



Better Turf for Better Golf

TURF MANAGEMENT

from the USGA Green Section

A SUMMARY OF TURFGRASS WEED CONTROL TESTS

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APPROXIMATELY fifty materials have been tested for weed control in turfgrasses at Georgia Coastal Plain Experiment Station, Tifton, Georgia. Testing of the materials has occurred over a period of ten years. Thus, only a few herbicides were screened for weed control each year. Many herbicides were not satisfactory for turfgrass purposes and were discarded. It has not been possible to test all chemicals or formulations produced by industry. This summary should not, therefore, be used as a recommendation for a given herbicide, but as a general guide for weed control in warm season grasses.

Someone has said that "if weeds occur, there is a reason why". Let's look at the causes of weed invasion. The many things which may be listed can be classified as:

Adaptation causes

Nature in all areas produces a balanced mixture of plants and not a pure stand of grass, shrubs, etc. Whenever man disturbs this balance by trying to produce only one plant over a large area of land, nature is constantly striving to invade the area with other plants which are generally undesirable.

Turfgrass producers have the problem of fitting grasses to an environment. Grasses and other plants produce their best

growth in areas to which they are adapted, and less weeds will appear when a grass is used which fits the locality.

Management causes

Weeds often invade turfgrass areas because of such unsatisfactory management practices as, poor construction, physical condition of soil, inadequate drainage, too much shade or tree root invasion, misuse of water, failure to prevent contamination from weed seed, damage to turfgrasses, low fertility standards, no chemical weed control program, etc.

Methods of weed control may be classified as follows:

Mechanical

Mowing devices and other equipment to decrease competition and hand weeding.

Biological

The right grass for the location well-managed.

The use of improved grasses which will compete with weeds.

Chemical

Removal of existing weeds with herbicides.

Prevent establishment of weeds by prevention of seed germination in turfgrass or

compost and preventing seed formation of weeds.

Turf producers have often had the experience of applying materials as recommended without satisfactory results. The same materials, however, when applied in other areas give good control. This discrepancy may be due to several factors, but the effect of soil properties on herbicides is often very important. High herbicide activity generally means good weed control. In general herbicidal activity on a given soil type will vary according to the following:*

SOIL TYPE

High Activity

Low organic matter
Low pH
High moisture
Medium temp.
Low volatility

Low Activity

High organic matter
High pH
Dry soil
High Temperature
High volatility

Although it is difficult to control soil properties which effect herbicides, the turf-grass producer may increase the effectiveness of materials used for weed control by:

1. Applying recommended amounts of herbicides to given areas
2. Using additives such as wetting agents, etc.
3. Using enough spray solution for various materials
4. Making sufficient applications spaced correctly

The following tables are presented as a summary of the weed control tests conducted at Tifton, Georgia, since 1946. Only those materials are listed which have been tested and which have given satisfactory control.

* *Recent Advances In Weed Control in the United States.* — W. C. Shaw.

TABLE I.
Materials Tested For the Control of Annual Summer Grasses Growing in Turfgrasses.

Material	Rate per 1,000 square feet	Injury to Bermuda Turf
Sodium arsenite	½ to 2 oz.	Temporary browning
Lead arsenate	10 to 20 lbs.	None
Organic arsenates	1 to 2 oz. (actual)	Slight Discolor
Phenyl mercury acetate	2½ to 5 oz.	Slight Discolor
Potassium cyanate	3 to 4 oz.	Temporary browning
Dinitro	1½ to 3 oz.	Temporary browning
Calcium cyanamid	20 - 30 lbs.	Temporary browning
Inorganic nitrogens	2 to 3 lb. N dry 1 lb. gal. H ₂ O, 4 gal. per 1,000 wet	Temporary browning

Use wetting agent, apply every 7 days (cyanate every 2) and add ½ ounce approximately 40% 2,4-D per 1,000 square feet.

TABLE 2.
Materials Used for the Control of Sedges* in Bermudagrass Turf.

Material	Rate	Injury to Bermuda Turf
Dinitro	2 - 4 lbs./Acre	Temporary browning
M C P	1½ - 3 lbs./Acre	None — slows growth
Phenyl mercury acetate	3 - 6 oz./1,000 sq. ft.	Temporary discoloring
Sodium arsenite	1 - 2 oz./1,000 sq. ft.	Temporary browning
Organic arsenates	1 - 3 oz./1,000 sq. ft.	Temporary discoloring
Inorganic nitrogen	3 - 5 lbs. N per 1,000	Temporary browning

*Sedges are known as watergrass, swampgrass, etc. Use wetting agent, apply every 7 days, and use 2,4-D in spray solution at ½ oz. approximately 40% per 1,000 sq. feet.

TABLE 3.
Materials Used for the Control of Spotted Spurge *

<i>Material</i>	<i>Rate per 1,000 square feet</i>	<i>Injury to Bermuda Turf</i>
M C P	¾ - 1½ oz.	None
Phenyl mercury acetate plus 2,4-D**	4 - 6 oz.	Slight discoloration
Potassium cyanate plus 2,4-D	3 - 4 oz.	Temporary browning
Sodium arsenite plus 2,4-D	1 - 2 oz.	Temporary browning

*Spotted spurge is also known as carpet weed, milk weed, etc.

**One (1) oz. 2,4-D containing 4 lbs. per gallon applied per 1,000 square feet with first application.

TABLE 4.
Materials Used for Pre-emergence Weed Control in Established Bermudagrass Turf.

<i>Material</i>	<i>Rate per 1,000 square feet</i>	<i>Injury to Bermuda Turf</i>
CI PC	½ - ¾ oz. actual	None
Dinitro	1 - 2 oz. actual	Temporary discoloring
C M U	1/5 - 1/3 oz.	Over dosage dangerous
P M A S	1 - 2½ oz.	May discolor
2,4-D	½ - ¾ oz. actual	Temporary checks growth
Crag Herbicide I Ses	1 - 2 oz.	Temporary checks growth
Crag Herbicide I Natrin	1 - 2 oz.	Temporary checks growth
Alnap 1 F	4 lbs.	None

TABLE 5.
Materials used for General Weed Control.

<i>Material</i>	<i>Rate Per Acre</i>	<i>Plants Controlled</i>
2,4-D formulation	½ - 1½ lbs.	Pre-emergence broadleaf weeds, clover, wild onion and garlic, prevent seedheads
2,4,5-T	½ - 2 lbs.	brush, clover
Maleic hydrazide, MH-40	2 - 6 lbs.	wild onion and garlic, prevent seedheads.
Naphthaleneacetic acid	1 - 3 lbs.	prevent seedheads
Dalapon	10 - 30 lbs.	grass killer, edging, cattails and reeds
Amino triazole	16 - 24 lbs.	grass killer, edging, cattails and reeds
T C A	60 - 120 lbs.	grass killer, edging, cattails and reeds
C M U	5 - 10 lbs.	grass killer, edging, cattails and reeds