

# Soil Drench with Merit 75 WSP

Before application, ensure that the following criteria are met:

1. The landowner has given consent for treatment.
2. The trees have been trimmed of all blooming flowers and pollinators are not actively foraging on the plants to be treated.
3. No application site is within 10 feet of aquatic areas (ponds, lakes, streams, creeks, etc.)
4. Review any previous applications to ensure that no more than 0.4 lb (1.6 pints) active ingredient (imidacloprid) per acre, per year, regardless of formulation or method of application, will be applied. This is equivalent to 4 packets of Merit 75 WSP.

## Define treatment acres:

Ensure that you are not applying more than 0.4 pounds of imidacloprid (equivalent to 96 feet of tree height or 1 envelope [4 water soluble packets] of Merit 75 WSP) per acre by soil drench.

## Dosage:

“1.6 oz (1 packet) MERIT 75 WSP Insecticide per 24 inches of cumulative trunk diameter or 24 feet of cumulative shrub height”

- Each packet can treat 24 vertical feet of palms (e.g. four 6 foot tall palms).

## Application volume:

The amount of imidacloprid applied is based on tree height but the application volume (amount of water used) is determined by the area of soil to be treated. The label lists a minimum of 10 gallons for each 1000 square feet of application area. Observe the root zone of the palm and determine what the optimum treatment area is that will result in good coverage of the root zone measuring a diameter centered on the palm. Factors to consider are the size of the trunk, the extent of the roots, the soil type and predicted uptake speed, and existing barriers to soil uptake (like weed mat, paving, or soil berms), and presence of a pot. Consult the table below to find the dilution volume based on the diameter of a circular treatment area. To calculate other treatment areas use a minimum of 45.5ml per 1 square foot. For pots, use the diameter on the table that is close to the diameter of the pot or calculate the area (1.28 ounces [37.85ml] of water per 1 square foot of treated soil).

Table 1. Minimum dilution volume per circular treatment area.

Application zone		minimum H2O volume	
diameter (ft)	area (sf)	gallons	ml
1	1.57	0.02	71.5
2	3.14	0.04	143
3	6.28	0.08	286
4	12.57	0.15	572
5	15.7	0.19	714
6	28.27	0.28	1285

## Mixing:

Mixing should be done on the same day as application.

1. Put on all PPE. This includes chemical resistant gloves, long pants and long-sleeved shirt, shoes, and socks.
2. Lay out the materials in your mixing zone. You will need
  - Merit 75 WSP
  - a concentrate dilution container of at least 800ml
  - one or more dilution bottles
  - water for dilution
  - a spill kit
  - separate water for cleanup and safety rinsing
3. Add 800ml of water to the concentrate bottle for each water soluble packet you are preparing.
4. Open one of the envelopes and remove one to four water soluble packets full of powder.
5. Do not open the packets. Add the entire 1.6 ounce packet of Merit 75 WSP to the concentrate bottle.
6. Close tightly, shake periodically over 3-4 minutes until the bag(s) and powder have dissolved. This concentrate will be used to mix several dilutions.
7. In a secondary dilution bottle, dispense 33.3 ml of concentrate per 1 foot of palm height (100ml/3ft).
8. Add water to the secondary dilution bottle according to the treatment area per the “**application volume**” above.
9. Close the dilution bottle well and shake vigorously until mixed.
10. This dilution is ready to treat one tree of the specified height.
11. Use the concentrate made in step 6 to mix more dilutions as needed (steps 7-10).

## Application:

1. Once at the treatment site, inform any people present that you will be doing applications and they should not touch the treated soil until dry.
2. Put on all PPE. This includes chemical resistant gloves, eye protection, long pants and long-sleeved shirt, shoes, and socks.
3. For each palm, expose the soil near the trunk to ensure that the drench will soak into the soil and not run off. This may require making small walls of soil or digging a shallow hole or trough near the root mass. Avoid breaking roots but try to expose moist soil that will take up the mixture well.
4. Pour the dilution into the soil and wait for the liquid to soak into the soil.
5. Cover the treated soil surface with untreated soil if possible.

## Tree selection:

If you cannot treat all the trees on an acre due to per acre chemical limit, you must select which trees to treat.

Prioritize trees based on the following factors in this order:

- **Damage:** More heavily damaged trees are a priority unless they are so damaged that you think that they might die soon. We assume that CRB will continue to feed on trees that they have fed on before. However, very heavily damaged trees may lack the transpiration necessary to get the chemical into the leaves.
- **Size:** We can treat a greater number of trees if we treat small trees. More treated trees provides a greater chance of killing a CRB.
- **Soil/site:** We want to maximize the uptake of the drench chemical so we want to avoid impermeable soils and land topology prone to runoff.
- **Proximity to flowering plants:** Drenches can run off to nearby soil and affect other plants. Select palms that are farther away from flowering plants.

If the total feet of trees to treat does not match the amount prepared, you will have to under-treat one tree. One packet is the minimum amount that can be prepared. This treats 24 feet of palms but you won't always have a multiple of 24 feet of palms to treat. Don't prepare more chemical than you have trees. Instead, completely treat as many trees as you can and apply the remainder to a tree as close to the remainder size as you can.

Example: You have 40 feet of trees in one acre (6', 8', 12', 14'). This is not enough to mix 2 packets (48 feet of trees). If we had trees in other acres to treat, we could mix 2 packets and use the rest on the other acreage. We do not have trees in other acres to treat in this example. One packet can treat 24 feet of palms but no combination of tree heights equals 24 feet. We can only do complete treatments on 2 trees. We decide to treat the 12' and 8' tree completely which leaves us with enough chemical to treat 4' of tree. We apply the remaining chemical to the 6' tree. If we treated the 14' and 8', we would have enough remaining chemical to treat 2' of tree. This is acceptable but in the first scenario the remainder treatment is closer to a complete treatment.

## Mixing a single dilution for multiple trees

When treating several trees of a similar size and the same treatment area for each tree, a single dilution can be done and different volumes applied to each tree based on height.

The table below provides dilution volumes and the number of ml to apply per foot of tree based on the treatment diameter and smallest palm height. The dilution volumes in this table are for one water soluble packet which can treat 24' of palms.

To use this table:

1. Identify palms to treat within one acre with a combined height of at least 24, 48, 72, or 96 feet.
2. Identify what treatment diameter (soil area) will work for all palms that you will treat.
3. Find the smallest palm height on the left of the table and the treatment diameter on the top and use this to find your Dilution volume and ml/ft.
4. Multiply the Dilution volume by 2, 3, or 4 if you are applying to 48, 72, or 96 feet of palms respectively.
5. Dissolve the water soluble packet(s) in the dilution volume of water.
6. For each tree multiply the ml/ft \* height of the tree to get the ml to apply.
7. Follow the procedures in the "application" section above to apply.

Dilution and treatment volumes for 24' of palms  
(one water soluble packet).

		Treatment Diameter (feet)							
		1		2		3		4	
		Dil. Vol.	ml/ft	Dil. Vol.	ml/ft	Dil. Vol.	ml/ft	Dil. Vol.	ml/ft
Smallest palm (feet)	3	572	23.8	1144	47.7	2288	95.3	4576	190.7
	4	429	17.9	858	35.8	1716	71.5	3432	143.0
	5	343	14.3	686	28.6	1373	57.2	2746	114.4
	6	286	11.9	572	23.8	1144	47.7	2288	95.3
	7	245	10.2	490	20.4	981	40.9	1961	81.7
	8	215	8.9	429	17.9	858	35.8	1716	71.5
	9	191	7.9	381	15.9	763	31.8	1525	63.6
	10	172	7.2	343	14.3	686	28.6	1373	57.2
	11	156	6.5	312	13.0	624	26.0	1248	52.0
	12	143	6.0	286	11.9	572	23.8	1144	47.7
	13	132	5.5	264	11.0	528	22.0	1056	44.0
	14	123	5.1	245	10.2	490	20.4	981	40.9
	15	114	4.8	229	9.5	458	19.1	915	38.1
	16	107	4.5	215	8.9	429	17.9	858	35.8

For 48', 72', or 96' of palms; multiply Dilution volume by 2, 3, or 4 respectively and add that number of water soluble packets to the dilution volume. Treatment volumes per foot of palm (ml/ft) remain unchanged when scaling up.

Example: There are 9 trees in an acre for treatment totaling 55 feet in height (5', 5', 5', 5', 6', 7', 7', 7', 8'). You decide that you can treat eight (out of 9) of them using a single dilution because they are similar in size and their height totals 48', a multiple of 24. They are 5-8 feet tall and are 48' in combined height. The smallest is 5' tall and each of the trees can be treated in a 3' diameter soil treatment area.

Referencing the chart for the smallest tree (5') and 3 foot treatment diameter, we see a dilution volume of 1373ml and treatment volume of 57.2 ml/ foot of tree. Since we are treating 48' of palms (2 water soluble packets) we use 1373ml to dissolve each packet so we dissolve 2 packets in 2746 ml. Once dissolved, we use 57.2ml for each foot of palm height. So, our smallest 5' tree gets 286 ml ( $57.2\text{ml/ft} * 5' \text{ height} = 286\text{ml}$ ) which is the minimum treatment volume by the label.