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Dethatching Lawns

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Thatch is an accumulation of an undecomposed dense layer of organic matter on the soil surface in lawns. Contrary to popular opinion, thatch is not the result of failure to remove grass clippings. Grass clippings constitute only a small portion of the total thatch layer. Thatch is primarily composed of a dense mass of fibrous roots, rhizomes (underground creeping stems) and stems of lawn grasses. Therefore, removal of grass clippings after mowing in itself will not prevent the formation of a thatch layer.

Thatch will form sooner and to a greater extent in the better and more vigorous growing lawns. The thatch layer produces unfavorable conditions for growth of the roots of the lawn grasses. In a sense, it acts as a sheet of plastic covering the lawn. The movement of air, water, nutrients, and lime into the soil is severely restricted by a thatch layer. As a result, the lawn grasses tend to develop a shallow root system and a weakened top growth that is very slow in responding to proper lawn care. In addition, the lawn grasses become more susceptible to drought, wear, invasion by weeds and to attacks by insects and/or diseases.

The thickness of the thatch layer can vary considerably from lawn to lawn. It may range from ¼ inch to more than 2 inches. The thickness of the layer can be easily and simply determined by examining a small square (2 to 4 inches) of sod from the lawn. The sod is obtained by cutting into the lawn with a sharp knife or garden spade to a depth of at least 3 inches and carefully removing. Examination of the side profile of the sample will indicate a rather sharp dividing line between the soil and thatch layer. The thatch layer will tend to be somewhat spongy and brownish in color with consistency resembling peat moss.

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When the thickness of the layer is found to be greater than ½ inch, mechanical dethatching of the lawn will help in overcoming the detrimental effects of thatch. Various types of powered equipment are available for this purpose. They vary considerably in size, power, type of blades or tines, width between blades or tines, depth of penetration and the results achieved from their use. Many of the machines when used on a lawn will bring up impressive amounts of dead material to the surface. Evaluation of the performance of the machine on this basis can be very misleading. In order to be effective in relieving the effects of thatch, the machine must be adequately powered and capable of adjustment so that the blades or tines penetrate completely through the thatch layer and at least ½ inch into the soil with insignificant or no damage to the existing stand of lawn grasses. Removal of thatch material only from the surface of the thatch layer is of little value.

Selection of the proper equipment becomes an important aspect of mechanical thatch control. Equipment presently available can be classified into three basic categories as follows:

1. Revolving spring tines.
2. Revolving swinging blades.
3. Revolving stationary blades.

Within these three basis categories, many variations can be found. The machine with the revolving straight stationary blades that is adequately powered and capable of adjustment to penetrate through the thatch layer will produce the most effective and satisfactory results in contending with thatch problems in lawns.

Dethatching of lawns should be restricted to the seasons most favorable for growth of the lawn grasses. The early spring and fall are best for the cool-season grasses such as the Kentucky bluegrass-red fescue type lawns and late spring or early summer for the warm-season grasses such as Zoysia and Bermudagrass. In comparing the favorable seasons, the fall is the preferred time for the cool-season grasses and the late spring for the warm-season grasses. Dethatching during the most favorable season will reduce the potential of damage to the desirable lawn grass. Furthermore, the lawn grasses recover immediately from any injury that may have been produced.

The suggested procedure for dethatching a lawn is as follows:

1. Close mowing — if the topgrowth is more than 1 inch tall set mower cutting height at 1 inch, mow and remove clippings.
2. Notate all areas that are bare or sparse and weak.
3. Apply 25 pounds of ground limestone and 10 pounds of a 10-6-4 (50% organic fertilizer) per 1000 square feet.
4. Dethatch with thatching machine. Set adjustment on machine so that the blades penetrate through the thatch layer and at least ½ inch into the soil.
5. Seed all bare and weak areas notated above.
6. Drag with steel door mat — may be repeated a second time. Before dragging, allow sufficient time for the loose thatch material and soil on the surface to thoroughly dry.
7. Lightly rake thatch material remaining on surface after dragging and remove from lawn. Thatch material may be composted for future use in garden or shrub beds.
8. Thoroughly water.

Where Do Turfmen Stand On Growing Better Athletic Field Turf?

R. E. Engel

Most everyone accepts the value of turfgrasses to athletic fields because they offer: (1) safety over hard surfaces, (2) aesthetic value to player and spectator, (3) cleanliness to players, (4) and provide a medium that facilitates play of the sport. Yet, those of us who make turf growing our career will agree that athletic fields are too often needlessly poor. Many of the reasons are quite obvious to us, but a review of the general problem, causes, and cures should bring some improve-

(Continued on next page)

The Causes of Poor Turf

What are the causes of poor turf on athletic fields? No single reason exists. Improper design and construction of the field is a major factor. The soil can have too much clay or sand for good results. Internal drainage of the subsoil is often too slow for good grass and early use after rains. Unfortunately some poorly drained fields continue in use for years without an attempt at correcting this basic need. Many fields have never grown a prime type of turfgrass species. With all the destruction of turf and reseeding that occurs on most fields, it would seem most fields would have the best grasses. Fields are often watered poorly. Some get too much, some are watered at the wrong time, and some are never watered. Certainly, any field of consequence should have a grade A watering system. The frequent need to germinate turfgrass seedings and encourage regrowth as quickly as possible is adequate reason for developing a good system. Also, the inadequate systems are usually costly to set up and slow to apply the needed water at the right time.

Most athletic fields suffer from something less than good management. Too frequently, the field is of secondary interest and receives part-time attention of persons who have a variety of other responsibilities. Even when persons are given clear responsibility for maintenance of the field, it is difficult to find personnel who have the know-how or interest. Most organizations must train their own men and pay good salaries, as well-trained turfmen are not commonly available because they have very good employment opportunities.

Maintenance deficiencies take many forms. A lack of adequate fertilization, mowing too closely or infrequently, failure to control weeds, incorrect use of herbicides, overwatering, and a lack of successful reseeding are common causes of failure. Of course, other factors can be responsible, but this listing is of great concern as it involves the common and basic needs.

Good athletic fields usually do not happen without a good budget and the stimulating spirit of a group who desire a good field. Surprisingly few fields have an adequately prepared budget. In some cases, when equipment, interest, and "know-how" are lacking, contract maintenance may be the best choice. Most areas have capable contractors. The problems with this procedure are: (1) determining the organizations that can maintain the field successfully, and (2) preparing specifications that assure the competing bidders will give equivalent performance.

How Much Should a Field Be Used?

Athletic fields are made to be used. The amount of use a field tolerates varies from season to season along with many other factors; and the appropriate amount of use is difficult to determine. How important a given day's use of the field may be is scarcely the turf grower's prerogative. The growers do not wish to say that a major event should be held or postponed. Yet, the persons associated with turf and maintaining the field are most aware of the ruinous tearing of the sod and soil compaction that occurs from use on a single day when conditions are improper. Certainly, the turf grower should be consulted for an opinion as to the amount of harm that is likely to arise from use under difficult conditions. Hopefully, administrators would not approve use of the field for secondary or trivial events when severe harm is imminent.

Improving Athletic Field Turf

The individual athletic field turf is often in need of several improvements. First, analyze the problem. What are the causes of poor turf? Attack the problems in order of importance and proper work sequence. Develop the interest and knowledge on the part of the working and supervising personnel. Install drainage if considered necessary by experts. Often the field should be recontoured. Reseeding or resodding of the field may be the next step. A good maintenance program should always follow. Good fields that are used seldom persist without regular repair. Even with the more severe conditions that destroy the grass cover, a field can develop an attractive cover of ryegrass with 8 weeks of nonuse, and cool, moist growing conditions.

Many athletic field areas do not have enough area to handle the total traffic. In such cases, additional grassed areas help maintain more continuous grass cover and aid the environment. Where space is very limited, a small portion of grassed area might be hard surfaced or covered with synthetic turf for use when the living grass areas need protection.

Develop a procedure for control of traffic. Unrestricted and continuous use or a day's use under very destructive conditions can kill the stand of grass and necessitate long periods of delay before reusing the field. Some restriction of traffic before the turf cover is destroyed usually gives more total use of the grass than unrestricted use. Also, shifting the wear pattern will greatly increase total use. Of course, seedling turf or newly laid sod is destroyed with very little use. Such expenditure should not be made, unless proper protection is assured.

The maintenance program for the field should be a primary responsibility of one person who: (1) knows or learns the work; (2) has a major role in developing the program; (3) can stay with the work plus oversee labor; and (4) has a voice in proposing budget needs.

With regard to general needs for better athletic field turf, more research is needed. Our current choice between Kentucky bluegrass, perennial ryegrass, and tall fescue is helpful. Yet, some research on developing types that are tougher and establish quicker seems worthwhile. Research information could help in developing more optimum soil mixtures. Also, research is needed on methods of growing vigorous grass but retaining tough leaf and stem tissue that resists more wear.

Synthetic Turf

Would turf growers ever propose the use of synthetic turf? Yes. This is the only hope for covered fields, sites with very limited facilities, and those that are used several times per week through most of the year. Yet, we urge careful study before converting to synthetic turf, as this does not appear to be the answer for many fields. The money spent on a synthetic field would be much greater than on the average grassed field. Installation costs of the synthetic field, even spread over a 10-year period, will do a tremendous amount of additional grass maintenance that most fields have not received previously. Also, the synthetic field is not free of maintenance costs. The player injury relationship between grass and synthetic turf is not clear. Synthetic turf is considerably hotter for summer use. Also, it does nothing to aid the environment.

In conclusion, athletic fields offer considerable opportunity for improvement. Everyone with responsibility for some part of the field's development or use, whether he be a turf grower, public official, architect, contractor, or commercial supplier, should recheck their role in providing for the proper needs of athletic fields. The needs are not ending; they are growing. The athletic field is in frequent need of extra care or rejuvenation. Grass will be the playing surface for many years on most athletic fields. We should find ways to encourage better turf for so many of these neglected areas where nothing but the best should be accepted.

ATHLETIC FIELD CONSTRUCTION

(1)

(2)

(3)

(4)

(5)

1. Baseball field roughed out and ready for sand-clay placement in baselines.
2. Rocks and debris shown above could have been avoided by enforcement of proper contractual specifications, including normally required hand work.
3. Uniform application of proper nutrients and soil amendments is too often overlooked.
4. Machine in foreground meters exact seed required over given area and sets same directly into soil at acceptable depth.
5. Completed athletic area now awaits the care of Mother Nature and hopefully a good maintenance program.

Change In Name, Adelphi Kentucky Bluegrass

Due to prior usage of the name as a brand mixture, Nassau, which had been approved by the U.S.D.A. and assigned to the new experimental Kentucky Bluegrass variety P-69 or FS-200, has been changed to ADELPHI KENTUCKY BLUEGRASS. The responsibility for the need to make this change naturally rests with the namer and not with the U.S.D.A.

Adelphi is a very appropriate name for this new variety; the connecting of the very oldest and best with the newest and most outstanding. It is at Adelphi, where for many years we have seen some of the most beautiful lawns in existence. In addition, it was at Adelphia Breeding Station of Rutgers University that work was done on the new variety Adelphi.

The variety Adelphi has been tested over a six-year period and has consistently been given a better quality and performance rating than other bluegrasses currently in widespread use. It has an attractive, rich, deep, dark green color, which it maintains throughout the growing season, having good resistance to leaf spot, crown rot, leaf rust and stripe smut. Under turf maintenance it has good rhizome and tiller development, producing an eye-appealing turf of excellent density and moderate horizontal spreading ability. The variety Adelphi will also tolerate moderately close mowing.

History is being made in the seed industry with this new variety, Adelphi Kentucky Bluegrass, as it is the first man-made or man-propagated strain to be marketed. The development and breeding work was done by Dr. C. Reed Funk and Dr. Gerard W. Pepin at Rutgers University. Adelphi Kentucky Bluegrass selected as the best from literally thousands of new varieties, based on overall performance coupled with the ability to produce marketable seed, is only the beginning of the advent of a whole new surge of improved varieties which will be coming on the market due to the fine work of these two men.

A limited quantity of Adelphi Kentucky Bluegrass seed was available last year, which was used mainly to extend the testing program of the variety in the East. While more seed is available this Fall, again, most of the quantity will go to selected locations so that plantings may be controlled and observed under a wide and varied range of growing conditions. It is anticipated that the variety will be freely available to the general public in the Fall of next year.

The United States marketing will be handled by J & L Adikes, Inc., Jonathan Green & Sons, Inc. and The Vaughan Seed Company.

Rooting Ability of Merion Kentucky Bluegrass Sod Grown on Mineral and Muck Soil

J. H. Dunn and R. E. Engel
Agronomy Journal 62:517-520, 1970

Merion Kentucky bluegrass sod grown on muck or mineral soil in several Northeast and Midwest states was subjected to field tests to show resistance of the newly planted sod to horizontal shearing. Sod rooting as measured by resistance to shearing varied more by sod source than by muck or mineral soil origin. In tests planted on June 3 and July 20, mineral sod appeared to have better resistance to shearing; while measurements for this same character in a third test of July 28, the muck sod was equal to the mineral sod. In a greenhouse test of samples used in the third test, the cultures planted with muck sod had some advantage in new root growth at 11 days over those grown with mineral sod. As a group, those sods with well-developed rhizome systems did not show better rooting. Thin cut sod (¾″) had consistently higher shear strength than sod cut to 1½″.

Comments: This research report shows muck and mineral sods may not differ as much in early rooting behavior as often expected. These results agree well with information from Michigan State University. Of course, more data are needed on: (1) the cleavage line phenomenon between sod and natural soil, and (2) the relationships of high organic soil, thatch, and rewetting as occurs when muck soil is placed on a mineral soil. Some historical thinking proposed avoiding muck sod on heavy traffic areas, slopes, or greens where turfgrass survival can be difficult. Possibly some of these considerations on the choice of muck or mineral sod may still be appropriate. Data from this study support thin cutting of sod. Thus, using thin sod should reduce the theorized problems from the very different layer of soil introduced with the sod whether it originates from a muck soil or a mineral soil with grossly different physical characteristics.

Intraspecific Hybridization as a Method of Breeding Kentucky Bluegrass for Turf

G. W. Pepin and C. R. Funk
Crop Science 11:445-448, 197[illegible]

Four selections and one cultivar of Kentucky bluegrass were crossed in various combinations. The most vigorous of the resulting hybrids were selected for evaluation of turf performance. After 2 years of observation in turf trials, the 17 most promising turf-type hybrids were studied in greater detail. Eight hybrids were highly apomictic, and were equal or superior to their parents in a number of characteristics reflecting vegetative and reproductive vigor, disease resistance and turf performance. Many of the most promising hybrids appeared to be triploids resulting from the fertilization of unreduced female gametes.

Comments: Obtaining improved turfgrass types of Kentucky bluegrass through selection and breeding was oftentimes considered unpromising. Selection of Merion Kentucky bluegrass and its subsequent usefulness showed one part of the fallacy. This paper shows that crossing of complementary types and selecting among the progeny is also an open avenue to better Kentucky bluegrasses for turf.