PlatinumTE PASPALUM

QUICK BEST MANAGEMENT STRATEGIES FOR SEASHORE PASPALUM

1. CHOOSE THE CULTIVAR CAREFULLY. YOU WANT MAINTENANCE SERVICE INFORMATION READILY AVAILABLE AND THOSE MANAGEMENT DETAILS WILL BE CULTIVAR-SPECIFIC. ALL CULTIVARS ARE NOT CREATED EQUAL. CHEAPLY PURCHASING A CULTIVAR DOES NOT MEAN THAT YOU ARE GETTING THE BEST AVAILABLE OR HIGHEST QUALITY GENETICALLY PURE CULTIVAR. ASK QUESTIONS AND GET UNBIASED INFORMATION. PLUS GO SEE THE CULTIVAR ON A GOLF COURSE OR IN A SPORTS FIELD SETTING. *BUY GRASS FROM A LICENSED GROWER AND ONE WHO HAS REGULARLY SCHEDULED FIELD INSPECTIONS TO ENSURE GENETIC PURITY OF THE SPECIFIC CULTIVAR.*

2. WHEN ORDERING SOD OR SPRIGS PRIOR TO PLANTING, REQUEST THAT THE GRASS BE SHIPPED IN REFRIGERATED TRUCKS THAT CAN MAINTAIN AIR TEMPERATURES AT 36° F IN ORDER TO SHUT DOWN RESPIRATION THAT CAN CAUSE ELEVATED RESPIRATION HEATED SOD OR SPRIGS ON DELIVERY.

3. IRRIGATION WATER QUALITY (SALINITY) MUST BE TESTED PRIOR TO PLANTING ON THE PLANTING SITE. COLLECT WATER SAMPLES FROM BOTH THE FRONT 9 AND THE BACK 9 HOLES OR FROM AT LEAST TWO LOCATIONS ON SPORTS TURF VENUES. SUBMIT THE SAMPLES FOR SALINITY AND NUTRITIONAL ANALYSES. KEY SALTS TO BE ANALYZED: TOTAL DISSOLVED SALTS (TDS), SODIUM, BICARBONATES, CHLORIDES, SULFATES, MAGNESIUM.

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4. MANAGEMENT PROGRAMS WILL BE BASED ON WATER QUALITY AND POTENTIAL FOR SALINITY ACCUMULATION IN THE SOIL PROFILE, ONSIGHT SPECIFIC IRRIGATION SYSTEM DISTRIBUTION EFFICIENCY, POTENTIAL FOLIAR FEEDING OF SALT IONS DIRECTLY INTO THE GRASS CANOPY, PLUS POTENTIAL ACCUMULATION OF SALTS IN THE SOIL PROFILE, & FERTILITY ADJUSTMENTS THAT IMPACT SPECIFIC CULTIVAR OVERALL SALINITY TOLERANCE RESPONSES.

5. PLANTING, ESTABLISHMENT AND GROW-IN TO FULL PASPALUM CANOPY DENSITY OFTEN CAN BE CHALLENGING WHEN IRRIGATION WATER TOTAL DISSOLVED SALTS (TDS) ARE ABOVE 2500 PPM AND SODIUM LEVELS ARE ABOVE 125 PPM (OR 5.43 MEQ/L Na) UNLESS ECOSYSTEM INFRASTRUCTURE CRITERIA ARE DEVELOPED SPECIFICALLY FOR SALINITY MANAGEMENT. SIGNIFICANT SITE-SPECIFIC MANAGEMENT ADJUSTMENTS MUST BE MADE IF SALINITY LEVELS ARE ABOVE 2500 PPM TDS AND SODIUM LEVELS ARE >125 PPM IN THE IRRIGATION WATER SINCE SALTS WILL ACCUMULATE IN THE SOIL AND MUST BE CONTINUALLY MANAGED (FLUSHED OR LEACHED) IN ORDER TO MINIMIZE SALT ACCUMULATION IN THE SOIL PROFILE.

6. THE SOIL PROFILE INFRASTRUCTURE NEEDS TO BE DEVELOPED FOR SALINITY MANAGEMENT LONG TERM. SEND IN SOIL SAMPLES BY DEPTH (SUCH AS 0-3 INCH, 3-6 INCH, 6-12 INCHES FOR A COMPLETE PHYSICAL ANALYSIS TO INCLUDE SATURATED HYDRAULIC CONDUCTIVITY, MOISTURE RETENTION, AIR AND CAPILLARY POROSITY, BULK DENSITY, AND SOIL PARTICLE SIZES (SILT + CLAY + SAND FRACTIONS).

7. REGULARLY SCHEDULED AERATION AND PERIODIC FLUSHING OF THE SOIL PROFILE TO LEACH EXCESS SALTS DOWN TO THE DRAIN LINES ARE ESSENTIAL MANAGEMENT STRATEGIES FOR LONG TERM SUSTAINABILITY WHEN IRRIGATING WITH SALINE IRRIGATION WATER. BE INFORMED AND ASK QUESTIONS REGARDING YOUR SPECIFIC SITE.

8. LEACHING RULE OF THUMB: 4 INCHES OF INFILTRATED WATER WILL REMOVE 90% OF THE SALT FROM THE UPPER 4 INCHES OF THE SOIL PROFILE; 8 INCHES OF WATER WILL DO THE SAME FOR THE UPPER 8 INCHES OF THE SOIL--INDEPENDENT OF SOIL

TEXTURE. FOR EXAMPLE: TO LEACH 70% OF THE SALT FROM THE TOP 2 INCHES OF THE SOIL ZONE WITH A ONE TIME SPRINKLER APPLICATION OF WATER, SAND--2-3 INCHES OF WATER, LOAM--4-6 INCHES, AND CLAY--6-9 INCHES. PULSED OR CYCLED IRRIGATION EVENTS MAY BE NEEDED TO EFFECTIVELY LEACH EXCESS SALTS DOWN TO THE DRAIN LINES ON A REGULARLY SCHEDULED BASIS IN ORDER TO MINIMIZE RUNOFF.

9. COLLECT PLANT TISSUE CLIPPINGS AND SUBMIT FOR A WET CHEMISTRY SPECTROPHOTOMETRIC OR ICP ANALYSIS FOR NUTRIENT CONCENTRATIONS ON A MONTHLY BASIS. UTILIZE NORMAL SOIL FERTILITY DATA + IRRIGATION WATER QUALITY + PLANT TISSUE ANALYSIS DATA TO ADJUST YOUR FERTILITY PROGRAM. DO NOT USE SATURATED PASTE EXTRACT TOTAL SALINITY IMPACT DATA TO ADJUST YOUR FERTILITY PROGRAM SINCE YOU WILL GENERALLY OVER FERTILIZE IF YOU USE THOSE DATA.

10. NUTRIENT SUFFICIENCY REQUIREMENTS FOR SEASHORE PASPALUM

2.00-3.00% N	50-500 ppm Fe
0.30-0.60% P	20-250 ppm Zn
2.00-4.00% K	50-300 ppm Mn
0.20-1.50% Ca	5-50 ppm Cu
0.20-0.60% Mg	5-60 ppm B
0.20-0.60% S	0.50-1.00 ppm Mo

Publications

1. R.R. Duncan, R.N. Carrow, and M. Huck. 2000. Understanding water quality and guidelines to management. USGA Green Section Record. September-October. Pages 14-24.

2. M. Huck, R.N. Carrow, and R.R. Duncan. 2000. Effluent water: nightmare or dream come true? USGA Green Section Record. March-April. Pages 15-29.

3. R.N. Carrow, R.R. Duncan, and M. Huck. 1999. Treating the cause, not the symptoms. USGA Green Section Record. November-December. Pages 11-15.

11. SEASHORE PASPALUM TOLERATES SALINITY; THEREFORE, IT GENETICALLY REGULATES THE UPTAKE OF CERTAIN SALT IONS AND LEAVES THE REMAINDER OF THOSE SALTS IN THE SOIL TO ACCUMULATE.

12. SOIL SALT ACCUMULATION MUST BE A PRIORITY MANAGEMENT STRATEGY FOR SUCCESSFULLY GROWING SEASHORE PASPALUM LONG TERM.

13. INSTALL OR REMEDIATE INFRASTRUCTURE COMPONENTS (IRRIGATION SYSTEM DISTRIBUTION EFFICIENCY AND UNIFORMITY, SOIL PROFILE COMPONENTS—ESPECIALLY GREENS MIXES, ADEQUATE DRAINAGE FOR THE SITE, CHEMIGATION EQUIPMENT, CULTIVATION EQUIPMENT) TO HAVE A REASONABLE CHANCE TO MANAGE THE GRASS WITH THE POTENTIAL FOR SOIL SALT ACCUMULATION.

14. COMPOSITION OF GREENS MIXES SHOULD BE BASED ON IRRIGATION WATER SALINITY AND THE SUBSEQUENT POTENTIAL FOR SALT ACCUMULATION IN SOIL PROFILES. SALT IONS WILL RAPIDLY ACCUMULATE IN SANDY SOIL PROFILES.

15. ANY INORGANIC SAND SUBSTITUTE THAT HOLDS WATER WILL ALSO SEQUESTER SOLUBLE SALTS IN MICROPORES AND ARE DIFFICULT TO LEACH IN ORDER TO MINIMIZE SECONDARY SALINIZATION OF THE SOIL PROFILE.

16. ASSESS SOIL CHEMICAL ISSUES ON THE SITE WITH NORMAL SOIL FERTILITY TESTING AND SATURATED PASTE EXTRACT (SPE=SALINITY) ANALYSES. KNOW AND UNDERSTAND THE SOIL LIMITATIONS PRIOR TO PLANTING.

17. COLLECT GRASS CLIPPINGS MONTHLY AND SEND TO THE LABORATORY FOR A WET CHEMISTRY/SPECTROPHOTOMETRIC ANALYSIS FOR ALL NUTRIENTS AND SALT IONS TO DETERMINE EXACTLY WHAT THE GRASS PLANT IS ABLE TO ABSORB.

18. YOU CANNOT PROPERLY GROW & PROVIDE LONG TERM CORRECT MANAGEMENT DECISIONS FOR SEASHORE PASPALUM UNLESS YOU IMPLEMENT A REGULARLY SCHEDULED AND PROACTIVE MONITORING PROGRAM INVOLVING TISSUE

ANALYSIS, WATER QUALITY ANALYSIS, NORMAL SOIL FERTILITY TESTING, AND SATURATED PASTE EXTRACT SALINITY TESTING.

19. DO NOT OVER-IRRIGATE. THIS GRASS WILL SET THE ROOTS DEEPER (OR SHALLOWER) DEPENDING ON IRRIGATION SCHEDULING. FREQUENT, SHORT DURATION IRRIGATION CYCLES WILL RESULT IN THE ROOTS BEING POSITIONED IN THE SHALLOW DEPTH ZONES NEAR THE SOIL SURFACE, RESULTING IN A HIGH SUSCEPTIBILITY TO DROUGHT STRESS POTENTIAL PROBLEMS AND PREDISPOSITION TO DISEASE ATTACKS. LESS FREQUENT, LONGER DURATION IRRIGATION CYCLES WILL RESULT IN THE ROOTS BEING POSITIONED DEEPER INTO THE SOIL PROFILE AND WILL PROVIDE ENHANCED DROUGHT TOLERANT RESPONSES FROM THE GRASS.

20. DUE TO AN EXTENSIVE ROOT SYSTEM, PASPALUM CULTIVARS WILL RAPIDLY ABSORB WATER FROM RAINFALL OR IRRIGATION. CAUTION: BE VERY CAREFUL WHEN VERTICUTTING OR AGGRESSIVELY GROOMING TO MINIMIZE SCALPING UNTIL POTASSIUM RE-REGULATES TURGOR PRESSURE. THE LEAVES WILL BE INITIALLY PUFFY FOR UP TO 12-24 HOURS AFTER ABSORBING WATER.

21. DO NOT OVER-FERTILIZE, ESPECIALLY WITH NITROGEN. THIS GRASS HAS A LOW REQUIREMENT FOR NITROGEN AND A VERY HIGH UTILIZATION EFFICIENCY FOR THIS NUTRIENT. EXCESS NITROGEN WILL PREDISPOSE THIS GRASS TO MORE DISEASE PROBLEMS. MAINTAIN 2.0-2.8% N IN THE LEAF TISSUE AT ALL TIMES.

22. CALCIUM (FOR NUTRIENT STABILIZATION) AND POTASSIUM (FOR STRESS TOLERANCE AND TURGOR PRESSURE MAINTENANCE) ARE ESSENTIAL SYNERGISTICALLY REACTING NUTRIENTS THAT STABILIZE NUTRITION & PROVIDE SUSTAINABLE STRESS TOLERANCE REACTIONS.

23. MANGANESE AND ZINC ACTIVATE THE SALT TOLERANCE MECHANISMS IN SEASHORE PASPALUM AND A DUAL PROGRAM INVOLVING LIQUID FOLIAR-ABSORBED AND SOIL-APPLIED GRANULAR PRODUCTS SHOULD BE INCLUDED IN THE FERTILITY PROGRAM.

24. MICRO-NUTRIENT APPLICATIONS SHOULD BE APPLIED ON A REGULARLY SCHEDULED BASIS—EVERY 2-3 WEEKS DEPENDING ON TISSUE SUFFICIENCY LEVELS.

25. PASPALUM IS A LUXURY CONSUMER OF MAGNESIUM, WHICH IS THE CORE MOLECULE IN CHLOROPHYLL. IF THE IRRIGATION WATER DOES NOT HAVE SUFFICIENT CONCENTRATIONS OF MAGNESIUM, REGULAR LIQUID AND GRANULAR SUPPLEMENTATION MAY BE REQUIRED SINCE MG IS RESPONSIBLE FOR MORE ENZYME ACTIVATIONS INVOLVED IN PHOTOSYNTHESIS THAN ANY OTHER NUTRIENT.

26. COLOR EXPRESSION IN PASPALUM INVOLVES A SYNERGISTIC INTERACTION AMONG CA, MG, MN, FE, S, AND P. CA SHOULD BE HIGHER (% OR MEQ/L BASIS) IN PLANT TISSUE THAN MG FOR MAXIMUM COLOR EXPRESSION.

27. COMMON SENSE APPLICATIONS OF BIOSOLID ORGANIC FERTILIZERS CAN BE PERIODICALLY APPLIED (SPRING AND FALL) TO SUSTAIN SOIL MICROBIAL POPULATIONS, ESPECIALLY AS SALINITY IN THE IRRIGATION WATER INCREASES AND SALTS ACCUMULATE IN THE UPPER SOIL PROFILE.

28. REGULARLY SCHEDULED CALCIUM PRODUCT APPLICATIONS SHOULD BE MADE TO ENSURE CALCIUM IS AVAILABLE FOR ROOT ABSORPTION AT ALL TIMES (NOTE: THIS IS ESPECIALLY CRITICAL IN CALCAREOUS SOILS WHERE CALCIUM CARBONATE AND CALCIUM BICARBONATE COMPLEXES RENDER THE CALCIUM INSOLUBLE AND UNAVAILABLE FOR UPTAKE, YET BASE SATURATION CALCIUM PERCENTAGES ARE GENERALLY >85%).

29. THE ONLY LIQUID CALCIUM PRODUCTS THAT CAN ACTUALLY BE FOLIARLY ABSORBED INCLUDE: CALCIUM NITRATE, CALCIUM CHLORIDE, CALCIUM ACETATE, CALCIUM GLUCONATE/ GLUCOHEPTONATE, AND CALCIUM CHELATED WITH AMINO ACIDS OR ALCOHOLS. CALCIUM IS RELATIVELY IMMOBILE INTERNALLY IN THE PLANT—FOLIARLY ABSORBED CALCIUM IS NOT TRANSLOCATED DOWN TO THE ROOTS—AND CALCIUM STABILIZATION DOES NOT OCCUR IN SHOOTS FOR 4-7 DAYS AFTER FOLIAR APPLICATION/FOLIAR ABSORPTION. FOR GRANULAR PRODUCTS (GYPSUM, LIME, DOLOMITE), CALCIUM IS ONLY ABSORBED BY THE ROOT TIP OR ROOT CAP, AND IT WILL

TAKE 3-4 WEEKS FOR THE ROOT-ABSORBED CALCIUM TO MOVE FROM THE ROOTS TO THE SHOOTS.

30. APPLY CYTOKININS FROM SEAWEED/KELP EXTRACTS (PRODUCTS MUST CONTAIN OVER 30% ACTUAL EXTRACT FOR OPTIMUM EFFECTIVENESS) TO DEVELOP OR RE-DEVELOP AND SUSTAIN THE ROOT SYSTEM. PASPALUM IS PRIMARILY RHIZOMATOUS; THEREFORE, INITIAL RECOVERY WILL ALWAYS INITIATE IN THE RHIZOMES & THIS HORMONE WILL REACTIVATE ROOT REGENERATION.

31. SEASHORE PASPALUM IS PRIMARILY RHIZOMATOUS AND SECONDARILY STOLONIFEROUS; THEREFORE, WHEN DAMAGED OR INJURED FROM SCALPING OR DISEASE ATTACK, THE GRASS WILL REVERT AUTOMATICALLY TO ROOT REGENERATION AND SURFACE CANOPY DENSITY WILL THIN OUT DUE TO THE SHIFT IN CARBOHYDRATE ALLOCATION FROM THE SHOOTS TO THE ROOTS.

32. THOU SHALT NOT SCALP SEASHORE PASPALUM AT ANY TIME. RECOVERY CAN TAKE 6-8 WEEKS IF NOT PROPERLY MANAGED AND REMEDIATION IMMEDIATELY IMPLEMENTED AFTER THE SCALPING EVENT.

33. MOWING HEIGHT REDUCTIONS SHOULD BE DONE VERY SLOWLY. AS HEIGHT OF CUT IS REDUCED, SEASHORE PASPALUM WILL DEVELOP SHORTER INTERNODES AND SHORTER, NARROWER LEAVES, WHICH WILL RESULT IN A TIGHTER CANOPY DENSITY COMPARED WITH OTHER WARM SEASON GRASSES. PASPALUM CULTIVARS VARY IN CANOPY DENSITY.