



The Plant Doctor's LANDSCAPE TIPS

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Photo 1: A river birch in northern Michigan affected with symptoms resembling mouse ear. The symptoms on this tree were ameliorated by cessation of broadleaf weed herbicides.



Photo 2: Close-up of river birch leaves that could be impacted by mouse ear, a Nickel deficiency. Note crinkled, cupped and stunted leaves. It is not uncommon for normal-appearing leaves to appear on the same branch. In this particular landscape, dicamba and 2,4-D were applied in the lawn around the tree and were presumed to have induced the mouse ear-like symptoms on this tree.



Photo 3: Determining whether Nickel deficiency-induced mouse ear symptoms or herbicide-induced leaf distortion is the problem can be a perplexing undertaking. Examination of other plants in the landscape may provide a clue. This white oak received an apparent light dose of broadleaf herbicide as evidenced by the dark green cupped leaves. Normal leaf development resumed the following year when herbicides were discontinued.

RIVER BIRCH: MOUSE EAR OR HERBICIDE?

INTRODUCTION:

River Birch (*Betula nigra*) is a widely utilized tree in Midwestern landscapes. Except for a few relatively minor problems, such as leaf miner, river birch is considered a hardy, relatively trouble-free tree.

For more than a decade, however, an unusual problem developed in container production of river birch at various nurseries around the country. This problem was labeled as Birch Abnormal Growth Syndrome (BAGS), but was also popularly called mouse ear disorder, little leaf, squirrel ear and leaf curl. Mouse ear seemed to develop in containers where media was primarily composed of peat and in situations where trees were held too long in specific containers. Other contributors to the problem included irrigation practices and certain fertilization regimes. Similar symptoms were noted in pecan production. In summary, scientists from the University of Georgia and from the USDA solved the mouse ear problem by discovering a deficiency of Nickel (Ni) in afflicted plants. Nickel has only been recognized as a plant nutrient for a few years. Excesses of other nutrients such as Magnesium or the heavy metals Manganese, Zinc, Iron, Cadmium and Copper may compete with and induce Nickel deficiencies in plants.

Over the past several years, scientists have observed similar symptoms of mouse ear in landscape plantings of river birch, believing the deficiency of Nickel was the probable cause. I have also witnessed similar symptoms with River Birch and other trees in landscapes (Photos 1 and 2). In many such cases, I have associated herbicide applications with these symptoms.

SYMPTOMS OF MOUSE EAR:

Mouse Ear appears as small crinkled leaves on river birch. Affected leaves are cupped and usually dark green in color. Leaf margins often appear chlorotic or necrotic while interveinal chlorosis is generally lacking. Normal-appearing leaves often appear on the same branch. The new growth may exhibit shortened intermodal growth, perhaps giving the branch a witch's broom appearance in severe cases. The entire tree may be affected or individual limbs may show symptoms.

Herbicides may also present similar appearances on River Birch and other landscape plants. In many lawns, standard broadleaf weed control includes applications of a mixture of growth regulator-type herbicides. Usually, 2,4-D and Dicamba are included in the mixture. These herbicides can initiate problematic consequences for trees, shrubs and other landscape plantings. Usually, herbicide labels warn applicators about using these herbicides in the vicinity of landscape plants but these warnings are often not heeded.

MANAGEMENT:

In managing mouse ear symptoms on landscape river birch, it is important to accurately diagnose the problem. Determining whether herbicides were applied in the landscape or nearby landscapes is usually fairly straightforward. In many situations, inquiries into records of chemicals applied to the lawn often reveals broadleaf weed herbicides, such as 2,4-D and Dicamba. Another clue that herbicides have been applied is the absence of broadleaf weeds in the lawn. In particular landscapes, plants other than river birch may also show symptoms (Photo 3). Cessation of application of these herbicides altogether or in the vicinity of roots zones will usually correct the symptoms the following season, if herbicide is the major issue.

For genuine cases of mouse ear (Nickel deficiency), applications of micro amounts of Nickel, either as a foliar application or to the soil, will usually correct the problem. Maintaining a low soil pH around 5.0 to 6.0 may help ameliorate Nickel deficiencies. Nickel may be applied in several forms. Nickel sulfate is one example. Nickel lignosulfonate, registered by NIPAN, LLC, as Advance NiTM, is another example. Some fertilizers contain trace amounts of Nickel and may also correct the problem. Nickel can be toxic to plants so caution in application is strongly advised. ■

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