Management of Poultry Litter as a Fertilizer Source in Pecan Orchards

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The use of poultry litter as a source of fertilizer in commercial pecan production has increased dramatically in the past few years due to the rising cost of synthetic fertilizers. When managed properly, poultry litter can be a valuable source of plant nutrients and can increase organic matter in the orchard. Due to high Ca levels in litter from layer opertations, it is recommended that where litter is used, broiler litter should be applied.

Broiler litter is composed of unretained feed nutrients and shavings. Nutrients are fed to broilers at levels so that maximum nutrients are retained by the broilers and minimum amounts of non-absorbed nutrients are left in the litter. Less than half of the N, P, and K fed to a 4 lb. broiler are found in the litter.

The fertilizer value of poultry litter varies depending on a number of factors including moisture, temperature, feed rations, number of batches before clean-out, storage, and handling. Broiler analysis has an approximate analysis equivalent to a 3-3-2 (NPK). A typical analysis for one ton of broiler litter can be seen below:

Nitrogen	60 lbs/A
P	60 lbs/A
K	40 lbs/A
Ca	30 lbs/A
Zn	0.6 lbs/A
Cu	0.6 lbs/A

Bedding material normally comprises 5-15% of the litter. It is strongly recommended that growers have samples analyzed before applying litter to the orchard in order to determine the actual values of nutrients contained in the broiler litter.

The availability of N from poultry litter, because it is an organic material, is less predictable than for commercial fertilizers. The amount and timing of N released from litter depends on a number of factors, including pH, temperature, sand content, and available moisture. Part of the nutrients contained in the litter are organically bound, and thus are released slowly. The organic material also adds tilth and water holding capacity to the soil. Normally, where poultry litter is used, liming will be at longer intervals since part of the calcium requirement will be met with the litter. Regular soil testing will indicate when lime is required.

As a rule of thumb, 60% (36 lbs N/ton) is available for crop uptake during the season. Most of the remaining litter is lost or tied up and should not be considered available to the crop. Since N availability is highly variable, leaf sampling is strongly recommended. Long term concerns of using poultry litter are the buildup of P and Zn in soils.

Poultry litter should be managed to provide spring P and K and a portion of the total N requirement. The remainder of the N should be applied as commercial fertilizer after crop load has been assessed. For example 1 ton/A of poultry litter applied in February and 1 ton applied in May followed by 50-80 lbs N/A applied as synthetic fertilizer in late

August or split between early August and early September when crop load is heavy should provide adequate N for pecan trees. Additional K should be based on the leaf N:K ratio in July. In the "off" year, the poultry litter applied in February and early May should be sufficient. This approach should avoid unnecessary P build-up and should not lead to contamination issues since poultry litter would only be applied in spring.