Overview
The balsam woolly adelgid, *Adelges piceae*, is an invasive pest that was introduced in the early 1900's through imported nursery stock. It has now spread through New England south to North Carolina, and to the Pacific Northwest. This insect can wreak havoc on Christmas tree stands, forests, and firs in the landscape generally feeding unnoticed until the tree is deformed and stunted. In serious outbreaks it can kill a tree outright in about 2-5 years. Fortunately, this pest spreads slowly, and if caught early enough can be controlled with treatment.

A Threat to Fir Trees
The balsam woolly adelgid is a small, aphid-like insect that threatens the health and sustainability of true firs such as: Fraser fir (*Abies fraseri*), balsam fir (*Abies balsamea*), subalpine fir (*Abies lasiocarpa*), Pacific fir (*Abies amabilis*), and grand fir (*Abies grandis*).

Symptoms & Damage
Initial symptoms can be seen as a flat top or weakened terminal lead. If left untreated stunted growth and branch dieback will begin, as well as swelling around the nodes and buds on the branches. Eventually, the tree will have an overall general wilted appearance resembling drought stress. If left untreated most firs will die in 2-5 years on average. Reaction wood also known as rotholz, is produced in response to feeding and will appear as red wood in the growth rings. However, this can only be seen once the tree has been removed.

Once hatched the crawlers will move around a bit until they find a spot to start feeding on the bark. Once they have inserted their mouthparts into the tree they are no longer mobile. As they mature they begin to produce the noticeable white fluff which can be a distinguishing characteristic to help diagnosis.
**How it works**

Xytect and Transtect are systemic insecticides that protect the vascular system of the tree. Xytect should be applied in the spring or the fall and Transtect should be applied in the spring to summertime. Both are applied at the base of the tree and are evenly distributed throughout the canopy by the pull created by the leaves. When the insect ingests the treatment they quickly stop feeding and die.

Transtect will provide rapid protection (1-2 weeks on most sized trees) and will last 2-3 months. Xytect can take up to month to be active in the canopy but will provide up to 12 months of protection against BWA. Which treatment will be recommended is dependent on the time of year the treatment will be applied, and the severity of pest pressure.

**BWA Treatment Considerations**

- Firs that are showing dieback of more than 1/3rd of the tree are NOT good candidates for treatment. However trees with less than 1/3rd dieback of their canopy can often be saved.

- Uses of some pesticides (e.g. imidacloprid, bifenthrin, permethrin) have been noted to worsen rust and spider mite outbreaks. Monitor trees after treatment to catch any outbreaks early.

- Firs with a large population of adelgids are best treated with Transtect.

**Added Protection**

- Adequate water is a key factor in maintaining healthy fir trees. A slow, deep watering event once per week during dry conditions will help maintain soil moisture levels and minimize stress.

- Mulch is very beneficial for trees because it reduces competition with turf and moderates soil temperature and moisture levels. The addition of 2-4 inches of wood chips or shredded bark under the drip line can have a very beneficial effect.

- The use of a growth regulator such as Cambistat can help slow the growth of the tree and help it reallocate those resources towards sealing of damage and fending off attacks from other pests.