

Plastic Covers for Winter Protection

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The value of protective covers to guard putting greens against the ravages of winter damage caused by desiccation has been widely recognized. Mulches, covers and blankets of various materials have been used. And, many have proven to be of value as protective agents.

The protective advantages of plastic (polyethylene) were first shown during the winter of 1958-59 and published in the *Golf Course Reporter*, September-October, 1960 and 1962. Since that time the benefits as reported have been demonstrated at a number of locations in the United States and Canada.

In addition to their protective value for established greens, polyethylene covers have been used to protect late planted tees and greens and to assure their establishment. Jim Haines, Superintendent of the Denver Country Club, has used the technique for both tees and greens. Greens planted with stolons in late October were played in early May—a gain of six to eight weeks over normal rates of establishment. Carl Beer, Superintendent of Mission Hills Country Club, Kansas City, was able to bring greens seeded in early December into play by May. In these as well as other cases, the conservation of moisture and the build-up of heat (greenhouse effect) associated with the plastic covers is believed to be primarily responsible for the marked success experienced by both Superintendents.

Why Limited Use?

In spite of the protection of greens provided by the covers, they are not widely used. **Why?** First, there are several disadvantages associated with their use. They are difficult to hold down and keep in place. The smooth surface acts much as an airfoil and is easily lifted by wind movement. Secondly, the build-up of heat, while a definite advantage when controlled, can prove to be disastrous if permitted to reach high levels. In areas with fluctuating temperatures, the difficulty of removing and replacing the covers to control temperature, maintain turf and permit play is costly and inconvenient. These definite disadvantages of polyethylene covers have no doubt been, to a large extent, responsible for their limited use.

One further factor, the uncertainty of weather contributes to limited use of the covers. Desiccation of greens does not occur each winter. And, in years when "winter kill" does occur, not all of the damage is caused by desiccation. There is evidence that the covers will protect against winter damage other than desiccation but their main value seems to be for this purpose. At any rate, it would seem that the difficulties associated with use of the covers along with the uncertainty of predicting the type of damage, if any, that may occur, limits the use of the plastic covers.

New Materials

In 1965, Precision Pak, an Excelsior blanket, was included in the winter protection studies located at the Toro R&D Center. In 1966, Famcomat, a fiberglass blanket, was included. Both materials were compared with clear 4Mil polyethylene.

All materials gave protection against winter damage. In late March, the soil was thawed to a depth of 3-5 inches under the Precision Pak, 5-7 inches under Famcomat and 10-12 inches under the clear plastic. Un-

protected soil in adjacent plots was thawed to an average depth of 6 inches.

Growth stimulation was greatest under the clear plastic and least on the unprotected plots. Growth stimulation under the Excelsior and fiberglass blankets was essentially equal and intermediate between unprotected and clear plastic plots.

The equality of growth stimulation, in spite of a decided difference in depth of thaw under the Excelsior and fiberglass blankets, may indicate the key role that moisture retention plays in early growth stimulation. The materials are effective as mulches and, therefore, keep the surface temperature more uniform and more moist. Such prevents or minimizes desiccation of the grass plants. This point needs further study.

In addition to these studies, in 1966-67, field demonstrations using Precision Pak were placed on a newly sodded green at Minikahda Club by Superintendent Larry Vetter, on an established green at Keller Golf Course by Superintendent Gil Foster and on the infield at Metropolitan Stadium by Grounds Superintendent Dick Ericson. In all three instances, the covers provided protection against winter damage and stimulated early growth.

A processed water-resistant wood fiber blanket, developed by Conwed Corporation, was added to the 1967-68 studies. Results of its performance are unavailable at the present time.

Soil warming studies using electric heating cables are also being conducted at the Toro R&D Center.

SUMMARY

Winter damage of golf greens may be caused by a number of natural phenomenon. One of the more devastating is desiccation. Covers and blankets have been shown to provide protection against this form of winter kill. In addition, the covers have been used successfully to promote establishment of late planted tees and greens. The value of the covers stems from their ability to conserve moisture. Blankets other than polyethylene will maintain a more uniform temperature at the surface; hence, promote a uniform type of growth.

Plastic covers have not been used widely although their value as devices to protect golf greens against desiccation and to stimulate early growth has been recognized since 1958. Some of the reasons for their limited use are the disadvantages associated with temperature build-up, the inconvenience of handling the material and the vagaries of weather.

New product — Precision Pak and Famcomat — do not appear to have the major drawbacks associated with the plastic cover.

ELECTRIC GOLF GREENS

Bizarre changes of temperature on the mile high Banff Springs Hotel golf course (the Chinook can bring a swing of 60 degrees overnight) have meant that greens are seldom ready for golfers before June. Six years of experiments by Dr. J. B. Lebeau, head of plant pathology at the federal government's research station in Lethbridge, Alta., have resulted in a thermostatically controlled electric earth warmer. Cables laid 10 inches below the greens in a premeditated pattern maintain a constant heat of 28.4 degrees throughout the winter. Grass flourished despite climatic changes and golfers should be able to tee off as early as April. The system isn't exactly cheap. Engineers estimate it will cost \$60,000 to wire the entire course. Other possible applications: all-weather football fields.