TIMELY TURF TOPICS

Issued By The

UNITED STATES GOLF ASSOCIATION GREEN SECTION

ROOM 307, SOUTH BUILDING
PLANT INDUSTRY STATION
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DRAINAGE, AERATION, AND WATER MANAGEMENT— THE BIG THREE IN GOOD TURF

ALGAE: Algae is not a problem - it is a condition which has resulted from certain causes. The real problem is to remove the cause so that grass can grow.

Algae is a green plant which requires a constant, abundant supply of moisture for its growth. Algae is found in ponds, pools, and springs where it is constantly bathed in water. It forms on the surface of putting greens only where the growth of grass usually is poor.

To prevent the growth of algae, provide adequate drainage and correct the water management so that not enough moisture remains on the surface to permit algae to grow. Again, it must be emphasized that good turf is the best defense against algae.

The procedure for correcting or checking an algae condition temporarily consists of light (2 to 3 pounds to 1,000 square feet) dustings at frequent intervals, using hydrated lime. Application of the lime as a spray is of less value because more moisture is applied. Tine-forking will admit air into heavy, poorly-drained soils and will break the smothering scum which forms.

In seasons when algae is prevalent it appears that there are more than the usual number of inquiries about crabgrass and clover.

The following excerpt is taken from The Bulletin, U.S.G.A. Green Section, Vol. VII, No. 10, p. 204, 1927:

> "Good turf can not be maintained on a putting green unless both the surface drainage and the under drainage are good. It seems very hard for some people to appreciate the importance of good drainage, although probably 50 percent of putting green troubles are due to lack of it."

EFFECT OF NITROGEN AND IRRIGATION ON CLOVER POPULATIONS IN BLUEGRASS SOD: In the February, 1947, number of the Journal of the American Society of Agronomy, Robinson and Sprague reported the results of some experimental work with bluegrass-clover mixtures. Some of their conclusions are listed below:

> "On plots without nitrogen fertilization or irrigation the closer clipping treatments (1/2 inch and 1 inch) resulted in excellent stands of clover. Clipping to a height of 2 inches produced a more dense sod of grass with considerably less clover.
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> "High rates of nitrogen fertilization, without irrigation, greatly decreased the stand of clover and on the plots clipped to 2 inches clover was practically eliminated. With the more severe clipping treatments considerable amounts of clover were maintained even with heavy nitrogen fertilization.
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> "On the irrigated plots, clipping to 1/2 inch or 1 inch resulted in excellent stands of clover even on plots that received as much as 360 pounds of nitrogen per acre per year. Fairly good stands of clover were maintained at the 2-inch height of clipping.
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> "It is concluded that clover populations are determined by the ability of the clover to compete with grass for space, light, moisture, and nutrients."

VALUE OF NURSE GRASSES IN SEED MIXTURES: In the August number of the Journal of the American Society of Agronomy, Erdman and Harrison, of the Michigan Agricultural Experiment Station, have presented the results of a study of "The Influence of Domestic Ryegrass and Redtop upon the Growth of Kentucky Bluegrass and Chewings Fescue in Lawn and Turf Mixtures."

It is common practice to include seed of "nurse grasses" in any lawn seed mixture. A "nurse grass" should provide a quick cover to prevent erosion, should not be unduly competitive, and should disappear after one season, thereby allowing the permanent grasses to dominate. In practice, "nurse grasses" prevail during the first season and persist in the turf for several years. The study of seeding rates of grasses alone and in mixtures, and of the inhibitory effect of one grass upon another, was undertaken at the Michigan State College for the purpose of obtaining more specific information.

Four grasses were used in various combinations and at different rates of seeding. Kentucky bluegrass and Chewings fescue were selected as representative turf grasses. Domestic ryegrass and redtop were used as "nurse grasses."

The most important conclusion reached was, "Where quick cover is not essential, sowing an adapted, desired turf grass alone will result in a more satisfactory turf than a mixture which includes the coarser, more aggressive nurse grasses."

Kentucky bluegrass and Chewings fescue did not compete with each other but neither did their production increase when used together in mixture.

The dominance of domestic ryegrass and redtop over Kentucky bluegrass and Chewings fescue did not diminish with time.

LEAD ARSENATE FOR THE CONTROL OF CRABGRASS: In the June, 1947, number of the Journal of the American Society of Agronomy, Welton and Carroll, of the Ohio Agricultural Experiemnt Station, discussed the value of lead arsenate as a control agent for crabgrass. Since the success of crabgrass control by the use of lead arsenate heretofore has been unpredictable, a research project was inaugurated to determine the causes of failure in some cases and success in others.

The first problem was to determine whether the anion or cation in the lead arsenate was responsible for the killing. It was found that the anion, that is, the arsenate radicle, was the killing agent.

To determine whether death occurred in the seed or in the seedling, an experiment was performed in the laboratory whereby two lots of crabgrass seeds were placed in Petri dishes, moistened, and held for a period of three weeks at a temperature subnormal for germination. At the beginning of the experiment, one lot was treated with lead arsenate at the rate of 20 pounds to 1,000 square feet, and the other was left untreated. At the end of three weeks, temperatures favorable for germination were provided, and the seeds were sectioned and studied microscopically at various intervals. These studies showed definitely that the embryo had been killed.

Because of unpredictable results from applications of lead arsenate the writers were led to seek the reasons for its failure to control crabgrass in some cases. As the most probable explanation seems to be that some soils contain elements or compounds which react with or fix the arsenic as rapidly as it is released, thereby inhibiting its action, the writers treated crabgrass-infested Wooster silt loam soil with various salts prior to the application of lead arsenate. It was found that the effectiveness of control was reduced by pre-treating the soil with calcium carbonate, ferrous sulfate, phosphorous, and nitrogen. The reduction in effectiveness was not so great with calcium carbonate and nitrogen as it was with ferrous sulfate and phosphorous.

On Wooster silt loam, lead arsenate usually gives good control of crabgrass if it is applied at the rate of 20 pounds to 1,000 square feet at any time through the winter before March 1, and if the soil during that time is reasonably moist. Variability in crabgrass control is correlated with the composition and the types of soil, and no control may be obtained in soils which contain relatively large quantities of certain chemical elements, such as calcium, iron, and phosphorous, and possibly of colloidal material.

LEAD ARSENATE SURVEY

The purpose of this survey is to determine the extent of the use of lead arsenate on the golf courses reached by this publication and also the benefits which they derive from it. When the results of this survey are published, a resumé of the literature on lead arsenate will be included for ready reference.

It is hoped that a report will be returned by every club which is reached by TIMELY TURF TOPICS. To avoid any possible embarrassment, the name of the person completing the report is wholly optional, but it is desirable. The name of the club also is desirable. The following data are solicited:

1. Arsenate of lead has been used on our golf course for _____ years.
2. In that period of time, we have used (approximately) _____ pounds.
3. The usual rate of application to 1,000 square feet is _____ pounds on greens and _____ pounds on fairways.
4. What is the total amount of lead arsenate applied to 1,000 square feet, since you started using it? Fairways, _____ pounds; Greens, _____ pounds.
5. Method of application: spray, _____; dust, _____.
6. Is lead arsenate mixed, or not mixed, with fertilizer or other carriers? Yes ___; No ___.
7. Do you consider lead arsenate effective in the control of

	Yes	No		Yes	No
Sod webworms	___	___	Mole crickets	___	___
Cut worms	___	___	White grubs	___	___
Southern green June beetles	___	___	Earthworms	___	___
Japanese beetles	___	___	Other	___	___

8. Indicate your soil type on fairways: Clay, loam, sandy loam, sand _____.
9. Is the soil on your greens heavy, medium, or light? _____.
10. What is the pH of the soil? Fairways, _____; Greens, _____.
11. Check degree of infestation of weeds listed below which are most troublesome to you:

	On Greens			On Fairways		
	Light	Medium	Heavy	Light	Medium	Heavy
Crabgrass	_____	_____	_____;	_____	_____	_____
Clover	_____	_____	_____;	_____	_____	_____
Pearlwort	_____	_____	_____;	_____	_____	_____
Chickweed	_____	_____	_____;	_____	_____	_____
Poa annua	_____	_____	_____;	_____	_____	_____
Other weeds	_____	_____	_____;	_____	_____	_____

12. In your opinion, has lead arsenate helped to control any of the weeds above listed? ___; Which? _____ _____ _____ _____ _____ _____.
13. What is your method of determining the need for another application?
14. Remarks:

State_____ Club_____

Section of State_____ Superintendent (optional) _____