

conditions such as water pressure, volume, size of pipe, type and number of sprinkler outlets and budget, each system has to be designed to meet these individual conditions. A competent irrigation engineer or others trained in this type of design should be consulted. Regardless of the system used, it should be able to apply a minimum of 1½ inches of water every 4 or 5 days during periods of extreme drought. A good quality loam soil will aid in minimizing the amount of watering required.

## SURFACES

Since many sports fields use turf surfaces, it is vital that the soil be properly prepared before grass is planted. A dense, wear resistant turf is necessary to provide a good safe footing, combat insects and disease, and present a pleasing appearance. Such a turf is the result of proper construction, preparation of the soil, (subsoil as well as topsoil) using the right grass and a well planned and executed maintenance program.

## SOIL PREPARATION

A good foundation and proper construction are essential if turf is to be established and maintained in good condition for any period of time at a reasonable cost in time and money. Minimum requirements include a deep, well drained soil that combats compaction; provides air circulation within the root zone; permits rapid removal of excess water from the soil while at the same time retains adequate moisture for continuous plant growth. The soil should all be of moderate to high fertility to encourage deep root penetration and promote growth.

Few areas in West Virginia available for construction of athletic fields meet these requirements, therefore, modification of the soil during construction will be necessary. Each athletic field will have specific requirements as to the area required, surface contour and orientation. Specific details for specific athletic fields are given in supplementary publications.

**Construction Procedure:** Once the site has been selected, the topsoil or surface soil should be removed and stockpiled adjacent to the site. The subsoil should then be graded to the desired contour for the specific field. After the contours are established, till the subsoil to a depth of 6 to 8 inches. Be sure to remove all stone, rock and other debris. At this time it is important to make certain that there are no soft spots or depressions that would appear in the final surface. Depending on the volume of topsoil available and the texture of the subsoil, it may be necessary to modify the

subsoil by incorporating organic matter and sand. Spread a two inch layer of organic matter and in the case of heavy clay soils, up to a two inch layer of sand over the area and incorporate into the subsoil. Fertilizer and lime (if needed) would also be incorporated into the subsoil at this time. A soil test will determine the amount and type of each.

Regrade the subsoil to the desired contour. Now is the time to install the subsurface drainage system. Generally, it is not necessary to install drainage tile throughout the entire area except in the case of frequent flooding or a high water table.

The topsoil should then be replaced in layers of no more than two to three inches, and mixing each layer with the preceding one. The proper contours should be maintained throughout this operation. The final depth of the modified subsoil and topsoil should be at least 15 inches.

A two inch layer of organic matter, lime (if needed) and one half the recommended amount of fertilizer should be worked into the top soil. A soil test will be needed to determine the exact requirements of each. Note that separate soil tests are required for subsoils and topsoils as their pH could vary drastically. Make certain that the proper contours are retained. Then rake in the remaining half of the fertilizer into the top two inches. The field is then ready for planting.

**Soil Sterilants:** After the seed bed has been prepared, it is advisable to sterilize the soil to eliminate all weeds, weed seeds, insects, and diseases. This aids in giving the newly planted grass a better start. Consult a local authority in fumigants and fumigation procedures for the method best suited to your particular situation.

## GRASS VARIETIES

Which grass to plant will be determined by the use of the field. Practice fields and others which receive daily use should be sown with Kentucky 31 fescue at a rate of five to ten pounds per 1000 square feet to give a compact turf and present a more pleasing appearance. Fields used only for actual games can be sown with any of the following:

- A. Merion Bluegrass (100%) - 2 to 3 lbs. per 1000 sq. ft.
- B. Windsor Bluegrass (100%) - 2 to 3 lbs. per 1000 sq. ft.
- C. Merion or Windsor Bluegrass (50%) - 2 to 3 lbs. per 1000 sq. ft.
- D. Common Kentucky Bluegrass (50%) - 1000 sq. ft.

Other available bluegrasses, such as Pennstar, South Dakota, Fyking, etc. may be considered for inclusion in the mixture.