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Rubigan® controls dollar spot on greens, tees and fairways.

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GEOTEXTILES

Brand name	Circle No.	Manufacturer	Fabrication process
Bidim	101	Quline	nonwoven needle-punched spunbound polyester
Duon	102	Phillips	nonwoven staple fiber heatbonded needle-punched polypropylene
Earthblanket	103	K.I.M. International	nonwoven spunbound polyester
Filterbond	104	DeWitt (distributor)	nonwoven polypropylene
Landscape Fabric	105	Dupont	nonwoven continuous filament spunbound heatbonded polypropylene
Rit-a-Weed	106	Amoco	nonwoven and woven needle-punched polypropylene
Stabilenka	107	American Enka	nonwoven polyester
Terrabond	108	Warren's	nonwoven continuous filament needle-punched spunbound polyester
Terracover	109	Warren's	nonwoven staple fiber needle-punched spunbound polyester
Terrashield	110	Warren's	nonwoven continuous needle-punched spunbound polyester
Weed Barrier	111	DeWitt (distributor)	woven needle-punched polypropylene
Weed Barrier Mat	112	American Woven Fabrics	woven needle-punched polypropylene
Weedblock	113	Easy Gardener	nonwoven molded polypropylene

rather than a geotextile. Stabilenka, a polyester geotextile, is often used in conjunction with the Enkamat to further control erosion.

Enkamat is a three-dimensional structure made from heavy nylon monofilaments fused at their intersections. The open construction of the mat leaves 90 percent to be filled with soil, gravel or other materials.

It gives vegetation a matrix for vegetative root growth. Before vegetation develops, the Enkamat will protect against surface erosion and prevent the disturbance of seed distribution. After vegetation develops, the mat forms a surface cover skin which protects subsoils against erosive forces.

George Dodson, assistant development engineer for American Enka, says Enkamat is a permanant solution to an erosion problem. Dodson calls it "unique" and says it really doesn't have any competition, except for old-fashioned riprap.

Used alone, Enkamat can line highway ditches and storm channels. Used in a "sandwich" with Stabilenka, Enkamat can restore highway shoulders and slopes which have been damaged by acidic water, allowing turf to recover and grow. Dodson says Stabilenka can help prevent roadside weed growth, although the company doesn't market it for that purpose.

Barney Barron of the San Francisco Parks Department has used Enkamat since 1981 to hold down the sod in Candlestick Park. The root system established with Enkamat prevents individual grass plants from being uprooted by players cleats.

Dodson says landscapers often use Enkadrain (Stabilenka heatbonded to the Enkamat) to line terraces or planters instead of gravel.

Mirafy Inc. markets a similar product, Miramat, manufactured by 3M. Miramat is made of a vinyl material. Vice president of marketing Terry Montgomery says the difference between Miramat and Enkamat is that Miramat is heavier and more flexible. Another difference is that Miramat tends to be used more in the private sector, while Enkamat is used publicly, especially along highways.

While installing North American Green's erosion control blanket, one should start at the top of the slope and unroll the blanket. The blanket should never be stretched so that contact with the soil is constant.

Although Miramat was developed for civil engineering purposes, Montgomery says he has seen an increased interest among landscapers. "There's been a lot of interest," Montgomery says. "They use it to take care of unsightly areas, such as rock on slopes or channels or concrete lined ditches."

Miramat's green color adds to the natural look many landscapers are after, while controlling erosion at the same time.

Some companies have developed natural erosion control blankets made of biodegradable materials such as wood or straw. Montgomery doesn't consider the products competition.

"I think they're excellent in low-flow conditions. They serve a niche," Montgomery says. "We don't compete against mulch or straw. It's not cost-effective."

Natural products are much cheaper than the man-made Enkamat or Miramat.

Jim Neimeier, marketing director for North American Green, does consider the man-made products competition to his erosion control blankets made of straw, coconut fibers or a combination of both.

In fact, he has run tests comparing his blankets to the Enkamat, Miramat and other natural products, with his

continued on page 66

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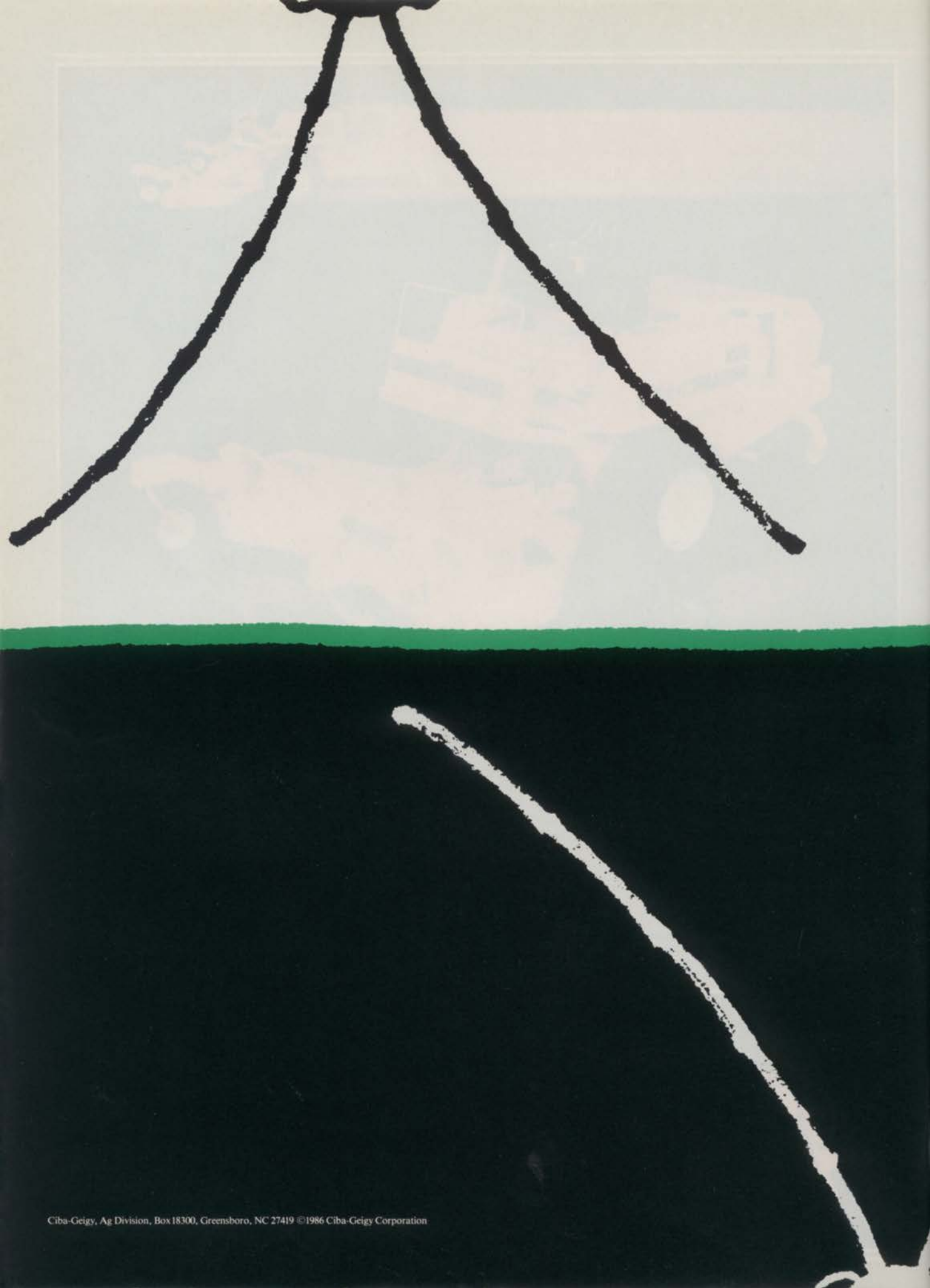

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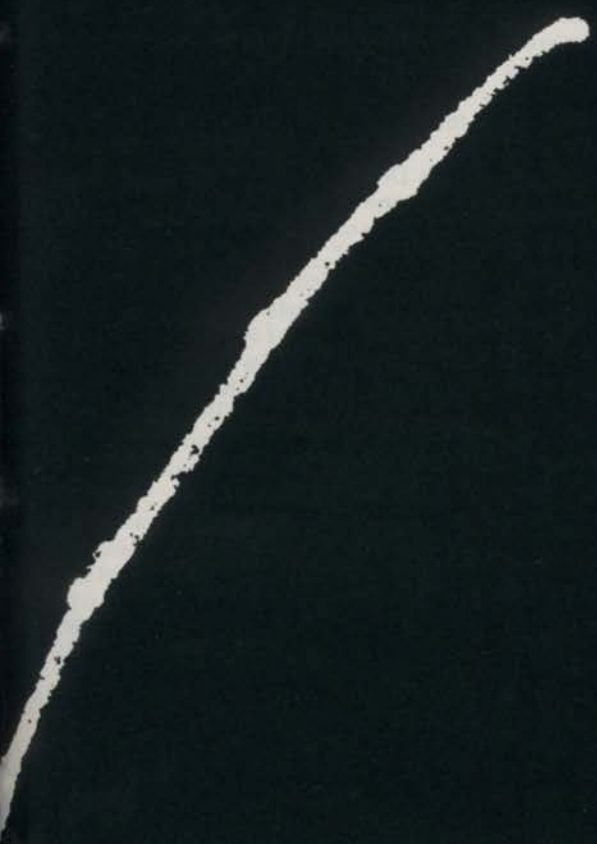

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DIAZINON.

Circle No. 250 on Reader Inquiry Card

FABRICS *from page 62*

Turf Nit netting is stretched across a sod field to stabilize the seed while it germinates.

product winning in velocity and less soil loss. But the products are inherently different.

"We're flexible, they're more structural," Neimeier says. "Their product is permanent and doesn't provide an adequate environment for vegetation."

The blankets are constructed to prevent moisture loss through evaporation, while allowing water to get through. The blanket also keeps the soil warm to help seeds germinate.

"The key to stopping erosion is to revegetate the area," Neimeier explains. The blankets then break down and provide mulch to the area. The coconut fiber blankets last longer than the straw blankets, allowing strong root systems to develop.

Five of North American Green's six blankets are placed over a seeded area and stapled to the ground. The company has just developed a foot-operated staple gun for this purpose.

The sixth blanket comes pre-seeded, for steep grades. The company calls it "an effective alternative to sod."

The blanket is perhaps the only one of its type on the market. Quline Corporation has developed plans for a pre-seeded Bidim, which would be made in a biodegradable fabric and used on steep slopes where erosion is a serious problem.

The technology for erosion control blankets has long been used in Europe. "The U.S. is not as conscious of erosion because they have more land and less population," Neimeier says. "We're behind the times."

Erosion control blankets made out of wood were first developed by American Excelsior Co. about 25 years ago.

P.P.S. Packaging Co. manufactures the Xcel, excelsior erosion control blanket made out of Colorado Aspenwood. American Excelsior's Curlex blanket is made out of a type of poplar wood, similar to the Aspen.

Wood products last about one year to 18 months before biodegrading.

Houseman says he hasn't seen straw blankets used very often. "The basic difference is that Aspenwood has the highest moisture content and is able to absorb water. You don't want runoff," Houseman explains. "Straw isn't going to do that."

American Excelsior branch manager Ernesto Forti says another problem with straw it is often contaminated with weed seed. "It's hard to find sterilized straw," Forti says. The blanket is used most frequently along highways where weed growth is difficult to control anyway.

Houseman says his product isn't competitive with the man-made materials, estimating a price difference of 41 cents per square yard for the Xcel blanket to possibly $6 per square yard for the Enkamat or Miramat. Both Houseman and Forti agree that the two types of products can be used together to combat serious erosion problems.

The Department of Transportation is the biggest user of the wood blankets. Although Houseman says he's seen inroads in the landscape business, he says many people are still committed to jute mesh, a type of rope fabric imported from India.

Delmarva Textile Co. manufactures Turf Nit netting to prevent erosion on seeded areas. It works under the same theory as Curlex or North American Green products, except the person has to lay down the straw. Still, the extra labor may be worth it because of the cheaper cost.

Turf Nit is made of UV stabilized polypropylene fiber.

After an area is seeded and covered with straw, the netting holds the seed and straw down to prevent erosion while the seeds germinate. It also helps hold the root system in place.

Before Turf Nit, chemical tackifiers were used for the same purpose.

"There's nothing comparable," says Delmarva president Joe Lamb. "No one makes a knitted netting which won't blow away in wind conditions."

Turf Nit consumer information says it can withstand heavy rains and winds in excess of 50 mph. The product is available in two size rolls, a 630 lb., 7 ½-acre roll for the sod industry and an easy-to-use 61 lb., ¾-acre roll for the landscaping industry. The company even sells its own stakes to hold the netting in place.

According to Lamb, the smaller roll is becoming popular with golf courses which use it on small replacement sod fields. Some golf courses even use it to hold straw in place on heavy traffic areas.

"The erosion control business hasn't even started," Lamb says.

Whether its artificial and permanent like Enkamat or Miramat, biodegradable like Excel, Curlex, or American Green or an inexpensive alternative like Turf Nit, erosion control is a growing field...literally.

—Heide Aungst

GEOTEXTILE GLOSSARY

Here are important terms used in the geotextile manufacturing industry:

NONWOVEN: fabric made of a random orientation of fibers

WOVEN: all fibers in the fabric are oriented in two directions at right angles to each other

SPUNBOUND: nonwoven fabric using continuous filament fibers bound together with heat, chemicals, resin or needle-punch

STAPLE: nonwoven fabric using short fibers bound together with heat, chemicals, resin or needle-punch

POLYETHELENE: non-breathable plastic film

POLYESTER: large, complex polymer derived from crude oil or natural gas that is resistant to many environmental fabrics

POLYPROPYLENE: short, less complex polymer derived from crude oil or natural gas

UV STABILIZED: fabric which has been treated to guard against breakdown from the sun's ultraviolet rays

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Kentucky bluegrass afflicted with rhizoctonia blight.

The fruiting structures of the pathogen of melanotus white patch.

THIRD OF THREE PARTS

CONTROLLING THE PATCH DISEASES

Warm weather and patch disease problems go hand-in-hand. Accurate diagnosis is a must for effective treatment.

by Dr. Houston Couch, Virginia Polytechnic Institute and State University

Editor's note: *Last month, Dr. Couch examined several summer patch diseases, including fusarium blight, sclerotium blight, and pythium blight. This month, he examines three other summer patch diseases—rhizoctonia blight, melanotus white patch, and summer patch. He describes key diagnostic features of each disease, listing specific weather and management conditions that favor development, and then gives control practices for each.*

Rhizoctonia blight

Rhizoctonia blight (brown patch) is incited by the fungus *Rhizoctonia solani*. This organism is pathogenic to over 1,800 plant species. Its grass hosts include all of the major warm season and cool season turfgrasses.

Rhizoctonia blight ranks as one of the most important diseases of turf and lawn grasses in the humid sections of the continental U.S.

In these areas, it is one of the more common diseases of bentgrass putting greens and bowling greens, and is often a cause of extensive blighting of Kentucky bluegrass lawns, athletic fields, and golf course fairways. In addition, from the Midwest to the Eastern seaboard, rhizoctonia blight is usually the most serious disease problem of tall fescue during July and August. During humid weather in the South, it can cause cause major damage to stands of zoysia and St. Augustinegrass.

The overall symptom patterns of rhizoctonia blight vary somewhat depending on the height of cut, the turfgrass type, and prevailing climatic conditions.

On bentgrass putting greens and bowling greens, its symptom pattern is characterized by irregularly-shaped patches of blighted grass ranging from a few inches to two feet in diameter. The coloration of these patches is usually first a purplish green, which rapidly fades to light brown as the leaves wither and dry out.

During warm, humid weather, dark, purplish "smoke rings," ½ to two inches in diameter, may border the diseased areas. These "halos" are usually more prominent in the early morning hours and may disappear as the day progresses.

On tall-cut grass maintained with grounds, golf course fairway, or home lawn management practices, the initial symptoms of rhizoctonia blight are irregularly blighted grass areas, ranging in size from a few inches to several feet in diameter. In the early development stages, the affected patches often develop as circular areas of dull tan to brown grass one to three feet in diameter with center areas of green, apparently unaffected plants—thus producing a "frog-eye" pattern.

The individual leaf symptoms of rhizoctonia blight on tall-cut grass are distinctive. They first appear as small, dull tan lesions. As they enlarge, they develop reddish-brown margins. Individual lesions may expand to envelop large sections of the leaf.

When this happens, in contrast to the symptoms of pythium blight, the integrity of the affected leaf tissue remains intact. In other words, instead of becoming softened, twisted, and matted together as in the case of pythium blight, leaves affected by rhizoctonia blight tend to retain their original shape and take on a dull tan to light brown, "dried out" appearance.

The infection of turfgrass leaves by *Rhizoctonia solani* begins when air

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Melanotus white patch is more severe on young tall fescue.

temperatures reach the low 70s (degrees F). When the daily air temperatures move into the mid 80s, infection rates increase significantly and the extent of colonization of the leaves by the invading fungus becomes more pronounced.

Free water on the surface of the leaves is an important factor in producing maximum infections. When the air temperatures are in the low-to-mid 70s, continuous leaf wetting for a period of 36-48 hours is necessary in order for a high order of infections to occur.

Dr. Houston Couch is professor of plant pathology in the Dept. of Plant Pathology, Physiology, and Weed Science at the Virginia Polytechnic Institute and State University in Blacksburg, Va.

However, when the air temperatures are in the mid to high 80s, a high incidence of infections can occur within eight to 12 hours. The severity of rhizoctonia blight is much greater on grass grown under high nitrogen fertilization.

Soil moisture stress in the readily available range (field capacity to permanent wilting percentage) does not affect disease development. Market-available fungicides labeled for rhizoctonia blight control include Actidione Thiram, Chipco 26019, and Daconil 2787.

In areas where outbreaks are a recurring problem, a preventive spray program is necessary if consistent control of the disease is to be accomplished.

As a general rule, the initial fungicide application should be made immediately after the first night where air temperatures do not drop below 70 degrees F.

Melanotus white patch

Melanotus white patch is caused by the fungus *Melanotus phillipsii*. To date, the disease has been observed only on tall fescue.

Outbreaks of white patch have been reported in Virginia, Georgia, North Carolina, Kentucky, Tennessee, and Alabama. However, it is highly probable that this disease is more widespread but has not yet been identified in other areas.

In the early stages of development, melanotus white patch is seen as circular patches of blighted turfgrass three to five inches in diameter but may enlarge to eight to 14 inches. These initial sites of disease development often coalesce to involve large areas of turfgrass.

In overall view, these affected areas have a distinctive off-white color. Also, the individual patches may be surrounded by a salmon-pink border. The grass leaves within the patches may mat together and become closely pressed to the soil surface.

The disease is restricted to the leaf blades, with the crowns of the plants unaffected. This means that with the return of cooler growing temperatures, total recovery of the affected plants usually occurs.

Beginning first at the tip and then progressing downward toward the sheath, the individual grass leaves assume a light tan to bleached white color. Both the mycelium and the fruiting bodies of the causal fungus occur commonly on the surfaces of the affected leaves. The mycelium is seen as a grayish-white cobwebby growth on the leaves.

The fruiting structures are very distinctive and therefore, serve as a valuable aid in diagnosis. These are small grayish- white mushroom-like bodies, 1/16-to-5/16 inch in diameter. They develop initially as small round balls. Eventually, they open and the familiar gills found on mushrooms are apparent on their lower sides.

Melanotus white patch is more severe on tall fescue stands that are less than a year old. Also, heavily seeded grass is usually more severely affected by the disease than grass seeded at a normal rate.

The development of white patch is favored by hot, humid weather. Damage from the disease is greatest when the daytime air temperatures exceed 85 degrees F and the night temperatures do not fall below 70.

In a given stand of grass, the most severe level of disease development occurs in the areas exposed to full sunlight rather than shaded areas.

Outbreaks of white patch are heaviest under conditions of low soil moisture content. In field trials, commercially available fungicides have failed to control melanotus white patch.

Certain cultural practices are helpful, however, in reducing disease severity. Since white patch is favored by hot, dry weather conditions, watering the stand of grass during these times to promote adequate plant growth will alleviate the problem to some extent.

In addition, while establishing new stands of grass, or when overseeding with tall fescue, one should take care to stay within the recommended seeding rate.