# PINEMAP Milestones

| | Year 1 (2012) | | Year 2 (2012-2013) | | | | | | | | | | | | Year 3 (2013-2014) | | | | | | | | | | | | Year 4 (2014-2015) | | | | | | | | | | | | Year 5 (2015-2016) | | | | | | | | | | | |
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| **Aim 1. Ecosystem Ecology/Silviculture** | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Finalize standardized measurement protocols | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tier III rainfall exclusion sites installed | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Assessment of Tier III treatment effects | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | X |
| Initial C and nutrient baselines estimated from existing Tier I data | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TerraC data interface training | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Assessment of climate, soil & management impacts on soil GHG flux | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | X |
| Regional C, nutrient, H2O baselines and responses to management from measured Tier II data | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | X |
| Regionalize estimates of water use efficiency for application in 3PG and WaSSI | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | X |
| **Aim 2. Modeling** | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Case study of management & climate effects on loblolly pine C and H20 budgets over a rotation cycle (Complete) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Predict C pool dynamics at varying scales for alternative land use, management, & climate scenarios | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| Improved process and hybrid models parameterized from network measurements | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Improved growth & yield models with climate inputs & C balance (initial prototype) | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Improved growth & yield models with climate inputs & C balance (for regional simulations IF mgmt. pres. Info. known) | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | X |
| Regional map of potential climate or anthropogenic limitations to productivity (nutrients) | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Modules for integration into DSS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Genetics: Growth & yield responses once deployed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| 3-PG | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Fire risk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | |
| Pest | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fertilizer: Tier 1 data for first version | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Nutrient genetics, more advanced nutrients | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Aim 3. Genetics & Breeding** | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Version 1 of genetic deployment tool with provenance information | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Version 2 of genetic deployment tool with progeny information | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Determine appropriate genome reduction methods for genotyping by sequencing | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| New markers for genotypes in ADEPT2, CCLONES & PSSSS populations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Phenotypes for adaptive traits in ADEPT2 & CCLONES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Phenotypes for growth and growth responsiveness to nutrition in ADEPT2 & CCLONES | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Phenotype wood density and lignin content of ADEPT2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Discover alleles associated with water relations (existing phenotypes, new markers) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Discover alleles associated with growth & nitrogen responsiveness (existing phenotypes, new markers) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Discover & validate alleles and genes associated with growth and adaptive traits in 3 populations (new markers) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | |
| Molecular tools for accelerating tree improvement and deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Develop new region-wide cross population for southwide field test | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| **Aim 4. Economics & Policy** | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Assess policies & programs that may affect C mitigation in planted pine forests | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | X |
| Regional market impacts based on business-as-usual assumptions | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NPV analysis & regional market impacts of adaptation strategies | | | | | | | X | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | X |
| Document landowner adoption of mitigation and adaptation strategies | | | | | | | | | | | | X | | | X | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | X |
| Life cycle assessment of wood products within forest & various management strategies | | | | | | | | | | | | | X | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Bioeconomic modeling of nontimber market ecosystem services | | | | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | X | | | |
| Assess tradeoffs btwn regional C sequestration, forest products, & maintenance of ecosystem services | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| NPV & regional market impacts of altered disturbance risks | | | | | | | | | | | X | | | | | | | | | | | | | X | | | | | | | | | | | | | X | | | | | | | | | | | X |
| **Aim 5. Education** | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Report of audience assessment for PLT module | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Report of teachers' attitudes concerning forest management | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Report of research on climate change education strategies | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Draft module and training ready for formative test | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Formative evaluation of PLT module complete | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | |
| Final module distributed through workshops and training | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| Summative evaluation complete | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Web-based course in multidisciplinary research for graduate students completed | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Undergraduate research internships completed | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Undergraduate teaching and communication distance course completed | | | | | | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | | X | | | | | | | | | | | X |
| **Aim 6. Extension** | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Develop & launch project website | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Implement and Strengthen forestry Extension/climatologist partnership (ONGOING) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Audience assessment for extension programs | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| State extension & climatologist teams organized | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Extension programs delivered (ONGOING) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Extension program evaluation (ONGOING) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Decision Support System pilot | | | | | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Decision support system development (ONGOING) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Decision support system training (ONGOING) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Decision support system evaluation (ONGOING) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |

January 2013