

Coverage, frequency and application rates are criteria for success.

## Fertigation of turfgrass—will it work for you?

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More and more turfgrass managers are finding that a method of applying fertilizers used extensively in the irrigated agriculture industry, can also be very practical and beneficial in the turf industry.

For over 20 years, irrigation farmers have been applying their fertilizers and some chemicals through the irrigation water. The same system used to apply water can be used to apply fertilizers uniformly, and with accuracy, through any well-maintained irrigation system. The same advantages and benefits are being realized by more and more responsible turf managers today.

Many people are apprehensive about further investigation of the fertigation concept because it can

seem complicated. This is a typical reaction to a new way of doing things, when, to most people, the old way seems to be very adequate. In most cases, it is just a matter of re-adjusting thinking from using dry materials to working with liquids. The turf will still require the same amount of nutrients but calculations would be done in liquid measurements instead of dry.

That fertigation will not work for someone is the exception rather than the rule. Fertigation will work only on a limited basis for some, while others may be able to engage in a total program to eliminate labor and costs related to other methods of application.

Will it work for you? Check the following and answer the questions as they apply to your situation:

**The sprinkler** system should provide coverage that you are happy with.



### Labor and equipment required for current program

◀ Calculate the labor and equipment costs you currently have for application of fertilizers.

◀ How effective is your fertilizer program?

◀ Are you satisfied with the results?

### Irrigation/sprinkler system

◀ Is the system programmed or designed to apply approximately the same amount of water on all areas?

◀ Are you getting the uniformity you want?

◀ Are you confident that your sprinkler system is getting the right amount of water in the right places?

**NOTE:** Systems programmed for less water in some areas will normally require less fertilizer to be applied in that area. Example: 1) Compacted area with run-off potential will require less fertilizers until compaction problems are resolved. 2) Sandy areas may require more water because of the high absorption rate. These areas will also require more fertilizer because of leaching tendencies.

### Fertilizers

◀ Figure the cost of fertilizer currently used.

◀ What are your storage and handling costs?

◀ How much is lost through leaching or other sources?

◀ Is it effective immediately after you apply it?

◀ How do you determine how much to apply at any one time - to last how long?

### Fertigation will work for you if:

◀ You are a concerned and responsible Turf Grass Manager.

◀ Your sprinkler/irrigation system is providing you with the type of coverage you are happy with.

**NOTE:** Fertilizer distribution is going to be only as effective as the water distribution.

◀ You select a reliable source to counsel you on:

a) Type of liquid fertilizers best recommended for your grass, soil and climatic conditions.

b) Frequency of application.

c) Amount of fertilizers needed per application.

### Benefits that are possible through fertigation:

◀ Reduces significantly the costs of labor and machinery required for dry fertilizer application.

◀ Extends the usefulness of the sprinkler system.

◆Storage and handling of liquid fertilizers are often made easier and less complicated.

◆Water and fertilizer mixed together often allows greater use efficiency of the fertilizer. No waiting for rain or water to desolve dry particles.

◆Apply only as much fertilizer as the plant will use for a specific period of time. More frequent applications of nitrogen at lesser rates have indicated less loss of nitrogen and greater use efficiency.

◆No equipment application restrictions - if your sprinkler system can be operated, you can inject and apply fertilizers when you want. Some are programmed to inject fertilizers at night when conditions are more favorable.

On many golf courses, especially in the more arid states of the Southwest, it's usually safe to say that "We don't want fertilizer where we can't get water to it." While this statement will not apply to all situations, most sprinkler systems are designed to give coverage to important areas of the course. Others, that are partially irrigated, would naturally be restricted in the effectiveness that could be achieved.

Contrary to a lot of thinking, it isn't necessary to achieve an absolute mix ratio of irrigation water and fertilizer on the turf. The basic thought to remember is the water is basically acting only as a carrier for the water soluble fertilizers. By predetermination, you know that each section (zone) of your sprinkler system is covering a certain square footage or area. Your irrigating time is usually based on, 1) the amount of water required for that area, 2) sprinkler system capabilities, 3) soil holding capabilities, 4) and other factors prevelant to that specific zone.

By considering all specifics involved, a time factor has been established for irrigating that area. Then, a determination must be made as to how much fertilizer is required for that particular area (zone).

Using the SMALLEST area (zone E) as the "calculating area", determine how to adjust the injector for 1.25 gallons of fertilizer to be injected into the waterline in a 10 minute time span. Set the injector pump at that rate and leave it at that setting for the entire operation. If using the proper equipment for injection, it

doesn't matter how many gpm's your well is pumping or what pressures. The output from the injection pump should remain the same if the right equipment is chosen and used according to specification.

Several different methods are being used today for "fertigation". Some of the methods of injection range from very complicated and expensive flow indicating or monitoring devices to very simple induction pipes installed on the suction side of a booster or water well pump. All of the various types or methods may prove to be acceptable for those that have installed and are currently using them. Most injection systems are adapted for that particular location and cannot be moved or transported to another location if the need arises. Some systems that rely on water velocity or pressures for operation may not be as consistant in output as desired because of fluctuations in flow and pressure.

Of all the methods that have been and are being used, it is generally agreed that a piston type pump, injecting the fertilizer into the pressure discharge side of the water pump, is probably most acceptable. One of the acceptable characteristics of the piston pump is its ability to automatically compensate for varying changes in water pressure. It is virtually not affected by pressure differentials. A separate pumping unit, the injector pump and fertilizer holding tank are located at any convenient position downstream from the water pumping station. Injection of fertilizer on the pressure side of water pumping equipment eliminates constant exposure to bearings and bushings in water pumps and to any critical automatic valving past

the pump.

Fertigation can be a very effective turfgrass management tool. Most irrigated turfgrass managers already have a major portion of their homework completed. It is very possible that fertigation could work for you.

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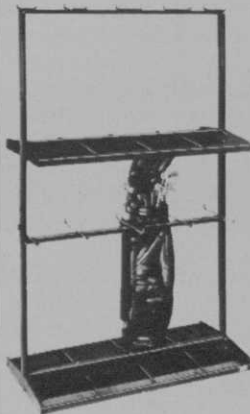
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