

The following table outlines some of the available options for preventing pine beetle infestations. This is for general information only, we (the PHHOA Fire Mitigation Committee) are not recommending a method, and people have to make their own decisions. We have tried to use only quality sources but please do your own research.

Prevention Option	What it is	Pluses	Challenges	Other (e.g., how to proceed)
Pheromone packets	Verbenone is a synthetic pheromone treatment. CO forestry uses this and states that it is effective at preventing infestations. This approach was recommended by one of the Jeffco foresters.	Verbenone works by affecting beetle behavior with a pheromone. It is an environmentally safe alternative for tree protection.	It might not be as effective if there is a severe infestation.	For additional information ⁱ and for ordering ⁱⁱ please see endnotes below.
Healthy maintenance	Maintain a healthy forest! Water and fertilize. Also make sure your trees are not crowded (space your trees!)	Easy for homeowners to do	This is just good practice that we can all do but might not be as effective when not used in combination with other methods.	
Injection	Insecticide is injected into a tree	Effective for two years	Less impact on the environment (e.g., bees).	Unclear evidence about effectiveness.
Spraying	There are three insecticides used for spraying pine beetle: Carbaryl (Sevin SL and XLR and others) and Permethrin (Astro, Dragnet and others) and bifenthrin (Onyx) *Please note that these are neurotoxins	Effective	<ul style="list-style-type: none"> • There is research and information linking the use of several of these insecticides to Parkinsons including one from the NIHⁱⁱⁱ • All three insecticides are harmful to other insects like bees^{iv} • Typically, only cost effective for 5-10 trees • Might have to spray twice per season 	<ul style="list-style-type: none"> • For more information see Colorado State Extension^v • We have a quote from one arborist for \$25-\$35 per tree • If you go this route, let your neighbors know so pets and children can be kept inside and windows can be closed. Don't spray when it's windy and please be considerate of your neighbors!

- ⁱ Pine beetle and Pheromone information <https://www.jeffco.us/5166/Current-Information> and https://www.jeffco.us/DocumentCenter/View/55205/Verbenone_Pheromone_FAQ_110525_accessible
- ⁱⁱ <https://www.forestrydistributing.com/> or <https://semiochemical.com/verbenone/> (this is the company I ordered through and it was about 600 dollars for the extended life packets that would provide coverage for an acre and a half coverage).
- ⁱⁱⁱ NIH study on link between insecticides and Parkinson's <https://pubmed.ncbi.nlm.nih.gov/articles/PMC11530492/#CR7> also information on carcinogen properties at www.extension.colostate.edu/docs/pubs/ag_natr/spray-trees.pdf
- ^{iv} Information on toxicity to beneficial insects https://www.extension.colostate.edu/docs/pubs/ag_natr/spray-trees.pdf
- ^v https://www.extension.colostate.edu/docs/pubs/ag_natr/spray-trees.pdf