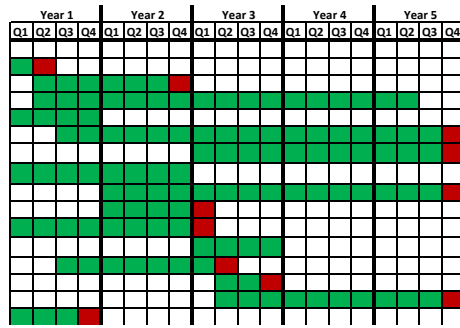


Tasks & Deliverables Gantt Chart

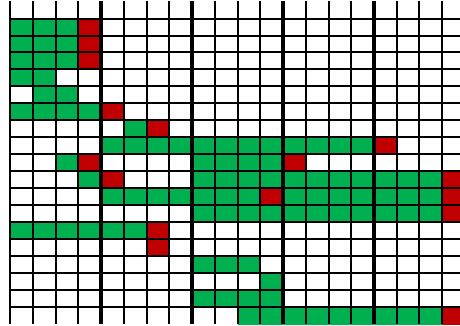
Aim 1. Establish monitoring network & develop standardized methods...

- 1 Standardize methods for C, N, N2O, H2O foot prints
- 1 Initial regional C and nutrient baselines from Tier 1 data
- 1 Measure Tier 2 sites, C, nutrient, soil respiration....
- 1 Install Tier 3 sites
- 1 Measure Tier 3 sites
- 1 Regional C, H₂O, baseline with tier 2 data
- 1 Regional C, H₂O, baseline with with responses to field manipulation
- 1 Quantification of regional variation in soil respiration
- 1 Initial regional quantification cross-region fertility rating and stomatal response functions
- 1 $\delta^{18}\text{O}$ & $\delta^{13}\text{C}$ from Tier 2 wood samples
- 1 Refine regional stomatal response and transpiration functions based on clonal & regional $\delta^{13}\text{C}$ data
- 1 Characterize tree water use efficiency (WUE) of different provenances and clones
- 1 Regionalize estimates of WUE for application in 3PG and WaSSI
- 1 Assess genotypic and treatment differences in carbon use efficiency (NPP:GPP) and regional variation in carbon sequestration efficiency (NEP:GPP)
- 1 TerraC Training



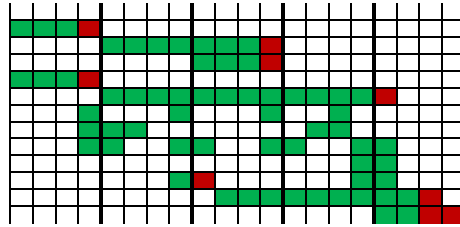
Aim 2. Develop multi-scaled modeling program to assess forest management systems...

- 2 Preliminary assessment/case study of management effects on loblolly pine C budget over a rotation cycle
- 2 Preliminary assessment/case study of climate change factors on loblolly pine carbon and water exchange
- 2 Assessment of the resolution of alternative methods for quantifying forest water use
- 2 Modeling team coordinates w Aim Leaders on field measurements
- 2 Compile regional satellite, meteorological (including climate scenarios), soils and data needed for model runs
- 2 Develop & assess management alternatives w/ Tier I data & existing models of C seq.
- 2 Adapt 3PG to run as real time geoprocessing server
- 2 Improved process & hybrid models parameterized from network measurements
- 2 Predict C pool dynamics at varying scales for alternative land use, management, & climate scenarios
- 2 Improved growth & yield models with climate inputs & C balance
- 2 Regional map of potential climate or anthropogenic limitations to productivity
- 2 Assess tradeoffs btwn regional C sequestration, forest products, & maintenance of ecosystem services
- 2 Refinement of forest management modules for integration into DSS
- 2 Prototype carbon management decision support tools to solicit structured feedback - Forest Management
- 2 Refinement of climate scenario modules for integration into DSS
- 2 Prototype carbon management decision support tools to solicit structured feedback - Climate Scenarios
- 2 Refinement of climate, landuse, genetics, pests/fire risk, fertilizer modules for integration into DSS
- 2 Prototype & refine carbon management decision support tools to solicit structured feedback - Climate, landuse, genetics, pest/fire risk, fertilizers



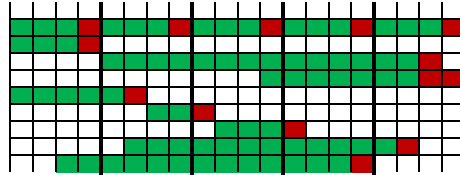
Aim 3. Analyze productivity & adaptive traits in breeding and natural populations ...

- 3 Develop uniform response functions with provenance trial data & version 1 of genetic deployment tool
- 3 Version 2 of genetic deployment tool with progeny data
- 3 Regional variation in tree water use efficiency by genotype & age from Tier II data
- 3 Determine appropriate genome reduction methods for genotyping by sequencing
- 3 Genotyping of ADEPT2, CCLONES & PSSSS populations
- 3 Phenotyping Cold Tolerance Traits in ADEPT2 & CCLONES
- 3 Phenotyping insect resistance traits in ADEPT2 & CCLONES
- 3 Phenotyping growth and responsiveness to nutrition in ADEPT2 & CCLONES
- 3 Phenotyping wood density and lignin content of ADEPT2
- 3 Discover alleles associated with nitrogen responsiveness
- 3 Discover & validate alleles and genes associated with growth and adaptive traits in 3 populations
- 3 Tools for accelerating tree improvement and deployment



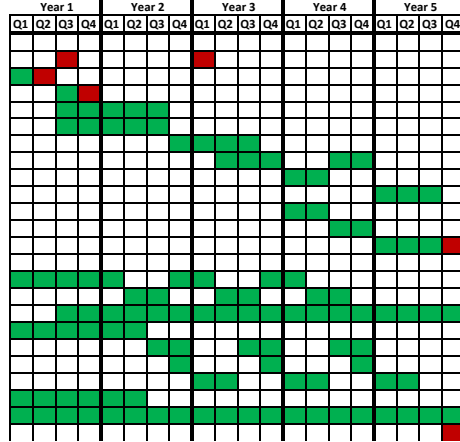
Aim 4. Conduct life cycle, policy & economic analyses of regional forest management...

- 4 Assessment of policies & programs that may affect C mitigation in planted pine forests
- 4 Regional market impacts modeled based on business-as-usual assumptions
- 4 NPV analysis & regional market impacts of adaptive management impacts
- 4 Document landowner adoption of mitigation and adaptation strategies
- 4 Life cycle inventory for key physiographic regions
- 4 Cradle to gate life cycle inventory for wood products
- 4 Cradle to gate life cycle inventory for pulp & paper products
- 4 Bioeconomic modeling of nontimber market ecosystem services
- 4 Landowner & regional economic losses from altered disturbance risks



Aim 5. Create educational resources & training programs...

- 5 Education advisory council meets
- 5a conduct audience assessment on climate and LCA and southern pine -- teachers, ext specialists, landowners
- 5a draft scope and sequence, revise with input
- 5a assess existing activities and provide to Ugs and Advisory Committee
- 5a begin designing activities to fill gaps and provide to Ugs
- 5a draft PLT module
- 5a Revise PLT module
- 5a pilot test PLT module
- 5a Rollout PLT module to K-12
- 5a Develop test and market online training
- 5a develop and launch state workshops for PLT module
- 5a evaluate PLT module at multiple levels
- 5 Deliver research and teaching FORCure undergraduate internship program
- 5b create application and selection process; market program; select grad students
- 5b UG interns in new states for the summer
- 5b create and maintain web site for program
- 5b develop distance course on education
- 5b run distance course on education
- 5b attract middle school teachers and introduce program
- 5b support UG presentations in classrooms
- 5 Distance class on climate change education and interdisciplinary research project
- 5 Training of graduate and postdocs in multi-disciplinary research
- 5 Trained graduates in forest & climate science



Aim 6. Extension programming combining climate & forest management expertise to deliver...