

emergence crabgrass control market, succeeding potassium cyanate and supplementing phenyl mercuric acetate. Research in 1957 has led to the production of a faster acting material, amine methyl arsonate, which will be available in 1958 through several formulators.

Soil Sterilization Needs More Attention

Dr. Gene Nutter of Florida reports on tests of 12 chemicals—four of which (Vapam, methyl bromide, Mylone, and calcium cyanamid) have been used to

some extent by turf superintendents. It does require extensive planning and some added work before satisfactory performance can be expected from these materials. Nevertheless, the potential service of sterilization of special soil is generally not being utilized.

Insecticides require some finesse in use but many types are available and the user may usually expect satisfactory performance. Generally, recognizing the problems is the key to satisfactory results.

Adequate Equipment Contributes to Efficiency

David M. Lilly and J. R. Watson, Jr.,

President and Chief Agronomist, Toro Manufacturing Corp., Minneapolis, Minn.

EFFICIENCY in golf course operation implies the development and maintenance of the highest possible degree of turfgrass quality and player acceptance commensurate with a given expenditure of time, energy and money. Efficiency in golf course operations is attainable through organization, planning and supervision. Adequate equipment contributes to efficient golf course operations. In fact, adequate equipment is essential for efficient golf course operations. The selection, procurement and use of adequate equipment should be approached on the same basis as the overall golf course operation; i.e., a planned and organized approach with proper supervision.

Need

Labor costs have been and still are rising. Further, there seems little reason not to expect this trend to continue. Likewise, player demands for higher quality playing conditions are increasing. Budgets are not, and probably will not, increase proportionately.

Labor is most likely the biggest expense item in a yearly budget. This means, primarily, that hand operations are too expensive and must be eliminated. If the demands for ever improving maintenance standards are to be met economically, operations must be keyed to the use of not only more mechanized equipment, but also to equipment which will produce a great number of work units per man hour of operation. Great strides have been made in this respect during the past two decades,

but still greater strides must be made if player demands are to be met.

Planning

The direction for increased efficiency through adequate equipment does not necessarily lie in the development of new equipment, non-existent today. Rather, increased efficiency may (and probably does) lie in the development and execution of programs built around equipment presently available, or in the later stages of development. Certainly the greatest immediate potential for increasing efficiency calls for such an approach in our thinking. This means planning.

RESPONSIBILITY—The club membership is responsible for overall programming of operational standards. It must decide the type of course and level of maintenance required for its particular needs. These expressions are made through their appointed representatives — the Green Committee. Based on the authorized expenditures (budget for golf course operation) the committee, in cooperation with the golf course superintendent, prepares and submits a long range and immediate plan of operation. If approved, the superintendent executes the program under the general supervision of the Green Chairman.

Planning for adequate equipment then, is indirectly the responsibility of the membership but, in actuality, the direct responsibility of the superintendent—acting within the confines of an operational program, planned and developed in coopera-

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tion with the Green Committee and approved by the membership through their representatives (Board of Directors). Participation of the golf course superintendent in local, regional and national educational conferences, particularly the National Show and Conference, is invaluable from the standpoint of keeping abreast of developments in golf course operations.

DEVELOPMENT—Planning for adequate equipment begins with a detailed study of the course layout. Ideally, a scaled layout of the course, with possibly relief models of the greens inserted, should be made. Such a layout would show the various landscape and terrain features; roadways and bridges; the size and shape of greens, tees, fairways and roughs; and the location, number and shape of traps. From such a layout, coupled with a knowledge of the necessary maintenance practices, plans for increasing efficiency through adequate equipment may be developed. These should be developed along two lines—an “immediate” or current program and a “long range” program.

IMMEDIATE PROGRAM—The objective of this program should be to determine if the course, in its present condition, is being maintained as efficiently as is possible with equipment on hand or available for purchase. This involves, among other things, an examination of the capacity, maneuverability, sturdiness, durability—and in the case of certain mowing units, trimability—as well as a study of the maintenance records on each piece of equipment to determine annual service and repair costs. Replacement of inadequate and costly (from standpoint of operation) equipment with units which will produce more work per man hour of operation will contribute materially to efficiency; however, since equipment purchases are essentially capital expenditures, and certain types may last from five to fifteen years, no equipment should be purchased except within the framework of a long range program. (Others on the program are scheduled for detailed discussion of long range planning. We will cover only the highlights as related to adequate equipment.)

LONG RANGE PROGRAM—This approach is basically a modernization program. Many of our courses were designed and constructed during an era when labor costs were negligible and mechanization of little importance, thereby creating many time consuming operations requiring the use of low capacity, and often costly equipment. Landscaping may not have been planned, but grew haphazardly over the years with little thought to the maintenance demands being created (often in accordance with the whims and fancies of some particular member). Shrubs and trees requiring specialized care in the way of spraying, trimming, etc., and often located in such a manner as to interfere with large capacity mowing equipment—thus requiring additional time consuming operations to maintain surrounding turfgrass—do not contribute to efficient operation.

A long range program of redesign in keeping with modern trends, landscaping calling for elimination of problem trees and shrubs, substitution of more hardy species requiring minimum maintenance and located to accommodate equipment

with greater capacity and, perhaps most important, the construction of greens and tees employing the latest materials and techniques developed through research will unquestionably contribute to efficiency. Such a program may require several years for completion, but with competent direction, supervision and adequate equipment, may be accomplished with only a reasonable increase in operating budgets.

Selection of Adequate Equipment

Adequate equipment for one course may be inadequate for another and excessive for a third; therefore, equipment must be selected on the basis of the individual requirements for a particular course. Features of the course, as developed earlier and incorporated in the plan of operation, will dictate the various kinds, sizes and types of

equipment required for efficient operation.

Other factors to consider when selecting equipment are: (1) Equipment purchases for the most part are capital expenditures and should be treated as such—amortized and depreciated; (2) The manufacturer or his representative should be consulted on the type of equipment needed. Information on new equipment and improved features, as well as the suitability of their equipment for the job at hand, is readily available from the reliable manufacturer. (3) The availability of parts and service facilities. This is of prime importance when selecting equipment. If repair parts are not available when needed and a machine is inoperable for extended periods, it is of questionable value and certainly will contribute little to efficient operation.

Question and Answer Session

MODERATOR: *A. M. Radko—USGA Green Section Eastern Director*

PANEL MEMBERS: *Mr. Harris, Dr. Watson, Dr. Daniel, Mr. Noer,
Mr. Andrew Bertoni, Superintendent, Meadowbrook Country Club,
Northville, Michigan
Mr. Carl Bretzlaff, Superintendent, Meridian Hills Country Club,
Indianapolis, Indiana
Mr. Charles K. Hallowell, USGA Green Section Mid-Atlantic
Director*

MR. RADKO: With reference to equipment, do you have suggestions as to how a club could set up a machinery replacement reserve?

MR. BERTONI: The best thing to do is to set aside so much out of your budget each year for machinery replacement. Set up a depreciation schedule and find out what you have and what the turnover will be. This will help somewhat to prevent some board member from decreasing the maintenance budget in order to promote some other project.

MR. RADKO: Mr. Bertoni, will you tell us how you go about determining the rate of depreciation of equipment? Doesn't it vary a great deal depending upon the kind of equipment?

MR. BERTONI: I try to check with the manufacturer or the salesman. You can operate a piece of equipment for a long time but it may be more expensive than if it were disposed of sooner, because of the expense of repairs. Length of life depends

on use to a great extent. We try to figure the expected life of each individual piece of equipment.

QUESTION: Mr. Bretzlaff, what do you think your total inventory is worth?

MR. BRETZLAFF: If we were to sell our equipment, it would bring around \$22,000. If we were to go out on the market and buy it, we would have to pay around \$35,000.

MR. HALLOWELL: I think Mr. Bertoni and Mr. Bretzlaff have touched on something rather obvious, that the life of the same piece of equipment will vary considerably from one part of the country to the other. One approach to determining the life of equipment is to keep your own records of cost and maintenance and to develop these data for your own particular course.

MR. HARRIS: I'm glad you mentioned that about different parts of the country. On my own course in Florida we have a replacement budget of \$5000 a year. Here