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**NOTE:** THE FOLLOWING INFORMATION IS OFFERED AS A GUIDE FOR PROSPECTIVE CHALLENGES TO MANAGING SEASHORE PASPALUM. ALL TURFGRASSES ARE SUBJECTED TO INSECT, DISEASE, AND WEED PRESSURES. PROPER MANAGEMENT IS THE KEY TO SUCCESS. YOU MUST CHECK ALL LABELS OF THE PESTICIDES TO BE USED ON THIS GRASS FOR LEGAL AND PROPER USE. MENTION OF A PARTICULAR PRODUCT IS NOT AN ENDORSEMENT OF THAT PRODUCT BUT REFLECTS WHAT IS KNOWN AT THE PRESENT TIME. ENVIRONMENTAL INTERACTIONS, INCLUDING SALINITY THAT IMPACT SPECIFIC SITES, MAY GIVE VARIABLE RESULTS IN THE USE OF SOME PRODUCTS.

## **BACTERIAL DISEASES**

To date, bacterial diseases have rarely been diagnosed on seashore paspalum, but the potential of other bacterial attacks on the grass always exists in turfgrass ecosystems.

## **Bacterial wilt**

(Xanthomonas campestris and Xanthomonas pv. Graminis)

Primarily a disease on annual bluegrass (Poa annua) and creeping bentgrass

Requires heavy rainfall periods with warm, sunny days and cool moderately warm nights. Late spring and early fall are favorable times. Spreads by excessive surface moisture and high humidity conditions.

**Symptoms:** Leaves lose turgor and wilt from tip back to the stem. Turns offcolor and shrivels. Tissue softens and eventually degrades. Whitish tan dime sized spots are evident. Can cause etiolation in Bentgrass from 'bacterial streaming'. Foliar-absorbed Primo applications can promote the streaming/etiolation issue; Cutless (flurprimidol) and Trimmit (paclobutrazol) do not cause this problem since they are root absorbed. Xanthomonas spp. cause small brown angular to circular spots with yellow halos; Pseudomonas spp. cause reddish brown spots with leaf distortion.

**Mode of action:** The bacteria colonize the xylem—water transport—of the roots, crown, and leaves. When the xylem is plugged with bacterial cells, water flow and nutrient transport internally in the plant is disrupted; the plants wilt and turn blue green. Leaves turn brown and shrivel. Bacteria are abundant on leaf clippings, organic matter (thatch) in the soil, and on the soil. Pathogenic bacteria enter the plant via mechanical damage or through stomata on leaves especially during or after heavy rain events. Bacteria in gutation water droplets (dew) can move into leaf tissue as the surface dries.

**Cultural control:** Avoid cultivations or bruising of tissue (excessive mowing, verticutting, core aeration). Sand topdressing will spread the disease. Increase mowing height of cut. Nitrogen fertilization can mask the disease symptoms. Avoid shaded and poor air circulation areas—remove or trim trees to improve air circulation. Reduce mowing frequency on affected greens or other areas. Hand water (syringe) greens during the day and do not overly wet the surface with nighttime irrigation. Use separate dedicated mowers on affected greens. Mowers should be disinfected with Clorox bleach after each use. Mow later in the day when the leaves are dry and do not mow on rainy days. Install large fans to enhance air movement around greens.

Suggested Chemical Control: Do not apply Zerotol--ineffective; copper hydroxide (Junction, Kocide); apply cytokinins (from >30% seaweed extract products) 1-2x weekly to enhance root redevelopment; during fall months (October and November)—apply two applications of a DMI fungicide (such as Banner or others) as a preventative; also implement cultural and chemical programs (granular Mn) for suppression of take-all/decline and other soil borne pathogenic organisms. Antibiotic oxytetracycline (Myco Shield) possibly can be used, but is not currently labeled for use on turfgrasses. .....

## Acidovorax avenae

New bacterial pathogen on creeping bentgrass and velvet bentgrass.

Causes bleaching, etiolation and eventually wilt.