

THE SAME
BALANCE
THAT MADE
PING PUTTERS
WORLD FAMOUS-

PING

- HAS
NOW BEEN
ENGINEERED
INTO THE NEW
BALANCED
PING
IRONS

FRONT AND SIDE VIEWS
REVEAL THE NEW PING LOOK
FOR BALANCED IRON CONTROL

Stainless Steel IRONS \$33 ea.
PUTTERS \$20 ea.
order thru your golf pro
KARSTEN MFG. CORP.
P.O. Box 9006
Phoenix, Arizona 85029
(602) 943-7243

PING PUTTERS
TO GET THE BALL
INTO THE HOLE-
NOW PING IRONS
TO GET YOUR BALL
UP TO THE HOLE

For more information circle number 211 on card

GOLF BAG STORAGE RACKS



37 YEARS IN BUSINESS
Call Collect 301-322-3900
Or Write For Free Literature

INSTALLATIONS INCLUDE:

Chevy Chase C.C., Chevy Chase, Md.
Congressional C.C., Bethesda, Md.
Garden City G.C., Garden City, N.Y.
Dunbar C.C., Lake Arrowhead, Calif.
Scarsdale G.C., Hartsdale, N.Y.
Royal Poinciana G.C., Naples, Fla.
Longboat Key C.C., Sarasota, Fla.
Woodbridge C.C., Woodbridge, Conn.

IMPROVE BAG STORAGE SAVE TIME AND SPACE

WE DESIGN YOUR LAYOUT
ECONOMICAL—EASY TO
ASSEMBLE HEAVY DUTY
FURNITURE STEEL



ACME IRON WORKS, INC.
4900 Frolich Lane, Kenilworth Ind. Park
Tuxedo, Md. 20781

For more information circle number 256 on card



by Dr. James B. Beard

TURFGRASS RESEARCH REVIEW

Balancing nitrogen- potassium nutrition in turfgrasses

Effects of nitrogen-potassium levels on the growth and chemical composition of Kentucky bluegrass.

C.A. Monroe, G.D. Coorts and C.R. Skogley. 1969. *Agronomy Journal*. 61:294-296. (from the Department of Agronomy and Mechanized Agriculture, University of Rhode Island, Kingston, R.I. 02881).

The interrelationship of nitrogen and potassium on the growth and development of Kentucky bluegrass was investigated. The growth and development responses determined included shoot growth, weight of roots and rhizomes, tiller number, blade width and rhizome length. In terms of the various growth and development responses, a balance between nitrogen and potassium nutrition was the most important factor. Higher potassium levels stimulated tillering, root and rhizome growth. Higher nitrogen levels restricted root and rhizome growth. Higher potassium levels

continued on page 34

TURFTOP...

U.S. PAT. #2989247

A NEW INNOVATION IN SPRINKLERS
LARCHMONT'S "TURFTOP" A PLAYERS DREAM

Call or write on your letterhead for details and specifications

LARCHMONT
ENGINEERING
& IRRIGATION INC.

LEXINGTON, MASS. 02173
(617) 862-2550



We use

Johns-Manville Transite Pipe
for all permanent installations

Johns-Manville
TRANSITE
IRRIGATION PIPE



For more information circle number 226 on card

TURF SOIL

UNDER GOOD TURF THERE MUST BE GOOD SOIL

To obtain a healthy and durable turf, the proper foundation is required—a foundation of carefully selected and processed soil materials, supplemented with periodic topdressing. Maximum turf growth, durability and desired drainage are best achieved when soils are shredded to the desired texture, and are uniformly blended, thoroughly aerated and screened.

Lindig Shredder/Screeners, with exclusive hi-speed hammermill shredding economically prepare your soil materials. And only Lindig offers Screener Attachments that mount *directly* on the shredder. No need for an extra power unit. Your Lindig Shredder/Screener is *one* fully mobile unit.

Easy to use and easy to move, there is a Lindig with the feed, capacity and discharge capabilities your operation requires.



L-25, L-40, L-60

Lindig Earth Processing Equipment with capacities from 4 to over 200 cu. yds.

DT-20



Write for Lindig Catalog



KM-10



LINDIG

MANUFACTURING CORPORATION
1875 West County Road C • St. Paul, Minnesota 55113
(612) 633 3072, Cable: LINMANCO



For more information circle number 221 on card

BEARD

continued from page 32

increased leaf blade width, while higher nitrogen levels reduced the leaf blade width.

Comments: There is a tendency in modern turfgrass culture to use higher rates of nitrogen fertilization without comparable increases in the other two major elements, particularly potassium. The data reported in this study is further evidence in support of several previous investigations which stress the importance of maintaining a balance in nitrogen-potassium nutrition of turfgrasses.

Effect of time of thatch removal on survival and earliness of growth of three turf-type bermudagrasses.

W. W. Huffine. 1969. *Turfgrass Production and Management Research, 1968. Oklahoma State University Progress Report P-610. pp. 7-9. (from the Department of Agronomy, Oklahoma State University, Stillwater, Okla. 74075).*

The primary objective of this study was to determine the proper timing of thatch removal for rapid spring greenup of three bermudagrass varieties. Sunturf, Tifgreen and U-3 bermudagrass varieties were dethatched at four dates: (a) February 3, (b) February 15, (c) March 1 and (d) March 14. Dethatching was accomplished with a vertical mower which was passed over the area 10 times. The blades of the mower were set as near as possible to the soil surface. A vacuum machine was then used to remove the chopped vegetative material from the area. The rate and degree of spring greenup were evaluated on April 1.

The preferred time for thatch removal varied with the particular bermudagrass variety. Under the conditions of this study (central Oklahoma during the 1968 season) thatch removal on or about

continued on page 36

Attention! DID YOU KNOW?

1. that we accept collect phone orders from you anytime?
2. that we ship within 24 hours?
3. that we have six salesmen traveling to serve you?
4. that we stand behind what we sell?
5. that because we are #2 in this business, we try harder?

NOW THAT WE'VE GIVEN YOU 5 GOOD REASONS WHY YOU SHOULD PICK UP YOUR PHONE AND CALL IN YOUR ORDER COLLECT, DO IT NOW! Dial 305-833-1048.

Balls, clubs, tees, mats, pails, grips, markers, retrievers, golf ball pickers... and more!

Atlantic Golf Equipment Co.

4210 South Dixie Hwy.

West Palm Beach, Florida 33405
WRITE FOR FREE CATALOG

For more information circle number 247 on card

Highland Bent the NATURAL TEE



Highland Colonial Bent is the fine-bladed luxury grass that provides the thick, deep green carpet demanded by today's golfers.

In a mixture or alone, Highland Bent helps provide that natural tee your golfers want. Remember, Highland is one of the most economical of the fine-bladed grasses.

It is adaptable to a variety of climates and soil conditions and will thrive at its ideal cutting height of $\frac{3}{4}$ inch or even when close cut to $\frac{1}{4}$ inch.

With 8 million seeds per pound, you have a great potential number of plants. Drop us a note for free literature on cultural practices as well as a brochure that answers most questions about Highland.

Just possibly, Highland Colonial Bentgrass is the greatest value in grass seed today!

Oregon Highland Colonial Bentgrass Comm.
2111 Front Street NE / Salem, Oregon 97303

For more information circle number 239 on card

BEARD

continued from page 34

March 1 was preferred for rapid spring greenup of Sunturf, while the interval between February 15 and March 1 was preferable for Tifgreen and U-3. Thatch removal dates, which were either earlier or later than this, resulted in a slower rate of spring greenup of the bermudagrass varieties. However, the rate of spring greenup was more rapid at all dates of thatch removal in comparison to a bermudagrass turf which received no thatch removal.

Comments: This study indicates that (a) thatch removal from bermudagrass turfs in the spring will assist in spring greenup and (b) that the timing of thatch removal can be critical in achieving the maximum rate of spring greenup. The specific date will vary with region. The optimum dethatching dates presented in this paper apply only to climatic conditions comparable to those found in central Oklahoma. In other locations having different climatic patterns, in terms of spring temperatures, an adjustment in the time of thatch removal will be required.

Evaluating turfgrass for shade tolerance.

G. W. Wood. 1969. *Agronomy Journal*. 61(3):347-352. (from the Department of Plant and Soil Sciences, University of Vermont, Burlington, Vt. 05401).

In this study the shade adaptation of a number of turfgrass varieties and species was evaluated under controlled climate and field shade conditions. Eight Kentucky bluegrass and eight red fescue varieties were evaluated in controlled climate chambers. Four light intensity levels were used in the growth chambers: 3,000, 1,500, 500, 230 foot candles. In the field shade study 57 varieties of Kentucky bluegrass, 18 varieties of red fescue, 1 hard fescue,

5 colonial bentgrasses and 2 creeping bentgrasses were evaluated. The field shade conditions consisted of a tree canopy which permitted approximately 5 per cent of the incident sunlight to penetrate to the turf. The tree canopy consisted of red maple, white birch and red oak. Total shoot and root growth were evaluated eight weeks after planting.

As a group, the red fescues were superior to the Kentucky bluegrasses in adapting to the shade, during the initial eight weeks of growth from seed. Among the red fescue varieties, Golfrood and Ruby were outstanding in shoot growth in both the controlled climate chamber and field shade studies. Rough bluegrass was also superior to the Kentucky bluegrasses in shoot growth during the initial eight weeks following planting. Shoot growth of creeping and colonial bentgrass varieties was inferior to that of the Kentucky bluegrasses and red fescues.

Comments: This study gives an indication of the relative establishment rate and initial seedling vigor of a large number of red fescue and Kentucky bluegrass varieties under intense shade conditions. Establishment of an adequate turf is one of the first requisites of the culture of turfs under shaded conditions. However, this type of study should not be used as a basis for determining the overall adaptation of turfgrass varieties to shaded environments. A much longer term study is required to evaluate the overall shade adaptation. Effects such as disease will frequently become an additional factor in turfgrass shade adaptation in long term studies.

The number of varieties evaluated in this study is much too great to report in this brief summary. For those interested in a particular variety, it is suggested that they review the original paper cited above. □