European elm scale (*Gossyparia Spuria*) is a small, non-native soft scale insect that attacks all species of elm with American elm being the most susceptible. The scale also attacks hackberry trees. European elm scale is usually first noticed when honeydew produced by the female scales, and the associated black sooty mold that grows on the honeydew, become a nuisance on parked cars or outdoor furniture. The insect feeds on the branches and foliage of the tree, causing premature foliage yellowing and leaf drop, branch and canopy dieback and, in heavy infestations, tree mortality.

**Life Cycle**

European elm scale has one generation per year, overwintering as second instar nymphs once leaves fall. Males typically pupate from February to March, and emerge in March to mid-May. Females emerge in late spring, and mating occurs from April to mid-May. From May to August, female nymphs mature into scales and settle on large limbs and branches where they lay eggs that can hatch into first instar nymphs in less than an hour after being laid. Female scales excrete honeydew until egg laying is complete. Female scales die in late summer, after laying all their eggs. First instar nymphs molt into second instar nymphs mid-July to October, followed by overwintering.

First and second instar nymphs are also known as crawlers and primarily live and feed on leaf tissue throughout the spring and summer. Second instar nymphs move to branches in the fall to overwinter. Female scales stick to branches until they die and feed by sucking nutrients out of the tree.

Note: Life cycle timing may vary by region.
TreeAzin Efficacy Trial
BioForest performed an efficacy trial against European elm scale in Lethbridge, Alberta in July 2014 using a TreeAzin dose rate of 8 mL/inch DBH. A pre-treatment assessment was completed in June 2014 and a post-treatment assessment was completed in June 2015.

Post-treatment assessments showed that scale populations per branch on the treated trees were reduced by 53% compared to the non-treated trees. This suggests that TreeAzin manages scale populations by inhibiting the growth of second instar nymphs into scales.

Treatment Timing
BioForest recommends monitoring European elm scale annually and treating nymphs (crawlers) once per season at a dose rate of 8 mL/inch DBH, as needed. Generally, treatments begin in early summer once crawlers are present. Refer to BioForest’s BioSIM maps at www.BioForest.ca as a guide for starting treatments.

Ongoing Research
BioForest is continuing to research TreeAzin and European elm scale to fine tune BioSIM maps, treatment timing and other recommendations. Areas of research also include determining how TreeAzin affects the different life stages of European elm scale. BioForest will continue to communicate developments on European elm scale as more science-backed information becomes available.

About BioForest
Established in 1996, BioForest specializes in innovative product development, and consulting strategies for urban and commercial forest protection. In 2015, BioForest became a subsidiary of Lallemand Plant Care to oversee and develop its Forestry division. BioForest is a Canadian company based in Sault Ste. Marie, Ontario, Canada with a presence in Southern Ontario; Michigan; Missouri; Massachusetts; and Finland. BioForest’s experienced and knowledgeable staff work with clients to create and implement effective pest management and forest health strategies for urban forests, commercial forests, woodlots, cottage properties, municipalities and more.

BioForest is the registrant of TreeAzin®, a systemic insecticide that provides up to two years’ protection against emerald ash borer and other insect pests in Canada and the United States. TreeAzin was developed for treating threatened trees in urban forests and environmentally sensitive areas. BioForest also developed an industry leading microinjection system, the EcoJect® System, used to apply TreeAzin into high value trees. BioForest is the exclusive Canadian distributor of Arbotect® 20-S, a preventive fungicide Macro-Injector treatment against Dutch elm disease, and is the exclusive North American distributor of Rotstop® C, a biological fungicide used to prevent the introduction and spread of Heterobasidion Root Disease (root rot) in pine trees.

BioForest’s purpose is to save trees from invasive pests and disease while having minimal impact on the surrounding environment. Using a science based approach, BioForest is committed to implementing effective pest management and forest health strategies.