



# Pest e-alerts



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## Kermes Scale Causing Problems for Oklahoma Oaks

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The Plant Disease and Insect Diagnostic Lab has received several reports of oak leaf/twig drop across Oklahoma in the past few weeks. From post oak samples we've collected in Logan County, the culprit appears to be a kermes scale called pubescent leaf kermes, *Nanokermes pubescens*. Populations of these scales are swelling on white oaks, especially post oak. We suspect this population explosion is the result of a very dry growing season in 2011 followed by somewhat wetter conditions this year. This report describes how to identify pubescent leaf kermes, its

life cycle, preferred hosts, associated damage, and management. Keep in mind that infestations of kermes scales are not likely to cause tree mortality, but excessive leaf drop will cause some concern among homeowners and landscape professionals.

### Description

Adult females measure approximately 1/8 to 1/4 inch in diameter. They are globular, immobile, hard-shelled, and reddish-brown to nearly black with brown specks. In general, they appear gall like and are found clustered around the leaf base and petiole. Many times these can be mistaken for buds or developing acorns. Adult males are gnat-like, have only two wings, and are short lived so they are not commonly seen.



**Life Cycle**

Eggs are laid for a month beginning in late June. In early July, first-instar nymphs (crawlers) emerge from beneath the females' scale coverings and colonize the trunk and limbs of the host tree, where they feed and overwinter. At bud break the following season, second-instar females begin to emerge and move to new growth, settling near the bud, on the petiole, or on the central vein of the upper leaf surface. They molt in mid-May, becoming third-instar nymphs, and complete their development by reaching adulthood in late May. There is only one generation per year.

**Hosts**

Oaks are the only known hosts of pubescent leaf kermes. In Oklahoma, we have only confirmed their presence on post oaks but they are known to occur on at least four other oak species.

**Damage**

Feeding damage initially appears as leaf distortion due to unequal development of the leaf. "Flagging", or death of the leaf or twig, occurs when several scales feed at one location. Dead leaves and twigs will drop from the tree or be dislodged by strong winds and storms. However, even serious infestations are not considered detrimental to the long-term health of the tree.







### **Inspection and Control**

Look for scales when leaves first develop on the tree. Adults are fully grown by early June and crawlers appear in early July. Crawlers can be monitored with double-sided sticky tape applied to twigs in the vicinity of the adult females. Migrating crawlers will be caught on the sticky tape, which can be removed and observed under a microscope or hand-held magnifying lens. Honeydew, the sticky waste product of some scale insects, will also be present on affected twigs and leaves.

Management of kermes scales often does not include the use of insecticides. In most cases, natural enemies (predators and parasitoids) will build up and control these scales naturally. However, insecticides can be used as sprays targeting the crawlers or as systemic applications to target settled life stages. Spray applications should be made when crawlers are abundant (monitored with sticky tape as discussed above) before they form their protective covering. Biorational products such as horticultural oils and insecticidal soaps can be used when crawlers are active, minimizing harmful effects on natural enemies. However, conventional insecticides such as cyfluthrin (Bayer Advanced Power Force Multi-Insect Killer, Tempo) and carbaryl (Sevin)

can also be used, but these products will harm natural enemies and pollinators so spray when beneficial insects are least active (e.g., early morning). Systemic insecticides can be applied to the root zone, or base of tree, to control scales feeding on plant sap. Prior to application, be sure to remove any organic materials such as mulch, which can inhibit penetration of the active ingredient through the soil into the root zone. These materials are moved throughout the plant and ingested by scales through their straw-like mouthparts. Several systemic products are available including imidacloprid (Bayer Advanced Tree and Shrub Insect Control, Merit), thiamethoxam (Meridian), and dinotefuran (Safari). These products should be applied in the fall before trees enter dormancy to control scales the following spring or summer.

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