

from a concrete or asphalt surface. Poor drainage often unnecessarily delays the use of turf after rainy periods. Any irregularities in the surface, such as those caused by tires in wet weather, are more troublesome in flat areas than those with more pitch. Porous loams or mixtures of loam and clay soils with more than 50 percent of sand, are of great advantage in establishing turf from the standpoint of drainage.

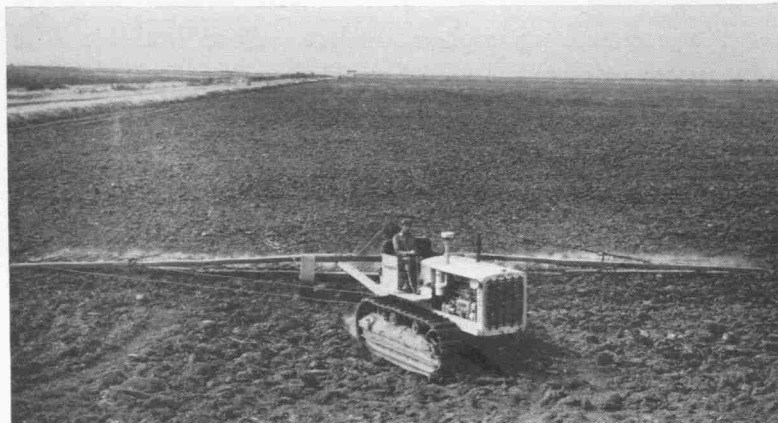
PREPARING THE SEEDBED

The purpose for which turf is to be planted, size of the area, and soil type are all factors which influence the methods to be



In preparing large areas for turf, a double disk may often be used to advantage. A machine such as this one, having a rear disk which throws the soil in only one direction opposite to the front disk, produces a level seedbed. The spike-tooth harrow dragged behind the disk helps to further pulverize and smooth the soil.

used in the preparation of a seedbed. On large areas such as airfields the preparation of soil for planting after the final grading has been done usually can be accomplished in one operation by the use of a disk. This operation may leave the



In preparing the seedbed on some soils, harrowing may be necessary in addition to disking. On large areas, this type of spike-tooth harrow may be used to advantage. The comparatively light draft of the spike-tooth harrow makes it possible to pull a large number of units with a relatively small amount of power. The use of such a harrow tends to level as well as to further pulverize the soil.

seedbed in a rather rough condition but because of the dust problem on dry areas the rougher seedbed is superior to one on which the soil has been finely pulverized, except in cases where good appearance is important.

On lawns or other small areas where the use of a disk is impractical other methods must be employed. Small disks, plows, or motorized tillers may be used on larger lawn areas, but on very small lawns it is often necessary to spade the area by hand to a depth of 3 to 6 inches, depending on the soil type. The practice of hand raking is employed on these smaller areas to smooth and pulverize the soil sufficiently to make it suitable for seeding.

On many large areas regular farm disks may be used satisfactorily. On airfields, however, most farm disks are not suitable for use, unless followed by a drag or harrow, because

they are constructed so that they throw the soil two ways. The use of this type of disk leaves alternate ridges and furrows, and unless these are leveled by some type of drag they cause a great deal of vibration in planes traveling across the field at high speed. Disks can be obtained which throw all the soil in one direction, thereby eliminating the "washboard" effect caused by the ordinary disk. In tightly packed clay soils it may be necessary to disk the area more than once in order to prepare the soil properly. If fertilizer is applied before the final disking, that operation can be used to accomplish two objectives; that is, to work the fertilizer into the soil and to break up the soil properly for planting. The fertilizer should not be disked into the soil so deeply, however, that it is placed below the level at which most of the grass roots will grow.

FERTILIZING

The fertilizer requirements of grasses for turf purposes are very different from those of most field crops. Grass produces a large amount of foliage for which nitrogen is primarily required. Because of this, together with the fact that nitrogenous salts are readily leached from the soil, nitrogen usually is the element which is likely to be depleted most rapidly from soil under turf. In general, therefore, the fertilizers which are recommended for use on turf are usually high in nitrogen. Fertilizer mixtures containing approximately half as much phosphoric acid as nitrogen and still less potash have been found to give the best results at the minimum cost in tests made under various climatic and soil conditions.

Soil analyses, when considered in relation to the requirements of the grass to be planted, are useful in helping to determine the types and amounts of fertilizers to be applied. Inorganic