






PALM TREATMENTS

Treatment	 Pros	 Cons	 Ideal For
Injection	<ul style="list-style-type: none">• No acre limit• Low off-target impacts	<ul style="list-style-type: none">• Slow and labor intensive• Expensive gear/start up cost• Must remove flowers to protect pollinators, not able to eat the fruit for a year• Hard to do as a homeowner - need training• Doesn't protect single palms, needs to be done on a large scale for it to be effective• Beetle needs to feed of the palm to die	High density planting where fruits and flowers are being trimmed regularly
Soil Drench	<ul style="list-style-type: none">• Fast• Low start up cost• Can easily be done by a home owner	<ul style="list-style-type: none">• Limited to ~96 vertical feet of palms per acre.• Can not be used near water, leaching to water and nearby plants• Must remove flowers to protect pollinators and not able to eat the fruit• Needs to be done on a large scale for it to be effective• Beetle needs to feed on the palm to die	Neighborhood treatment on shorter trees and few palms per acre
Crown spray	<ul style="list-style-type: none">• Immediate effect• Can detect beetles when they fall out of a palm on the same day as treatment• Low off target impacts if applied correctly• Organic options	<ul style="list-style-type: none">• Requires access to the crown of the palm, either by drone, lift truck or short palm• Residual activity may be short for many products (1-4 months)• Some pesticides are restricted use and need a certified applicator	Palms with signs of current feeding When you have regular access to the crown
Netting	<ul style="list-style-type: none">• Chemical free treatment• Creates a barrier• Can reduce damage and entangle beetles	<ul style="list-style-type: none">• Requires access to the crown• Needs to be repositioned every 2-4 months as new fronds emerges• Net with most effective hole size can not be sold or used in the water in Hawaii so needs to be ordered online	Properties that need to protect low numbers of palms. Short palms with easy access to crown
Sand	<ul style="list-style-type: none">• Chemical free treatment	<ul style="list-style-type: none">• No published efficacy studies• Requires regular reapplication as wind and rain likely to wash off sand.	



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Information and definitions

Chemical Treatments

Chemical treatments for controlling CRB populations primarily focus on killing beetles that feed on trees. Pesticides can be applied as foliar sprays, systemic injections, or systemic soil drench. Systemic pesticides require beetles to feed on palms to be effective. Some damage may still occur, but reducing the local CRB population can significantly mitigate it. It's ideal for most palms in the area to undergo treatment to maximize effectiveness.

TREES THAT HAVE BEEN TREATED WITH SYSTEMIC PESTICIDES (e.g. imidacloprid or acephate) NEED REGULAR TRIMMING OF FLOWERS TO PROTECT POLLINATORS AND THE FRUIT CANNOT BE CONSUMED UNTIL THE PRE-HARVEST INTERVAL OR REAPPLICATION INTERVAL HAS PASSED.

ALWAYS REFER TO THE PRODUCT LABEL WHEN APPLYING PESTICIDES. Misuse of pesticides is not only illegal but can be harmful to the environment and human health.

Injection

Injecting host plants with Imidacloprid and Acephate have shown promising results in reducing CRB populations when applied to most palms in the area. Treating a minority of palms in a neighborhood or region is unlikely to provide satisfactory protection because beetle populations will thrive from feeding on untreated trees nearby. Imidacloprid is predominantly used for injections because research at UH indicated that CRB were sensitive to this chemical.

Soil Drench

Imidacloprid drenches, like Merit 75 WSP, can be applied as a soil drench for systemic treatment of palms, though its field efficacy in this method hasn't been tested. Fully trimmed palms can be treated as "shrubs" per label instructions.

Crown Spray

Spraying the crown with pyrethrins or pyrethroids like cypermethrin and cyhalothrin effectively kills CRB in both lab and field settings. Some pesticides are labeled as "restricted use" and require application by certified applicators. Some have region specific application restrictions so check the label and consult with an extension agent or pesticide specialist if you are unsure. The chemical should be applied only to the base of fronds where they meet the heart of the palm near the spear and upper central crown area. Applications can also be made directly into CRB boreholes. Application to frond leaflets, emerged foliage, fruits, or flowers will have little effect on CRB and may increase off-target effects.

Physical Treatments

Netting

Netting can be used to entangle and exclude CRB from accessing the crown of trees, providing a chemical-free treatment option or additional protection when used with pesticides. It should have a 1 to 2-inch stretched hole size ($\frac{1}{2}$ -1" squares) and be placed at the base of fronds in the upper crown and near the spear. Netting works best in multiple layers and not stretched too tightly. This method is labor-intensive and requires repositioning every month or two as new fronds emerge. Note that netting less than 2" stretched hole size is illegal for fishing in Hawaii, is illegal to sell in the State, and should only be used for palm treatment. "§13-75-11 It is unlawful for any person to possess or use any drift gill net in the waters of the State," and "§13-75-10 (a) It shall be unlawful for any person to sell or to offer for sale any throw net with a mesh of less than two inches stretched mesh." (HAR 13-75)

Sand

Sand can be applied to the crown so that it sits between the bases of the fronds surrounding the spear. We have not tested the efficacy of this treatment in the field. Sand requires regular reapplication as it washes away and as new fronds grow out from the spear.