The Plant Doctor's LANDSCAPE TIPS

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SPRUCE GALL AGELGIDS

INTRODUCTION:

Spruce Galls are caused by two aphid-like insects known as adelgids. Cooley Spruce Gall, caused by *Adelges cooleyi,* primarily affects Colorado blue spruce. With Cooley Spruce Gall, pineapple-like cones are formed on branch tips (Photo 1). Eastern Spruce Gall, caused by *Aldelges abietis*, primarily affects Norway, white, red, black, Englemann and occasionally Colorado blue spruces. Eastern Spruce Gall is typically differentiated from Cooley Spruce Gall by formation of pineapple-like galls at the base of the twig (Photo 2). Both galls are actually plant tissue that has been induced to be formed into a gall by the insect. Although the galls appear objectionable to some people, neither spruce gall usually affects the health of their host plants. These two spruce galls are quite common on spruce throughout the United States. The incidence of spruce gall may vary from year to year. There are also some other spruce galls that may be confused with Eastern and Cooley Spruce Gall.

LIFE CYCLE:

Both spruce adelgids have similar life cycles except that with the Eastern Spruce Gall, the life cycle of the insect is completed entirely on its spruce host plant whereas the life cycle for Cooley must be completed on two different host plants: Douglas Fir and Spruce. On Douglas Fir, the Cooley adelgid forms no galls; evidence of infestation on Douglas fir includes the visible wooly adult and yellow spots on bent needles from feeding injury.

Typically, the spruce adelgids have complex life cycles with multiple generations. Immature female adelgids usually overwinter on the undersides of current year's branches (twigs) or at the base of buds. In mid-April, the females mature and form a waxy white cottony covering as they feed at the base of buds; they also become active and reproduce as weather warms in the spring. Subsequently, they lay several hundred eggs in their waxy coating. Within two to three weeks, the eggs hatch and the nymphs migrate to swollen needle bases near developing buds where they feed at the base of expanding needles. During feeding, chemicals in their saliva induce the changes in plant development that result in the characteristic galls. With Eastern Spruce Gall, only the lower half of the bud is affected, resulting in elongation of some of the shoots; with Cooley, the entire bud and needles are affected, resulting in the terminal Pineapple galls and no elongating shoot. Initially these galls appear as greenish pineapples. Later in the season, the galls become brown and hard allowing maturing nymphs to escape through exit slits in the gall. These mature nymphs crawl to needles and molt into females which lay more eggs under their wings before dying. These eggs hatch into the overwintering immature females which move to new buds, thus completing the life cycle.

MANAGMENT OF SPRUCE GALL ADELGIDS:

Because adelgid galls are rarely if ever harmful to the health of spruces, control is generally not needed (Photo 3). For aesthetic reasons, some individuals prefer to implement some management procedures. Hence, the following tips may help.

Cultural: Spruce trees vary tremendously in their susceptibility to the spruce gall adelgids. Avoid purchasing specific trees, which already show some infestation. Removal of highly susceptible landscape trees and replacement with resistant trees may preclude the need for treatment. In the case of Cooley Spruce Gall, avoid planting spruce and Douglas Fir close together to prevent build-up of adelgid populations. Picking off the green pineapples will destroy the insects within, possibly contributing to population reduction; picking off brown galls that exhibit exit holes will not control the insects because they have already emerged.

Chemical: Chemicals can be applied in the early spring (usually April) to kill overwintering adults. These chemicals may include dormant or horticultural oils, which can be applied in April or in October or November. Warning! Be aware that oil injury/discoloration may occur on some spruces, particularly Colorado blue spruce. Alternatively, other common insecticides are also registered. Insecticide treatments may be made in mid-April or in September and October to kill overwintering females. Regardless, direct all sprays to the new buds and shoots, especially the undersides. Treatments will not be effective after the gall has been initiated.

Imidacloprid soil treatments have also proven to provide reasonable control of Spruce gall adelgids.

Photo 1: The Cooley Spruce Gall Adelgid typically induces the formation of pineapple-like galls on the terminals (tips) of branches of Colorado blue spruce.

Photo 2: The Eastern Spruce Gall adelgids typically induces the formation of galls at the base of twigs. This adelgid usually occurs on Norway, white and other common spruce species.

Photo 3: Even though this spruce has a fair number of adelgid galls, they are generally not very conspicuous from a distance. Spruce adelgids generally cause little concern for the health of spruce trees but may be aesthetically displeasing to some tree owners.

For more information, please feel free to email me at robertsd@msu.edu or contact a professional plant health care provider. The author, MSU or MGIA do not endorse any particular products. If using pesticides, be sure to read and follow label directions.