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Letter to the Editor

Depreciation Buckets and Brackets

I would like to clarify the context of James Komen's recent, thought-provoking article[1] on depreciation in the 10th Edition. Context is set in the first sentence: *"The 10th Edition of the CTLA Guide for Plant Appraisal has changed the depreciation factors used in the Trunk Formula Method [TFM](now 'Technique')[TFT]."* There are two things to clarify.

First, the 10th Edition has indeed changed the three percentage depreciation factors. Since those changes apply across the Cost Approach, James's article actually applies to 10th Edition depreciation factors generally. It is not limited to basic cost developed with TFT.

Second, in the 8th and 9th Editions, both cost development operations and the depreciation operation were included *in* TFM.[2] Depreciation was a required part of the method (even if all the factor ratings were 100%). In the 10th Edition, by contrast, TFT includes cost development only. Thus, depreciation is not a required part of the technique. The depreciation operation is not *in* TFT at all.[3]

Cost development was isolated in the 10th Edition techniques so that those techniques could be transportable across methods. For example, the trunk formula unit cost calculations can be used in both the Reproduction and Functional Replacement Methods. As a result, depreciation is also isolated. In the 10th Edition, three-factor

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[1] Komen, James. 2019. Buckets and Depreciation in the CTLA Trunk Formula Technique. *Arboricultural Consultant* 52(3):14-16.

[2] And also in 8th and 9th Edition Replacement Cost Method (RCM) and Cost of Cure (COC, Condition only).

[3] This is also true of the 10th Edition Direct Cost Technique (DCT) and Cost Compounding Technique (CCT).

depreciation is an "orphan operation" in that it is neither a) within a method or a technique nor b) a separate "technique." This is clear in the 10th Edition, Figure 5.1 and text.

This clarification of context does not affect the substance of James's article. Depreciation remains an important part of the Cost Approach. The overlap of depreciation factors and the potential for "double dipping" remain a concern for plant appraisers.

Sincerely,
Scott Cullen, RCA #348

Response From James Komen

Scott makes a persuasive case here that depreciation is a separate operation not contained within the TFT. His conclusion is supported by the flow chart in the 10th Edition that shows TFT (and CCT and Direct Cost) listed as separate from the depreciation step. I agree that a linguistic differentiation could be articulated that depreciation is separate because it may be applied to the basic cost developed by any of the cost techniques (CCT, TFT, Direct Cost) and not just TFT.

However, I would also like to present the contrary viewpoint. The Trunk Formula Technique may also be said to encapsulate the process of formulating a Basic Cost and also of multiplying it by a depreciation factor, if applicable. This broader bracketing of the beginning and end of the TFT was presented recently at a local conference ("In the Trunk Formula Technique, we characterize condition as a [percent] where 100% is excellent and 0% is dead.")[4] and confirmed by later personal communication with the presenter.[5]

Scott's points do not change the substance of my article, which was focused entirely on the significance of the allocation of depreciation attributes among the new depreciation factors themselves. His points also do not change the outcome of the cost approach calculation. Whether the total depreciation is multiplied with tree cost within or immediately after the TFT brackets (or CCT or Direct Cost brackets) does not make a mathematical difference due to the associative property of multiplication.[6] A theoretical mathematical difference only occurs when depreciable attributes are distributed differently among the three depreciation "buckets," as I discuss in my article.[7]

I am ambivalent to either interpretation of the bracketing of TFT. Should the label of TFT only refer to the steps used in calculating the Basic Cost through extrapolation of a Unit Cost derived from nursery stock pricing? Or should the TFT refer to the entire process of developing the Basic Cost and also applying depreciation if applicable? Either way, they both have the same resulting "depreciated cost." I leave the labeling of that distinction to the powers that be. Whatever the answer, I intend to follow the guidance of any future published developments answering this question.

I hope that my "Buckets" article will still continue to spark discussion about allocation of depreciable attributes within the new rating system.

Sincerely,
James Komen, RCA #555

Scott's Reply

James is, of course, correct that mathematically, the result is the same whether the notation is bracketed as single or separate steps. Since the 10th Edition presents an entirely new organizational scheme, understanding and reflecting that scheme is as important (to appraisers and appraisal users) as the numerical result. Separating cost and depreciation operations or steps in mathematical notation more accurately reflects the organizational scheme depicted in Fig. 5.1.

[4] Clark, James. "Plant Appraisal: from assessment of health, structure, and form to determining depreciation." Assessing Trees for Value and Safety. September 20, 2019. Anaheim Community Center, Anaheim, CA.

[5] Clark, James. September 20, 2019. Personal communication.

[6] The associative property of multiplication is expressed as A x B x C = (A x B) x C. In tree appraisal, the following is equivalent: Trunk Area x Unit Cost x Depreciation = (Trunk Area x Unit Cost) x Depreciation

[7] (Condition - a - b) x (Functional Lim) ≠ (Condition - a) x (Functional Lim - b)
Or, more precisely, the above equation is only true when b is 0.