PRINCIPLES OF TURFGRASS CULTURE by John H. Madison, Department of Environmental Horticulture, University of California, Davis. 405 pages plus index; 107 illustrations; 6 x 9; Van Nostrand Reinhold; $19.95. Publication date: March, 1971.

Principles of Turfgrass Culture is a compendium of the vast amount of literature available in the field. After noting the material, the author extracts general principles, then uses them to illustrate their bearing on various management problems and practices. Emphasis is placed on the interactions between different management practices and different environments; the principles are used to show the directions in which one can go and the compromises that are necessary to achieve certain goals.

The author provides complete coverage of the anatomy, morphology, genetics, taxonomy, and physiology of the turfgrasses—physiology and ecology are treated throughout the book as parts of almost every chapter. The author then explains climate, soils, plant nutrition, irrigation, salinity, and drainage.

An unusual feature of Principles of Turfgrass Culture is the inclusion of sections called practicum, or practical review, which make it possible to review quickly important practical applications of the scientific principles and data to field management. A second feature is the nexological approach that considers management practices as an interrelated network of the whole in which each affects the results of all the others — irrigation, mowing, disease control, fertilization, and so forth, are never considered as isolated bits in a program.

The ten chapters of Principles of Turfgrass Culture are as follows: Anatomy and Morphology of the Turfgrass Plant; Taxonomy, Cytology, and Genetics; Turfgrass Physiology; Turfgrass Climate and Microclimate; Soils; A Brief Introduction to Soil Chemistry and Plant Nutrition; Plant Nutrition and Fertilizers; Soil, Plant, and Water Factors in Irrigation; Irrigation Design; Drainage and Salinity. This important reference also contains a Glossary, Author Index, and Subject Index.

THEREFORE:

(.17) (18%) + (.12) (6%) + (.06) (.12% = $4.50/100 lbs. or 4.5¢/lb.

Fertilizer that contains 18% nitrogen will require 5½ lbs. of fertilizer per 1,000 sq. ft. to apply 1 lb. actual N/1,000 sq. ft.

Thus, actual cost becomes 4.5¢ times 5.5 lbs. or 24.75¢ per 1,000 sq. ft. of turf area.

Third bid: $105.00/ton for 13-4-9.

$$\text{Cost/lb. N} = \frac{52.50}{(2{,}000)\ (.13)} = .20¢/\text{lb.}$$

$$\text{Cost/lb. } K_2O = \frac{.20}{3} = .07¢/\text{lb.}$$

$$\text{Cost/lb. } P_2O_5 = (2)\ (.07) = .14¢/\text{lb.}$$

THEREFORE:

(.20) (13%) + (.14) (4%) + (.07) (9%) = $3.79/100 lbs. or 3.8¢/lb.

Fertilizer that contains 13% nitrogen will require 7⅔ lbs. of fertilizer per 1,000 sq. ft. to apply 1 lb. actual N/1,000 sq. ft.

Thus, actual cost becomes 3.8¢ times 7.66 lbs. or 29.1¢ per 1,000 sq. ft. of turf area.

Now—let's summarize these three bids.

1. 15-5-10 @ $100/ton = 25.3¢/1000 cost.
2. 18-6-12 @ $120/ton = 24.75¢/1000 cost.
3. 13-4-9 @ $105/ton = 29.1¢/1000 cost.

It becomes evident that the cheapest bid to start with was not necessarily the most economical as an end product. These figures are relative, and should be used for comparative purposes only. This method is much more accurate, and in many cases, will reflect a different cost than that shown by comparing the cost of N alone. This in turn gives the most important reasons for using this method of evaluation. It eliminates controversy and disagreement on the part of those bidding, and allows positive justification to superiors for final selection of a successful product.