

Cal-Turf Trials Show

WHAT A MOWER NEEDS TO CUT HYBRID BERMUDA



AS THE SOD PRODUCTION industry matures, more growers are taking a look at how their product is performing and how it is being cared for after it leaves the farm. The reason is clear; no matter the cause, if the purchaser is unhappy with the grass, the word gets around. And that's how bad images and declining sales can get started.

Some growers are issuing fertilizing and watering instructions, weed and disease control information, and mowing frequency tips.

On the subject of mowing, Cal-Turf of Camarillo, Calif., probably has conducted the most extensive test program so far to indirectly support the sales effort of one of its turf products.

Total lawn acreage of hybrid bermudagrass is on the increase, including home lawns. A major difficulty that has cropped up with these dense grasses is the extreme difficulty encountered in mowing them properly with the presently available home lawn mowers.

Cal-Turf, working with California Polytechnic Institute at Pomona, undertook a study of home lawn mowers being used on hybrid bermudagrass. The objective was to investigate factors that would enable the homeowner to groom his lawn

with success and without having to purchase extremely expensive equipment.

Following is a summary of the mowing trials Cal-Turf conducted. Copies of the entire study are available by special request from Cal-Turf, 5417 Santa Clara, Camarillo, Calif. 93010. Phone 805/485-6757.

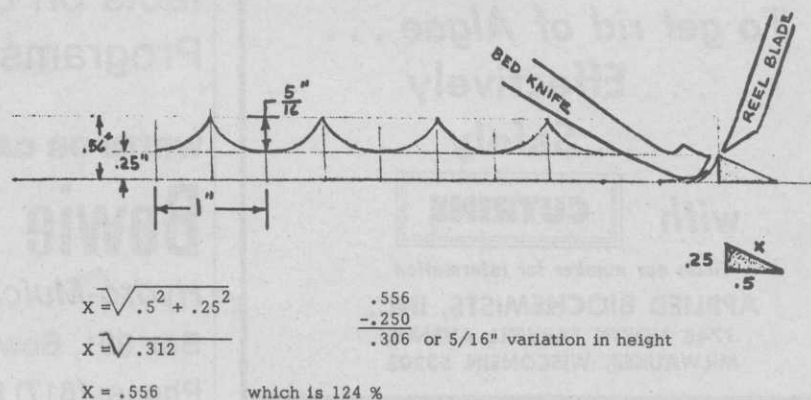
Types of Mowers

Presently, the three basic types of mowers available to the homeowner at relatively reasonable costs are the rotary, rear discharge reel, and front-throw reel.

The rotary mowers use a high velocity whipping action for mow-

ing, which tears the grass blade rather than cutting it cleanly. For an effective mowing action, the grass blades should be vertical—the bermudagrass blades and stems are not. Field experience over the years indicates rotaries can't be expected to mow the bermudas in an adequate manner.

Reel mowers utilize a clipping or scissors action in mowing the grass, and the low travel of the bedknife allows the clipping of many semi-horizontal stems and blades found in the bermudas. The rear discharge reel mowers are designed with two wheels forward and a roller to the rear with the bedknife under the



forward set of wheels. The grass catcher is suspended behind the rear roller; when clippings fill the catcher, weight is removed from the bedknife, which encourages flotation over the tough bermuda turf.

Front-throw reel mowers have four to eight wheels or rollers which allow for even and constant weight distribution on the turf. These mowers are generally sturdy and relatively heavy, permitting a more even forward movement of the bedknife. Wide experience indicates this type of reel mower has the best potential for properly mowing hybrid bermudagrass turf.

Organization of Trials

Cal-Turf obtained on loan from four manufacturers a total of eight front-throw, homeowner mowers. Three varieties of hybrid bermudagrass turf were sodded into an area at Cal-Poly in Pomona. The area was sanded, leveled and eight mowing strips were set up in such a way that each mower had its own strip and each strip cut across Tifdwarf, Tifgreen and Tifway, under identical conditions.

The mowing trials were headed up by Dan Neff, a senior student at Cal-Poly. Neff performed the weekly mowings himself, and compiled the data. Most of the statistical evaluations, as well as concepts in testing, stemmed from Tobias Grether, president of Cal-Turf.

Constants of the eight mowers included: (1) All were front-throw reel types, readily available to homeowners; (2) The bedknife was set to touch the floor when the mower was positioned on a level concrete surface. (3) All mowers were brand new and were well maintained throughout the trials.

Variable factors between the eight mowers included: (1) Weight of mower at the bedknife; (2) Bedknife design; (3) Clip rate (fre-

quency of cut); (4) Number of blades in the reel; (5) Engine horsepower; and (6) Form of power transmission.

Clip Rate and Turf Ribbing

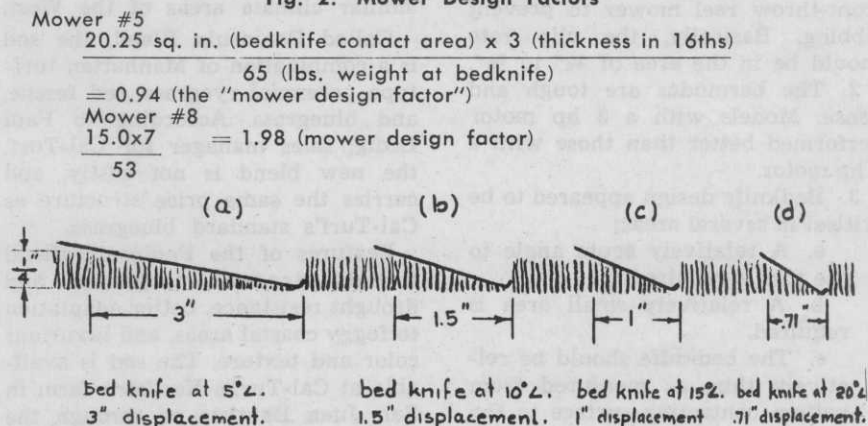
The hybrid bermudagrasses must be maintained a low mowing heights (1/2-inch or less) for best appearance and performance. Under many maintenance situations, they show a ribbing or marcelling that somewhat detracts from the turf appearance. This ribbing stems from the relationships between cutting height and frequency of cut, or "clip rate." When the clip rate is greater than the cutting height, ribbing occurs; if the clip rate is equal to or somewhat less than the cutting height, a smoothly mowed surface may be achieved. Fig. 1 shows a mower with a one-inch clip rate (quite common), mowing at one-half inch height (as demanded by the bermudas), and causing a 124% variation in mowing height of individual blades, or severe ribbing.

Mower Design Factors

After several weeks of observation of the trials and study of the individual mowers in the trials, a "mower design factor" was computed mathematically. It is calculated as the area of bedknife contact at 1/4" cutting height, times the bedknife thickness expressed in 1/16-inch increments, divided by the mower weight at the bedknife. These appear to be critical factors in successful mowing of the dense bermudas. Fig. 2 shows two examples.

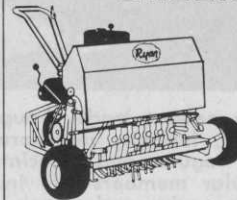
In theory, the best mowing job would be done with the mower having the lowest mower design factor, other things being equal. This would include the weight per square inch of bedknife to press into the

Fig. 2. Mower Design Factors



Build healthier, more attractive lawns and turf with Ryan equipment

GREENSAIRE



Self-Propelled. Coring aerator. Removes soil cores on 2" centers (36 per sq. ft.), over 3" deep.

MATAWAY



Heavy Duty. Self-Propelled. Power rakes, deep slices, disc spikes for triple turf treatment.

SPIKEAIRE

Self-Propelled disc spiker for relieving compaction. Opens turf for fertilizer, fungicides, seed, etc.



World-famous Ryan Equipment can help you grow tougher, greener, healthier, springier turf. Hundreds of the world's finest golf courses, thousands of states, municipalities, institutions, industrials and many rental operators depend on rugged Ryan Equipment as the most efficient for building greener, healthier turf and lawns.

Aerate. Spike. Slice. Renovate. Control thatch. Cut and harvest sod. Top dress. Fertilize. Ryan Equipment outperforms all others.

Write today for new full-color "Turf Equipment Catalog."



RYAN EQUIPMENT COMPANY

2055 White Bear Avenue
St. Paul, Minnesota 55109
Telephone 612-777-7461

SUBSIDIARY OF OUTBOARD MARINE CORP.



The golf industry's newest trade group, the Golf Course Builders of America, formally incorporated in November. Directors approved regular and associate classifications of memberships. Regular members will include general golf contractors and others who work closely with them, such as irrigation specialists, fumigators, and turf contractors. Associate memberships are available to the suppliers in golf course construction. Associate members will be entitled to three voting members on the nine-member board; and each will have a one-third vote at general membership meetings. Officers who gathered at the National Press Club for the

special meeting in November are from the left: James J. Kirchdorfer, Kirchdorfer Irrigation, Louisville, Ky.; Vice-President Robert Vincent, Jr., Robert Vincent Co., Benton, Pa.; Richard W. D. Jewett, Jr., Hyper-Humus Co., Newton, N.J.; Executive Director Harry J. Lambeth, Washington, D.C.; President David Canavan, Moore Golf, Culpeper, Va.; Secretary-Treasurer J. James Shipe, Turf Industries, Bel Air, Md.; Robert E. Chakales, Chakales & Associates, Richmond, Va.; Floyd F. Hendrix, Hendrix and Dail, Greenville, N.C.; and Parker Shirling, Princeton Turf Farms, Centreville, Md.

heavy and stiff bermuda stems and help prevent thatch buildup from mower flotation. The angle of the bedknife to the turf is critical, as a sharper angle would decrease the bedknife contact area. Fig. 3 illustrates.

Actual Trials

Recorded trials extended over a two-week period beginning in mid-July with mowing on a weekly schedule. The height from soil to grass blade tip was measured at each mowing and a cushion or thatch measurement was made at the close of the trials. An increase in the height measurement indicated inability of the mower to maintain the low level desired which, in turn, would allow thatch to build up. The thatch or cushion accumulation was measured by stacking one-inch steel cubes on a spindle and measuring the depression in the turf as each pair of additional cubes was added to the stack. Heavily cushioned turf will resist penetration of the bedknife to a high degree, thus, this measurement was critical in evaluating actual mower performance in reducing or preventing thatch buildup.

Data from the field trials showed that the least cushion buildup occurred in the strip mowed with the mower having the lowest "mower design factor." Both the height and the cushion depression measure-

ments bore out the mathematically computed notions of mower design and construction. Visual observations of color, scalping and overall appearance showed severe scalping on this strip the first few weeks of the trials, but, upon recovery, the visual ratings were consistently high. It might be well to point out that the trials were not an attempt to pit one machine against another, but rather to discover some of the essential elements in a front-throw mower adapted to mowing hybrid bermudas under a home lawn situation.

Conclusions

1. For mowing the hybrid bermudas, it is essential that a high speed reel or more than the traditional five blades be used in the front-throw reel mower to prevent ribbing. Basically, the clip rate should be in the area of $\frac{1}{4}$ " to $\frac{3}{8}$ ".

2. The bermudas are tough and dense. Models with a 3 hp motor performed better than those with a 2 hp motor.

3. Bedknife design appeared to be critical in several areas;

a. A relatively acute angle to the turf is required.

b. A relatively small area is required.

c. The bedknife should be relatively thin, as measured from bottom contacting surface to the actual cutting edge.

d. As the area of the bedknife increases, the downward weight on the bedknife must also increase.

4. The mower should be dependable, well-constructed and easy to start.

5. It would be hoped that relatively minor modifications in mower design and construction would not put the final product beyond the financial reach of the average homeowner.

Cal-Turf Announces New Sod Blend

A new sod blend has been developed by Cal-Turf, Inc., specifically for use in Northern California and similar climate areas of the West.

Called Peninsula Blend, the sod is a combination of Manhattan turf-type perennial ryegrass, red fescue, and bluegrass. According to Paul Ledig, sales manager for Cal-Turf, the new blend is not costly, and carries the same price structure as Cal-Turf's standard bluegrass.

Features of the Peninsula Blend include greater toughness and drought resistance, better adaptation to foggy coastal areas, and luxurious color and texture. The sod is available at Cal-Turf's Northern farm in San Juan Bautista or through the Cal-Turf lawn center in San Jose.