Making Sense About Crabgrass

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READERS of *Weeds and Turf* appreciate the fact that several chemicals are offered for reducing the competition of crabgrass and other annual grassy weeds. Although the "No Crabgrass" millenium is still far away, well-managed areas may be kept free of this weed. This article attempts to characterize and summarize current technology and to aid the reader in developing his program.

The annual infestation of vigorously growing grasses, particularly crabgrass, has for years stymied the homeowner's enthusiasm for improved lawn techniques. Within recent periods, in fact since 1956, the threat of uncontrolled crabgrass has been outdated, because of the availability of nine different basic chemicals in at least 50 formulations. These products are marketed almost nationally so that consumers can choose locally the product they prefer.

The important thing about the above is that this has opened the door to the purse and mind of lawnowners and turf managers so that concepts of producing good turf, free of unwanted competition, now can predominate. For this reason the fundamentals of crabgrass control appeal particularly to readers of *Weeds and Turf*.

First, a modest review of crabgrass itself. Fundamentally its germination is most limited by temperature. Second, its germination is limited by moisture since it germinates primarily only at the surface of the soil. Often the rise in air and soil temperatures during early and midspring is accompanied by wet, humid periods sufficient to produce a dense covering of crabgrass seedlings. Counts of 50 per square inch are modest, and these can occur even in good, dense turf.

The real problem, therefore, in adequate crabgrass prevention is to provide toxic concentrations of a chemical in the surface and in the available soil moisture, so that whenever germination occurs, susceptible crabgrass seedlings are affected by these toxic concentrations and selectively killed. Now, the above sentence shows the importance of total materials used, and time of application.

From the standpoint of the material, this involves the solubility, relative availability, longevity of toxicity, ease of movement with water, type of carrier, and other factors. In rate of application is involved the dilution, uniformity of application, the tenacity of holding onto the carrier, the ease of solubility, and the ability of the material to release the available fraction at toxic concentrations.

Timing is important since prudent scheduling can permit lighter rates of variable solubility materials. For example, calcium arsonate needs to be used right at the critical time because of its ease of solubility. As another example, calcium propyl arsonate moves in the soil solution readily. It can affect seedlings 1″ from the point of application, but most materials would not affect seedlings even ¼″ from point of application.

Good Management Pays Off

Over the years much has been said about the techniques (and tedium) of good management to provide adequate vigor and survival of the desired grass. The 2″ mowing of bluegrass, at least twice-a-year fertilization, the careful timing of weed removal, the avoiding of surface disturbance—all of these things attempt to assure bluegrass and fescue survival. However, under many conditions these are not adequate to keep out crabgrass germination, nor spot survival. Forunately the 50 seedlings per square inch of crabgrass often deteriorate, or die completely if one has the right combination of competition and dry soil surfaces.

Using Crabgrass Preventers

For turf managers the preemergence control of crabgrass opens the door for a better management of turf areas. The consumer without "the blessings" of crabgrass infestation and its masking, quickly finds out how good a turf producer he may be, since many lawns actually need some crabgrass to be considered even summertime lawns. The plagues of fairy-ring, leafspot, foot-rot, brown-patch, drouth, grubs, sodwebworm, plant wear, desiccation, and other ills that may cause browning of turf now assume major proportions in the turf manager's view. It is true that

without crabgrass it's much easier to grow bluegrass or other desired grasses.

We would readily agree that everyone expects the ground to be covered with something by July 4. Therefore, one of the problems of wise crabgrass preventer use has been to indoctrinate consumers with the idea that they should have turf worth protecting before using such compounds.

Over-seeding and Preventer Use

All producers and distributors of crabgrass preventers have faced the dilemma of the consumer's wish to over-seed ritualistically. The habit of over-seeding, so thoroughly ingrained, has raised questions concerning the use of crabgrass preventers. For this reason all companies have needed, but few have had, adequate realistic data on the preferential survival of bluegrass seedlings when crabgrass preventers were used at adequate toxic rate. It is obvious that anybody anywhere can over-seed concurrently with using anything, but the criteria of success is the uniform, normal establishment and survival of seedlings of the desired grass which will contribute to the turf cover. There is a big difference between over-seeding and getting a stand of seedlings. In fact, failure in over-seeding is most common just because people do not keep the seed and seedlings constantly moist. Failure is augmented by competition and by disease, so always it has been a problem to determine the success of such an over-seeding.

A general suggestion, based on observation and understanding of the problem, is that consumers are wise to have turf worth protecting before one decides to use crabgrass preventers. And conversely, if over-seedings are badly needed, then it is suggested that they make their over-seedings as early in the spring as possible. Use crabgrass killers along with weed control during the summer and fall, and be prepared to use crabgrass preventers one year later.

On occasion very early over-seeding, combined with rather late crabgrass preventer use, could be very successful if all goes well. Admittedly these are tediums of management over which manufacturers and distributors often have little control, but they are important to the sales of distributor groups and consumer's satisfaction. Fortunately just the prevention of weedy grass competition, combined with good turf management, gives the consumer a much better chance to maintain the desired grass.

Recommended Rates

Table 1 outlines the several chemicals available and general items concerning their use. With several products there are fringe benefits, such as knotweed control, long-term residual, or better selectivity. For the novice the prime purpose is the prevention of crabgrass competition, and in this area terrific progress has been made and more will be made. The turf manager may be very careful to select the chemical that fits his long-term management program.

Nine compounds are available in numerous formulations for seedling grass prevention. These have been tested repeatedly at numerous experiment stations, and the data resulting therefrom has been quite carefully assayed by the companies producing the basic chemical.

Currently the labeling on most formulations is quite adequate. Nevertheless, one of the real problems with crabgrass preventers is their proper use by the applicator for each individual situation. Table 1 gives chemical designation and comments, and indicates the relative carry-over.

Post-emergence Control

Post-emergence is a useful tool against established susceptible plants—crabgrass, foxtails, dallis grass, sandburs, johnsongrass, and several others. Often crabgrass develops severe competition before killing is achieved. Also any discoloration, burn, or thinning or damage, may weaken the desired turf.

Two applications, good soil moisture, and active growing grasses are desired for best results with the several formulations of popular organic arsenicals.

Turf managers, homeowners, and contract applicators alike now have adequate chemicals to selectively "keep crabgrass out." The need to wisely grow a dense turf becomes even more important in the face of this growing technology.

Table 1. Chemicals and Comments for Pre-emergence Herbicides

Chemical designation	Active ingredient rate lbs.	Residual time	Estimated carryover %	Next season apply	Comments
Zytron	15 A/A	1 season plus	50	.5+	Controls knotweed
Dacthal	10 A/A	2 months	0	full	Quite safe
Betasan	15 A/A	1 season	0	full	Newer compound
Azar	10 A/A	1 season expected	?	?	New in '64
Diphenatrile	30+ A/A	1 season	0	full	Safe on flowers
Trifluralin	1.5 A/A	1 season	0	full	Controls knotweed
Bandane	30+ A/A	1 season	50?	.5+	
Chlordane	80 A/A	1 season	50	.5+	
Lead arsenate	20 F/M	1 season plus	80	.25	Powdery—caution
Calcium ars.	12-18 F/M	1 season plus	75	.25	Granulars preferred
Ca. Propyl Ars.	6.25 F/M	1 month plus	0	full	Fast acting

Diphenatrile and Trifluralin are used together at lighter rates of each. (Even with nine basic formulations of pre-emergence herbicides now available, continued research and additional chemicals can be expected.)