

Myoporum thrips by Robert Muraoka M.S., B.S.



If you own a Myoporum hedge, shrub or tree, then you have seen the curling galled-up foliage shown in the photo on the left. It is caused by an invasive species of thrips that was first observed in the U.S. in Orange County, 2005. Since then, it has infected most of the Myoporum plants throughout southern California.

Myoporum thrips are shiny, dark brown, sucking insects 2 to 2.5mm long (see photo below). The damage from this species is characterized by gall-like symptoms and curling of the new foliage. This thrips is host-specific to Myoporum and only feeds on the new growth. A few of them can usually be found on leaves near the growing tips, but the majority are hidden in the curled or folded leaves.



Myoporum was introduced to California decades ago because of its fast, hardy growth. It became popular and spread very quickly because it was easy to grow and relatively insect and disease free. Although it thrives in moist soils, most of the Myoporum in California are surviving on little

or no irrigation. Although this was a plus in thirsty southern California, it is stressful for the plants resulting in minimal growth. In the past, the slower growth was also a benefit, reducing maintenance cost in terms of trimming because the majority of Myoporum were planted as large screens or hedges.

This invasion of *Klambothrips myopori*, Myoporum thrips has changed that. Since drought stressed plants produce minimal foliage, it enables the Myoporum thrips to attack virtually every new leaf. The plant's photosynthetic capacity is slowly reduced as the older leaves are eventually shed. This combined with drought stress and continued shearing can overtime lead to death.

What to do? There are several options available depending on the aesthetic importance of the individual plant, tree or hedge:

Care, Culture & Treatment

Irrigation: The most important thing is to create the best cultural conditions possible. If your plant is struggling under poor growing conditions and producing little or no new foliage, insecticide treatments will be of little help. In most cases you will have little or control no over soil type and exposure; however in most cases you can control irrigation.

In order to increase foliage production Myoporum should be watered adequately and appropriately. This means when you water your established plants, the entire area underneath the canopy and beyond an additional 10 to 25% should be wet twelve to eighteen inches deep.

How often your plants will need water is determined by soil type, their size and density, exposure and time of year. For younger plantings you can allow the soil to dry two to three inches deep, for established plants four to six inches deep. On average they could need water during the summer every two to four weeks. A good rule of thumb is the more foliage your plants have, the more water they will require.

How long the system will need to run is determined by its precipitation rate. Low volume mini-sprinklers will need to run for hours, whereas high-volume sprinklers may produce run-off within minutes. In most cases hand-watering will be impractical. It is deceiving how long it takes to wet soil to the needed depth.

If you have a low volume mini-sprinkler system, run it for a set time of two hours. Then with a trowel or shovel check to see how deep the water penetrated. If the soil is wet two inches deep; the system should be programmed to run for at least twelve hours. We arrive at twelve hours by taking twelve inches the minimum target depth and dividing it by two inches the measured depth, which equals six. Multiply the actual run time of two hours times six. This equals twelve hours or the time needed to reach the target depth.

Drip systems with a single spot emitter next to the base of established plants are not adequate and can create conditions favorable for crown disease. This type of system can be refitted in a grid pattern so the wet area each emitter produces coalesces or with a mini-sprinkler system for better coverage.

In many cases, high volume spray systems cannot run long enough to reach the desired depth before runoff occurs. If runoff occurs in fifteen minutes for example; turn off the system and check the depth of penetration. If the soil is wet three inches deep, you will need to program at least three additional start times to reach the desired depth. Most controllers feature multiple start times for this reason.

Any type of sprinkler system needs to be occasionally checked. Branches will grow deflecting spray patterns, drip emitters can clog and mini-sprinklers are often leaning, broken or knocked over. If there is no irrigation system watering your Myoporum and you cannot install an automated system, a soaker hose is the best hand method. Whether your Myoporum is being watered by hand, soaker hose, drip, mini-sprinkler or spray system is not important as long as the entire root zone is being evenly watered.

Fertilizer: In most cases Myoporum does not need to be fertilized. In the past stimulating growth with fertilizer on hedge Myoporum would increase maintenance costs. However if your Myoporum has never been fertilized, it may benefit from a good feeding to stimulate growth. Even without insecticide treatments, an actively growing plant may produce enough foliage so that some leaves can mature without being damaged.

You can use any type of general purpose fertilizer however lawn fertilizers with their higher nitrogen content are usually the most cost effective. Organic or low analysis fertilizers are very good but they will require more fertilizer per plant. With high nitrogen lawn foods such as Turf Supreme 16-8-4, expect to use up to ½ pound per inch of diameter of trunk. All fertilizers should be spread evenly under the canopy and out just beyond the drip-line of the plant. Where possible, cultivate the fertilizer into the top inch or two of soil. In all cases the fertilizer should be thoroughly watered in. If it cannot be watered in, wait until the fall before the first significant rainfall to apply.

An annual feeding as previously described would be generous. To stimulate new growth, a single feeding every year or two is ample, for maintenance every four or five years is adequate.

Mulching: All plants can benefit from mulch. It helps conserve water, prevent weeds, adds organic matter to the soil and even suppresses some disease organisms. Whether home generated or purchased commercially, a 4 to 6 inch layer of coarse mulch under the canopy of your Myoporum and just out beyond the drip-line will improve the cultural environment. Note: When adding mulch, do not pile it up around the base of the plant; leave an air gap of at least six to twelve inches around the trunk.

Insecticides: Even though Myoporum thrips is a new pest to this country, there has already been a treatment study done. In 2006, Bethke and Shaw of U.C. Cooperative Extension in San Diego trialed one restricted material and two over-the-counter insecticides. Spinosad (Conserve) and Imidacloprid (Merit) are available for retail purchase and both of these insecticides significantly reduced the number of thrips with two fall treatments, applied two weeks apart.

Conserve (Spinosad) is a Naturalyte* insect control product derived from the fermentation of *Saccharopolyspora spinosa*. One advantage for using Conserve; it is less damaging to Minute Pirate Bug, a natural predator of thrips. The mixing rate for Conserve is 3.3 tsp. per 5 gallons of water, complete coverage is required.

Merit (Imidacloprid) is a synthetic, "Caution" labeled insecticide, which is the lowest relative toxicity category. It is packaged in many formulations however the Merit 75 WP can be purchased in a 2 oz. container or a 4 x 1.6 oz. bag. The mixing rate for Merit 75 WP as a foliar spray is ½ tsp. per 5 gallons of water, complete coverage is required.

Although it was used in the trial as a foliar spray only, Merit 75WP can also be applied as a soil drench. The advantage to soil drench is a single application can last for the entire growing season. It does not require measuring minute amounts or the specialized equipment needed for foliar spray.

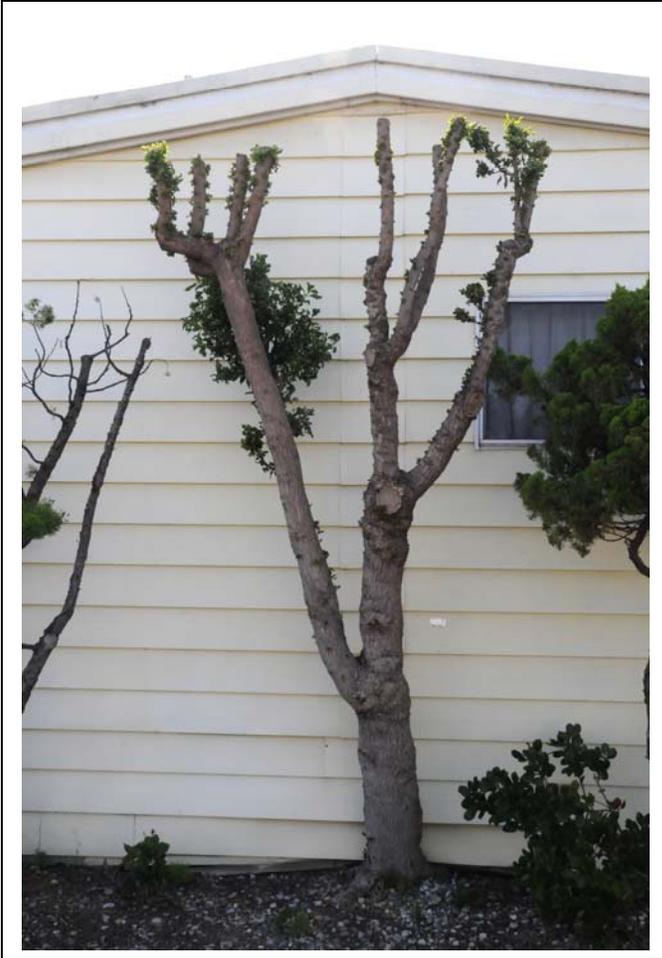
It is important to understand that insecticides will not "cure" or permanently eliminate the problem. Rather, if insecticides are properly applied to an otherwise healthy plant, they will create an opportunity for the *Myoporum* to develop and "harden" foliage free of thrips damage. If enough new foliage develops during this window of opportunity, it will help maintain the plants overall health and aesthetic appeal. Keep in mind your plants will be re-infested and they will develop the same symptoms. This means whatever insecticide treatment you choose will be ongoing or at least an annual process.

There are many variables that determine how effective an insecticide treatment or treatments will be. The first is to read the label. Using the recommended rate and getting good coverage is imperative. *Myoporum*, especially large screens or hedges can be difficult to spray. Some insecticides will kill only exposed thrips; all foliar insecticides require full coverage. Hedges that define property lines will require cooperation, permission or a joint effort from neighbors to treat both sides.

Merit 75WP is an expensive insecticide and you may be tempted to "stretch" the product. If it is applied as a soil drench, it must be applied at the recommended rate. It must be watered in and the entire root zone must be kept moist for seven to ten days. If the root zone cannot be kept moist, this insecticide should not be applied.

How often insecticides will need to be applied is determined by in part the insecticide, the method of application and your level of tolerance to the aesthetic damage. Bethke and Shaw's study showed for significant reduction, at least two foliar insecticide treatments two weeks apart are necessary for significant reduction. This does not mean total elimination, nor is complete eradication possible or needed. *Myoporum* can tolerate a significant number of thrips. Treatment before the thrips population becomes too heavy is recommended, but if the majority of new foliage is infested or the appearance becomes unacceptable, then treatment will be necessary.

Other potential insecticides: Malathion, Tempo, Orthene, Insecticidal Soap, Horticultural Oil are some examples of other insecticides registered for use on thrips. It is not guaranteed they will work on this particular species but in our pesticide application business for example we have used Orthene with good results. If you are planning to treat your Myoporum and already have any of these or other insecticides registered for use on thrips, I would recommend using them first before buying Spinosad or Imidacloprid. Insecticidal Soap and Horticultural Oils have the lowest relative toxicity of this group and we have found there to be a synergism when they are combined in the same tank.



Pruning: If feasible, a light trimming removing only the curled or galled foliage before spraying can be beneficial. The majority of thrips protected by the curled foliage will die when detached from the plant thus reducing their population. It will also expose the surviving thrips while improving spray coverage.

If you decide to prune your Myoporum back, it is best to preserve as much healthy, functioning foliage as possible. Pruning is a stressful event for plants. It creates wounds that can be infection sites for disease and reduces the plants photosynthetic capacity. Robust and otherwise healthy Myoporum can tolerate severe pruning. However plants that are severely stressed or producing very little foliage may not. Furthermore the slow recovery and limited growth allows thrips to damage all of the new

foliage damaging the plants even further. In the photo above is an example of a plant that was over pruned. The recovery is slow and all of the new foliage has been infested.

Replacement: If treatment measures and good cultural practices are impractical or too expensive, the Myoporum may eventually need to be replaced. Or if your Myoporum has a lot of dead wood, few functioning leaves and little or stunted new growth; it is probably weakened to the point where its chances of recovery are doubtful even if the conditions are improved. In these cases it may be necessary to replace the planting with a different genus. Some possibilities are Arbutus, Callistemon, Dodonaea, Eleagnus, Heteromeles,

Juniperus, Ligustrum Pittosporum, Podocarpus, Prunus, Rhamnus, Viburnum and Xylosma all have species that can be used as screens or hedges similar in size to Myoporum. For other possibilities in your area, consult your local nursery or garden center.

Predators or beneficial insects: There is a native predator called Minute Pirate Bug that has been commonly seen feeding on this species of thrips. Unfortunately they are not feeding in numbers that significantly reduce the damage. In the future there may be other beneficial insects introduced, resistant cultivars developed or other strategies for control but don't hold your breath, they may be years away.



The Myoporum hedge in this photo has not been treated with any insecticides and it is not under irrigation. While the plants on both sides of the healthy specimen are heavily infested with Myoporum thrips, the healthy plant in the center is free of insect damage. Selection and propagation of specimens such as these holds promise for the future development of a resistant cultivar.

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