



PSHB.co.za



SHOT HOLE BORER “WHAT TO DO” GUIDE

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Summary:

People need practical information on what to do about the Polyphagous Shot Hole Borer (PSHB) beetle.

- They want to know how to save their infested trees, and how to prevent infestation in their healthy trees.
- There is no single solution, and a successful treatment and prevention regime will incorporate multiple strategies and products, repeated over years.
- Consider all available options apply critical thinking, specialists among us are developing creative solutions - inquire at your nursery about available products.

PSHB is a new invasive pest in South Africa and currently no chemical products are registered for use against PSHB. As a private individual you have the prerogative to evaluate existing chemical products and use them in accordance with their registered instructions.

- Carefully consider the impact of poisons that are applied directly to your garden. Injection of poison into the tree is the optimal delivery mechanism - it specifically targets your tree, without affecting the surrounding environment.
- Remember, poisons applied directly to the soil can affect your pets, the soil and other plants and the groundwater.
- Spraying of poison is useless unless it contains a surfactant that can penetrate bark. Poisons applied in this way should be applied to the trunk only to limit contamination of the surrounding environment.

SHOT HOLE BORER 101

Polyphageous Shot Hole Borer (PSHB) is an ambrosia beetle that attacks living trees. The beetle creates tunnels, deep within the tree, where it breeds and eats fusarium fungus. The fungus spreads outwards from the tunnels into the tree, blocking the trees' vascular system. The tree branches begin to dry up, they lose their leaves and with time the tree may die.

HOW DO I KNOW IF MY TREE HAS BEEN ATTACKED?

Signs of infestation are sawdust collecting on the bark and around the base of the tree. For certain tree species, there may be oozing of liquid and gum from the beetle holes.

This is what your infested tree might look like: [PSHB.co.za/pshb-tree-identification/](https://pshb.co.za/pshb-tree-identification/)

View the nasty little beetle here: [PSHB.co.za/pshb-beetle-identification/](https://pshb.co.za/pshb-beetle-identification/)

WHAT DETERMINES IF MY TREES WILL BE ATTACKED?

The reality is that every tree in your garden could be attacked by PSHB, however not every tree will provide an ideal ecosystem for the beetle to thrive and breed. One heavily infested tree can contain over 100,000 beetles, and the females can fly up to 1 km. Yet, most beetles will simply fly to the surrounding trees, selecting trees that suit their taste, or attacking the first tree they happen to land on.

To stem the crisis, a heavily infested tree needs to be urgently treated or removed, as the sheer quantity of beetles in each tree means the infestation easily spreads. Trees that have been killed by the beetle need to be responsibly removed and the wood treated, as the tree will continue to be a breeding ground for the beetle, for up to a year after it has died.

WHAT CAN YOU DO TO SAVE YOUR TREE?

STEP #1 - Boost the health of all your trees

A stressed tree suffers from a diminished immune system, which can inhibit its capability to resist insect attack. Boost your tree’s natural defence by:

- Build up mulch around the base of your tree
- Provide additional water if your trees are suffering during a drought
- Add bio-stimulants (synthetic or, preferably, natural products and composts) to the soil around the tree that will boost its health.
- Introduce micro-biomes and trichoderma to the soil around your tree to increase its quality.

A local nursery will be able to provide information on all of the above options.

STEP #2 – Apply reactive treatment to your trees that have already been attacked

Your tree will not die quickly or easily – however it can die under your watch if you are not monitoring it. As the PSHB beetle lives inside the wood, and is so small, it is unlikely to be noticed crawling on the bark, even in the most heavily infested tree.

The following points on treatment must be noted:

- Repeated treatment will likely need to be applied annually or every 6 months
- Some treatments and chemicals are harmful to trees and, if applied too often, may damage or kill the tree, as well as the surrounding ecosystem.
- Insects develop tolerance and resistance to chemicals, and as such a structured program for rotating treatments needs to be conducted over time.
- Use the Tree Survey Record Sheet at the end of this guide to document the health of your tree and to keep track of treatments that have been planned and that have been applied.

Do you need help from a service provider in your area who knows how to treat shot hole borer? PSHB.co.za/service-provider/

If you are managing a large number of trees, for example on an estate, we have a forestry management solution that can help improve your results, and reduce your annual tree treatment costs: PSHB.co.za/forestry-management/

STEP #3 – Notify your neighbours and create awareness

A tree in a garden next door may be host to hundreds of thousands of shot hole borer beetles. Beetles fly in search of new host trees, potentially in your garden. So it's vital to spread the word within your community. Make use of social media to ensure that the local authorities, friends, family, neighbours and colleagues are aware of the problem.

Some actions you can take are to find out what your municipality, and City Parks, are doing about the problem. Insist on the prompt and proper removal of dead street trees, and ensure that the wood is being responsibly destroyed so that the beetle does not spread further.

Contact your residents association and inquire if they are aware of the problem.

The risk to healthy trees from those already infested is very high. Therefore knowing which trees are infested is important information to share. This knowledge will enable others to take preventative action to safeguard their trees.

Report the PSHB infestation using the Tree Survey app. The location of the infestation is used to inform local and national institutions about the severity of the PSHB crisis. Download the app from Google Play or iTunes. Here is the user guide to show you how to report an infested tree: [TreeSurvey.co.za/how-to-guide/](https://treesurvey.co.za/how-to-guide/)

As knowledge of the crisis in South Africa develops, mapping the infestation within our urban areas is becoming more accurate. Yet there are gaps in the data. You can help to spread the word so that local residents know how to report infested trees, and mapped within our national PSHB database: [TreeSurvey.co.za/gis-reports/](https://treesurvey.co.za/gis-reports/)

TREATMENT DELIVERY OPTIONS

Effective treatment against PSHB requires both Insecticides and Fungicides getting into infected trees. There are several options for doing this:

TREE INJECTION

- **Pros:** Active ingredients are delivered into the tree and are distributed by the tree via vascular flow. This has the least adverse impact on the ecosystem and surrounding environment. It is the most effective means to deliver treatment into the tree.
- **Con:** Specialised equipment is required

SOIL DRENCH

- **Pros:** No specialised equipment is required
- **Cons:** Poison is exposed to the environment, and it absorbed by all plants and animals in the vicinity; Poor results have been experienced with PSHB; Pollution of ground water

IRRIGATION PIPES

- **Pros:** Chemicals are applied beneath the surface of the soil which reduces potential contact with animals. Repeat application treatment can be applied via the established infrastructure.
- **Cons:** Preliminary ground work is required to lay the irrigation pipes around the tree.

BARK PENETRATING AGENT (SURFACTANT)

- **Pros:** Can limit spraying to the trunk only (instead of the entire tree crown)
- **Cons:** Limited local products availability. Poisons that are mixed with surfactant is exposed to the environment, and it can be absorbed by all plants and animals in the vicinity

PASTE APPLICATION

- **Pros:** Extended localised release
- **Cons:** Not readily available for purchase

WHAT CAN BE USED TO TREAT SHOT HOLE BORER?

This "WHAT TO DO" guide serves as a practical guideline on the options that are available for private residents to treat their own trees. This guide does not endorse any specific products, nor does it represent an easy solution to the PSHB crisis South Africa is currently experiencing.

READ THE TREATMENT DISCLAIMER AND LEGAL DISCLAIMER AT THE END OF THIS GUIDE

Be aware that there is no proven solution to PSHB infestation, and recognise that you need to adopt various approaches to treat the beetle. Take note that some treatments can harm the environment and your trees. Repeated use of some chemicals can negatively affect your trees, and some poisons should not be released directly into the ground or air - injection is the safest and most effective delivery mechanism.

Currently there are no chemicals products registered for treatment against PSHB in South Africa. Chemical formulations with specific active ingredients have been shown to be effective in US trials, no recommendation is made to use them – **local chemical companies need to register their own formulations for use against PSHB under Act 36.**

Common sense needs to be combined with practical experience. We recommend that you contact your local nursery and inquire about available products, or buy specialist PSHB products and treatment services directly from TreeTreatment.co.za

Create a list of all of your trees using the Tree Survey Record Sheet at the end of this guide and give each tree a visual inspection. Keep a dated record of treatments that you have applied. This will help you to rotate products for future treatments, to prevent PSHB developing resistance.

MY TREE IS DEAD - WHAT MUST I DO?

Most people will notice that a problem exists when a tree in their garden dies - they may initially think this is unusual and attribute the death to some unknown natural process. When the tree gets chopped down, the myriad of tunnels inside the wood will become evident and the cause of death linked to PSHB.

WOOD DISPOSAL

The wood from your dead infested tree needs to be processed to kill the beetle that is inside - surviving beetles will move to nearby trees and repeat the carnage. Your options for treating dead wood are:

- Burning the wood onsite is a good option, obviously this is not practical if the wood is still wet.
- Solarization of a pile of infested wood is the best option - cover the pile of wood with a thick black plastic sheet where it receives good sunshine and tuck the edges in to preserve the heat and moisture that will build up inside. Leave the pile for 6 to 8 weeks to effectively kill all the PSHB that is inside the wood.
- Chipping of the wood is considered to be effective in killing 95% of PSHB. An industrial chipper is required to process large branches.
- Dumping of wood at designated dump sites, for managed destruction is a necessary facility that we require in the urban areas - currently there are no dedicated dumping sites dedicated to PSHB in South Africa. Contact your municipality or City Parks and enquire when they will establish one.

STUMP REMOVAL

The stump that remains once a tree has been removed presents a unique challenge since it is extraordinary difficult to remove. Burning out a stump can take days, and using a stump grinder is very expensive. An alternate option is to convert the stump into a future food source by encouraging growth of edible mushrooms, that will provide food and accelerate the decomposition of the stump. If this option is desirable, be sure not to use systemic toxins on the stump, and solarize the stump with a black plastic sheet to kill the PSHB.

DISCLAIMER

TREATMENT DISCLAIMER

There can be no guarantee around the outcomes of treatments that are applied to trees that have been infested by PSHB. There is no proven treatment that can cure a tree from PSHB. Each tree needs to have its health evaluated, and appropriate treatments applied in accordance with what could benefit the tree. Whilst a tree's ability to resist PSHB can be bolstered by improving its natural health, the outcomes cannot be pre-determined. The application of any product that can repel or kill the PSHB, or impact the fungus that the PSHB feed on, need to be utilised in accordance with its registered instruction.

SOUTH AFRICAN LAW

South African law under Act 36 requires that any products that are used for treatment of a pest be registered. PSHB has only recently been identified in South Africa – therefore no product is currently registered.

DISCLAIMER NOTICE / INDEMNITY

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Tree Survey Record Sheet



PSHB.co.za

Address of Survey:	
Date of Survey:	

Index	Tree Description	PSHB Holes Visible on Tree?	Signs of Branch Dieback?	Health of tree?	Treatment Plan - #1		Treatment Plan - #2	
		Y / N	Y / N	0 = Dead 5 = Great	Description	Date Applied	Description	Date Applied
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								