

provided for slopes and surrounding areas of greens. Normally, the soil used for these areas are heavier and poorly drained as compared to the modified putting greens. Thus, they hold water better and do not need to be irrigated as frequently as the well-drained green.

Soil sterilization

Soil sterilization is the next step in producing a quality playing surface. This provides control of most undesirable weeds, insects, and nematodes present in the root zone mix. Maintaining putting greens with an ever declining number of effective pesticides, amplifies the need of soil sterilization before grass establishment. This is especially true when considering nematode and weed control. The two most commonly used soil fumigants are methyl bromide and metam-sodium. Methyl bromide is the most effective soil sterilization chemical to use. However, it is highly toxic, requires a polyethylene cover after application for optimum efficacy (Fig. 11), and a special pesticide license for purchase and use. Metam-sodium does not require a cover after application, but is less effective without one and three weeks are generally required before planting. It is suggested for those unfamiliar with soil sterilants contract a custom applicator to perform this to insure proper and safe application.



Figure 11. Polyethylene cover used to obtain maximum efficiency from soil fumigation.

Final grading

Once fumigation is completed, the final grade will probably require a re-check using a level or transit to ensure that the original specifications are retained. Any final grading should be done manually by means of shovels, push boards, and/or drags. Once the final grade is established, the green is now ready for firming. Several machines are

available to perform this. A small crawler tractor, a mechanically powered roller, or a tractor with wide tires is operated back and forth in numerous cross angles until the entire surface has been compacted in several directions. The profile can be enhanced to settle and become firm by irrigating deeply but not to the point of runoff or else soil erosion and contour disruption may result. Once a satisfactory final grade is achieved, the surface should be smoothed by raking (Fig. 12). Hand raking is the preferred method but certain types of mechanical sand rakes are acceptable as long as the final grade is not significantly disturbed. The area is now ready to be established (planted) and maintained.



Figure 12. Hand means using shovels, push boards, and/or drags are best for final grading and smoothing.

Additional information

Collars

In the planning stages of green construction, it is suggested that the collar region be constructed similar to that of the green. Collars receive similar traffic and maintenance procedures as the green, and experience has shown that when constructed similar to greens, problems encountered in maintaining these regions are minimized. A problem frequently encountered after green establishment is excessive drying of soil adjacent to the collar. This occurs when the adjacent soil is a finer-texture, therefore, it has a greater tension (affinity) for the available water in this coarser-textured green area. Two methods to eliminate this drying include "ringing" the collar's perimeter with an impermeable barrier or by gradually grading the constructed collar's perimeter with a slope of 60 to 80 percent. In the "ringing" process, a strip of polyethylene sheeting is inserted between the outer soil and the sandy root zone mix to act as a vertical