

Anaheim Office
 Lab No.
 Path No.

Attn:

PATHOLOGY RESULTS: TURF

Final results are provided here for a sample of turf collected from the above-referenced job site. Information provided at the time of drop off indicates there is a large, expanding irregular patch of necrotic grass present in the lawn. As requested, the turf was analyzed for potential pathogens.

In examining the received lawn sample it appears that it is primarily comprised of kikuyu grass. Following preliminary microscopy work to check for fungal structures (mycelium, spores, and sclerotia), we proceeded to culture out sections of leaf blades, stolons/rhizomes, and root tissue onto a series of agar plates. A portion of the turf swath was also placed in a moisture chamber for incubation.

Sample Id.	Pathogens from Roots	Pathogens from Stolons/Rhizomes	Pathogens from Leaf Blades
Turf	<i>Gaeumannomyces graminis</i> <i>var. graminis</i>	<i>Gaeumannomyces graminis</i> <i>var. graminis</i>	None

In addition to processing the turf sample for pathogens, a complete soil analysis was also requested to assess nutrient levels and overall horticultural suitability.

Soil Analysis Results

The included data sheet for the performed soil analysis shows that salinity is down in the range considered safe for all commercial varieties of turfgrass, and even the invasive kikuyu. There is a modest accumulation of soluble sodium, but this is properly balanced by calcium and magnesium.

Soil pH is slightly alkaline in reaction at 7.2 and there is no free lime present, which is considered ideal.

Save for low iron and manganese, there are ample supplies of nitrogen, magnesium, sulfate, and zinc. Copper is sufficient. Phosphorus and potassium are slightly low.

Comments and Recommendations

It would appear that the main factor contributing to the decline of the kikuyu is the disease known as Take All caused by the fungus *Gaeumannomyces graminis* var. *graminis*. This disease mainly affects the roots and stolons causing them to rot. This fungus is favored by mild temperatures that range from 50^o – 60^o F, which is why the organism is most active during the fall and winter.

Often times, however, the damage caused by this pathogen is typically not noticed until the grass is exposed to heat stress when the plant wilts and dies out because the roots no longer function properly.



Soil moisture extremes help to weaken the grass and increase its susceptibility to Take-All infection. Other stressors such as poor soil fertility and high pH can also play a role in predisposing the grass to infection.

There are fungicides available to help manage Take-All; however continued stress to the turf will make it difficult to obtain optimum control. Fungicides containing azoxystrobin, fenarimol, myclobutanil, or propiconazole are said to provide control of Take All patch. Ideally treatment for Take All should occur in the fall for best results. Check with your preferred agrochemical provider for specific product recommendations.

Fungicides provide the best control of this disease when combined with the cultural practices required by kikuyu, i.e. maintain soil pH in moderately acidic range, closely monitor soil moisture to avoid moisture extremes (i.e. too dry, too wet), provide well balanced fertility, adequate aeration, and good thatch management. If possible, raising the mowing height slightly would be advisable to speed turf recovery. Of course depending on the degree of damage to the grass it may be necessary to reseed or sod the affected areas to avoid weed establishment.

The accumulation of sodium in the soil may be hinting at a cultural problem such as severe compaction, inadequate irrigation practices, or a problem with irrigation coverage. If any of these issues exist they must be addressed in order to effectively leach sodium from the turf root zone and prevent further accumulation. Failure to correct these problems will negatively impact the performance of the turf in the long run.

Next month, make an application of 16-6-8 fertilizer to ensure there are adequate supplies of phosphorus and potassium as we head into fall. Evenly broadcast the fertilizer using a rate of 6 lbs. per 1000 ft² and water in well.

Please call if you have any questions.

A handwritten signature in black ink that reads "Paul Santos".

Paul Santos, M.S.
Plant Pathologist