**June 2, 2015**

Welcome / Meeting Overview

*Doug Karcher:*

* Introductions
* Lunch at Chileno’s

Foster the integration between teaching and extension

-Research/teaching into extension

*John Russin:*

* 2014 minutes
* 5 year project, rewritten in 2013
* Sign up for the project , NIMMS membership list
* Meeting schedule

*Janet Cole:*

* Welcome to Oklahoma

*Dennis Martin:*

* 1992, last meeting in Oklahoma
* 3.88 million in Oklahoma
* 1.1 million residencies in Oklahoma
* 70th year of turf education in Oklahoma
* Dr. Huffine, forage scientist 🡪turfgrass program (1963), agronomy department .
* Oklahoma:
  + Eco-regions
  + Mountains
  + Rainfall
    - 12-52 inches
    - Emerged from drought
* USDA hardiness zone
* Faculty:
  + Justin Moss
  + Nathan Walker
  + Yanqi Wu
  + Kemin Su
  + Eric Rebeck, ento extension
  + Tom Royer, IPM
  + Tracy Boyer
  + Chanjin Chung
  + Angela Post, extension wheat
  + Dennis Martin

Turf Pathology Update

*Nathan Walker:*

* Ectotrophoc root-infecting fungi
* Host/pathogen interaction of Spring Dead Spot patho-system using transgenic fungi
  + Transgenic fungi to see where they reside
* Teaching
  + Teaching and turfgrass pathology emerging issues
    - Decline in students enrolled in turfgrass IPM at a Junior/Senior level course
    - Recent administrative emphasis on minimum class size for an upper level course at 12 students
      * Budget issues
    - Future offering of course is questionable
  + Turfgrass industry has about 35 total fungicide active ingredients available
  + 30 prepackaged fungicide mixtures
    - Increases spectrum of activity
    - Convenient
    - One even has 4 active ingredients
  + Greater emphasis on resistance management
  + Pathology teaching
    - Students stressed for time
    - Attendance issues
    - Reliance on short term memory/internet
  + Industry support?
  + MONEY (Puff Daddy: Its all about the Benjamins)
* Decline in extension turfgrass pathologists
  + For many, turfgrass is only one of their commodity responsibilities
  + Extension is only part of peoples responsibilities
* Australia
  + Austeria program effectively ended most government and university research/teaching/extension programs
  + Disease issues even on warm-season grasses
  + Fringe “plant-protection industry”
* Issues not limited to turfgrass pathology
  + Greater need than people can meet
  + Many service industry outside of state
  + Travel is expensive
* Research
  + Greater performanece expectations and intensive management of Turfgrass
    - Mowing height, cultivars
  + Environmental extremes
  + Parasitic nematodes
  + Bentgrass putting grass issues
  + Ultradwarf Bermuda grass issues
* Disease
  + Spring dead spot
    - Riveara
      * In the middle of the spectrum—good
      * Maturity issues
  + Large patch is everyehere and severe
  + Leaf Spot
  + Fairway Patch?
    - Similar to spring-dead spot
  + Fairy rings and unidentified disease

State Reports (AL, AZ, AR, FL, GA)

*Various State Rep’s*

*Alabama:*

* Faculty:
  + New
    - Dr. Steve Lee
    - Dr. Joyce Ducar
* Student:
  + Numbers are down
    - 23 full-time undergraduates
    - Down about 50% from recent high
  + Building online program
    - Master of turfgrass management
      * Non-thesis masters
      * 32 credit hours
      * Capstone project
      * Tuition
        + $450 per credit hour
* Extension
  + Ebook series
    - Gardening in the South
  + Smart yards app
* Resignation
* Dean of the College of Agriculture

*Arizona:*

* Not present
* Faculty updates
  + Retirees
* Research
  + Cultivar screening
  + Salt stress, drought stress
* Extension
  + Turfgrass field day
  + IPM seminars
  + Turf schools
* Courses:
  + 14 students
  + Intro to turf science and management
    - 14 students
* Budget cuts
  + Farm fees apply to all land use

*Arkansas:*

* Jon Boyd
  + Extension
* Faculty update
  + 5 grad students
    - 2 phd
    - 3 masters
  + Retirement
* New department head
  + 5 star quarterback
  + Wayne
* Alternate year field day schedule
* New putting green
  + Warm season research

*Florida:*

* New hire
  + Provost at Cornell
    - Pro-agriculture
  + New dean for research
  + Agronomy head
* Retirement
  + Jon Cisar
* Hiring turf entomologists
* Teaching
  + No more turf degree program🡪 degree in plant science
* Research
  + Drop in research
  + Spread too thin
* Extension
  + New positions

*Georgia*

* Retirement
  + Bob Carrow
  + Keith Karnok
  + Lee Burpee
* Faculty
  + 19 state wide
  + Promotions
* New cultivar release
  + Bermuda grass
  + DT1
* Awards
  + Walter B Hill Award
* Field Day
  + 850 attendees
  + Governor spoke
  + Every two years
  + August 3, 2016
* Facilities enhancement project
  + 11.5 million dollars of bond funding
  + Facility enhancement statewide
* Extension
  + Hiring county agents
* Teaching
  + 21 students in undergrad program
  + 5 or 6 grad students

Break

Turf Nematode Update

*Billy Crow:*

* Nemacure
  + Fenamiphos-Nemacure 10 G and Nemacure 3 Turf
    - Organophosphate “nerve poison”
  + Versatile
    - All kinds of nematodes and turf types
  + Cease use by October 2015
    - Deadline pushed to 2017
* Fluensulfone
  + New class of nemacide
  + Owned by Adama/Qualipro
  + Approved for food crop, safe for animal and human
* Nemitz Pro G
  + 1.5% a.i. granular formulation
  + Effects of B.longicaudatus , percent green cover, and root length graphs
  + Decreased population density of sting and lance nematode (roots and soil)
  + Improved turf root system and cover
  + Multiple lower dose more effective than single large dose
  + National launch
* Abamectin
  + Active ingredient in Syngenta’s Avid 0.15 EC
  + Labeled for greens, tees and fairways
  + RUP
  + Do not have to buy with Heritage
* Avid
  + Related to invermectin used in human and veterinary medicine
  + Excellent nematicide but poor movement in soil.
    - Will go only about 2 inches deep
  + Restricted use pesticide in Florida
  + Percentage green cover and USGA nematode control graph
  + Turf responses, no nematode reduction
  + Targeted at Sting nematodes but application eliminated root-knot nematodes
    - Juvenile root-knot nematodes inside roots causing problems but not laying eggs yet
* USGA/FGSCA IPM study
  + Sting, spiral, stubby root, and ring nematodes
  + Bermuda grass cultivars with different level of nematode resistance
    - Nitrate leaching
* 2016
  + Good year for nematode management
  + New Bayer product
    - Safe?
  + Nematicice rotations

Sports Turf Safety Research

*Adam Thoms:*

* Center for athletic turf safety
  + Funded by astroturf
  + Half natural, half synthetic
  + Each plot is lined with pond liner and designed for leaching testing
  + Natural
    - Bermuda grass and KBG
    - Soil
      * Silt-loam (native)
      * Sand-cap
  + Synthetic
    - Fiber, denier, thatch (root zone layer), pile, primary polymer, etc.
* Athletes
  + Contact vs non-contact injuries
    - Prevent non-contact injuries
  + Bio mechanics
  + Athlete-to-surface interactions
    - Ground reaction forces
      * 3-5 times force back on them
  + Issues with natural turf testing
    - Portable device to simulate human reaction with turf
    - Tennessee Athletic Field Tester
      * Change out shoes and forces
* Temperature on synthetic turf
  + Higher temperatures🡪higher athlete injury rate
  + Irrigation and synthetic turf
    - Works for about 20 minutes
  + Temperature upper limits
  + Build model to predict synthetic turf surface temperatures
    - Maximum forecasted air temperature + maximum forecasted solar radiation
* Natural turf plots
  + Digital image analysis
  + 30 similar traffic events
    - 10 games a week over 3 weeks
    - 3 games a week over 10 weeks
  + Sand performance
  + Surface hardness
    - 100 GMAX NFL limit
    - All tested surface were playable in wet and dry years
  + Force measurements
    - No differences in cleat interaction
* Cultivar research
  + Green cover on simulated traffic events
    - Tifway vs Patriot
    - Latitude vs Tifway
    - Northbridge vs Tifway
* Field quality and weeds
  + Broadleaf and grassy weed effects on athletic field quality
    - %cover vs games
    - Weeds lead to higher chance of head injury vs Bermuda grass
      * Ranges of weed cover testing in the future
* Hardness testers
  + F355 and Clegg relationship
    - Non-existent
* Merge natural and artificial turf
* Cleat design and surface
  + Higher force on more aggressive frontal cleating

Lunch

Breeding Cold Tolerance in Warm-Season Grasses

*Dennis Martin:*

* Freezing tolerance vs chilling resistance
  + Chilling tolerant
    - Maintaining color through cold season
  + Freezing tolerant
    - Freeze injury
* History
  + 1986-USGA/OCAST funding for improved seeded turf-type Bermuda grass
  + 2001-2002-Yukon and Riviera seeded Bermuda grass became available
  + 2002-2003- Patriot interspecific hybrid becomes available
  + 2012- Latitude 36 and Northbridge commercially available
* Experimental trials
  + Bermudagrass trial
    - OKC varieties
  + Warm season putting green trial

*Yanqi Wu:*

* Hybrid bermudagrass
  + Tifgreen
    - Mutations in different environments
  + Tifdwarf
  + Champion dwarf
* Justification and breeding goal
  + Winterkill
    - No cold-hardy cultivar of this kind has ever been released for transition zone in US
  + Develop cold hardy grass
* Preliminary data
  + Dwarf type progeny from C. transvaalensis x C. dactylon
* Future plan
  + Dr. Moss and Dr. Martin replicated mowing trial
  + Dr. Nathan Walker evaluating host plant disease resistance especially Spring Dead Spot
  + Wu to continue to produce new dwarf type interspecific hybrids

*Ambika Chandra*

* Long term collaboration between TAMU and KSU to develop new and improved Zoysia grasses for the transition zone.
* Chisholm
  + Comparable cold-tolerant to Meyer
  + Superior turf quality
  + Rapid rate of establishment
  + Rapid recovery rate
  + Shade tolerant
  + Goof fall color retention
  + High shoot density
  + Low seed-head number
  + Resistant to Zoysia grass mite
* Finer textured and cold tolerant Zoysia
  + KSUZ 0802 and KSUZ 1201 are superior to Meyer
* USGA
  + 2012
  + Three state collaboration
    - KSU, TAMU, and Purdue
  + Develop cold hardy and large patch resistant Zoysia grasses
    - 60 have been qualified for advancement

*Susana R. Milla-Lewis*

* Breeding for cold tolerance in NC
* St. Augustine
  + Long range of winter survival in North Carolina
  + Raleigh
    - Released in 80’s
    - Could use improvement
    - Industry standard for cold tolerance
    - Ugly
  + Parent selection
  + Improving selection
  + Markers
  + Advanced trials
    - 2014
      * 81 entries
      * 4 locations
    - 2015
      * 45 entries
      * 3 locations
* Zoysiagrass
  + 2010
  + 80 entries
  + Evaluated 10-11 for winter coverage
  + 350 hybrids per year
  + First trial 2016?
  + MyerxVictoria=175 progeny

*Dr. Paul Raymer*

* Seashore paspalum
* North

*Dr. Kemin Su*

* Cell membrane are primary site of damage
* Three bermudagrasses
  + Okc 1131
    - Early spring green up
    - Freexing tolerant
  + Tifway
  + Celebration
  + Goals
    - Quantify membrane lipid molecular species change under optimum conditions
    - Identify relationships between lipids and cold tolerance
  + CRD with 5 reps, well waters, lipid sampling, mowed 1xweek at 5 cm
  + Optimum temperature 30 C day, 24 C night with light intensity of 680 umol over 14 hour photoperiod
  + Chilling stress
  + Lipids collected 3 x per day
    - Before chilling treatment
    - 14 days chilling stress
    - 42 days chilling stress
  + 4th time leaf samples were collected when greening up

*Kevin Kenworthy from Florida*

* Florida cold tolerant
  + Green all year round
* SERI program
* NTEP trials as cold tolerant screen

Update on the SCRI Multi-State Warm-Season Grass Breeding Project

*Ambika Chandra:*

* Federal finding to agricultural research and development
* Specialty crops competitiveness act of 2004
  + Specialty crops
    - Intensively cultivated
    - Used by people
      * Fruits and vegetables, tree nuts, dried fruits and nursery crops.
      * Turfgrass is now included
* SERI investment by Major Crop Groups
  + Funding to turfgrass research
  + 5 years of finding
  + Variance of proposals throughout the years
  + 3% of funding
* 2008-2009 proposal deficiencies
  + Need feedback mechanism
  + Management plan
  + No social science component
  + Not enough detail provided on how consumer surveys will be conducted
  + Need experienced turfgrass economist
  + Grant and program coordinator
  + More detail on stages of breeding, germplasm sharing, and evaluation
  + Biotic and abiotic stress tolerant
* Funded in 2010
* Objectives
  + Creation of Coordinate Agricultural Projects team
    - 5 species
    - Multi-state team
    - Transdisciplinary
  + Functioning of the ream to promote SSTIP
  + Development of superior cultivars
    - Turfgrass breeding and development
    - DALSA 0605 St. Augustine grass
      * Highly sterile
      * Drought tolerance
      * High Gray LeafSpot tolerance
      * Suppression of Southern Cinch bugs
      * Reasonably good cold tolerance
    - DT-1 Bermudagrass
      * Triploid hybrid
      * More drought tolerant
      * Better establishment
      * Superior traffic resistance
      * Higher sod strength
      * Faster spring green up
      * Greater color retention
    - Gentice and QTL Mapping in bermuda grass drought tolerance
      * More than 100 simple sequence repeat SSR Markers
      * 981 SSR markers in African Bermuda grass
      * 18 linkage groups
    - Sequence-tagged high density genetic map of Zoysia Matrella
      * Crossing diamond and cavalier
      * 95 F1 individuals were genotyped
      * Genetic map of diamond has 2375 RAD markers
      * Cavalier has 3563 RAD markers
* Cross location progeny evaluation
  + - 8 locations
      * Stillwater, Oklahoma
      * Dallas, Texas
      * College Station, Texas
      * Raleigh, North Carolina
      * Griffin, Georgia
      * Tifton, Georgia
      * Jay, Florida
      * Gainesville, Florida
  + Commercialization
  + Consumer preference
    - Determine consumer preferences for drought and salinity tolerant turfgrass based on grass attributes
  + Education
* Shade tolerance
  + RFT for field shade testing at Tifton, GA
    - Planted summer 2014
    - 70% shade for advanced lines of all four species
* Structure
  + Holistic approach
  + Measurable parameters
    - Germplasm exchange
    - Germplasm advanced
    - Cultivar releases
    - Graduate student training
    - Publications
    - Socio-economic surveys
    - Extension outreach
* Challenges
  + Budget
    - 3.8 million over 5 institutions
  + Personal changes
    - 4 CoPis moved/retired
  + Data analysis
    - Method, data template
  + Rating scale/system
    - Standardization
  + Drought
    - Variable across locations
  + Years to selection
    - 2 years for drought evaluation in SSPN and selections for RFT
  + Changes
    - Scope of work based on results and discussion
  + Extension outreach
    - No cultivars on hand for first year of project

**June 3, 2015**

SERA-25 Business Meeting

*Doug Karcher*

* *Agenda approval*
* *2014 Meeting Summary (Dara Park)* 
  + *14 participants in Greenville*
  + *June 22/23-25*
  + *5 year plan*
  + *New format for the state reports*
  + *Discussion on next year’s meeting*
  + *New joint conference*
  + *Gerald Henry, undergraduate teaching* 
    - *Students are doing too much*
    - *Promoters*
    - *Be better at utilizing counselors*
    - *Distance education*
    - *Undergraduate vs Graduate*
  + *Clemson*
    - *Fertility*
    - *Nitrogen*
    - *Asian turf grass counsel and PACE*
    - *USDA tool kit*
    - *Organics vs natural sources of chemicals (nitrogen)* 
      * *Stakeholder knowledge*
  + *Importance of nickel for urea.*
  + Program discussion
  + Viability of South joint program
    - No, different states have different requirements
  + Business meeting
    - Attendance
    - 3-4 member steering committee
    - NTEP reports—Jason
  + Grassology
  + Pre-emergence failure
  + Low sod supply
  + Nematodes
  + Tour of field
  + Winter damage and recovery
    - Healthy going in , healthy coming out
    - Zoysia
    - Increasing mowing height in the Fall
    - Covers
    - Prediction models
* *NTEP Report (Jason Kruse)* 
  + National Arboritum
    - Ways to raise money to cover next 4 years
    - Grassroots installation
      * Engage public
      * Traveling show?
  + New modified grasses
    - Bypass regulation
  + Cool-season grasses
    - Export market
    - GMOs
  + USGA update
    - Grant money
      * Project funding
    - Water
    - Agronomist retiring
    - Taking turf out
    - War season breeding in California
    - Two surveys
      * Water and fertilizer
      * 80 thousand per survey
    - Shelters for projects
* *2016 Site Selection / Secretary Election* 
  + History
    - 2nd or 3rd week of June
    - At the beach?
* Potential states
* Texas
* Alabama
* Louisiana
  + Secretary
    - Dr. Ben Wherley
  + **Alabama, 2nd week of June**
  + Landgrantimpacts.org
    - No increase in capacity funding
  + Impact discussion for next meeting
  + Mission statement
    - Information exchange relevant to turfgrass extension and research issues
    - Cultivar development, drought resistance, pest management
    - To foster the discussion and exchange of information and ideas related to turfgrass extension and issues.
* *Adjourn*

Urban Extension Programs

*Matt Elmore*

* Discussion
  + What causes a lack of visibility in urban areas?
  + Do we desire more visibility?
  + Successful programs
  + New strategies to increase visibility
  + Role of Ext. specialist in more traditional extension programs
* Urban/suburban visibility
  + Not a new problem
  + Turf interaction
  + Homeowners source of information
    - Family, magazine, retailer, levels, ads, company and extension
  + Problems
    - Do not have time to personally engage all clientele
      * Agents spread thin
      * Lack of funding
      * Young people
    - Limited funding
    - Topics are not “cutting-edge”
  + Potential benefits
    - Impact
    - Lawn and patio shows
  + Audience issues
  + Florida Friendly Landscape Program
  + Engaging athletic field managers
    - Dave Han—Auburn
    - Program to engage coaches that manage fields. More effective in rural areas, moving towards urban areas.
  + SAFE Program in Texas
    - Integrating athlete safety, water conservation, and other agronomic principles
    - 7 million in DFW area
  + Georgia BMP Template
    - Water-use efficiency/conservation plan
    - Measurable impact
  + OSU water program
    - Funding, measurable impact
  + Partnership with industry
    - Fertilizer signs in Calloway’s Nursery
    - 18 locations in Dallas metroplex
    - Sell about 20k bags/year
  + Social Media
    - Extension
    - Conversation
    - Radio shows?
  + Visibility
    - Extension factsheet🡪youtube
      * Multi-state Factsheets
        + Utilize expertise of different specialist
        + Administrative support?
  + Low-input lawn management
  + Role in master gardener program
    - Value?

Turf Weed Control Update

*Matt Elmore*

* Herbicide resistance
  + Reported at nearly 60% of golf courses
    - ALS and mitotic inhibitors
  + Roundup, glyphosate, PSll inhibitors, Mitotic inhibitors, ALS inhibitors
* Texas
  + Collected 25 populations from different courses with suspected resistance
* International Survey (HEAP)
  + Multiple resistant populations
* Indaziflam
  + Movement still an issues
  + Fall recommended
* SureGuard
  + Flumxazin
    - Ppo inhibitor
    - Movement an issue
    - Labeled in dormant form season turf
* Vary mode of action
  + Code
    - HRAC
    - WSSA
* New herbicide drought
  + Look at Ag strategies
    - Packaged products
      * ALS
      * HPPD
      * Chloroacetamide
    - MSMA replacements
      * Dallisgrass
        + Topramezone effectiveness
      * Goosegrass
        + Pylex
        + Making triazines cool again?
        + Will they label in Bermuda, paspalum and St. Augustine?
      * Sandbur
        + Pre+Post combinations for control
* Methiozolin
  + EUP program
  + Materials submitted to EPA
  + Mechanisim for selectivity
  + Injury report
    - Rutgers
* Khakiweed
  + TAMU TTU collaboration
  + Problem in West Texas
* Off-types
  + Flow cytometry
    - 52 samples are triplois hybrids
    - Mutations of dwarf burmuda grasses
* NCSU fate research
* Other issues
  + Bermuda grass control in everything
  + Annual bluegrass control
  + Broadleaf signalgrass

Break

Distance Education

*Joey Young*

* University promotion?
  + Comes in waves
  + Florida
* Extension
* AgIdea
* Online classes
  + Filmed lectures
  + Switch view
  + Chunk lectures
    - 5 minute videos
  + 5-10 minute alarm
  + Term glossary
* Interactivity
  + Discussion board
  + Real time discussion
  + Blackboard
* Accessibility
  + Captioning

Innovative Instruction Techniques

*Brandon Horvath*

* Students today
  + Millennials
    - Lazy
    - Tech savvy
      * Just because they use technology doesn’t mean they can actually use it
* Enrollment
  + Visibility problems
    - Posters from marketing program
    - Careers that never stop growing
    - Guerilla marketing
      * Sod the homecoming rock
  + Goals
    - Increase enrollment
      * Was going down -18, now ~25
      * Goal about 35
    - Increase visibility
      * Athletic
      * Placement of ad materials on campus
      * Placements around town
        + Banners
* Flipped classroom and game dynamics
  + Put lecture in video, assign as homework. Homework comes into class.
  + Background
    - Tired of students doing ‘grade calculus’
    - Wanted to find something that shifted responsibility back to students
    - “I love teaching, and not unlike Stephen Brookfield, Ive been there…”
  + Flipping with FIZZ
    - Dr. Lodge McCammon
    - FIZZ Flipped Classroom
    - Blooms Taxonomy
* Implementation
  + White board pieces
  + YouTube videos
  + Questions
* Game dynamics
  + Level-up system
  + Challenges, not homework
    - Graded on binary system
    - Optional
    - Glossary challenge
    - Twitter challenge
      * Post things from class
    - Missed questions challenge
  + Snow day
    - 8 showed up, 4 did not
    - Worth 25 points
    - Immediate takeaways
      * Can be overwhelming
      * Lots of technology available
      * Doesn’t mean you have to use it
      * Onebutton studio
        + Free app
        + In app purchases

Lunch

State Reports (KY, LA, MS, NC, NM)

*Various State Rep’s*

* Louisiana
  + Moving forward despite budget challenges
  + Research
    - Two grad students last year
    - 3 will finish this year
* Projects
* Funding
* Teaching
  + - 8-10 students
    - 2 different concentrations
      * Turf landscape
      * Horticulture
      * Extension
      * Personnel
      * Publication being updated
      * Conference continues
* Mississippi
  + Personnel
    - New hires
  + Grad students
    - 3
  + Awards
  + Conferences
    - Deep south turf expo
      * Biloxi, Nov 12
    - Field day
      * Aug 25th
  + NTEP
    - Tall fescue
    - Bermudagrass
  + Teaching program
    - Changes
      * Intro to turf class
        + 70-80 students
        + Golf management students
* North Carolina
  + Teaching
    - Aging faculty
    - Staff
      * 16
    - 14 grad students
    - 33 4 year students
    - 32 two year students
  + Decline
    - University policies
  + Honors and awards
  + Turf files
    - Updates
  + Conferences
    - 8
    - Sod producers meeting
  + Short-course
    - 5 day instruction
    - Extension and industry people
    - Cert program
  + Field days
    - Raleigh, 12th August
      * Lawn care industry
      * 750-850
    - Sandhills
      * 100
  + NTEP trials
  + Publications
    - 30 refereed articles
    - 32 extension popular press publications
* Oklahoma
  + Hort department
    - 6 grad students
    - 10 undergraduates
  + OSU-OKC
    - 2 year program
    - 9 students
  + Field day
  + Turf conference
* Tennessee
  + 7 faculty
    - Research and extension specialists
    - Grad students
      * 9
  + Honors and awards
  + Field day, Sept 12
  + Conferences
  + Funding issues
    - Charged for plot space
  + Publications
* Texas
  + Faculty
    - Dallas Center
  + Texas Tech
  + Carleton State
    - Course changes
  + Grad Student
    - A&M
      * 8
  + Student
    - 35
  + Honors and awards
  + Updates to Aggie Turf website
  + TTUTurf social media
  + State turfgrass conferences
  + Field Day
    - Homeowner field day
      * 200 registrants
    - Texas Tech field day
      * July 15th
    - TAMU field day
      * October
  + NTEP Trials
  + Course
    - Sports field construction
  + Turf-field laboratory
* South Carolina
  + Faculty
    - 7 faculty
    - 5 actively teaching
  + Athletics connection
  + New president
    - September 2014
    - Ag guy
    - Provost
      * From West Virginia
  + Agricultural and Environmental sciences department
    - 60 faculty
  + New hires
    - New dean
    - New director of extension
    - Positions
      * Soil ecologist
      * Nutrient Manager
  + Extension
    - Reestablishment
  + Students
    - 20
    - Grad
      * 15
  + Field day
    - Alternate schedule
    - Moved to April
    - Bluegrass control Field day
      * April
  + Conference partnership
  + Walker course
    - Rated 14th for collegiate golf courses
    - Offering tours
    - Renovation
  + Industry
    - Round for research
    - 8th-21st
  + Awards and Honors

Turfgrass Light Requirements Research

*Jason Kruse*

* Effect of shade intensity and duration on warm-season turfgrass growth and development
* Experiment 1
  + Turfgrass cultivars
  + Temperature
    - Three different temp regimens
      * Summer
        + 35, 20 degrees C
      * Spring
        + 30, 15 degrees C
      * Winter
        + 25, 10 degrees C
    - DLI requirements by season
* Experiment 2
  + Instruments
    - Spectrum technologies DLI 100 light meter
    - Measures and complies light intensity for entire day
  + Determine viability
  + Experiments set up in various places around putting greens
    - DLM vs QLS
    - Issues in southwest with too much light
* Experiment 3
  + Mowing height
  + Greenhouse study
    - Bermuda and paspalum
  + Green vs fairway
    - Relationship between cut and light requirements
* Spreadsheet
  + DLI curve available
* Shade structure
  + Research at UofA
  + Light meters underneath
  + Over-seeded vs non-over-seeded
    - Various shade situations
  + Athletic field setting, minimum DLI requirement
* Minimum light for bermudagrass
  + Lawn or rough
    - 22.0 mol/m2/day
  + Fairway or sports turf
    - 27.0 mol/m2/day
  + Greens
    - 33.0 mol/m2/day
* Discussion
  + Temperature gauges
  + Light quality
  + Humidity
  + Research suggestions
  + Collaboration

Turfgrass Water Use Research

*Mike Richardson*

* Current initiatives in drought research in the southwest
  + SCRI warm season breeding project
  + USGA/NTEO water use study
    - Funding
      * 100,000 PER YEAR FROM 5 YEARS
      * Additional funding through NTEP entry fees
      * Will seek additional finding from organizations
    - Current status
      * USGA wants water use data for species and cultivars
      * Developing alternative protocols for conducting studies
        + Chronic drought stress

Water use of drought-tolerant turfgrass under chronic stress

Gallons of water used over duration of study

* + - * + Actual water use
        + Acute drought stress
      * Early money can be used to build drought structures at university sites
    - Start date
      * Fall 2015 (ambitious)
    - Structures
      * Rainout used for turfgrass screening
      * Full-time maintenance
      * Expensive
      * Fixed roof rainout
        + Costs less
        + Light reduction

7%

* + - * + Moveable

Gutters and endcaps

4 mm plastic

* + - * + http://www.smallfarmtools.com/pages/pipe-skid-tunnels
  + Turfgrass Water Conservation Alliance
    - Not just companies and private plant breeders
    - Water authorities
      * They set the rules
    - Benefits
      * Information
        + Newsletter
    - Membership is free for university people
    - Founded by 4 seed companies, have since added.
      * Work together to establish guidelines and a standard for drought-tolerant labeling
    - Determine what grasses in trials qualify for drought-tolerant label
    - Issues
      * 70% drought tolerance in mixes
    - Discussion on opening approval to everyone

3:15 – TBD Optional SCRI Tour / Dinner in Stillwater