Best Management Practices to Eliminate Mosquito Breeding in Garden Centers and Plant Nurseries in California

Plants and mosquitoes both need water to grow, making nurseries and garden centers key partners with mosquito and vector control agencies to help reduce mosquitoes in local communities. Standing water can become a breeding site for mosquitoes. Recent studies have shown that large populations of mosquitoes can develop in water-holding plants and that the presence of these plants in a landscape increases the risk of disease transmission if a local outbreak of dengue, chikungunya, or Zika virus was to occur in the area. Implementing the following best management practices helps reduce mosquito breeding and prevents inadvertent movement of invasive mosquitoes.

GENERAL MOSQUITO REDUCTION PRINCIPLES FOR GARDEN CENTERS AND PLANT NURSERIES

- Prevent or eliminate unnecessary standing water that may remain for more than four days.
- Maintain irrigation systems to avoid excess water use and runoff into storm drains and other water conveyance and impounding features.
- Promptly repair leaks or damaged irrigation or drainage systems to prevent the formation of standing water.
- Inspect passive cooling systems to ensure standing water is drained or circulated every four days.
- Use pumps in water features, such as ponds and fountains, to circulate the water. If the feature does not have a pump, flush and replace the water every four days, or use a larvicide treatment or mosquito-eating fish (often available for free from your local mosquito and vector control district) in the feature to prevent mosquito production.
- Remove emergent vegetation from water features to prevent the development of mosquito refuge and other resources that promote breeding.
- Thin aquatic plants to ensure fish can access all areas of the feature, and to enhance their ability to capture larvae.
- Dispose of unwanted or unused containers. Store open containers upside down to prevent standing water, or place under cover, where rainfall and irrigation water will not fill the container.
- Inspect for the presence of mosquito larvae and if unable to control mosquito breeding, contact the local mosquito and vector control district for technical guidance or assistance.
- Provide safe access for the local mosquito and vector control district to monitor and treat mosquito breeding sources.

RECOMMENDATIONS FOR PREVENTION AND CONTROL OF MOSQUITO BREEDING IN WATER-HOLDING PLANTS

- Identify all plants that may hold water and store them in one area for ease of inspection and treatment.
- Inspect and drain water-holding plants every four days.
- Grow water-holding plants in one-gallon containers, or smaller, so they can be easily inverted to drain water.
- Flush all water-holding plants with clean water to wash away nutrients that mosquito larvae use for growth and development, and then invert the plant to drain any collected water.
- Remove water-holding plants from containers and displays that are too heavy or large to drain.

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WATER-HOLDING PLANTS (CONTINUED)

- Restrict planting water-holding plants in living walls and other plant displays that are unable to be drained every four days.
- Contract with a pest management company licensed to control public health pests in California if pesticide use to control mosquitoes is necessary.
- Provide guidance and educational information for customers who purchase water-holding plants and plants rooted in water on prevention and control of mosquito breeding as it relates to the plants purchased.

Bromeliad-Specific Information

- When possible, water bromeliads at the roots and keep the tanks and cups free of water.
- Keep any necessary standing water in tanks and cups of bromeliads clear, free of debris, and flushed frequently.
- Remove bromeliad flowers that that are decomposing in water-holding containers.
- Prevent bromeliads from propagating and growing into a dense mass, where inspections and control measures may become difficult or impossible to achieve.
- Avoid planting bromeliads in landscapes or other features unable to be manually inverted.

PREVENTION AND CONTROL OF MOSQUITO BREEDING IN PLANTS ROOTED IN WATER

- Root plants in perlite, plant gel, water storing crystals, or other mediums that restrict standing water available for mosquito growth and development.
- Ensure gels are not overly saturated resulting in basins of free water accessible to developing mosquitoes.
- Locate plants rooted in water, drain and scrub the container, and replace water with mediums that limit standing water.
- If mosquito eggs are present on the lucky bamboo stalks, they may need to be dipped in a pesticide effective at killing immature stages of mosquitoes. Advice on the pesticide can be provided by the local mosquito and vector control district.
- Lucky bamboo or similar products should only be sold growing in fine gravel or decomposed granite to prevent mosquito development.

INTEGRATED PEST MANAGEMENT PLAN FOR MOSQUITO PREVENTION AND CONTROL

- Develop an Integrated Pest Management (IPM) plan for mosquito management that includes routine inspections for standing water, guidelines for when mosquito control is needed, and ways to prevent mosquito breeding.
- Establish a pest control log for employees to report biting mosquitoes and other pests to ensure a timely response to all pest sightings.
- Train workers at least annually on the mosquito lifecycle, how to identify mosquito larvae and adults, and all aspects of the integrated pest management plan to prevent mosquito breeding at the facility.

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