

Use of a Metal Detector to Relocate Semipermanent Experimental Plots¹

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Abstract: A metal detector was used to relocate steel pins marking the boundaries of semipermanent plots in cranberry bogs and turfgrass where continuous use precluded the placement of permanent wooden stakes.

Key words: cranberry, metal detector, method, technique, turfgrass.

Experimental plots must often be located on land where stakes and other above-ground markers create hazards or obstacles for other persons using the land. For example, cranberry bogs are flooded during harvest, thereby permitting mechanical beaters to free the berries. The beating machinery removes or breaks off wooden stakes. An underwater, sharply pointed stake could easily penetrate rubber boots resulting in severe injury to wading harvesters. Cranberry bogs are also flooded during winter months to protect plants from frost heaving. Subsequent ice formation and its movement may obliterate above-ground plot markers.

Turfgrass areas, especially golf courses, preclude the use of semipermanent above-ground plot markers which interfere with the activities of players. In addition, dethatching machinery dislodges shallow stakes or nails placed at or above ground level. Cement markers embedded at ground level have been used in turfgrass plots in New Jersey, but such markers are difficult to install, create holes in the turfgrass, and when covered with grass thatch are hard to find. Periodic removal of mark-

ers often results in inaccurately relocating the correct position of semipermanent plots.

These problems can be avoided by burying metal corner markers when first establishing plots. Our objective was to evaluate the reliability of using a metal detector for finding and delimiting semipermanent experimental plots.

The metal detector used was a Fisher M-Scope Model M-90 (Fisher Research Laboratory, Los Banos, CA). It is sensitive to iron, copper, lead, aluminum, steel, brass, and tin. The ground rejection adjustment permits its use in soils containing high levels of iron and moisture. The 20-cm-d disc is swept over the ground to relocate plot markers within about 5 cm of their actual position. Cadmium or zinc-plated masonry nails, surveyors marking spikes, and even large 60d nails proved successful as plot markers. The markers are either placed at ground level or driven 1–3 cm below the ground's surface. After approximate location of the metal markers, the plots are temporarily marked with wooden stakes, plastic survey stakes, or wire markers. A swinging magnetic stud (nail) finder or the 10-cm-d detector head may be attached to the metal detector to exactly relocate the metal markers. It will be easier to find plots in future years if direction and distances have been previously mapped from a permanent structure or object. This procedure reduces the amount of ground sweeping with the metal detector and facilitates the finding of buried markers.

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