

LETTERS

Appropriate Name for Pecan

There is still apparently some confusion concerning the most appropriate scientific name for pecan: *Carya illinoensis*, or *C. illinoensis*. As one who has been involved in the debate, I would like to offer clarification. Most horticulturists use the spelling *illinoensis*. In fact, that spelling is specified in the *ASHS Publications Manual* (1991). This is consistent with the recommendation of the Crop Advisory Committee for Pecans and Hickories [Grauke, 1985, *HortScience* 20(4):629-630]. At the time that recommendation was made, a proposal to conserve the name of pecan as *Carya illinoensis* (Wangenheim) K. Koch was submitted to the Standing Committee for Stabilization of Nomenclature, for consideration at the meeting at the XIVth International Botanical Congress in Berlin, July 1987 (Grauke et al., 1987, *Taxon* 35:174-177). We were confident that the proposal would be accepted, given the long history of that name's usage and the fact that previous Botanical Congresses, although lacking a mechanism for authoritative implementation, had decided in favor of *C. illinoensis* (Schubert, 1969, *Regnum Veg.* 60:110). Unfortunately, the proposal was rejected (Nicolson, 1988, *Taxon* 37:440). As a result, the appropriate scientific name of pecan is *Carya illinoensis* (Wangenh.) K. Koch. The decision of the Nomenclature Committee was communicated to scientists involved with the study of pecan at the National Pecan Research-Extension Meeting, New Orleans, Jan. 1988, and was reflected in the minutes of the meeting.

Several colleagues have requested documentation of the decision and have provided that information to editors of *ASHS*. I would not have submitted the proposal for consideration by the Nomenclature Committee had I been unwilling to abide by their decision. I have therefore adopted use of the approved name. I recommend that the editorial policy of *ASHS* be revised, recognizing *Carya illinoensis* (Wangenh.) K. Koch as the approved scientific name of pecan. (Please also note that the approved abbreviation of Koch's name is "K. Koch," in the Draft Index of Author Abbreviations compiled at The Herbarium, Royal Botanic Gardens, Kew, 1980, rather than "C. Koch" as listed in the *ASHS Publications Manual*.)

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Fertilizer Flexibility?

Many fertigation experiments have been performed in citrus orchards, usually with a highly positive response in yield and fruit growth. Unfortunately, however, we can find some experiments that did not show any positive response.

According to our experience (Dasberg et al., 1983, *Plant and Soil* 75:41-49, Fig. 2) we almost could not detect N-NO₃ in sandy loam soil 1 month after fertigation; it was either absorbed by roots or leached beneath the root system by the irrigation water.

The paper by Willis et al. [*HortScience* 1991, 26(2):106-109] described measurements of N-NO₃ and N-NH₄ in the soil 1, 4, and 7 days after application, while the frequency of application was once in 1, 3, and 6 weeks. I am not surprised that they found higher N concentration until the 7th day with fertigation once in 6 weeks. I do wonder why the difference in N found in the soil was so small compared with the fertilizer concentration added each week or once in 6 weeks. Why did they not

measure the N concentration each week, or at least before the next indication for accumulation and movement of nutrients past the root zone? It is possible that the N was depleted in the 6-week treatment before the next application, since the irrigation was at 20% of soil moisture depletion. (What was the distance of the probe measurements from the emitter? Water table fluctuation between 0.45 to 1.60 m from the crest of the bed with high irrigation frequency might tend to diminish the reliability of the results as reported.) If N-NH₄ was adsorbed by the soil in the top layer, why would you expect to find it at the 50- to 80-cm depth? Ammonium is well known to be oxidized to nitrate by soil microflora. This might explain why there are no differences in the fertilizer rate 7 days after application.

It is very difficult to find significant differences between granular and liquid fertilizer in the first year of growth. The tendency of trunk diameter and tree height to be greater under liquid fertilizer as compared with granular application would be greater in the 2nd and 3rd years of growth.

An experiment done with 30-year-old 'Shamouti' orange trees showed, after 5 years where granular was applied two times per year compared with liquid fertigation applied four or 16 times per year, that application of 16

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times had advantages in yield production and N-NO₃ concentration in the leaves (unpublished data). I feel that the statement of Willis et al. that "growers have flexibility in choosing their fertilizer programs in the first season after planting" bears careful analysis in light of my remarks.

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Authors' Response

We thank Dr. Erner for his comments concerning our recent fertigation studies. When we undertook these studies in 1987, we, too, were concerned about conflicting reports from growers related to effects of fertigation on growth of young citrus trees. We agree that in many previous studies, fertigation has increased yields and fruit growth. As Dr. Erner knows, however, climatic and edaphic conditions in Israel are considerably different from those in Florida. Therefore, we would be surprised if our results were similar to his. We would be equally surprised if his results using 30-year-old 'Shamouti' trees were the same as ours using newly planted 'Hamlin' trees. In fact, Dr. Bob Koo's data from Florida using mature citrus trees suggest that fertigation does not increase yields over those obtained with granular fertilization.

As Dr. Erner is well aware, *HortScience* is intended for preliminary results. Sometimes this is regrettable because the entire scope of

the research cannot be presented. During subsequent years, we did measure NO₃-N and NH₄-N soil levels the day before fertigation (fertilization) and thereafter at weekly intervals the day following fertigation for 19 weeks. Measurements were also made at three soil depths for several application frequencies. We also repeated the field trials using three fertilizer rates and two rootstocks, sour orange and Carrizo citrange. The results were published in the Proceedings of the Florida State Horticultural Society, 1990, 103:30-37. Details on sampling and analytical procedures are clearly outlined in this article.

As expected, we found that higher NO₃-N concentrations occurred in the upper soil layers when fertilizer was applied five times compared with 10 or 30 times per season. We also found very little movement of NO₃-N past the root zone even following significant rainfall. Our assumption is that nitrate must be taken up by the roots rather rapidly. Recent studies by J. Lea-Cox and J. Syvertsen in Florida using ¹⁵N suggest that significant N uptake does occur within the span of our experiments. Moreover, several studies in Florida citrus groves have failed to show unacceptably high levels of nitrate in our surface water when recommended fertilizer rates are used.

We do not believe that a fluctuating water table had any effect on our results because: 1) the water table rarely reached the root zone of the young trees and 2) we achieved the same results over several seasons when studies were conducted on well-drained, deep sands that did not have a fluctuating water table.

Dr. Erner also states that granular vs. liquid fertilization has no effect on tree growth in the first season. We generally agree with this

statement, although 'Hamlin' trees on Carrizo rootstock growing on a sandy soil were significantly larger if fertigated 30 times vs. 10 or five times per season. Again, Dr. Erner is extrapolating his findings to a much different situation in Florida. We have no data to support or refute his statements on fertigation of 2- or 3-year-old trees.

Finally, we are very confident in our results and have no reason to retract our statements concerning "grower flexibility in fertigation scheduling in Florida." We conducted five large-scale, well-replicated studies using two soil and rootstock types over 3 years. We believe that the growth increases attributed to fertigation largely result from improved water management, rather than improved nutrient management. It is important to note that we carefully controlled soil moisture conditions in all of our studies. Further support for our recommendation comes from the fact that there are currently many different fertigation application frequencies being used in Florida with equal success. However, even within Florida, we are hesitant to make general recommendations for all soil types, rootstock/scion combinations, and climatic conditions. We believe Dr. Erner should be equally cautious in extrapolating his results collected from a very small citrus-growing region and applying them to fertigation practices on a worldwide basis.

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