Turf Management I

Propagation, Growth, Development, and Structure of Turfgrass Species

Careers in Turf

• Rapid Growth
  – Ongoing technological, legal and business development
• Increased technical sophistication
  – Requires formal training at all levels
• Career Opportunities

Turf Terminology

• Turfgrasses
  – Plants that form a more or less continuous ground cover
• Turf
  – An interconnecting community of turfgrasses and the soil adhering to their roots and other belowground organs
• Sod
  – Surface layer of a turf that is harvested for transplanting

Turf Quality

• Related to subjective requirements
  – Utility
  – Appearance
  – Duration of playability (for sports turf)

Football Turf: firm footing – cushion characteristic – wear resistance – fast recuperative growth
Golf Fairway:
Suitable lies of ball.

Golf Green:
Sufficient ball holding capacity

Roadside Utility Turf

Ornamental Lawn

Horse Race Track

Home Lawn

Tennis Turf
Utility Turf Used As Landing Area

Turfgrass Ecosystem

Climatic
- Air
- Light
- Moisture
- Temperature

Biotic
- Culture
- Pest Management
- Traffic and Use

Physical

Chemical

Biological

Visual Turfgrass Quality

- Density
- Texture
- Uniformity
- Smoothness
- Color
- Growth habit
Turf Quality

Visual Characteristics

Functional Characteristics

Turfgrass Density

- Number of aerial shoots per unit area

Turfgrass Density

- Increases with increasing nitrogen fertility
- Decreases with increasing mowing height
  - Root growth and rhizome growth tend to increase with increasing mowing height

Turfgrass Growth Habit

- Type of shoot growth

Turfgrass Texture

- Width of the leaf blades
- Related to density
  - Coarse-textured turfgrasses have relatively low densities, while fine-textured turfgrasses can have very high densities

Turfgrass Texture

Texture – Blade Width

- Tall Fescue
- Kentucky Bluegrass
- Perennial Ryegrass
- Creeping Bentgrass
- Red Fescue
Turfgrass Smoothness

• Surface feature that may affect both visual and functional quality

Turfgrass Uniformity

• Even appearance of a turf
  – Uniform if each shoot is seen appears to have the same shape, size and orientation

Turfgrass Color

• Measure of the light reflected by a turfgrass
  – Species
  – Indicator of plant condition

Function Turfgrass Quality

• Rigidity
• Elasticity
• Resiliency
• Ball roll
• Recuperative capacity
• Yield
• Verdure
• Rooting

Turfgrass Rigidity

• Resistance of the turfgrass leaves to compression
  – Related to the wear resistance of a turf

Turfgrass Elasticity

• Tendency of the turfgrass leaves to spring back once a compressing force is removed
  – Dramatically reduced when the turf is frozen
Turfgrass Resilience
• Capacity of a turf to absorb shock without altering its surface characteristics
  – Largely a feature of the medium

Turfgrass Ball Roll
• Average distance a ball travels upon being released to a turf surface

Turfgrass Yield
• Measure of the clippings removed with mowing
• Influenced by
  – Fertilization
  – Irrigation
  – Other cultural factors
  – Natural environmental factors

Turfgrass Verdure
• Amount of aerial shoots remaining after mowing
  – Proportional to density (with the same genotype and mowing height)

Turfgrass Verdure
• At higher mowing heights, the same genotype will often have more verdure and generally better wear resistance
• Increasing verdure is correlated with increasing resiliency and rigidity

Turfgrass Rooting
• Amount of root growth evident at any one time during the growing season
Turfgrass Recuperative Capacity
- Capacity of turfgrasses to recover from damage
- Reduced by:
  - Compacted Soils
  - Unfavorable Temperatures
  - Insufficient Light
  - Inadequate/Excessive Moisture
  - Inadequate/Excessive Fertility
  - Toxic Soil Residues
  - Disease

Turfgrass Quality Level
- Growth and Development
- Decomposition and Deterioration
  - Insects and Other Pests
  - Disease Agents
  - Weed Infestation
  - Traffic

Turfgrass Management
- Modification of the natural environment to sustain turf at a desirable level of quality
  - Quality Levels: Low – Medium - High

Turfgrass Management
- Low Quality Levels
  - For those individuals who want an average looking turf with a minimum amount of inputs
- Medium Quality Level
  - For those who want an acceptable turf appearance but are not willing to commit significant time or expense into extra maintenance requirements
- High Quality Level
  - For those who demand the densest, greenest, healthiest turf and are willing to commit considerable time, and expense for proper maintenance (namely extra mowing and proper irrigation)

Turfgrass Management
- As desired level of quality increases:
  - Cultural intensity increases
  - Potential of mismanagement increases

Turfgrass Management
- Element of Turfgrass Management
  - Selection of well-adapted turfgrasses
Turfgrass Management

- Element of Turfgrass Management
  - Selection of well-adapted turfgrasses
  - Acceptable establishment procedures

Proper maintenance
- Mowing
- Fertilization
- Irrigation practices
- Cultivation
- Pest management

Turfgrass Management

- Requires comprehensive program of culture