Use of Lime in Orchards

Updated from the Cornell Orchard Nutrition Management Information Bulletin #219 by W. Stiles and W. Shaw Reid.

Thorough incorporation of adequate amounts of lime prior to planting a new orchard is essential. The topsoil (0-8 inch depth) should be adjusted to pH 7 and subsoil (8-16 inch depth) to pH 6.5. An adequate liming program based on soil tests should be the first consideration in developing orchard fertilization plans. Lime is the most economical source of calcium and magnesium. Regulation of soil pH through liming is also necessary to achieve optimal response to other nutrient elements. Fruit from Honeycrisp plantings can suffer from a physiological disorder called bitter pit (BP). The mitigation of BP requires the implementation of multiple tactics, of which the maintenance of soil pH around 7.0 helps.

Type and fineness of lime. Solubility of lime, and therefore, the rate at which it is effective in neutralizing soil acidity, is influenced by the fineness to which it is ground as well as its chemical composition. In general, hydrated (slaked) lime and burnt lime (oxides) are more reactive than ground limestone. Ground limestone is usually suggested for most orchard situations.

Placement of lime. Time required for lime to act is influenced by method of placement (i.e. soil contact) and by fineness of the material. In preparing soil before planting a new orchard, maximum benefit is obtained by thoroughly harrowing or rototilling the lime into the surface soil, and then plowing to work it as deeply as possible into the soil. If large quantities of lime are required it should be applied in split applications. Working one-half to two-thirds of the total amount of lime into the soil as indicated above, plus thoroughly harrowing the remainder into the topsoil after plowing, is often suggested as an appropriate method for liming during preplant soil preparation. With some fine-textured soils that require large quantities of lime, application of about two-thirds of the total lime required in such a manner, followed by biennial surface applications of additional lime may be necessary to achieve the desired goal.

Surface applications of lime in established orchards move slowly into the soil and must be considered as long term corrective or maintenance programs. Regularly scheduled applications of lime of 2 tons per acre every two years, as predicted by soil and leaf analysis, represent the best available means of maintaining pH values of 6-6.5 and calcium and magnesium supplies in the soil. For the *Honeycrisp* variety, maintain soil pH around 7.0.

The type of lime (i.e., calcitic or dolomitic) should be determined by the need for magnesium. In most cases, even if soil magnesium is fairly high, dolomitic lime is suggested for orchards. Dolomitic lime generally has a greater neutralizing value than calcitic lime.

The text of the full extension bulletin which covers all aspects of fruit tree nutrition can be found by following the link here.