The Plant Doctor's LANDSCAPE TIPS

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ZIMMERMAN PINE MOTH

INTRODUCTION:

Zimmerman Pine Moth (ZPM=*Dioryctria zimmermani*), may cause severe damage to various species of pines. Austrian Pine (*Pinus nigra*) and Scotts pine (*P. sylvestris*) appear to be the most susceptible or affected species, but Ponderosa (*P. ponderosa*) pine, Red Pine (*P. resinosa*), Jack pine (*P. banksiana*), Mugo pine (*P. mugo*), and Japanese Red Pine (*P. densiflora*) may also be infested. On rare occasions, ZPM has been reported on White Pine (*P. strobus*), particularly when white pines occur in the vicinity of highly infested Austrian pines.

SYMPTOMS AND LIFE CYCLE:

ZPM typically attack pines at crotches in the branch whorls on the main trunk. Larvae perform the damage by tunneling into the cambial tissues through the bark to feed in the phloem. Attacks may occur for many years before any obvious outward evidence is noted; the lack of evidence of injury is especially associated with Austrian pines, which have very dense foliage. ZPM damage can easily be observed by spreading the branches to examine for masses of pitch on the trunk (Photo 1). Eventually branches break from the main trunk or the entire top portion of the trunk may break off at a branch whorl (Photo 2 & 3). ZPM feeding may also occur on branches, which will exhibit pitch exudates similar to other insect attacks and Diplodia tip blight infections (Photo 4).

ZPM overwinters as larvae, which subsequently feed by tunneling in the cambium (phloem) until mid to late July, when they pupate. Adults, which are gray infused with reddish-brown colors and with sharp zigzag line patterns in the wings, are rarely seen but emerge about two weeks later, mate and lay eggs in bark and branch crevices during July and August. Small larvae hatch and spin silken homes for overwintering. There is one generation per year.

MANAGEMENT OF ZIMMERMAN PINE MOTH:

Cultural: Where ZPM is severe, it may be best to plant non-susceptible species. For example, native white pine is generally not affected. For wind breaks or screens where Austrian pine is commonly utilized in the landscape, arborvitae (Northern white cedar), for example, is not affected by ZPM and may represent an alternative among a variety of other possible species. Because adult females may be attracted to injured pines, avoid injury such as shearing or corrective pruning when adults may be active. Destroy severely affected trees which may serve as breeding reservoirs.

Chemical: Insecticides may help manage ZPM, however some researchers report only about 20-30% control in many situations. Apply registered insecticides in the early spring (early April in Lower Michigan) and/or in August, when caterpillars are exposed and active; spring sprays are reported to be more effective than late summer sprays. Thoroughly spray the trunk and branches with a registered insecticide according to label directions.

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.

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Photo 1: Zimmerman causes copious sap exudates on the trunk of trees, originating predominantly from the branch whorls. On older pines, the pitch is fairly obvious; on younger pines whose foliage is very dense, it may be difficult to determine early infestations of ZPM without careful examination.

Photo 2: In severe cases, Zimmerman Pine Moth tunneling may lead to structural failure in the trunks of trees. In this situation, the top half of the tree had broken away from the lower half.

Photo 3: A close-up of Photo 2 showing the breakage point and copious sap production.

Photo 4: Zimmerman Pine Moth may also cause shoot death in branches and may be mistaken for other insect problems or, for example in this case, Diplodia tip blight, a very common fungal disease on pines.