

# Sod, Water, and A System

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The production and use of sod for the establishment of an instant turfgrass cover is not of recent date. However, the progress and developments which have led to the sod industry as we know it today have primarily come about within the last 10 to 15 years. One of the most striking developments has been the rapid emergence of sod production as a highly specialized and sophisticated industry from the so-called "pasture stage" of long standing. The "pasture stage" was characterized by fence rows, dairy and beef animals as mowing units, as well as fertilizer manufacturing plants and application equipment and a "pot-pourri" of plant growth most of which would be difficult to classify as turfgrasses.

From an economic standpoint, grazing of sod fields provided the distinct advantage of utilization of clippings. Clippings are somewhat of a by-product in the present day industry. The "pasture stage" has been forced out of existence in most areas but remnants of this stage still can be found in certain parts of the country.

The new industry became known as nursery sod or cultivated sod in contrast to the "pasture sod." Sod producers became quite sensitive to this distinction. The primary stimulus for the rapid advancement of the nursery or cultivated sod industry was the realization that there was a demanding market for a high quality product. The sod industry quickly and successfully responded to satisfy this market. The high quality sod which became available acted as a "catalyst" in stimulating greater interest in the use of sod. Striking improvements in sod quality were achieved through the adoption of intensive cultural practices, improved turfgrass varieties of known genetic purity and high quality seed.

Sod growing tends to be concentrated close to the area of use, i.e.

close to its market or point of utilization. The major marketing area of a specific sod operation is principally within a 100 mile radius of the point of production, although some may be shipped for greater distances. Two major reasons can be cited for such localization of production and marketing:

1. Sod is a highly perishable product which will deteriorate very rapidly after harvesting if not utilized immediately, particularly during the warmer seasons of the year.
2. Minimize transportation costs and in terms of present day concerns, conservation of energy as well.

Accordingly, you will find sod farming concentrated very close to areas of residential, industrial and recreational development. Consequently, this means production in high value land which becomes an important cost of production factor.

A superior quality sod is characterized by many different factors. An attractive appearance is of paramount importance to a purchaser of sod. From the standpoint of the producer, in addition to appearance for marketability, sod must be dense with a well developed root and rhizome system to facilitate harvesting and handling. In addition, the producer must be vitally concerned with minimizing the length of time to achieve maturity, a marketable product, from the time of seeding. To satisfy these needs, the maintenance of favorable soil moisture conditions for rapid, vigorous, and healthy growth of turfgrasses is of vital importance in the profitable production of sod.

Among the cultural practices that were adopted by the sod producer in emerging from the "pasture stage" was sprinkler irrigation. In some areas of the country sod must be irrigated throughout most of the growing season. In the more humid areas such as my area in the Northeast, sod producers must rely upon

supplemental irrigation to provide assurance of adequate soil moisture during unpredictable soil moisture stress periods which invariably occur during the growing season.

The importance of water in the life processes of a turfgrass plant is partially revealed by the fact that from 60 to 75 or more gallons of water are required for the production of one pound of dry matter by the plant. Although turfgrasses can tolerate a high degree of soil moisture stress without suffering permanent damage, adequate supplies of soil moisture must be maintained by supplemental irrigation not only to satisfy the demands for a high quality sod but also from the standpoint of economics of production to reduce or minimize the time required for maturity. Reducing the time to produce a marketable product constitutes an important factor in production costs since, as previously mentioned, sod generally is produced on land of high real estate value.

Since turfgrass plants can withstand a certain degree of drought stress, it is not essential to maintain every square foot of sod on a farm in an attractive green condition. Once the sod has reached maturity, emphasis upon watering can be relaxed and the sod allowed to become semi-dormant or even dormant. However, prior to marketing, it must be brought back to an attractive green condition. This can be readily accomplished with the resumption of proper water management to eliminate any soil moisture stress. In addition, a light application of a soluble nitrogen fertilizer will hasten growth as well as restoration of green color.

Other than encouraging maturity and providing for an attractive appearance, sprinkler irrigation may be effectively utilized for various purposes in the economic production and utilization of sod. The following are listed as prime examples:



1. Germination of new seedlings: Practices in seeding differ throughout the country. Some areas will restrict seeding to the favorable season — the late summer-early fall season. Other areas will seed continuously throughout the growing season. This practice must rely upon sprinkler irrigation, usually by means of solid set.

2. Watering-in of materials: Fertilizer and possibly other chemicals can be watered-in after application to reduce the possibility of injury and/or accelerate activity of the treatment.

3. Fertilizer carrier: Soluble fertilizer can be applied by injection into the sprinkling system. An even distribution pattern becomes very critical.

4. Harvesting operations: Favorable soil moisture conditions are necessary to facilitate mechanical lifting of sod as well as provide moisture for its preservation until it is transplanted and watering resumed at the new site.

5. Post-transplanting management: Watering immediately after and also as a part of the transplanting procedure is very critical until the sod develops new roots and knits to the soil in which it is transplanted.

6. Waste disposal site: Sod farms may serve as a site for solid and liquid waste disposal.

Important considerations in the establishment of a water management program on a sod farm are the basic questions of water quality, supply, amount, rate, frequency and time of application. It is beyond the scope of this article to expound upon these basic considerations for an effective and efficient sprinkler irrigation program. However, I wish to state that it is very difficult or impossible to establish rigid or arbitrary standards as answers to these questions because of the wide variations in many factors influencing water requirement for satisfactory turfgrass growth. Such factors as the turfgrass plant, stage of maturity of the sod, absorptive and storage capacity of the soil and climatic factors affecting the consumption and loss of water need to be considered. Accordingly, specific recommendations that would encompass all of these considerations and be inclusive of the extremely wide variation in conditions become an impossibility. An intelligent manage-

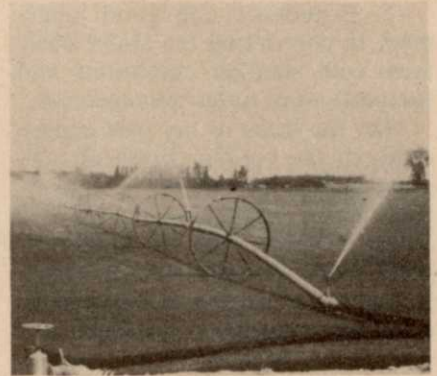
ment program in the production of sod depends upon:

1. An understanding and appreciation of the functions of water in the establishment and growth of turfgrasses.

2. An understanding of the water requirements of turfgrasses.

3. An intimate knowledge of soil conditions present on the farm and their effect upon infiltration, storage and release of water for growth of turfgrasses.

4. A keen observation of turfgrass conditions and status of soil moisture from day to day.



This wheel move system is a form of irrigation commonly used in sod production.

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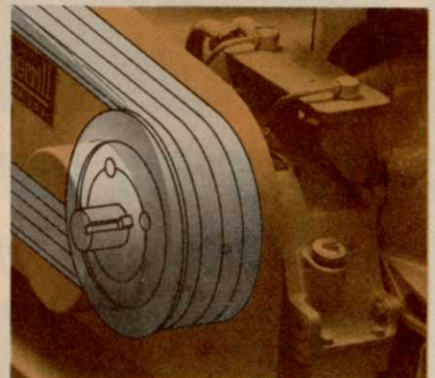


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5. Experience and good judgment in correlating the above basic facts with weather conditions and forecasts—i.e. water management.

On the basis of my past experiences in the various facets of turfgrass culture in general, it appears that water management on sod farms is better than in other turfgrass areas. Perhaps a major reason is due to the fact that it becomes an economic necessity in profitable sod production. A common tendency on many turfgrass areas is to water excessively. This type of water management is not only wasteful and costly but can be detrimental to turfgrasses.

Irrigation of sod is very similar to that of other agricultural crops. However, one major exception is the necessity for uniform distribution patterns in the production of sod. Water distribution patterns become more noticeable and evident in the appearance, growth and quality of the sod than in the other agricultural crops. Accordingly, greater precautions must be taken in sod production not only in proper selection of sprinkler irrigation systems but also in the techniques of application.

The primary and most common method of sprinkler irrigation utilized on sod farms is by means of surface portable systems. Such systems include various means of movement of pipe ranging from manual to self-propelling by various different mechanisms.

Sod production lends itself very well to self-propelling mechanisms because of the levelness and size of the fields and the surface that sod provides to facilitate movement. Solid set systems are utilized to a limited extent — primarily for the germination of new seedings. However, I personally have noted solid set utilized throughout the entire production stages of the sod. Solid set greatly reduces but does not entirely eliminate the chore of moving pipe. In order to facilitate mowing, movement of pipe becomes necessary. Solid set would be most useful in low rainfall regions. Ideally, an economical underground pop-up system would be a sod producer's delight. However, systems of this nature which are presently available are prohibitive from the standpoint of economics.

A glance into the future of the sod industry on the basis of the

energy crisis and economic forecasts makes one feel rather pessimistic. I personally have adopted an optimistic attitude. My outlook is based on such facts as:

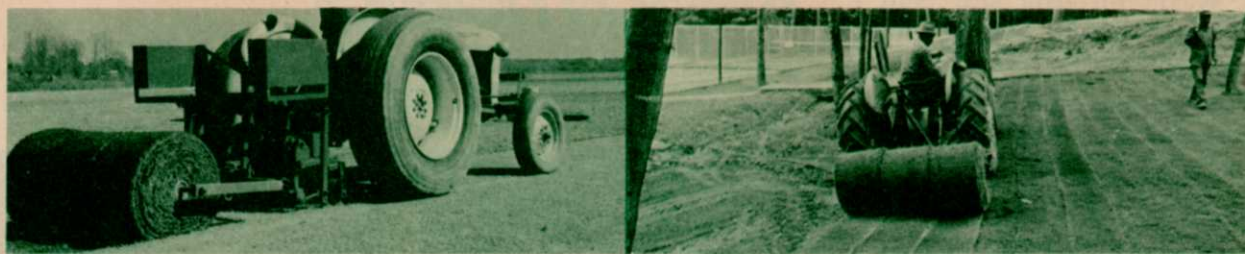
1. Sod represents a product that is vital to the enhancement of our environment for more enjoyable living. As long as we continue to be concerned about our environment and strive for its improvement, sod will occupy an important position.

2. Possible utilization of sod farms, protected by mandate against massive development, as a means of maintaining needed open space in an attractive condition.

3. Utilization of clippings as a source of nutritious feed for the production of animal products.

4. Solid and liquid waste disposal without detriment to the environment is one of our major concerns. Sod farms may effectively serve as a disposal site for solid and liquid waste in future management of our waste problems.

On the basis of these considerations, perhaps the future for sprinkler irrigation in sod production is brighter than what it may appear to be today in view of other problems.



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