NITROGEN AND PHOSPHORUS TRANSPORT IN GOLF GREEN SAND MIXES AMENDED WITH VARIOUS ORGANIC MATERIALS

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Abstract

Nitrogen and Phosphorus are two important elements in turf and environmental management. Numerous studies have shown that nitrate and phosphate leachate is minimal off of sand golf greens amended with peat moss or inorganic amendments. Many new organic products are being used in golf course management. This study examined nitrate and orthophosphate leachate of organic amended greens with sphagnum peat moss, treated steer manure, biosolid/yard waste mix and steer + peat mix. The fertilization program was managed not accounting for the nitrogen and phosphorus available in the organic amendment. Nitrate leachate levels were high in the fall of 2002 before grass was fully established for all treatments. The initial NO_3-N levels for steer + peat were over 300 mg l^{-1}, for steer over 150 mg l^{-1}, biosolid/yard mix over 100 mg l^{-1} and peat moss below 20 mg l^{-1}. The following year after grow in of bentgrass none of the treatments had leachate levels over 16 mg l^{-1}. On all treatments increases of nitrate in leachate was seen after soluble fertilizers such as urea and ammonium nitrate was used.

Levels above 20 mg l^{-1} of orthophosphate leachate were observed on the steer and steer + peat treatments. The peat moss mixture leachate highest amount was 0.4 mg l^{-1} while bio/yard mix highest leachate was no more than 2 mg l^{-1} for both 2002 and 2003. It is important to examine both the chemical and physical properties of the mixes to determine the best fertilization strategy.

PROCEEDINGS OF THE

THIRTY-FOURTH NORTH CENTRAL EXTENSION-INDUSTRY SOIL FERTILITY CONFERENCE

Volume 20

November 17-18, 2004
Holiday Inn Airport
Des Moines, IA

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Published by:
Potash & Phosphate Institute
772 – 22nd Avenue South
Brookings, SD 57006
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Web page: www.ppi-ppic.org