

Mat and Thatch

Cause, Effect and Remedy

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Much of the trouble that occurs on turf and especially on greens can be attributed to accumulations of mat and thatch. Mat and thatch are terms which often are used interchangeably to describe a condition where excessive vegetation has accumulated. The two terms do relate to different conditions, however, and the remedial operations must be chosen to combat the particular condition which may exist. It may be useful to define the two conditions.

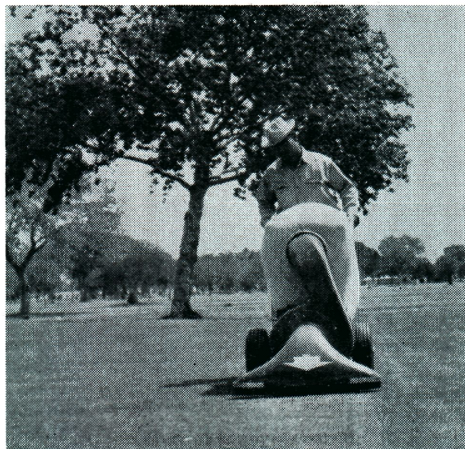
Mat—*thickly overgrown and tangled mass of vegetation. In turf, undecomposed mass of roots and stems hidden underneath green vegetation. Associated with sponginess or fluffiness in turf.*

Thatch—*an accumulation at the soil surface of dead but undecomposed stems and leaves.*

Mat

It is possible, of course, for mat and thatch to occur together but either of the conditions may occur singly. Mat is the more common condition. It occurs as the result of (1) rapid growth, (2) a growth habit that produces a tangle of prostrate stems and leaves, or (3) from faulty mowing practices. Because mat is characterized by sponginess, it contributes to a lack of "trueness" in the putting surface. Uneven mowing, scuffing, and scalping are some of the first signs that the casual observer will note when mat begins to build up.

A matted condition contributes substantially to an environment which encourages disease activity. High hu-



Julian Serna, superintendent of the Albuquerque Country Club golf course, demonstrates a vacuum cleaner type of machine for picking up the clippings following the use of a vertical mower.

midity may occur in the mat; fungus organisms are harbored and are protected from fungicide sprays. The mat serves as a source of inoculum and when traffic presses healthy turf down against the mat, a favorable situation for fungus attack is created. The grass is bruised and forced against a fungus harboring medium.

Fortunately, mat usually can be eliminated without doing more than superficial damage to the turf. Close mowing, coupled with raking or vertical mowing, will remove much of the excess vegetation and will cut or remove the tangle of prostrate stems and leaves. (See accompanying photos.)

Turf may be discolored temporarily from the removal of a substantial amount of vegetation, but because we are dealing with living turf plants,

growth will occur to renew the color and density in a short while.

Topdressing is one of the chief tools for combating mat, but ordinarily it should be used with practices such as raking or vertical mowing. Topdressing on top of a mat and failure to get the soil materials in contact with the surface of the soil below will create a buried layer of organic matter. Layers of this kind impede the movement of water and are sometimes associated with very shallow root systems.

Thatch

Whereas mat is considered to be an accumulation of excess growth that is alive, thatch is a layer of dead but undecomposed vegetation. We have said that mat and thatch sometimes occur together and sometimes singly.

Thatch is considered to be a more serious problem because of the difficulty associated with its removal. It is beneath the living turf and consequently removal of the thatch also implies removal of some of the living material overlying it.

Thatch occurs because of an abundance of heavy clippings, the shading and destruction of lower leaves by a heavy overlying mat, or from slow decay of dead plant parts. Slow decay is difficult to understand when we know that efforts to build organic matter in a soil are largely unsuccessful because of rapid decomposition.

One fact which may provide a clue to the reason for slow decay is that a frequently topdressed turf seldom produces a thatch. The mixture of soil with the dead vegetation contributes to a more rapid breakdown. It has been suggested that the relatively thin layer which is involved in thatch may be lacking in some material which is necessary for decay. Could high acidity (low pH) create an en-

vironment unfavorable to the activity of the appropriate microorganisms? Could there be a lack of calcium or of nitrogen in this layer? Might the use of fungicides on turf suppress the activity of the decay organisms? Such questions cannot be answered at the moment.

While we may not understand completely the causes of thatch, the effects are well known. Thatch interferes with water movement. It holds excess water near the surface and thus contributes to disease activity, the germination of weeds, and shortened root systems. Paradoxically, when thatch becomes dry it is very difficult to rewet. It then sheds water and is the cause of localized dry spots.

Topdressing, applied over a thatch in too heavy amounts, will create organic matter layers with the attendant difficulties. Topdressing, however, is one of the chief tools to be used in the prevention as well as in the elimination of thatch. Topdressing is best used in conjunction with aerification or cultivation. Holes or slits



A putting surface which has just been vertically mowed. Note the fine, parallel grooves. After mowing with a putting green mower, this green may be temporarily off color but it will be "truer" and more nearly free of grain than before.

made through the turf permit top-dressing material to be worked down into contact with the underlying soil. These closely spaced channels offset any tendency of the buried thatch layer to impede the movement of water.

It has been noted that soil or compost brought into intimate contact with organic matter accumulations hastens the decay of that material. This topsoil or compost usually contains the nutrients which would be necessary for the growth of microorganisms. Nitrogen may be especially important in bringing the carbon-

nitrogen ratio into a favorable balance.

Cultivation alone may be of considerable value in reducing surface accumulations. It creates channels favorable to water penetration and it deposits soil on the surface which filters back down through the turf. This soil imparts some of the benefits of topdressing.

As is the case with most troubles, the prevention is far easier than is the cure. Regular programs of raking, vertical mowing, cultivation and topdressing will almost guarantee freedom from mat, thatch, and many of the ills to which these conditions contribute.

Care of Sprayers*

The sprayer should be cleaned thoroughly after each spraying operation since many herbicides are corrosive, causing scale to form, in addition to damaging parts of the pump, pressure regulator and nozzles.

When 2,4-D esters or oil soluble materials have been used:

1. Rinse the sprayer system with kerosene.

2. Put in one or two pounds of washing soda to 30 gallons of water or one quart of household ammonia per 30 gallons of water.

3. Allow this to remain in the sprayer for several minutes. Then start the sprayer and circulate it through the system.

4. Drain the sprayer.

5. Rinse the sprayer again with water and drain.

When 2,4-D amines or other water soluble salts have been used:

1. Rinse the sprayer system with either one or two pounds of washing

soda or one quart of household ammonia in 30 gallons of water. Allow the solution to stand in the sprayer for several minutes; start the pump and circulate it through the system. Then drain the sprayer.

2. Rinse the sprayer system with six to eight ounces of liquid detergent in 30 gallons of water and drain.

3. Rinse the sprayer system with water and drain.

To prevent rust or corrosion, flush the sprayer system by pumping through it a solution of automobile radiator rust inhibitor in water ($\frac{1}{2}$ cup per gallon of water) and drain. Kerosene or fuel oil will not prevent rust or corrosion.

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