



Section of old "haygrass" turf knocked down with cacodylic acid spray prior to reseeding. The dead grass, loosened in seedbed preparation, can remain as an effective mulch. A modern technique for upgrading turf with quality grasses such as Kentucky bluegrass, fine fescues, or even Highland bentgrass.

Business Opportunities in Turf Reseeding

TECHNOLOGICAL advance is a mark of our times. Only skillful use of specialized equipment leads to maximum service (and profit). Do pest control specialists seize all such opportunities? Perhaps some might extend their technical competence to embrace seeding, a creative facet that rounds out the professional program of turf maintenance and gives it a positive luster. Seeding could enhance year-around utilization of equipment and know-how.

Turf pest control specialists are no doubt alert to latest developments in preventive spraying. But they may not have considered how closely spraying is related to other evolving procedures with which it might be integrated.

Seeding of quality grass, for example, is a creative, positive act; it may blunt and even overshadow the distasteful negativism that

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"protection" implies. Might not a customer respond better to suggestions for making his a first-rate Kentucky bluegrass-fine fescue lawn than he does to warnings for defensive action against pests? If a lawn service organization can offer relatively effortless means for upgrading lawn quality, isn't this also an automatic entree for keeping lawns fertilized, weed-free, and bugless?

Newer developments bring us almost to the point where a hay field can be turned into a bluegrass lawn with minimum effort. And in the South, dull turfs can be winterseeded to produce an emerald cover of attractive texture. Indeed, Kentucky bluegrass, Oregon fine fescues, and Highland bentgrass are already substituting for ryegrass on the better golf

putting greens in the South; were this to become usual for the millions of acres of bermuda lawns that turn dingy each autumn, imagine the market! Yet, techniques for accomplishing this easily and economically may not be remote; and a rising level of personal income in the South may make winterseeding more acceptable.

The modern homeowner — even the groundskeeper — cannot afford to capitalize specialized machines for just occasional usage. Nor does he have the know-how to do the right thing at the right time. A lawn service, well equipped to give good grass a chance in outdistancing weeds, should find acceptance in a market as yet unexploited. The chemicals and the equipment are on hand to make this possible. New seeding fits nicely into the tapering-off season too, for autumn is the best time to seed bluegrass-fescue and Highland bentgrass lawns in the North, as well as winterseed southern turfs.

This added business must be cultivated, of course. But with good lawns increasingly a status symbol, with homeowners having more leisure time in which to be concerned about lawns, and with national tastes in turf becoming more sophisticated all the time, the trend of the times lends support. Family formations, dispos-



Well known among turf people, Dr. Schery (pictured above) is director of the Lawn Institute, a nonprofit agency devoted to advancement of fine turf. The author feels contract turf companies can find new profits in lawn re-seeding.

able income, and leisure time all seem sure to rise; relaxed suburban living amidst ample good turf is not likely to suffer inadequate demand.

Quick Knockdown

The usefulness of specialized chemicals is nowhere better demonstrated than for freeing a poor lawn of unwanted vegetation prior to reseeding with quality grass. Conventional soil sterilization is not an everyday answer; this process usually requires either soil cultivation or a considerable waiting period before reseeding. Methyl bromide, one of the most effective sterilants, must be contained under gas-tight tarpaulin. Vapam is drenched into cultivated soil, and may injure ornamental plantings (through the roots). Such methods tend to be too intricate for use on some landscaped grounds.

A surface knockdown of old vegetation is practical, however. Lawn Institute tests convince us that general weed killers such as dalapon, amitrol, Vapam, and Novege—or heavy dosage of calcium cyanamide—knock out unwanted annuals and most perennials. Where broadleaf weeds are a problem, 2,4-D or Silvex might be combined with such sprays as dalapon. Used at manufacturers' suggested rates, the chemicals dissipate within a few weeks (depending upon climate and soil), after which reseeding can be undertaken.

Even more convenient is cacodylic acid, a newer, quick-knock-down chemical. One half pound (of the 66% liquid) in a few gallons of water to the thousand square feet scorches back all surface vegetation within just a few days, even when temperatures are crisp with light freezing at night. The chemical seems to be immediately inactivated upon reaching soil, and presents no hazard to shrubs and trees. Dilution can be adjusted for the type of vegetation being sprayed, so that the foliage is well doused (perhaps with a wetting agent or spreader-sticker added), but little solution is lost by soaking through to the soil. For better control of weed grasses that have deep rhizomes, such as quackgrass, dalapon may be added to the cacodylic acid; but then

delay before reseeding must match dissipation time of the dalapon.

There is some advantage to surface knockdown even when the seedbed is plowed or rotary tilled. A cultivated seedbed free of living sprouts is still the surest way to procure a uniform new stand of grass on schedule. But labor costs often make cultivation prohibitive. A newer substitute is to use a thinning or "vertical mowing" device after chemical knockdown. These can be set low to fragment the old vegetation and scratch the soil surface. Used in a favorable season, such as autumn or early spring for bluegrass-fescue or Highland bentgrass, an adequate seedbed is obtained for lodgement of the relatively small seed of these quality turfgrasses. The old stubble, and any loose "straw" kicked aside in the operation, can be left as a mulch. If facilities permit, top-dressing or additional mulching encourages establishment of the new grass. Frequent watering until the stand is well rooted is even more important than when the seedbed has been cultivated.

This simplified seeding method is not a foolproof substitute for conventional planting to a well-fertilized seedbed. The chances of failure are greater, especially when watering is neglected or where no top-dressing or mulch is used to hold moisture. Nor can fertilizer be mixed deeply into the root zone. But it is an inexpensive means of reseeding or patching that could extend pest control operations with little more than



Mulching is good insurance to bring on sprout of a new seeding. Researchers at The Lawn Institute discovered that covering lawn seeding with a polyethylene tarp improved growth.

the purchase of a vertical mowing or de-thatching machine.

Indeed, a sufficiently powered thatch-remover might pay its way even without the chemical treatment. Annual de-thatching, followed by bolster seeding with quality grasses, should in time upgrade poor sods in almost any climate. The thinning sets back permanent grasses only slightly, but may mutilate and temporarily halt bulky weeds. In any event, thatch removal opens the sod sufficiently so that new seed reaches soil, rather than being wasted atop debris where it can't strike root.

Winterseeding

Just as autumn is excellent for planting cool-weather favorites (Kentucky bluegrass, fine fescues, and bentgrass) in the North, so is it the season for seeding these species into southern turfs as winter annuals. In the upper



A "vertical mower" can be used to scratch a receptive seedbed where old grass has received chemical knockdown spray. Note the loose, receptive surface where the machine has passed, excellent for good seed to strike root.



Newer techniques are in the offing for winter-seeding southern turfs, such as bermudagrass. Here Dr. Evert Burt, Plantation Experiment Station in Florida, checks the new seedlings from a bluegrass-fine fescue-bentgrass mixture overseeded in November. The striations are where a vertical mower had opened the now-dormant bermuda.

South, from coastal Virginia through the Piedmont, west to Memphis and Dallas, common bermudagrass is the usual lawn cover. Because it is dormant from November until perhaps April, plusher neighborhoods often seed "wintergrass" annually in October. Even in the Deep South, where the dormant season is relatively short, there is demand for attractive winterseeding, especially along the tourist routes, and for commer-

cial or recreational properties (such as motels and golf courses). With the South industrializing and achieving increased personal income, and with northern retirees so often heading south, it is reasonable to anticipate demand for more attractive outdoors with quality lawns on which to enjoy winter "outdoor living."

Traditionally, ryegrass, a large-seeded bunchgrass, has been scattered into bermuda to make winter cover of sorts. Ryegrass is quick and easy, but has a number of faults. It has certainly fallen into disfavor with experts such as golf course superintendents, who must maintain greens of high quality for winter vacationers. Ryegrass is relatively coarse, not a very deep green, subject to a number of diseases, and requires generous seeding rates (because the big seeds represent so few plants per pound). But worst of all, it is aggressive, and generally refuses to fade away gracefully in spring allowing bermuda to revive. Moreover, in the recent unusually cold winters, ryegrass has winterkilled as far south

as southeastern Texas and middle Mississippi, while comparison plantings of bluegrass remained undamaged.

One might guess that the future holds promise for finer textured northern grasses of quality, such as Kentucky bluegrass, the fine fescues (Creeping Red, Chewings, Illahee, Pennlawn, etc.), and the lawn-type bentgrasses, now that techniques and equipment are evolving that make their establishment readily possible. Some research on this is discussed in the following sections.

Golf Course Winterseeding

Custom applicators probably have little direct contact with the golf course market, since golf courses typically employ their own expert superintendents. Nevertheless, golf courses represent a concentration of fine turf interest, where new developments receive trial under fire. Also the glamour of success "rubs off" well on influential citizens. A summarization of winterseeding results on putting green turf may thus be instructive.

The Lawn Institute investigated

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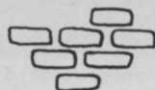
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winterseeding in the deep South during 1962-63. A great deal of ferment is evident, but little in the way of general conclusions. Over much of the South ryegrass has fallen into disfavor for the reasons earlier given, and because many golfers feel it is not the ideal putting surface. Where ryegrass has winterkilled the last two years, the question is not so much whether to plant ryegrass, as what to substitute for it. Many cool-weather species are candidates, especially the quality ones previously mentioned (fine fescues, Kentucky bluegrass, and the bentgrasses), and *Poa trivialis* (rough bluegrass). There have been successes with each. All appear to give better spring transition than does ryegrass. But a serious difficulty is slowness to become established in autumn (compared to ryegrass). In this respect, the fine fescues are not too much at a disadvantage, but bluegrasses and bentgrasses generally don't make much of a cover until the winter tourist season has begun.

Research is being undertaken to develop reliable techniques for

establishing fine turfgrasses in a putting green (while mowed $\frac{1}{4}$ - $\frac{3}{8}$ inch). Vertical mowing and dethatching play a part. But of even greater pertinency to pest control interests may be spraying with growth retardants to induce earlier autumn dormancy in the permanent grass (keep bermuda from competing strongly with establishment of the wintergrass). Spraying of MH-30 (maleic hydrazide) or some of the other retardants prior to overseeding has given excellent results at the University of Arizona (50 cc.'s of 60% maleic hydrazide in $\frac{1}{2}$ gallon water per hundred square feet), but erratic behavior at the University of Mississippi. The University of Florida has tried several retardants which might find a place in that relatively humid climate.

At Mississippi State University, mid-October seedings with fine fescue established as well as did ryegrass. By November 9 fine fescue ratings were the highest. It seemed to make little difference whether top-dressing was practiced before, after, or both before

and after seeding. The turfgrass research report for 1962 mentions: "Ratings for turf quality (color, density, putting quality) found Pennlawn fescue rated highest." It noted, too, that the university golf team considered this the best putting surface. Both the coach and the team rated *Poa trivialis* as a poor grass for putting quality. The report adds: "Ryegrass and *Poa trivialis* did retard bermudagrass in the spring. Pennlawn fescue did not." Other conclusions: "Tests on overseeding of golf greens have found that there are other cool-season grasses which are as desirable or more desirable than ryegrass." And: "The bentgrasses, fineleafed fescues, and some of the *Poa* species do have a place in Mississippi in their use for overseeding of golf putting greens; — bentgrasses, fescues and bluegrasses produced best results when seeded 20-30 days prior to the first killing frost."

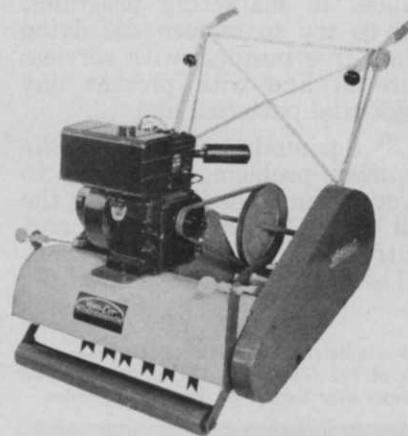
Researchers at Texas State University felt winterseeding there is best made about November 1. Quality northern grasses are much
(Continued on page W-16)



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Event is designed to bring together a variety of equipment and materials related to the turfgrass and nursery industries, for the benefit of professional members of the turf industry.

For more information on the trade show, write Gordon Lindsey, publicity director, Southern California Turfgrass Council, American Poultry Guano Corp., P.O. Box 332, Cucamonga, Calif.

Turf Reseeding

(from page W-9)

used for golf green winterseeding in Houston, usually in mixture, about 6-9 lbs./M (compared to 40 or 50 lbs. with ryegrass). Seedings at River Oaks Country Club were visible within a week, and none suffered so severely from the cold as did ryegrass. The finest Kentucky bluegrass putting green seen was at the Houston Country Club. Both Kentucky bluegrass and Pennlawn fescue seedings were made November 10, and the putting surface was perfect by February.

In Florida Dr. Prevatt has been successful with fine fescue-bluegrass and bentgrass combinations in the Lakeland area. Dr. Burt at the Plantation Experiment Station, and the University of Florida at Gainesville, have other winterseeding successes. One disadvantage found with *Poa trivialis*, both in Florida and Texas, is that this imported seed often brings with it troublesome rosette crucifer weeds.

Dr. Marvin Ferguson of the USGA Greens Section agrees that the winterseeding of southern golf greens is in a state of experimentation and flux. He is reluctant to advance firm recommendations until additional research can prove-up techniques and grass types. Mixtures of the grasses seem a way "to spread the risk"; if one species finds conditions adverse, another may not. A mixture of Highland bentgrass, Kentucky bluegrass, and Oregon fine fescues supplies high-quality potential, — and *Poa*

trivialis might be included, too, if its yellowish color and tendency to bring in weeds is not objectionable. Most people prefer the darker green of the previous three grasses, although where *Poa annua* is an abundant weed, the yellowish color of *Poa trivialis* matches it pretty well.

Commercial Properties and Homes

Lawns of homes and commercial properties offer tremendous potential. Attractive turf is especially important for motels during tourist season. The same holds for shopping malls, funeral homes, and other commercial properties. Given time and sufficient promotion, winterseeding may catch on more fully, too, for the home.

Conclusions voiced for golf courses apply generally to commercial properties and homes, although a winter stand is more easily achieved, because the pressure of intensive use is not quite so great. Recent tests at Mississippi State University indicate that greatest success with the bluegrass-fescue-bentgrass seed mixtures is obtained when the permanent grass is mowed $\frac{3}{4}$ inch or less prior to overseeding in autumn. The University of Arizona notes that ryegrass needs more frequent mowing than bluegrass-fescue-bentgrass, and probably exhausts water supplies more completely. Highland bent offered little competition to revival of bermuda in 1961 tests.

For the Future

Although quick knockdown and winterseeding are not thoroughly developed markets, their feasibility is well established. Chemicals, equipment, and seed are readily available for renovation, upgrading, and annual bolstering. But other potentialities shape up, too. Pesticide applicators might like to think about, perhaps experiment a bit with, (1) slurry seeding, and (2) de-thatching services.

Slurry seeding requires special power sprayers only recently widely available (viz. the Hydroseeder of the Finn Equipment Company, Cincinnati, or similar machines made by Bowie Machine Works, Bowie, Texas). The technique has been most widely developed for roadsides. For a number of years a slurry containing seed and fertilizer has been sprayed upon the roadside with the Hydro-

seeder, to be followed by straw mulch with asphalt tack. More recently, a mulch derived from wood pulp (Turfiber) has been included, making possible a seeding-feeding-mulching operation all in one. The mulch functions more effectively for soil holding than as a moisture barrier, but nonetheless it is intriguing to consider the possibility of a small Hydroseeder for seeding home yards (perhaps given preliminary knockdown chemical spray). The tie-in seems a natural for lawn spray services.

De-thatching Has Possibilities

De-thatching, too, appears destined for future popularity. Heavy grass growth is an inevitable outcome of sophisticated lawn tending, the demand for better, more vigorous lawns. Need for occasional thinning is already widely accepted for elite turfs such as bentgrass. Trailing lawn-grasses of the South, or almost any grass urged to splendor by heavy feeding, tend to thatch.

Several lawn thinners or de-thatchers have been developed to remove the organic debris (thatch) which accumulates deep in the sod. With some grasses, such as zoysia, this can become persistent enough to hinder insoak of water. In almost all cases thatch prevents access of new seed to soil.

While many of the thinning machines tear the sod and disfigure the turf temporarily, at least one (the Thatch-O-Matic) has been developed to comb out the thatch without serious mutilation to the living leaves. The machines are not expensive, and one might surmise the extent to which they might serve a lawn-tending service. De-thatchers are just as impressive to a homeowner as are aerifying devices, however.

Thus, de-thatching would seem a logical preliminary to Hydroseeding or bolster seeding wherever appreciable thatch prevails. In fact, routine de-thatching and power sweeping prior to almost any lawn service (fertilization, weed control, bolster seeding) might make the operation more certain. Thatch can result in irregular penetration of materials, and hence imperfect performance, even though the sprayer gives perfect distribution.