leaves and are taken in bins to packing plants where they are inspected thoroughly before packing.
Zea mays	Sweet Corn	IPM practices implemented by producers, including the use of routine chemical applications that are designed to suppress Lepidoptera pests, also target LBAM In addition to this, processing and packaging practices involving the use of an ice water bath immediately followed by the commodity being packed in ice for shipment provides the safeguard necessary to eliminate the risk of harboring or reinfestation of LBAM.
Opuntia spp.	Tuna (fruit and pad)	This product is handpicked, allowing for in-field inspection. In addition to this, processing and packaging practices involving the use of hot water dip, spine removal, and post-harvest storage provides the safeguard necessary to eliminate the risk of harboring or reinfestation of LBAM.
Various species	Baled Hay	This product is generally harvested mechanically, dried, and compressed into bales.

Host (Scientific Name)	Host (Common Name)	Justification for Exemption
Fragaria spp.	Strawberry (dormant, frozen strawberry nursery stock)	The product is dormant, frozen strawberry nursery stock grown by State certified producers.
Allium cepa	Green Onion (with tops cut)	IPM practices implemented by producers, including the use of routine chemical applications that are designed to suppress Lepidoptera pests; also target LBAM. In addition, green onions are hand-picked; tops cut by hand, inspected, washed, and packed.
	Onion, dry	This product is harvested; tops removed; cured in the field prior to storage. Before packing, the onion is thoroughly inspected.
Allium sativum	Garlic	This product is harvested; tops removed; cured in the field prior to storage. Before packing, the garlic is thoroughly inspected.
Citrullus lanatus *Citrullus vulgaris*	Watermelon	This product is harvested without leaves; visually inspected prior to packing.
Coriander sativum	Cilantro	IPM practices implemented by producers, including the routine use of chemical applications that are designed to suppress Lepidoptera pests; also target LBAM; product is handpicked; inspected; hydro-cooled.
Cucumis melo	Melons	IPM practices implemented by producers, including routine use of chemical applications that are designed to suppress Lepidoptera pests; also target LBAM; product is handpicked; inspected prior to packing.
Daucus carota	Carrot	IPM practices implemented by producers, including routine use of chemical applications that are designed to suppress Lepidoptera pests; also target LBAM. Product is handpicked, inspected and washed prior to packing.
Foeniculum vulgare	Fennel	IPM practices implemented by producers, including routine use of chemical applications that are designed to suppress Lepidoptera pests; also target LBAM. Product is handpicked; inspected prior to packing.

Host (Scientific Name)	Host (Common Name)	Justification for Exemption
Gossypium hirsutum *Gossypium barbadense*	Cotton	IPM practices implemented by producers include routine use of chemical applications that are effective on LBAM. Product is harvested mechanically; heated; ginned; and compressed into bales.
Pistacia vera	Pistachio	Commercial pistachios are mechanically harvested; dried; leaves removed; visual inspection during packing
Prunus amygdalus *Prunus dulcis*	Almond	Commercial almonds are mechanically harvested; dried; fumigated. Leaves and hulls are removed; visual inspection of nuts prior to packing.
Punica granatum	Pomegranate	This product is harvested without leaves; washed; brushed; waxed; inspected during packing
Taraxacum officinale	Dandelion green	IPM practices implemented by producers, including routine use of chemical applications that are designed to suppress Lepidoptera pests; also target LBAM. Product is handpicked; inspected prior to packing.
Ziziphus jujube	Jujube	Fruit is hand harvested without leaves; inspected prior to packing
Dried Fruit (such as raisins, dates, etc)	Various	Analysis of scientific literature showed that LBAM is not a storage pest.
Actinidia spp.	Kiwifruit	Pest management guidelines in California for kiwifruit include visual inspection at prebloom and bloom; chemical application if applicable Kiwifruit is hand harvested; leaves removed; thoroughly inspected prior to packing.
Vaccinium spp.	Blueberry	IPM practices implemented by producers including monitoring and surveillance greatly reduce LBAM if present; fruit is hand harvested; leaves removed; visually inspected prior to packing.
Diospyros kaki	Persimmon	Pest management in California for persimmon, including hand harvesting, leave removal, and visual inspection, minimize the likelihood of LBAM movement.
Phaseolus vulgaris	Green beans	IPM practices implemented by producers including chemical application greatly reduce LBAM if present in production areas. Beans are either machine or hand harvested; visually inspected prior to packing.

Host (Scientific Name)	Host (Common Name)	Justification for Exemption
Rhaphanus sativus	Daikon	IPM practices implemented by producers including chemical application greatly reduce LBAM if present in production areas. Daikon, with or without tops, is hand-picked; washed; and visually inspected prior to packing.
Prunus avium	Cherry	The combination of low field prevalence and packing procedures make it highly unlikely that a foundation LBAM population could be moved out of the quarantine area with cherry fruit after conventional production and harvesting.
Fragaria x ananassa	Strawberry (conventionally produced)	Based on evidence and our current understanding of LBAM biology, we have determined that it is appropriate to remove picked-and-packed fresh strawberry fruit produced using conventional (non-organic) field-production methodologies.
Citrus sp.	Citrus fruit (conventionally produced)	LBAM survival on citrus is low compared with non-citrus hosts. The combination of low field prevalence and packing procedures make it highly unlikely that a foundation LBAM population could be moved out of the quarantine area with citrus fruit after conventional production and harvesting.
Prunus persica, P. armeniaca, P. persica var. nucipersica, P. persica, P. domestica or P. salicina, P. armeniaca x P. domestica x P. armeniaca, P. armeniaca x P. domestica x P. domestica	Stone fruit (peaches, plums, nectarines, and apricots)	IPM practices implemented by producers, including routine chemical applications to suppress Lepidoptera pests, keep LBAM prevalence very low in stone fruit production areas. The combination of low field prevalence and packing procedures (i.e. hand packing and refrigeration at 1°C prior to shipment) make it highly unlikely that a foundation LBAM population could be moved out of the quarantine area with stone fruit.
Malus domestica	Apple	Apple producer best management practices greatly reduce both the prevalence of LBAM in production areas and the likelihood that LBAM will be present on market-ready commodities. Movement of commercially produced apples represents a low risk pathway for establishment of new LBAM infestations after conventional production and harvesting.

Host (Scientific Name)	Host (Common Name)	Justification for Exemption
Pyrus communis	Pear	Attributes of pears and the industry practices, such as monitoring for pests, application of mating disruption, visual inspection, and hand-packing without leaves provide further mitigations to prevent human assisted dispersal of LBAM.
Persea americana	Avocado (conventionally and organically grown)	Analysis of commercial production practices determined avocadoes present a low risk of dispersing viable populations of the pest. Standard practices include thorough inspection and hand packing of each harvested fruit, with damaged fruit culled. The commercial processing would result in the detection and removal of any leaves attached to the fruit, any larvae or pupae hidden underneath the leaves, and any larvae or pupae present without leaves.
Vitis vinifera	Table grapes	IPM practices implemented by producers minimize risk of LBAM; fruit is hand harvested; visually inspected prior to packing; stored and shipped at low temperatures.
Vitis vinifera	Wine grapes	IPM practices implemented by producers minimize risk of LBAM; fruit is harvested in a manner that is not conducive to maintaining live larvae, visually inspected prior to packing, stored and shipped at low temperatures. Green waste, the product left after the processing of wine grapes, is simply the next step in the same pathway, thus green waste is also exempt.
Palmaceae Cycadales Cactaceae Agavaceae - *Mangave* Aizoaceae-*Aloinopsis, Antimima, Aptenia, Argyroderma, Carpobrotus, Cephalophyllum, Cerochlamys, Conophytum, Cylindrophyllum, Delosperma, Dinteranthus, Drosantemum,*	Commercially grown palms and cycads and various genera of cacti and succulents as provided. With the exception of succulents of the genera *Senecio* and *Euphorbia*.	Eligible due to non-host status. Possible host associations with members of the genera *Senecio* and *Euphorbia* do not allow those plants to be exempted at this time.

Faucaria, Fenestriaria, Frithia, Gibbaem, Glottiphyllum, Lampranthus, Lapidaria, Lithops, Oscularia, Pleiospilos, Rabiea, Rhombophyllum, Ruschia, Schwantesia, Titanopsis, and *Trichodiadema*. Aloaceae – *Gasteraloe, Gasterworthia* Amaryllidaceae - *Allium* Apocynaceae - *Caralluma, Ceropegia, Cynanchum, Fockea, Hoodia, Huernia, Orbea, Stapelia* Asparagaceae - *Agave, Aloe, Bowiea, Calibanus, Dasylirion, Drimiopsis, Furcraea, Gasteria, Haworthia, Hesperaloe, Ledebouria, Ornithogalum, Sansevierea, Veltheimia, Yucca* Commelinaceae - *Tradescantia* Compositae - *Kleinia, Othonna*		

Crassulaceae - *Adromischus, Aeonium, Aichryson, Bryophyllum, Cotyledon, Cotyledon, Crassula, Crassula, Cremnosedum, Dudleya, Echeveria, Graptopetalum, Graptosedum, Graptoveria, Jovibarba, Kalanchoe, Monanthes, Orostachys, Pachyphytum, Pachysedum, Pachyveria, Rosularia, Sedeveria, Sedum, Sempervivella, Sempervivum, Tacitus* Cucurbitaceae - *Xerosycos* Didiereaceae - *Alluaudia, Didierea* Dioscoreaceae - *Dioscorea, Testudinaria* Euphorbiaceae - *Monadenium, Pedilanthus, Synadenium.* Fouquieriaceae - *Fouquieria* Gesneriaceae - *Reichsteinaria* Malvaceae – *Bombax*		

Piperaceae - *Peperomia* Portulacaceae - *Anacampseros, Calandrinia, Portulaca, Portulacaria* Vitaceae - *Cyphostemma* Xanthorrhoeaceae - *Bulbine*		
	Cacti, succulents (live plants)	These commodities pose no or very low risk of spreading LBAM from infested areas due to the morphological nature of the plants, the general and LBAM specific integrated pest management (IPM) practiced in nurseries and the nature of the commercial trade of cacti and succulents.
Cucumis sativus	cucumbers	LBAM does not appear to be a pest of cucumbers. Additionally, IPM practices implemented by producers would minimize risk of LBAM survival; fruit is hand harvested; visually inspected prior to packing; stored and shipped at low temperatures.
Propagative material	Bulbs, tissue cultivated plantlets callused vegetative cuttings, seedlings, divisions, unrooted vegetative cuttings, callused vegetative cuttings, rooted vegetative cuttings, under condition that the plants do not exceed 10 cm in height.	These commodities pose no or very low risk of spreading LBAM from infested areas due to the morphological nature of the plants, the general and LBAM specific integrated pest management (IPM) practices in nurseries and the nature of the commercial trade of propagative material. Further definitions of the plant material are provided in the Pest Risk Evaluation of propagative material.
Cut flowers and floral greenery	**Various (commercially produced)**	**IPM practices and industry standards for handling commercially produced cut flowers and floral greenery, minimize the likelihood of LBAM movement.**