

CONCERNS OVER LIME TREATED SOIL

By Heidi Fisher

Hydrated lime (calcium hydroxide) or quicklime (calcium oxide) is commonly used in building construction to achieve compaction for stability purposes or as an aid to dry saturated soil in a timely fashion.

The effect on soil chemistry relates to the degree of contamination. It doesn't take much to alter soil pH to an irreparable degree. A portable pH meter may be used in the field to determine the extent of contamination as it relates to concentration and depth of treatment. In some cases, an aggressive amending program can be implemented to bring pH and chemistry into a suitable range for plants. In more extreme cases where pH has drifted beyond a natural degree of >9.5, more thorough action is needed to provide a suitable substrate to support ornamental plantings. Removal and importation of quality topsoil is generally the recommendation.

Unnaturally high alkalinity as a result of lime treatment can subject plantings to nutritional deficiencies that wear on plant health and appearance. More so of concern than pH alteration would be the compacted nature and cemented soil structure resulting from lime treatment. Impaired drainage could result in waterlogged conditions suffocating to roots and conducive to disease. Roots would not readily grow into this compacted soil.

Removal & Replacement Guidelines

Remove and replace lime-treated soils with quality import topsoil to a depth that will accommodate the rootzone of the intended plantings. A minimum 12-inches import should be placed for 1-gallon shrubs and groundcovers and an 18-inch depth minimum for 5-gallon shrubs. The 24-inch box trees should have a minimum 6-inch layer of import below their rootball to provide a suitable substrate to root into for establishment.

The need for drainage provisions will depend on whether or not compacted lime-treated soils are fully removed and subsoil drainage capability is adequate. In cases where it is felt limed soils have been completely excavated at the depth of the plant pit, native subsoil drainage should be evaluated to determine its adequacy. If 6 inches of water does not drain from a 2-foot deep pit within 24 hours, then some form of drainage assistance should still be considered. Determination of adequacy should take into consideration draining capacity of the import. If subsoil drainage is found to be surprisingly good, then you may have the option of boring holes through any shallow depth of lime-treated subsoil left after excavation, to take advantage of subsoil drainage capability.

Poor drainage at the interface of lime-treated soils with no possibility to use subsoil drainage should be handled by implementing a drainage network connected to a storm drain system. The bottom of large planter pits may be sloped in a fashion to route excess water to a single perforated drain. Near building pads where depth of excavation and drainage provisions may be hindered by the buildings structural needs, a slanted cut may be made so that plantings are placed in sufficient growing media with drainage tied in down slope.

Amendment and fertilizer rates needed to prepare the import topsoil after placement may be provided with chemical and textural analyses of the proposed material.