Dear Editor,

RE: The Turfgrass Phytomer—A Carryover from the Past

The term "phytomer" has been defined by some as the basic structural unit of the grass plant, consisting of "a piece of stem with a leaf on the upper end and a bud at the lower end" (6). Phytomers are used in several of the current turfgrass textbooks to describe the vegetative growth of grasses (2,3,8,9,15). However, the term does not appear in widely used botany texts (10,11,13,16). Further, the term and the related phyton theory are generally mentioned only in passing by plant anatomists and developmental botanists (R.J. Tyrl, 1983, personal communications). Why, then, does the term persist in turf literature? A brief review of the history of the term's use will help answer this question.

Man's desire to describe the basic structural unit of plants is not new. Theophrastus, over 2000 years ago, stated that the root, stem, branch, and twig were the primary units of plants, corresponding to equivalent members in animals (14).

Plant scientists during the early 19th century again became keenly interested in discovering the basic unit of plants (1,12). Researchers of this era were perplexed by the power of stems to produce leaves, roots, and other stems. No other plant part possessed such generative powers. They reasoned that plants must consist of a series of basic, totipotent units. The physical bumps (nodes) along the stems of plants were thought to delimit such units. The basic unit was termed a phyton and the phyton theory was developed to explain that plants grew by the simple sprouting of terminal phytons.

In 1879, Asa Gray, a prominent Harvard botanist and proponent of phytonism, coined the word phytomer to replace phyton (7). Gray objected to the term phyton, because in Greek it meant plant. He preferred phytomer, which means plant-unit.

The phytonic theory was never universally accepted by botanists, yet it took nearly a century before it was abandoned it (1,5,12). As botanists accumulated information about the organization and growth of vascular plants, it became apparent that the phytonic theory and terms phyton/phytomer had no basis in anatomy (5), embryology of primitive plants (4), or paleobotany (1). The concept and the terms were resoundingly rejected by botanists in the early 20th century (1,4,5,12).

Unfortunately, while the use of the terms phyton and phytomer by botanists had waned, the use of phytomer (unwittingly?) perpetuated by a few agricultural scientists. A.G. Etter published a paper entitled “How Kentucky Bluegrass Grows” (6). Etter referenced Gray as the authority on the phytomer. Etter’s paper became a cornerstone of early turfgrass literature, and thus phytomer was carried into later writings (2,3,9,15).

Unquestionably, the phyton/phytomer is not the basic morphological growth unit of grasses or other plants. Since the concept on which these terms were based has been rejected by science, it would be better to avoid continuation of their use.

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