



CALIFORNIA DEPARTMENT OF  
FOOD & AGRICULTURE

Karen Ross, Secretary

September 15, 2022  
Renewed / Amended

Permit No. QC 650

### **MASTER PERMIT FOR THE SHIPMENT OF NURSERY STOCK FROM HAWAII TO CALIFORNIA**

Under authority of Section 3154 (Secretary May Issue Special Permits) and Section 3271 (Burrowing and Reniform Nematode Exterior Quarantine), Title 3, California Code of Regulations, and Section 403 of the Food and Agricultural Code (The Department Shall Prevent The Introduction of Injurious Pests), permission is granted to the Hawaii Department of Agriculture (HDA) to issue compliance agreements to Hawaii firms which authorizes those firms to use a HDA Burrowing and Reniform Nematode Certificate for shipments of nursery stock to California. Hawaii firms not entering into a compliance agreement may ship nursery stock to California when the shipment or lot is accompanied by an original certificate issued by an authorized HDA official and establishes that all material in the shipment or lot meets the requirements of Section 3271, Burrowing and Reniform Nematode Exterior Quarantine, and all other applicable quarantine laws.

The following conditions shall be met:

1. Only firms that have signed a compliance agreement with the HDA will be authorized to ship nursery stock under this permit. The shipper must have signed the compliance agreement before HDA authorizes the possession of a HDA Burrowing and Reniform Nematode (BRN) Certificate for certifying plant material to California destinations. To be authorized to ship under this permit:
  - A. A nursery owner or responsible party specifically designated by the owner shall enter into the nursery compliance agreement (Appendix A).
  - B. If applicable, stock dealers (defined as those shippers which do not produce the plant material, but do physically possess plant material destined to California) must be registered with HDA, and shall be placed under the compliance agreement covering stock dealers (Appendix B).
  - C. If applicable, plant brokers and agents (defined as those shippers which buy and sell from producing nurseries, generally on commission, and never take physical possession of any plant material) must be registered with HDA, and shall be placed under a compliance agreement for those businesses (Appendix C).



2. The HDA shall reassess and update the status of all Hawaii firms every twelve months. This reassessment will comprise confirmation of those Hawaii firms that continue under compliance agreements to qualify as stock dealers, plant brokers and agents, and nurseries.
3. HDA must ascertain that nurseries under the same ownership with the same location or with a nearby location maintain separate inventories and certifications, and under no circumstance share them. Each certified location must ship only California approved plant material that is annotated on their inventory list for that specific location. Any shipment in violation of this condition shall be subject the entire shipment to being rejected. HDA must also ascertain that the aforementioned nurseries follow proper sanitation practices.
4. Only qualified plant materials, produced by the nursery, can be certified for BRN through the use of California BRN certificates issued to the nursery by HDA. Qualified plant materials are those plant materials that meet all the requirements of this Master Permit No. QC 650. Plant material originating outside of the United States that is rooted in a Hawaii nursery and sampled by HDA and found free of California Department of Food and Agriculture (CDFA) regulated nematodes will be considered produced by that nursery. Other nursery stock that originates from an out-of-state source does not qualify for shipment under this permit. Such nursery stock may be shipped to California either in the unopened, original cartons/boxes in which it entered Hawaii and accompanied by an original phytosanitary certificate from the place of origin, or it must be recertified by an original HDA phytosanitary certificate verifying that the nursery stock qualifies for shipment to California.
5. The HDA shall provide to the CDFA (Pest Exclusion Branch) a list of firms authorized to ship under this permit and their identification numbers prior to the initiation of shipments.
6. The HDA shall provide to the CDFA a list of the specific nursery stock, including genus, species, cultivar, pot size, etc., each nursery is certified to ship to California prior to the initiation of shipments from that nursery. Orchids may be called "<genus> species". In case of multiple crosses – "<genus> hybrids". This list shall be maintained at the following website: [http://hawaii.gov/hdoa/pi/pq/nema\\_cert/nurseries-in-hawaii](http://hawaii.gov/hdoa/pi/pq/nema_cert/nurseries-in-hawaii). The list MUST include contact phone numbers and the nursery physical address where nursery stock is located (not a P.O. Box). Plant material not listed on the appropriate website prior to its arrival in California is not certified under the terms of this permit. Any shipment containing any uncertified plant material shall subject the entire shipment to being rejected. Additionally, HDA must make a note in their website of those nurseries affected by any calamities that have rendered them inoperable and unable to qualify under the current Master Permit QC No. 650.
7. The approved material list for participants in this program must undergo annual review by HDA. The HDA website is required to display the most recent date when the inventory was reviewed under "Date Inventory Reviewed", as well as the current date of the nursery inspection under "Date of Nursery Inspection" for each certified nursery. The HDA shall inspect all the certified nursery's facilities at least every six months. The HDA website must be immediately updated with the inspection results (inventory lists and dates).

8. The HDA shall inform all nurseries and stock dealers authorized to ship to California under this permit that nematicides may not be used to treat the plant material grown for California delivery.
9. All nursery stock shipped to California under this permit by the producing nursery must meet the requirements of either A or B below:
  - A. The plants or plant parts being shipped to California were protected from nematode contamination by the following sanitation methods:
    - i. Propagated from clean seed, tissue culture, or from cuttings taken at least 12 inches above ground level. Tissue culture plants, up to stage three (cell-packs) may be purchased by a grower for propagation purposes provided it originates from one of the HDA approved tissue culture facilities. However, such plant material must be "stepped-up" to a finished product prior to shipment to California. A grower cannot purchase tissue culture plant material and ship it to California under the nursery's BRN certification unless the stock went through a size increase. This plant material may be marketed when ready and is only subject to HDA's normal nematode sampling scheme barring a specific problem.
    - ii. Planted in sterilized soil or other suitable material prepared or treated to assure freedom from CDFA regulated nematodes. Vapam may not be used to sterilize volcanic cinders until HDA provides CDFA with quarantine efficacy data.
    - iii. Retained in sterilized pots, containers, or beds.
    - iv. Placed on sterilized benches or sterilized supports at least 18 inches from the ground or floor level. Plant material that has been propagated by all of the sanitation methods contained under this section and which has been progressively "stepped-up" to containers which are 10 inches in diameter or larger, may be removed from the benches or supports to an approved area. CDFA strongly recommends that these containers be elevated off the approved area's surface on sterilized supports. However, the containers may be set directly on the surface of an approved area as defined below.
      - (1) The surface of an approved area shall be (a) constructed of concrete or asphalt of a thickness which will prevent weeds and other plants from growing through it; (b) graded in a manner to ensure water drains away from the center toward the edges; and, (c) elevated in a manner to preclude contamination by native soil or surface water. Other areas may be approved if written authorization is obtained from CDFA, Permits and Regulations, Plant Health and Pest Prevention Services.
      - (2) Only California approved plant material shall be placed on this surface. Plants shall not be placed within six feet of the edge of the surface, unless the surface is enclosed with an approved barrier. The containerized plants eligible for entry under the terms of this permit shall not be placed within six feet of other plant material not meeting all

California quarantine requirements and shall be protected from nematode contamination prior to shipment.

(3) Access to the surface shall be limited to essential personnel and equipment. Equipment, footwear, and clothing worn by personnel accessing the surface shall be clean. Personnel accessing the surface shall be properly trained in nematode sanitation procedures.

v. Area beneath benches or supports holding plants will be treated at six-month intervals with a registered nematicide or other material having nematocidal effect and approved by the HDA, except when smooth clean flooring of concrete is present; or HDA can verify that the area beneath benches or supports has been maintained free of all plant growth/vegetation for the preceding 12 months.

vi. Plants and growing media must be sampled using survey methods which have been approved by CDFA and made a part of this permit by reference (Appendix D). Details of the sampling protocol are given in Appendix D.

(1) Orchids and non-tank bromeliads (air plants) are exempt from nematode sampling in certified nurseries on all Hawaiian Islands provided no soil or plant material in contact with soil is used in their propagation (CCR Title 3, Sec 3271 C.5b). Plants that are propagated in soil or from plant parts in contact with soil are not exempt from nematode sampling and must be sampled according to the guidelines provided in Appendix D. Exempt plants are still subject to the other 'non-sampling' requirements of this Master Permit QC No. 650.

vii. Plants and growing media must be protected from nematode contamination until shipped:

**or**

B. The shipment consists of only domestically produced unrooted plant cuttings, provided that the cuttings were taken from that portion of the plant that is growing at least 12 inches above ground level and were protected from contamination until shipped.

10. A firm authorized to ship under this permit shall maintain accurate records of the numbers, pot sizes, and types of plant material that are shipped to California; and make such records available for review by HDA personnel during normal business hours or the firm may lose its authorization.

11. The owner/general manager of firm authorized to ship under this permit shall be in control of all pertinent documents pertaining to this permit and shall be responsible for any unauthorized use of such documentation.

12. All shipments of nursery stock shall be accompanied by shipping document(s) that include the producing nursery's BRN certificate qualifying the plant material for California entry. To be properly certified for California delivery, the Hawaii supplying nursery's shipping documents (bill of lading, invoices, etc.) shall be completed in the following manner: it must list the type of plant material (exactly as certified), pot sizes, and amount of each type of plant material shipped; and lines must be drawn through any remaining blank portions of the document. In case of handwritten shipping documents, the numbers of each type and pot size must be written numerically and spelled-out, i.e., 10 (ten).

A. The bill of lading and/or invoice shall have been preprinted with a sequential identification number.

B. The authorized stamp certificate shall be applied to the accompanying shipping documents.

C. The wording of HDA's BRN stamp certificate shall be:

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HAWAII DEPARTMENT OF AGRICULTURE  
PLANT QUARANTINE BRANCH

NEMATODE CERTIFICATE # \_\_\_\_\_

This is to certify that the plant materials in this shipment meet California's burrowing and reniform nematode quarantine requirements and originated from a nursery participating under the terms of California's Master Permit for the shipment of Nursery Stock from Hawaii to California, Permit No. QC 650

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D. There must be a statement on the package or stamp that states "OK for parcel inspection."

13. No shipping documents with the nursery's HDA California BRN certification can be out of the nursery's control at any time or given to another party prior to its proper completion as stated in condition 11 above.

14. The nursery shall not sell California certified plant material to a stock dealer, plant broker, agent, or other party unless that party is properly licensed or otherwise registered with the HDA for conducting such business under Hawaii laws and regulations. If the firm is not authorized to ship into California under a HDA BRN compliance agreement, then the Hawaii nursery may only issue the BRN certificate consigned to a firm with a Hawaii address. HDA would then be responsible for issuing an original phytosanitary certificate to accompany the shipment to California.

15. Any shipment of plant material found to be infested with plant parasitic nematodes regulated by California or improperly certified shall be rejected in accordance with California laws and the shipper suspended until CDFA, in consultation with HDA, determines the nature of the violations involved and is satisfied with the resolution of the violation(s).

16. HDA shall immediately notify CDFA, Pest Exclusion Branch, via email (peinfo@cdfa.ca.gov), of any violations, either suspected or known, of this permit, brought to the attention of the HDA by any party, to enable a cooperative investigation or other appropriate action(s).
17. HDA must remain an active participant in administering this permit and conduct ongoing education concerning this permit's provisions.
  - A. HDA must document outreach efforts to demonstrate how they remain an active participant in administering this permit and conducting ongoing education to HDA and industry staff concerning this permit's provisions, nematode sampling, nursery sanitation, weed, pest and disease management.
  - B. HDA shall conduct and document annual HDA staff training on processing nematode samples and basic plant parasitic nematode identification in the lab.
18. Renewal of the 2023 permit QC650 is contingent upon Permittee (HDA) scheduling an Onsite Audit by CDFA to be completed prior to the September 30, 2023.
19. Hawaii nurseries shall pay transportation and per diem expenses of CDFA representatives for the purpose of observing that the permit requirements are met at origin.

The attached Appendices A, B, C, D, E, F, G and Recommendations for the Hawaii Department of Agriculture Nematology Lab are incorporated by reference into this permit. Violation of any of the conditions of this permit shall be sufficient cause for its immediate revocation.

Unless earlier revoked, this permit is valid until September 30, 2023.

*Dean Kelch*

Dean Kelch, Ph.D.

Environmental Program Manager

Permits & Regulations

Plant Health and Pest Prevention Services

cc: Jonathan K. Ho  
Don Yanagisawa  
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**APPENDIX A**

**Certified Nursery Compliance Agreement**

I/we agree to the following: that nematicide control treatments shall be used under those areas under benches or other supports and surface areas as necessary or shall be maintained free of plant growth. Nematicides shall not be applied to plant material cuttings or as a soil drench on plant material destined to California, that insecticides which are also nematicides shall only be applied foliar and shall not be used within six weeks of official Hawaii Department of Agriculture (HDA) nematode sampling or within six weeks prior to shipment to California, that regarding any treatments used in the certification of regulated articles, no liability shall be attached either to the California Department of Food and Agriculture (CDFA), HDA, to cooperating agencies, or to any of their employees in the event of injury to the property or the regulated articles; to handle, process, and move regulated articles in accordance with the provisions of applicable plant quarantines; to use all permits and certificates in accordance with instructions; to maintain and offer for inspection such records as may be required; to carry out all additional conditions, treatments, precautions, and sanitary measures which may be required by the inspector or stipulated by pertinent state or federal laws; and to hold both HDA and the CDFA harmless in their respective roles in carrying out this program because such program is a strictly voluntary alternative and an accommodation which is made available to me/us in lieu of requiring my/our compliance with standard California legal requirements for shipping out of state origin nursery stock into California.

1. All plant material destined to California shall be produced in a manner that meets California's and the federal government's laws regarding interstate movement.
2. The HDA shall approve and, at least every six months, inspect all of the nursery's facilities as a condition of this agreement. All plant material must be found free of all CDFA regulated nematodes upon each annual inspection to qualify for shipment to California.
3. Only qualified plant materials, produced by the nursery, shall be certified for burrowing, reniform, and other serious nematodes (BRN) through the use of the California BRN certificate issued to the nursery by HDA. Plant material originating outside of the United States that is rooted in a Hawaii nursery and sampled by HDA and found free of CDFA regulated nematodes will be considered produced by that nursery. Other nursery stock that originates from an out-of-state source does not qualify for shipment under this compliance agreement and must be accompanied by an original HDA phytosanitary certificate verifying that the nursery stock qualifies for shipment to California.
4. All nursery stock shipped under the provisions of this compliance agreement shall be free of pests of limited distribution or not known to be established in California ("A", "Q", or "B"-rated pests); and shall be relatively free of pests of common occurrence in California (in general, "C"-rated).
5. The plants or plant parts that are shipped to California must have been grown in accordance with the following sanitation methods:
  - a. Propagated from clean seed, tissue culture, liners up to three inches that were produced from seed, or liners that were purchased from other California certified nurseries that were produced from non-prime host cuttings taken at least 12 inches above ground level. Prime host cuttings must be taken from plants sampled and found free of BRN. Tissue

culture plants, up to those which are standard cell-pack size, may be purchased from another California certified Hawaii origin nursery, held for a minimum of one year, then sampled by HDA and recertified for shipment to California. ["Stage three" (cell-packs) may be purchased by a grower for propagation purposes provided it originates from one of the HDA approved tissue culture facilities. However, such plant material must be "stepped-up" to a finished product prior to shipment to California. A grower cannot purchase tissue culture plant material and ship it to California under the nursery's BRN certification unless the stock went through a size increase. This plant material may be marketed when ready and is only subject to HDA's normal nematode sampling scheme barring a specific problem.]

- b. Plant seed or cuttings in sterilized soil or other suitable material prepared or treated to assure freedom from CDFA regulated nematodes;
- c. Retain plant material in sterilized pots, containers, or beds;
- d. Place all plant material on sterilized benches or supports at least 18-inches from the ground or floor level. Plant material that has been propagated by all of the sanitation methods contained under this section and which has been progressively "stepped-up" to containers that are 10-inches in diameter or larger, may be removed from the benches or supports to an approved area.
- e. The term approved area shall mean a production area approved by HDA that is modified by the implementation of propagation procedures and/or structures which enable the nursery stock to be grown in compliance with the BRN quarantine requirements. The following shall be required to become an approved area:

The surface of an approved area shall be:

- i. constructed of concrete or asphalt of a thickness which will prevent weeds and other plants from growing through it;
- ii. graded in a manner to ensure water drains away from the center toward the edges; and,
- iii. elevated in a manner to preclude contamination by native soil or surface water.
- iv. Other areas may be approved if written authorization is obtained from CDFA, Permits and Regulations, Plant Health and Pest Prevention Services

Only California approved plant material shall be placed on this surface. Plants shall not be placed within six feet of the edge of the surface, unless the surface is enclosed with an approved barrier. The containerized plants eligible for entry under the terms of this permit shall not be placed within six feet of other plant material not meeting all California quarantine requirements and shall be protected from nematode contamination prior to shipment.

Access to the surface shall be limited to essential personnel and equipment.

Equipment, footwear, and clothing worn by personnel accessing the surface shall be clean. Personnel accessing the surface shall be properly trained in nematode sanitation procedures.



f. Treat the area beneath benches or supports and any approved area's surface, at six-month intervals, with a registered nematicide or other material having nematicidal effect and approved by the HDA, except when smooth flooring of concrete is present or if an area within six feet of such benches or supports has been free of all plant growth for the preceding 12 months;

g. Sample all plants and growing media using survey methods that have been approved by CDFA and made part of this agreement by reference;

h. Sterilize and store potting medium/soil in a manner approved by the HDA, including:

(1) On a concrete or asphalt slab, constructed in a manner to prevent contamination by native soil or surface water, equipment, personnel and to drain any water to the outside, or

(2) In sealed bags on pallets; and,

(3) The storage area and media must be maintained free of all plant growth/vegetation.

i. Protect all certified plant material from contamination by CDFA regulated nematodes until shipped. California nematode certified and other non-California certified plant material are prohibited from being mixed in the nursery (a minimum of a 6 foot separation shall be maintained) or in any shipment destined to California.

6. The nursery shall keep accurate records and logs of the number, types and pot sizes of plant material produced by them that are California certified and which are shipped to California. These records shall be provided to the HDA on demand during normal business hours.

7. Shipments which consist of unrooted plant cuttings must be limited to plant cuttings taken from that portion of the plant which is growing at least 12 inches above ground level.

8. Plant material destined to California shall not be treated with a nematicide.

9. Prior to its arrival in California, all plant material must be accompanied by an original bill of lading and/or invoice which is accompanied by the nursery's HDA California burrowing and reniform nematode (BRN) certificate and any other required certificates. The bill of lading and/or invoice shall have been preprinted with a sequential identification number.

10. The owner/general manager of the nursery shall be in control of the nursery's HDA BRN certificates at all times and be responsible for any unauthorized use of their nursery's BRN certificates.

11. The nursery shall only supply properly completed bills of lading/invoices to plant brokers, stock dealers or others. To be properly completed, the shipping documents must list the type of plant material (exactly as certified), pot sizes, and amount of each type of plant material shipped. Lines must be drawn through any remaining blank portions of the document to prevent tampering. In case of handwritten shipping documents, the numbers of each type of plant material and pot size must be written numerically and spelled-out, i.e., 10 (ten). Finally, the documents

must be accompanied by the nursery's assigned HDA California BRN certificate and any other required certificates.

12. The nursery shall not sell California certified plant material to a stock dealer, plant broker, agent, or other party unless that firm is properly licensed or otherwise legally registered with the HDA for conducting such business under Hawaii laws and regulations. If that firm is not authorized to ship under a compliance agreement to California, then the Hawaii nursery may only issue the BRN certificate consigned to a firm with a Hawaii address. HDA would then be responsible for issuing an original phytosanitary certificate to accompany the shipment to California.

13. California nematode certified plant material and non-California nematode certified plant material are not to be mixed in the nursery and a distance of six feet shall be maintained between such plant material unless a physical barrier is present. Additionally, before loading California certified plant material into a trailer, the nursery shall check that the driver has California certification documents for all other plant material in the trailer.

14. The producing nursery shall be held accountable for serious nematode or other actionable pest interceptions as well as misuse of official certificates and automatically suspended from shipping into California until the problem is identified, corrected and a reasonable explanation is provided to HDA, and accepted by CDFA.

**California Department of Food and Agriculture (CDFA) regulated nematodes shall be defined as belonging to either Category I or II.**

**CATEGORY I**

<i>Anguina funesta</i>	seed gall nematode
<i>Anguina tritici</i>	wheat seed gall nematode
<i>Aphelenchoides besseyi</i>	strawberry summer dwarf nematode
<i>Belonolaimus longicaudatus</i>	a sting nematode
<i>Belonolaimus</i> spp.	a sting nematode
<i>Bursaphelenchus coccophilus</i>	red ring nematode
<i>Ditylenchus destructor</i>	potato rot nematode
<i>Dolichodorus heterocephalus</i>	Cobb's awl nematode
<i>Globodera pallida</i>	white cyst potato nematode
<i>Globodera rostochiensis</i>	golden nematode
<i>Helicotylenchus multicinctus</i>	banana spiral nematode
<i>Hemicycliophora arenaria</i>	a sheath nematode
<i>Heterodera avenae</i>	oat cyst nematode
<i>Heterodera carotae</i>	carrot cyst nematode
<i>Heterodera glycines</i>	soybean cyst nematode
<i>Heterodera mani</i>	a grass cyst nematode
<i>Hirschmanniella oryzae</i>	rice root nematode
<i>Longidorus elongatus</i>	needle nematode
<i>Meloidogyne chitwoodi</i>	Columbia root-knot nematode
<i>Meloidogyne enterolobii</i>	guava root-knot nematode
<i>Meloidogyne floridensis</i>	peach root-knot nematode

<i>Meloidogyne naasi</i>	barley root-knot nematode
<i>Nacobbus aberrans</i>	sugar beet false root-knot nematode
<i>Pratylenchus alleni</i>	a lesion nematode
<i>Pratylenchus coffeae</i>	a lesion nematode
<i>Pratylenchus flakkensis</i>	a lesion nematode
<i>Radopholus similis</i>	burrowing nematode
<i>Rotylenchulus reniformis</i>	reniform nematode
<i>Xiphinema brasiliense</i>	a dagger nematode
<i>Xiphinema chambersi</i>	a dagger nematode
<i>Xiphinema diversicaudatum</i>	European dagger nematode
<i>Xiphinema index</i>	California dagger nematode
<i>Xiphinema setariae</i>	a dagger nematode
<i>Xiphinema vulgarae</i>	a dagger nematode

## CATEGORY II

Nematodes other than those specifically listed as Category I shall be considered Category II. The detection of the following nematodes may result in the immediate rejection of the infested nursery stock at the discretion of the destination agricultural commissioner:

<i>Meloidogyne</i> spp.	(except root-knot nematodes <i>M. chitwoodi</i> and <i>M. naasi</i> )
<i>Pratylenchus brachyurus</i>	smooth-headed lesion nematode
<i>Pratylenchus penetrans</i>	cobb's lesion nematode
<i>Pratylenchus vulnus</i>	walnut lesion nematode
<i>Pratylenchus zeae</i>	corn lesion nematode

15. A nursery shall lose its authorization to ship under this compliance agreement when any California certified plant material is found positive for any Category I regulated nematode during either HDA or CDFA testing, until the problem is identified, corrected and a satisfactory explanation is provided to, and accepted by CDFA.

16. A nursery authorized to ship under this compliance agreement that has plant material found positive for any CDFA Category II regulated nematode after the shipment is received in California shall be immediately notified that a sanitation problem exists and shall be provided an opportunity to identify and correct the problem. A recurring problem may result in the nursery losing its authorization to ship under this compliance agreement until a satisfactory explanation is provided to and accepted by CDFA.

17. A nursery which allows its BRN certification to be used in an unauthorized manner shall lose its authorization to ship under this compliance agreement until the problem is identified, corrected and a satisfactory explanation is provided to, and accepted by, CDFA. Unauthorized use shall include but not be limited to the following:

- a. Mismanifesting plant materials (excluding spelling errors);
- b. Shipping unmanifested plant materials;
- c. Commingling California certified plant material with non-California certified plant material;

- d. Offering blank bills of lading, blank nematode certificates, or other documentation to any unauthorized party imprinted with or accompanied by the nursery's HDA California BRN certificate;
- e. Using a nematicide on plant material destined to California;
- f. Shipping plant material to California under the nursery's HDA California BRN certificate which was not of their own production; and,
- g. Shipping more plant material to California than the nursery has accurate records of producing under this agreement.

18. Any information which may be needed regarding apparent or suspected violations of this agreement, or of California's and the federal government's laws and regulations regarding interstate movement of plant material, shall be immediately provided via telephone or fax and confirmed with a detailed and written explanation within one week of the initial notification of the apparent violation by CDFA.

19. The cost of any efforts, except routine quarantine inspections and sampling, required by CDFA to verify compliance; including any investigative, legal, court fees or other applicable costs, as determined by law, may become the responsibility of the owner/general manager whose signature appears on this agreement.

A firm found violating any terms of this compliance agreement may be prosecuted to the fullest extent of all applicable laws.

Agreement No. \_\_\_\_\_ Date Agreement Valid \_\_\_\_\_

**The affixing of the signatures below will validate this agreement. It shall remain in effect until canceled by either party, revised as necessary, suspended, or revoked for noncompliance.**

\_\_\_\_\_  
Print Business/Nursery Name

\_\_\_\_\_  
Print Inspector Name

\_\_\_\_\_  
Signature Owner/General Manager

\_\_\_\_\_  
Signature Authorized Representative, HDA

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address

Hawaii Department of Agriculture  
1428 So. King Street  
Honolulu, Hawaii 96814-2512

\_\_\_\_\_  
Telephone Number

APPENDIX B

**Stock Dealer Compliance Agreement**

I/we agree to the following: that nematicide control treatments shall be used under those areas under benches or other supports and surfaces as necessary or shall be maintained free of plant growth. Nematicides shall not be applied to plant material which is to be shipped to California, and that regarding any treatments used in the certification of regulated articles, no liability shall be attached either to the California Department of Food and Agriculture (CDFA), Hawaii Department of Agriculture (HDA), to cooperating agencies, or to any of their employees in the event of injury to the property or the regulated articles; to handle, process, and move regulated articles in accordance with the provisions of applicable plant quarantines; to use all permits and certificates in accordance with instructions; to maintain and offer for inspection such records as may be required; to carry out all additional conditions, treatments, precautions, and sanitary measures which may be required by the inspector or stipulated by pertinent State or Federal regulations; and to hold both HDA and the CDFA harmless in their respective roles in carrying out this program because such program is a strictly voluntary alternative and an accommodation which is made available to me/us in lieu of requiring my/our compliance with standard California legal requirements for shipping out of state origin nursery stock into California.

1. This compliance agreement authorizes stock dealers to utilize a "HDA BRN Consolidation Declaration for Hawaii Nursery Stock Destined to California" (Appendix E) in lieu of a HDA phytosanitary certificate for each shipment of Hawaii origin plant material destined to California. All plant material purchased from a Hawaii nursery which is destined to California shall be certified by HDA as meeting California's and the federal government's laws regarding interstate movement. Only original documents properly stamped with both HDA and any other required certificates will be accepted by California. The stock dealer shall complete a consolidation shipping document (Appendix E) listing all of the plant material destined to California. The list shall be completed in the following manner: the type of plant material (exactly as certified), pot sizes, and amount of each type of plant material shipped; and lines must be drawn through any remaining blank portions of the document to prevent any unauthorized use. In case of handwritten consolidation shipping documents, the numbers of each type and pot size must be written numerically and spelled-out, i.e., 10 (ten).
2. All qualified plant material destined to California purchased from domestic sources other than those which were produced in Hawaii and properly certified by HDA, shall be recertified by HDA on a per shipment basis. HDA, with the exception of plant material which originates from California BRN regulated areas, shall be responsible for the inspection of such plant material and the verification of any accompanying quarantine certificates issued by an authorized agricultural official from the state of origin to ensure that the plant material would meet California quarantine requirements if shipped directly to California from the domestic origin. **General nursery stock certificates which accompany plant material shipments do not meet California's quarantine requirements and cannot be used as a basis for qualifying for California certification.** Non-Hawaii origin plant material originating from other California BRN regulated areas does not qualify for shipment to California.  
HDA shall recertify, using a HDA phytosanitary certificate, plant material destined to California not covered under this compliance agreement and meeting California entry requirements.
3. For consolidated shipments, each plant must be identifiable to the shipper.

4. Accurate records and logs of the number and types of plant material and the supplier of such plant material destined to California shall be maintained. This information shall be sent to HDA or CDFA upon demand during normal business hours or the firm may lose its authorization to ship.
5. Plant material destined to California shall meet California's burrowing and reniform nematode (BRN) certification requirements upon receipt by the stock dealer. Such plant material will not be accepted if there is any reason to believe it is not properly certified and accompanied by authorized original documents including a HDA BRN and any other required certificates.
6. To be properly certified for California delivery, the Hawaii supplying nursery's shipping documents (bill of lading, invoices, etc.) shall be completed in the following manner: list the type of plant material (exactly as certified), pot sizes, and amount of each type of plant material shipped; lines must be drawn through any remaining blank portions of the document to prevent improper use by any party; documents shall be accompanied by the supplying nursery's authorized HDA BRN certificate for California and any other required certificates. In case of handwritten shipping documents, the numbers of each type of plant material and pot size must be written numerically and spelled-out, i.e., 10 (ten).
7. The firm authorized to ship under this compliance agreement shall indicate that it is the shipper on all bills of lading accompanying plant material shipments to California, and shall accept only properly completed documents as described in item 6, and shall immediately report any party offering the firm unauthorized plant material for shipment to California.
8. All plant material destined to California shall be stored and segregated from all other plant materials at all times and placed on sterilized benches or supports which are at least 18 inches from the ground or floor level. Containerized plant material ten-inches or larger may be placed on an approved area.

The term approved area shall mean a production area approved by HDA which is modified by the implementation of propagation procedures and/or structures which enable the nursery stock to be grown in compliance with the BRN quarantine requirements. The following shall be required to become an approved area:

The surface of an approved area shall be (a) constructed of concrete or asphalt of a thickness which will prevent weeds and other plants from growing through it; (b) graded in a manner to ensure water drains away from the center toward the edges; and, (c) elevated in a manner to preclude contamination by native soil or surface water. Other areas may be approved if written authorization is obtained from CDFA, Permits and Regulations, Plant Health and Pest Prevention Services.

Only California approved plant material shall be placed on this surface. Plants shall not be placed within six feet of the edge of the surface, unless the surface is enclosed with an approved barrier. The containerized plants eligible for entry under the terms of this permit shall not be placed within six feet of other plant material not meeting all California quarantine requirements and shall be protected from nematode contamination prior to shipment.

Access to the surface shall be limited to essential personnel and equipment. Equipment, footwear, and clothing worn by personnel accessing the surface shall be clean. Personnel accessing the surface shall be properly trained in nematode sanitation procedures.

9. The area beneath the support system and the approved surface area shall be treated with a nematicide approved by HDA at six month intervals, except where smooth clean flooring of concrete is present or a six foot area surrounding the support system has been maintained free of all plant growth/vegetation for the preceding 12 months.
10. Plant materials destined to California shall not be treated with a nematicide.
11. This compliance agreement shall list the nurseries which are supplying plant material destined for California delivery. Supplying Hawaii nurseries and their BRN certification number must be listed as an addendum to this agreement. Therefore, only those nurseries which appear on this list are authorized to ship to California under this compliance agreement. Any change in nursery suppliers shall be made immediately known to CDFA (Pest Exclusion Branch via email [peinfo@cdfa.ca.gov](mailto:peinfo@cdfa.ca.gov)). This information shall remain confidential and disclosed, only if necessary, to HDA or other governmental regulatory agencies.
12. The HDA shall approve and periodically inspect all storage and holding facilities as a condition of this agreement.
13. The authorized shipper and the supplying nursery shall be held accountable for CDFA regulated nematode and other pest interceptions and shall be automatically suspended from shipping into California until a reasonable explanation is provided to HDA and accepted by CDFA from all involved parties.
14. The unauthorized use of any official certificate shall result in the suspension of this agreement until a satisfactory written explanation, verified under the penalty of perjury, is provided by the firm to the HDA, and accepted by CDFA.
15. The firm which signs this compliance agreement agrees not purchase Hawaii origin plant material for California delivery through third parties such as plant brokers, agents, stock dealers, etc.
16. The firm shall protect all certified plant material from contamination by CDFA regulated nematodes until shipped. California nematode certified and other non-California certified plant material are prohibited from being kept within six feet of each other at the stock dealers premises; non-certified and California certified plant material may not be commingled in any vehicle or trailer. Vehicles or carriers transporting California certified nursery stock shall be sealed after each loading by the nursery or stock dealer utilizing procedures and seals approved by HDA.
17. Any information pertinent to suspected violations of this agreement, or of California's laws regarding interstate movement of plant material, shall be immediately provided via telephone or fax and supported by a detailed written explanation within one week of the initial notification by CDFA.
18. The cost of any efforts, except routine quarantine inspections and sampling, required by CDFA to verify compliance; including any investigative, legal, court fees or other applicable costs, as determined by law, may become the responsibility of the owner/general manager whose signature appears on this agreement.

QC Permit No. 650  
September 15, 2022  
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A firm found violating any terms of this compliance agreement may be prosecuted to the fullest extent of all applicable laws.

Agreement No. \_\_\_\_\_ Date Agreement Valid \_\_\_\_\_

**The affixing of the signatures below will validate this agreement. It shall remain in effect until canceled by either party, revised as necessary, suspended, or revoked for noncompliance.**

\_\_\_\_\_  
Print Dealer/Business Name

\_\_\_\_\_  
Print Inspector Name

\_\_\_\_\_  
Signature Owner/General Manager

\_\_\_\_\_  
Signature Authorized Representative, HDA

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address

Hawaii Department of Agriculture  
1428 So. King Street  
Honolulu, Hawaii 96814-2512

\_\_\_\_\_  
Telephone Number



**Plant Broker or Agent Compliance Agreement**

I/we agree to the following: to use all permits and certificates in accordance with instructions; to maintain and offer for inspection such records as may be required; to carry out all additional conditions, and precautionary measures which may be required by the inspector or stipulated by pertinent State or Federal laws; and to hold both the Hawaii Department of Agriculture (HDA) and the California Department of Food and Agriculture (CDFA) harmless in their respective roles in carrying out this program because such program is a strictly voluntary alternative and an accommodation which is made available to me/us in lieu of requiring my/our compliance with standard California legal requirements for shipping out of state origin nursery stock into California.

1. This compliance agreement shall authorize a plant broker or agent which qualifies to utilize a "HDA BRN Consolidation Declaration for Hawaii Nursery Stock Destined to California" (Appendix E) in lieu of a HDA phytosanitary certificate for Hawaii origin plant material. All plant material destined for California via a plant broker or agent must be accompanied by a nursery's original shipping documents (bill of lading/invoice) properly completed and accompanied by the original producing nursery's California burrowing and reniform (BRN) nematode certificate number and federal certification number.
2. To be properly certified for California delivery, the Hawaii supplying nursery's shipping documents (bill of lading, invoices, etc.) shall be completed in the following manner: list the type of plant material (exactly as certified), pot sizes, and amount of each type of plant material shipped; the numbers for each type and pot size must be written numerically and alphabetically; lines must be drawn through any remaining blank portions of the document to prevent tampering; the documents shall be accompanied by the supplying nursery's qualifying HDA BRN and any other required certificates.
3. Further, the plant broker or agent shall complete a consolidation shipping document (Appendix E) listing all plant material destined to California as outlined in 2 above.
4. Plant brokers and agents must acknowledge that they are the shipper on all shipping documents which accompany the plant material to California.
5. Plant brokers or agents shall only ship to California the type and size of plant material supplied by a Hawaii nursery and certified by HDA for California delivery.
6. For consolidated shipments, each plant must be identifiable to the shipper.
7. Plant material certified for California shall, at no time, be commingled with other plant material which is not certified for California.
8. Any special reports which may be needed regarding apparent violations of this agreement or of California's laws and regulations regarding interstate movement of plant material shall be immediately provided via fax and followed with a detailed written explanation within one week of the initial notification of the apparent violation by CDFA.

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9. The cost of any efforts, except routine quarantine inspection and sampling, required by CDFA to verify compliance; including any investigative, legal, court fees or other applicable costs, as determined by law, may become the responsibility of the owner/general manager whose signature appears on this agreement.

Violations of the terms of this compliance agreement may be prosecuted to the fullest extent of all applicable laws.

Agreement No.  
(Registration No.)

Date Agreement Valid

\_\_\_\_\_

**The affixing of the signatures below will validate this agreement. It shall remain in effect until canceled by either party, revised as necessary, suspended, or revoked for noncompliance.**

\_\_\_\_\_

Print Broker/Agent Name

\_\_\_\_\_

Print Inspector Name

\_\_\_\_\_

Signature Owner/General Manager

\_\_\_\_\_

Signature Authorized Representative, HDA

\_\_\_\_\_

Date

\_\_\_\_\_

Date

\_\_\_\_\_

Address

Hawaii Department of Agriculture  
1428 So. King Street  
Honolulu, Hawaii 96814-2512

\_\_\_\_\_

Telephone Number

## APPENDIX D

### Approved CDFA Survey Methods

Survey methods for sampling plants, rooted or non-rooted cuttings nursery stock for detection of plant parasitic nematodes at origin nurseries.

Number of containerized plants for export per species	Minimum number of subsamples collected to comprise one composite sample <sup>1</sup>	Range of percentage sampled to comprise one composite sample
1-10	(Sample all plants) 1-10	(100%)
11-50	11	(100-22%)
51-100	22	(43-22%)
101-200	24	(24-12%)
201-300	26	(13-9%)
301-400	28	(9-7%)
401-500	32	(8-6%)
501-600	36	(7-6%)
601-800	36-40	(6-5%)
801-1,000	40-44	(5-4%)
1,001-5,000	44-200	(4%)
>10,000	400	(4%)

A composite sample should be at least 475-950 ml (1/2 to 1 quart by volume) of roots and soil. *(Collect approximately 5-100 g (5-100 ml by volume) of soil and roots from each plant/subsample.)*

#### Recommendations:

1. All plants for export to California under CDFA permit are considered potential hosts for Burrowing and Reniform Nematodes (BN and RN) and, therefore, must be sampled equally in accordance to CDFA's sampling protocol rooted plants or non-rooted cutting nursery stock. The CDFA does not recognize or prescribe to a prime host list for either nematode species as all nursery stock originating from "Areas Under Quarantine" (3271.8) are suspect for quarantine and actionable nematode pathogens
2. Rootless plant cuttings and plants with young roots for export can be internally infested with burrowing and/or reniform nematodes and must be sampled for the possible detection of those nematode species.

3. Sampling needs to be based on number of containerized plants per plant species according to CDFA's protocol for sampling nursery stock for nematodes.
4. Options for collecting composite samples are as follows:
  - a. Combine all varieties of the same species in a composite sample.
  - b. Combine container sizes of the same species in a composite sample.
  - c. Sample only those container sizes that are exported to California. Container sizes of plants not exported normally include, seeds, seedling trays, small containers, etc.
5. When 1 plant species is on multiple benches in a nursery, then 1 composite sample may comprise subsamples collected from all the benches, or a calculated number of subsamples for each bench may be composited to give 1 composited sample per species per bench.
6. If more than 1 plant is potted in a container, then the total number of plants in a container are to be treated collectively as 1 whole plant.

**APPENDIX E**

**Consolidation Declaration for Hawaii Nursery Stock Destined to California**

To be completed by stock dealer, plant broker or agent:

Shipper's Name and Address: \_\_\_\_\_

HDA Broker Certificate of Registration Number: \_\_\_\_\_

Consignee's Name and Address: \_\_\_\_\_

Quantity*	Nursery Stock (exactly as certified)	Size	BRN #

**TOTAL QUANTITY SHIPPED:**

\* In case of handwritten consolidation declarations, the numbers of each type and pot size must be written numerically and spelled-out, i.e., 10 (ten).

\_\_\_\_\_  
Owner/Manager's Signature  
Certification

\_\_\_\_\_  
Date

**APPENDIX F**

<b>Period of Permit:</b>		<b>Date of Audit:</b>		
<b>QC 650 Permit Compliance Checklist</b> <b>For use by HDA and/or participating firm and CDFA</b> <b>Auditor</b>				<b>Not applicable</b> <b>or comments</b>
		<b>YES</b>	<b>NO</b>	
<b>Entity Audited:</b>				
<b>Condition 1.</b>				
<b>1</b>	Do all the firms shipping under the permit have a compliance agreement with HDA?			
<b>2</b>	Do the shippers sign the compliance agreements before HDA authorizes the possession of an HDA Burrowing and Reniform (BRN) Certificate?			
<b>3</b>	Do nurseries participate in the program?			
<b>4</b>	Do stock dealers participate in the program?			
<b>5</b>	Do plant brokers participate in the program?			
<b>6</b>	Are the stock dealer and plant brokers, if any, registered with the HDA?			
<b>Condition 2.</b>				
<b>7</b>	Does HDA reassess and update the status of all Hawaii forms every 12 months?			
<b>Condition 3.</b>				
<b>8</b>	Does HDA ascertain that nurseries under same ownership with the same location or with a nearby location maintain separate inventories and certifications and do not share them?			
<b>Condition 4.</b>				
<b>9</b>	Do participants ever receive plant material from out-of-state (OS) and ship to CA?			
<b>10</b>	When plant material from "out-of-state" is received and rooted in a Hawaii nursery, is HDA sampling and testing plant material to determine it is free of regulated nematodes before shipment to CA?			
<b>11</b>	Has HDA sampled and tested any plant material originating out-of-state in order to qualify it for export to CA? Documentation?			

12	Are only "qualified plant materials" being shipped into CA?			
13	Are only "qualified plant materials" being certified for BRN?			
<b>Condition 5.</b>				
14	Does HDA provide to the CDFA the list of firms authorized to ship under the permit and identification numbers prior to the initiation of shipments?			
<b>Condition 6.</b>				
15	Does HDA provide to the CDFA a list of specific nursery stock, including genus, species, cultivar, pot size, etc., that each nursery is certified to ship to CA, prior to the initiation of shipments from that nursery?			
16	Is the list being properly maintained on the Hawaii website?			
17	Does the list include accurate contact phone numbers and physical addresses of the locations?			
<b>Condition 7.</b>				
18	Does HDA conduct annual review of the approved material list?			
19	Are the most recent Date Inventory Reviewed and latest Date of Nursery Inspection displayed for each nursery?			
20	Does HDA inspect all certified nursery facilities at least every 6 months?			
<b>Condition 8.</b>				
21	Does HDA inform the participating nurseries and stock dealers authorized to ship under this permit that nematicides may not be used to treat the plant material grown for CA delivery?			
<b>Condition 9.</b>				
22	Are plant/plant parts for shipment to California: i. Propagated from clean seed? ii. Propagated from tissue culture? iii. Propagated from cuttings taken at least 12 inches above ground level?			
23	Do participants purchase tissue culture plants? List tissue culture suppliers:			
24	Is such plant material being "stepped-up" to a finish product prior to shipment to CA?			

25	<p>Is soil or other planting media sterilized on site?  Describe procedure (temperature and duration), if known:</p> <ul style="list-style-type: none"> <li>i. Is sterilized soil/media purchased?</li> <li>ii. List suppliers:</li> <li>iii. Is sterilized soil/media stored in a designated area?</li> <li>iv. Are only new containers used in production?</li> <li>v. Are old containers reused in production?</li> <li>vi. Are old containers disinfected prior to each production?</li> </ul> <p>Describe procedure (disinfectant, concentration &amp; duration):</p>			
26	Was VAPAM used to sterilize volcanic cinders?			
27	Retained in sterilized pots, containers or beds?			
28	<ul style="list-style-type: none"> <li>i. Placed on sterilized benches or sterilized supports at least 18 inches from the ground or floor level?</li> <li>ii. Are benches and supports cleaned and disinfected regularly between productions?</li> <li>iii. Describe procedure (disinfectant, concentration &amp; duration):</li> </ul>			
29	Were plant materials that were propagated via the sanitation methods required in this agreement, "stepped up" to containers of 10" or greater?			
30	Is such stepped-up plant material placed in an elevated approved area?			
31	<ul style="list-style-type: none"> <li>i. Is the surface of approved areas constructed of concrete or asphalt of a thickness which will prevent weeds and other plants from growing through them?</li> <li>ii. Are weeds visible in production area (e.g., under benches)?</li> </ul>			
32	<ul style="list-style-type: none"> <li>i. Is the surface of approved areas graded in a manner to ensure water drains away from the center toward the edges?</li> <li>ii. Is there standing water in production area (e.g., under benches)?</li> <li>iii. Is the surface of approved areas elevated in such a manner to preclude contamination by native soil or surface water?</li> </ul>			
33	Does the approved area only have California approved plant material?			



34	When the surface area is NOT enclosed by a barrier, are plants being placed within six feet of the edge of the surface?			
35	Are containerized plants that are eligible for entry to CA, being placed within six feet other plants that do not meeting all of California's quarantine requirements?			
36	<p>i. Are plants that meet CA requirements for entry, being protected from nematode contamination prior to shipment? If yes, how?</p> <p>ii. Is cultivation equipment used in the certified greenhouses dedicated to that area?</p> <p>iii. Is outside equipment allowed in the greenhouse area?</p> <p>iv. Are plants for shipment to California watered regularly by:</p> <ul style="list-style-type: none"> <li>a. Ground hose?</li> <li>b. Drip?</li> <li>c. Overhead irrigation?</li> </ul> <p>v. Is there standing water on benches and supports?</p> <p>vi. Do benches and supports allow for irrigation water to drain through?</p> <p>vii. Are cultivation tools cleaned and disinfected between:</p> <ul style="list-style-type: none"> <li>a. Benches/supports?</li> <li>b. Plant species?</li> </ul> <p>viii. Are plant trimmings, diseased/unhealthy plants/plant parts, debris and waste removed and disposed of regularly?</p> <p>ix. Is there a designated area for disposal?</p> <p>x. Is disposal area near certified plant production site?</p>			
37	<p>i. Is access to the surface of the approved area limited to essential personnel?</p> <p>ii. Are customers allowed access into nurseries to pick up plants?</p>			
38	Are personnel accessing the approved surface area trained in nematode sanitation procedures and does their training stress the importance of using only clean equipment, footwear and clothing?			
39	Are areas, other than smooth clean concrete flooring, beneath benches or supports holding plants being treated at six-month intervals with a registered nematicide or other material having a nematicidal effect and approved by the HDA? Or did HDA verify that the area beneath the benches or supports were maintained free of plant/growth vegetation for the preceding 12 months?			
40	Is there understanding about the appropriate number of plants that must be sampled to form composite samples per Appendix D?			

41	Were plants and growing materials sampled using survey methods per Appendix D?			
42	As an alternative to the above listed sanitation requirements, did such alternative shipments only consist of domestically produced unrooted plant cuttings that were taken from that portion of the plant that was growing at least 12 inches above ground level and were protected from contamination until shipped?			
<b>Condition 10.</b>				
43	Did firms shipping under the permit, maintain accurate records of the numbers of pots, pot sizes, and type of plants shipped to California, and make such records available to HDA?			
<b>Condition 11.</b>				
44	Is the manager of firm authorized to ship under this permit in control of all pertinent documents?			
<b>Condition 12.</b>				
45	Do shipping documents list the type of plant material (exactly as certified), pot sizes, and the amount of each type of plant material shipped (in case of handwritten shipping documents: the numbers for each type and pot size written numerically and spelled-out, i.e. 10(ten); and with lines drawn through any remaining blank portions of the document?			
46	Are bill of ladings and/or invoices preprinted with sequential identification numbers?			
47	Do packages have a statement or stamp that states "OK for parcel inspection"?			
<b>Condition 13.</b>				
48	Is shipper maintaining proper chain of custody of documents for each certified shipment?			
<b>Condition 14.</b>				
49	Is the nursery only selling California certified plant material to stock dealers, plant brokers, agents, or other parties that are properly licensed or otherwise registered with the HDA for conducting such business under Hawaii Laws and Regulations?			
<b>Condition 15.</b>				

<b>50</b>	Were any shippers suspended in the last 12 months for shipments found to be infested with plant parasitic nematodes regulated by California?			
<b>51</b>	List suspended shippers and current status (months to reinstatement):			
<b>Condition 16.</b>				
<b>52</b>	Was CDFA notified of any suspensions implemented during the last 12 months by HDA?			
<b>Condition 17.</b>				
<b>53</b>	<p>Did HDA conduct ongoing education concerning the permit's provision during visits to firms authorized to ship under this permit?</p> <p>i. Did HDA document outreach efforts to demonstrate how they remain an active participant in administering this permit and conducting ongoing education to HDA and industry staff?</p> <p>ii. Did HDA conduct and document annual HDA staff training on processing nematode samples and basic plant parasitic nematode identification in the lab?</p>			
<p>This form may be completed by Hawaii Dept. of Ag to document compliance to the terms of QC650 permit.</p> <p>The form will be used by a CDFA representative to audit HDA and/or randomly selected, or targeted, participants in the QC 650 program.</p> <p>Any deficiencies found during the audit should be addressed in a formal auditor's report with timeframes and documentation requirements for proof of correction.</p>				

## Appendix G

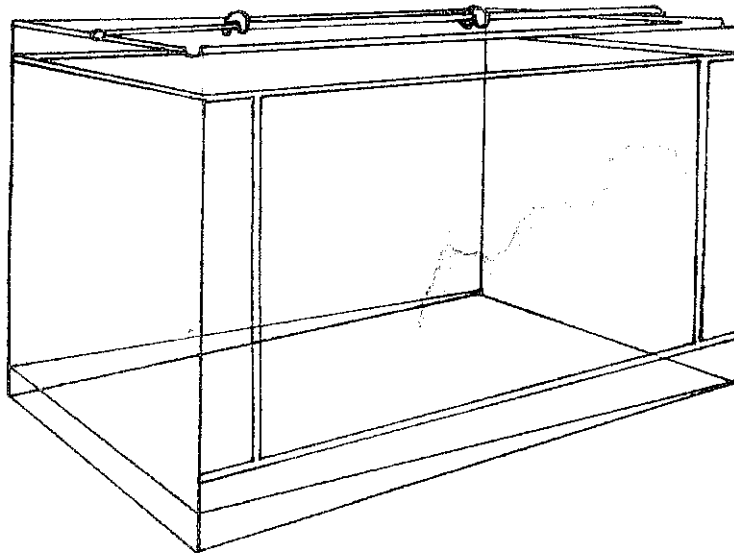
### Recommendations for the Hawaii Department of Agriculture Nematology Lab

1. To increase sample load capacities in the existing HDA Nematology Lab mist extraction chambers or units, CDFA suggests that the units are re-done to match the prescribed dimensions of the original design for a mist extraction unit. *[Original mist chamber dimensions are provided below. The plexiglass/solid walls were originally designed; the cabinet or inner chamber dimensions are essential.]* By doing this, the existing mist units will be able to hold 4 funnel support racks, instead of 3, and thereby increase the number of funnels (samples) to 6 additional ones, or totals of 24 funnels (samples) per unit, 144 funnels (samples) for 6 units and a total output of 288 funnels (samples) per week, which is 72 additional funnels (samples) per week over the current output of 216 samples per week. *[The CDFA Nematology Lab is able put 4 funnel support racks in its mist chambers built according to the original dimensions.]*
2. To increase efficiency of nematode extraction in the lab, CDFA suggests that roots are cut to about 1-in lengths prior to placement on a funnel apparatus in a mist extraction chamber or unit and only loosely packed in extension tubes, when use of the latter is necessary. This will prevent possible compaction of a sample within an extension tube by increasing aeration and a more even flow of water through a sample.

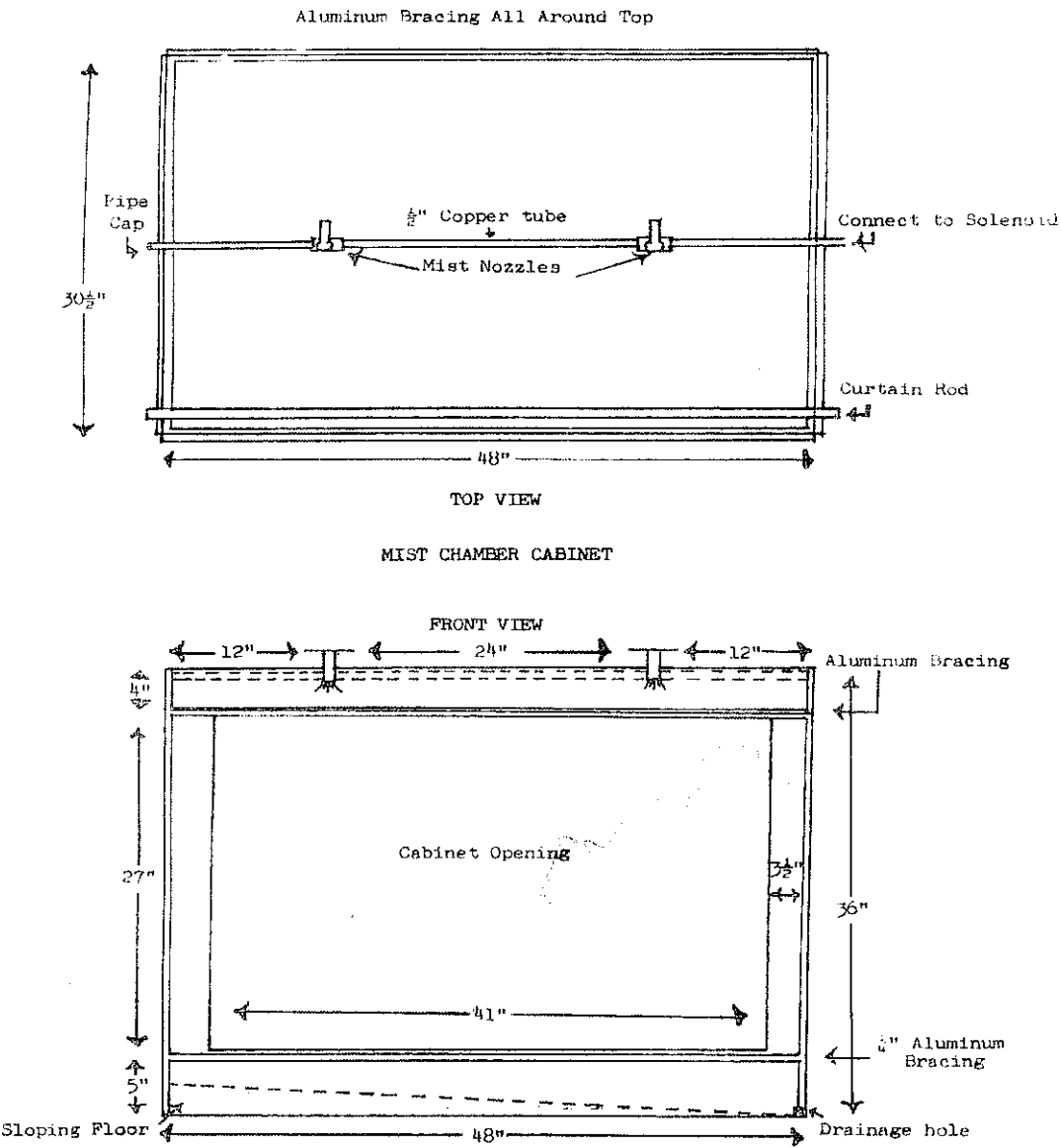
MIST CHAMBER CABINET

DESCRIPTION AND SPECIFICATIONS OF MATERIALS

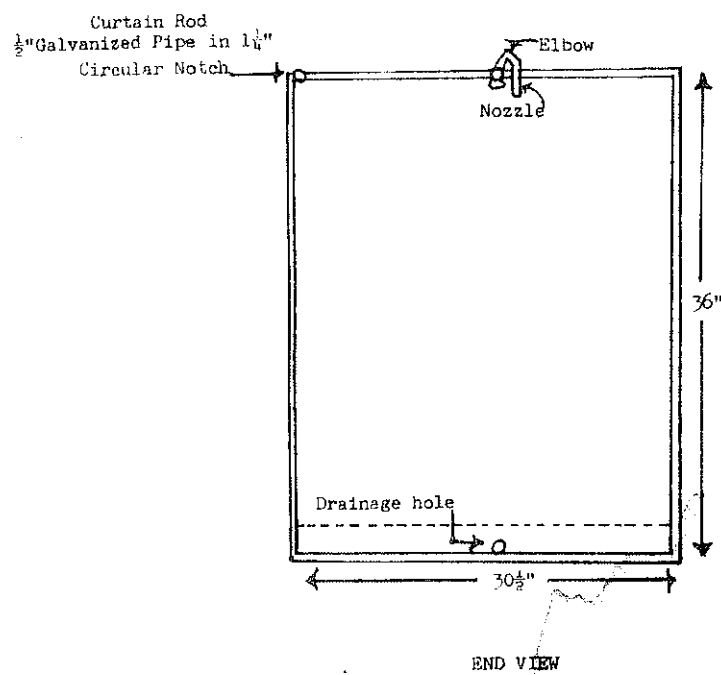
1. Construction of  $\frac{1}{4}$ " clear plexiglass laminated together with acrylic cement.
2. Aluminum braces are added to top edges and opening of cabinet.
3. Inside corners to be braced with triangular-shaped strips of plexiglass laminated with the chamber.
4. Suggested overall dimensions:  
Height: 36"  
Width: 30-1/2"  
Length: 48"  
Door Opening: 41" x 27"  
Slope of floor: 2-1/2" in 48" (necessary for drainage)
5. 1-1/4" circular notch cut from top-front corners of sides for curtain-rod support.

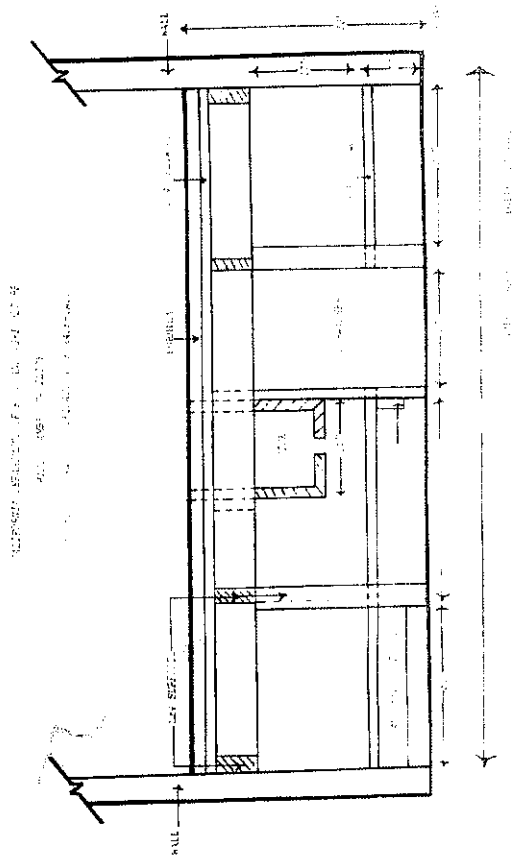
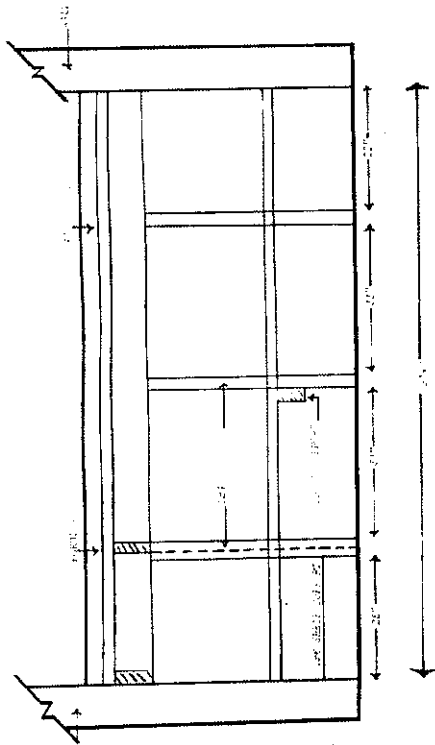


MIST CABINET  
GENERAL VIEW



MIST CHAMBER CABINET

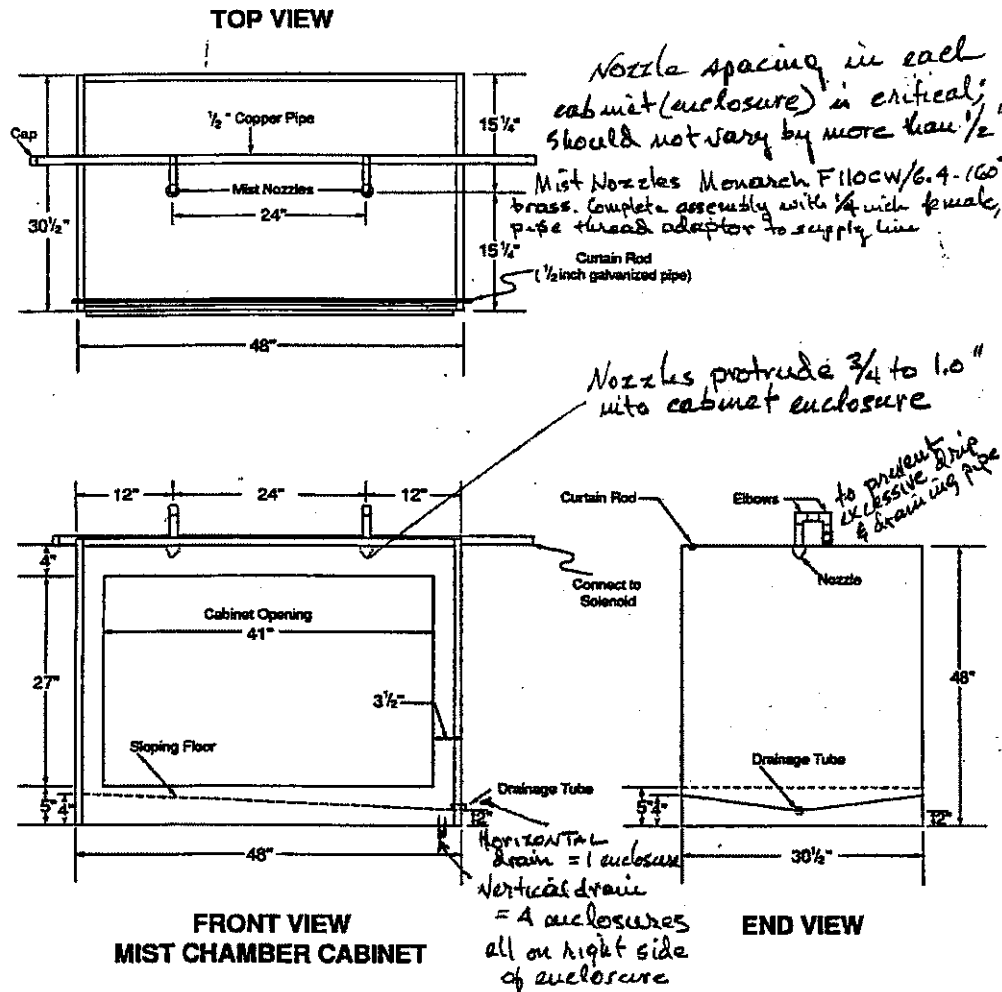






*Measurements are not exact for each enclosure*

FIG. 2



Modified after Ayoub, S. M. 1977.  
 Plant Nematology An Agricultural Training Aid.  
 State of California Department of Food and Agriculture.  
 Laboratory Services - Nematology. Sacramento, California.

# MIST EXTRACTION APPARATUS

