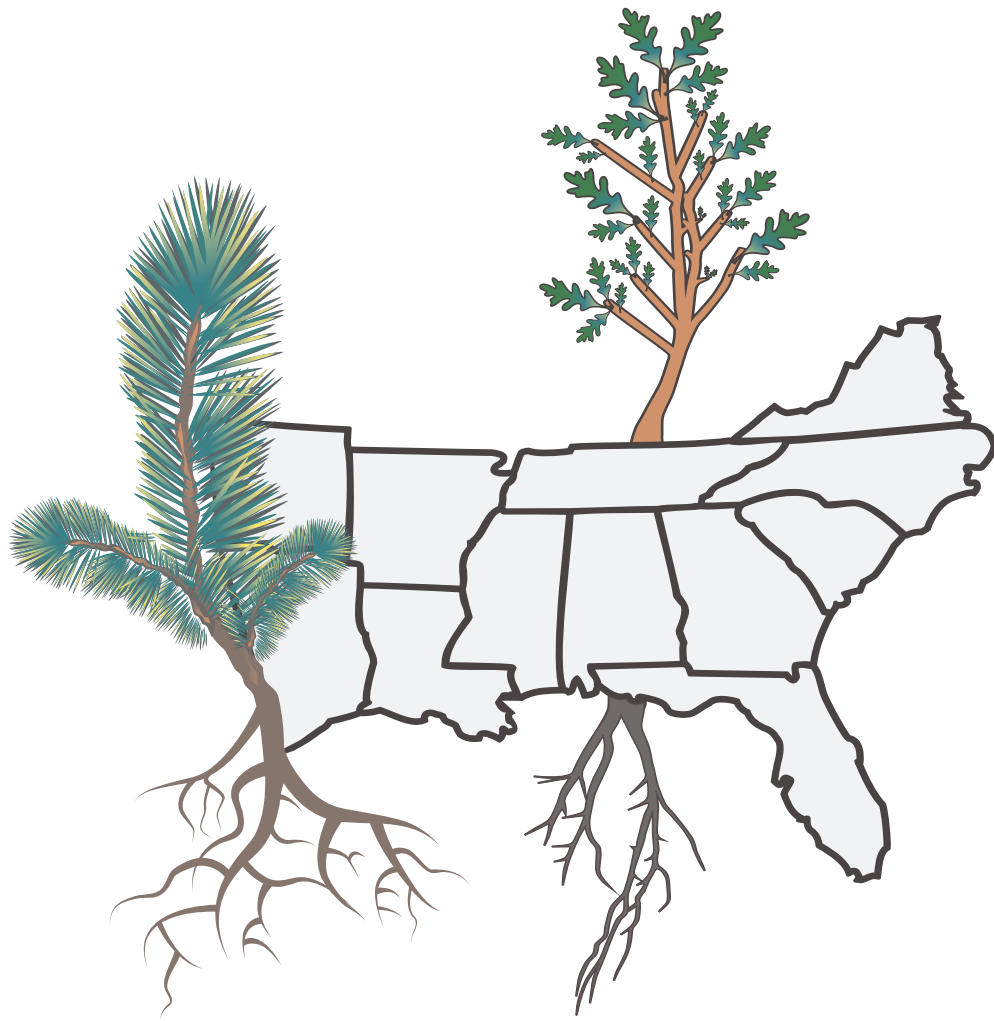


Southern Forest Nursery Management Cooperative



FY 2013 Annual Report

ANNUAL REPORT

FY 2013

(October 1, 2012 - September 30, 2013)

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AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

MEMBERSHIP LIST

(November 2013)

Full Members:

The States of

Arkansas
Georgia
Louisiana
North Carolina
Oklahoma
South Carolina
Tennessee
Virginia

Forest Industry

Plum Creek Timber Company
Rayonier
Weyerhaeuser

Non-Industrial – Private

ArborGen, LLC
International Forest Company
Williams Forestry and Associates (Native Forest Nursery)
Campbell Timberland Management (Crown Pine Timber Nursery)

USDA Forest Service

Associate Members:

AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

EXECUTIVE COMMITTEE

Service Rotation
(November 2013)

<u>FISCAL YEAR†</u>	<u>Member 1</u>	<u>Member 2</u>	<u>Member 3</u>
2012	Tennessee	North Carolina	Arkansas
2013	North Carolina	Arkansas	South Carolina
2014	Arkansas	South Carolina	Weyerhaeuser
2015	South Carolina	Weyerhaeuser	Virginia
2016	Weyerhaeuser	Virginia	ArborGen
2017	Virginia	ArborGen	Louisiana
2018	ArborGen	Louisiana	Forest Service
2019	Louisiana	Forest Service	Plum Creek
2020	Forest Service	Plum Creek	Georgia
2021	Plum Creek	Georgia	Rayonier
2022	Georgia	Rayonier	Oklahoma
2023	Rayonier	Oklahoma	IFCo
2024	Oklahoma	IFCo	Campbell Timberland
2025	IFCo	Campbell Timberland	Native Forest Nursery
2026	Campbell Timberland	Native Forest Nursery	Tennessee
2027	Native Forest Nursery	Tennessee	North Carolina
2028	Tennessee	North Carolina	Arkansas
2029	North Carolina	Arkansas	South Carolina
2030	Arkansas	South Carolina	Weyerhaeuser
2031	South Carolina	Weyerhaeuser	Virginia
2032	Weyerhaeuser	Virginia	ArborGen

† Member 1 would conduct the Coop business meeting held in that fiscal year. For example, Tennessee conducted the business meeting for FY12, in November of 2011.

THE EIGHT FUNDAMENTAL RULES OF ANTI-TRUST COMPLIANCE

1. Competitors may not agree on prices they charge for goods they sell.
2. Competitors may not agree on the prices they charge for services.
3. Competitors may not agree on terms of sale.
4. Companies may not use dominant market position to monopolize a market, control prices, or exclude competitors.
5. Competitors may not agree not to compete by allocating customers, territories, or markets.
6. Competitors may not agree not to compete on bids – i.e. bid-rigging.
7. Competitors may not agree on prices for products or services they buy.
8. Competitors may not join in a boycott of suppliers or customers to accomplish anti-competitive ends.

Rules and Policies for the Auburn University Southern Forest Nursery Management Cooperative

Approved November 1997

MEMBERSHIP

1. Full membership in the Cooperative is open to companies with domestic operations and state and federal agencies that operate a forest tree nursery. Associate membership in the Cooperative is open to domestic companies that do not operate forest tree nurseries but plant forest tree seedlings. Associate membership in the Cooperative is also open to manufacturers and distributors of commercial products used in the production of forest tree seedlings in container or bare-root nurseries.
2. Full members are required to pay annual dues. Associate members are required to pay one-half the dues set each year for full members.
3. Voting rights will be granted to full members only.
4. Membership is for one year. Membership may be terminated by either the member organization or by Auburn University by giving 60 days written notice before October 1.
5. Membership will be contingent on signing a memorandum of agreement with Auburn University.

ORGANIZATION

6. The Dean, School of Forestry, Agricultural Experiment Station of Auburn University in consultation with the Coop Executive Committee, will appoint the Cooperative's Director. The Director will be responsible for:
 - A. Directing the activities of the Cooperative;
 - B. Employing a competent staff;
 - C. Developing the Cooperative's direction in conjunction with the Advisory Council;
 - D. Ensuring each member participates to a threshold level; and
 - E. Reporting research accomplishments to the Advisory Council
7. An Advisory Council consisting of one representative from each cooperating organization shall be established to:
 - A. Act as a liaison between the organization and the Director;
 - B. Develop Cooperative policies;
 - C. Advise the Director on the Cooperative's direction;
 - D. Approve the annual budget and membership fee.

- E. The Advisory Council will have an annual meeting in the first quarter of each fiscal year.
8. An Executive Committee consisting of three Advisory Council members and the Director shall have the authority to meet and conduct routine business in the name of the Advisory Council. One Executive Committee member will be appointed annually according to a rotating schedule and will serve for 3 years. The Advisory Council chairman will be the senior member of the Executive Committee and will preside at the Executive Committee and Advisory meetings. Associate members are not eligible to serve on the Executive Committee.
 9. Contact representatives will be designated by each cooperating organization. This individual may or may not be the same person serving on the Advisory Council. Contact Representatives will be directly involved in research established with each member organization. A meeting of contact representatives will be held in the 3rd quarter of each fiscal year.
 10. All data will be available to all members in the Cooperative.

DUES and BUDGET

11. Membership fees will be set by the Advisory Council at its annual meeting. Recommended fees will be computed annually by the Executive Committee based on the consumer price index (CPI) for the previous year, and will become effective October 1 of the following year.
12. The Cooperative will operate on the fiscal year October 1 to September 30. Invoices for membership fees will be sent to all member organizations on October 1 of each year, or by special arrangement with the individual organization.
13. When a Cooperative member is acquired by another member organization, all, two-thirds, and one-third of the full membership fee will be paid for the lost member the first, second, and third years after acquisition, respectively, by the continuing member.

RULES CHANGES

14. Changes in, deletions from, and additions to the membership rules may be adopted by a two-thirds vote of advisory members in attendance at regularly scheduled or special sessions of the Advisory Council.

DIVISION OF RESPONSIBILITIES BETWEEN AUBURN
UNIVERSITY AND MEMBER ORGANIZATIONS
IN THE AUBURN UNIVERSITY SOUTHERN FOREST
NURSERY MANAGAMENT COOPERATIVE

1. Study plans will be developed by Auburn University in conjunction with the Cooperative's Technical Committee. Responsibilities will be delineated in individual study plans.
2. Auburn will do all data analysis and processing, as well as manuscript preparation, and will insure timely distribution of results to cooperators.
3. Auburn will be responsible for developing a procedure for uniform soil testing and analysis.
4. Auburn will act as a clearinghouse on current nursery management research and will disseminate appropriate information on these practices.
5. Auburn University graduate students will be utilized to work on specific problems.
6. All cooperators will be responsible for adhering to the study plans.

AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

FY14 ADVISORY MEETING AGENDA

Wednesday, November 13, 2013

<u>TIME</u>	<u>EVENT</u>	<u>SPEAKER</u>
11:00 – 1:00	Registration	
1:00 – 1:05	Welcome to Auburn	Scott Enebak – SFWS
1:05 – 2:00	FY13 Accomplishments	Scott Enebak
2:00 – 2:50	24 C Labels and Section 18 Rules	Tony Cofer – AL Dept. Ag & Industries
3:00 – 3:30	BREAK	
3:30 – 3:45	Native Plant and Weed Control	Nick Barnwell – SFWS
3:45 – 4:15	Can Eucalyptus be Planted Deep?	Daniel Spolidorio – SFWS
4:15 – 4:45	Seed Polymers	Tom Starkey - SFWS
4:45 – 5:00	2013 Lessons Learned in Seedling Lab	Tom Starkey
5:00 – 5:30	FY14 Study Plan Discussion	Nursery Cooperative
5:30 – 8:00	BBQ Dinner and Social	

Thursday, November 14, 2013

<u>TIME</u>	<u>EVENT</u>	<u>SPEAKER</u>
7:15 – 8:00	Breakfast – Danish / Coffee / Juice	
8:00 – 9:00	Beyond Cowboy Science: <i>Simple Method for Conducting Credible Nursery and Field Research</i>	Tom Starkey
9:00 – 10:00	FY14 Work Plan Discussion	Scott Enebak & Arkansas
10:00 – 10:30	BREAK	
10:30 – 12:00	FY13 & FY14 Budget Discussion	Scott Enebak & Arkansas
12:00 ish	Adjourn	Have a safe trip home!

FY 2014 ADVISORY COMMITTEE MEETING
November 13 & 14, 2013

MINUTES

- 1) The FY 2014 Advisory Committee Meeting was opened at 1:00 p.m., Wednesday, November 13, 2013 by Scott Enebak, Director.
- 2) This is to serve as a reminder that all business is conducted according to the guidelines of anti-trust legislation (see page 7).
- 3) Those in attendance of the FY 2014 Advisory Committee Meeting were as follows:
Wayne Bell, IFCO
Mike Coyle, IFCO
Jeff Fields, Georgia Forestry Commission
Mark Davis, Rayonier
Dave Bowling, Arkansas
Doug Shelburne, Weyerhaeuser
Doug Sharp, Plum Creek
John Conn, Tennessee
Randy Rentz, LDAF
Larry Foster, ArborGen
Paul Ensminger, Native Forest Nursery
Elizabeth Bowersock, AU
Scott Enebak, AU
Barry Brooks, AU
Nick Barnwell, AU
Tom Starkey, AU
Daniel Spolidorio, AU
Tony Cofer, AL Dept. of Ag/Industries
- 4) Please see page 13 for the FY 2014 Advisory Committee Meeting Agenda. The following presentations were made on Wednesday afternoon or Thursday morning as noted in the Agenda:
 - a. Herbicidal Tolerance and Weed Control – Nick Barnwell
 - b. Options for Addressing Critical Pest Situations – Tony Cofer
 - c. Soil Fumigation Update – Scott Enebak
 - d. Eucalyptus Depth Study – Daniel Spolidorio
 - e. Lessons Learned in the Nursery Coop Lab in 2013 – Tom Starkey
 - f. Beyond Cowboy Science – Tom Starkey
 - g. Seed Treatment of Southern Pines – Tom Starkey
- 5) The FY 2014 Business Meeting of the Auburn University Southern Forest Nursery Management Cooperative was called to order at 9:26 a.m. on Thursday, November 14, 2013, by Dave Bowling of the Arkansas Forestry Commission. Cooperative Members as listed above (page 14) were present. All members present concurred unanimously to

begin the meeting. Topics of the FY14 Work Plan were discussed and voted upon as follows:

Goal A.

Objective 1.

- a. Methyl Bromide Substitution

Motion to Approve: John Conn

2nd: Mark Davis

Unanimous Approval

- b. Herbicide Trials

Discussion: Willow Control – Container/Bareroot, Morningglory – East Tennessee

Motion to Approve: Wayne Bell

2nd: John Conn

Unanimous Approval

- c. Fusiform Rust Control

Unanimous Approval

Objective 2.

- a. Seed Treatment Using Polymers

- b. Seed Treatment of Longleaf Pine using ApronMaxx[®]

Discussion: Loblolly? Foliar?

- c. Eucalyptus Planting Depth

Discussion: Different planting times? (Wayne Bell)

- d. Does a second “late season” undercutting reduce seedling survival and growth?

Discussion: John Conn – What is the theory being tested? Tom Starkey – That growth is set back by late 2nd undercutting; Plum Creek Shubuta/Jesup...

Motion to Approve: Paul Ensminger

2nd: Doug Shelburne

Unanimous Approval

Objective 3.

- a. Longleaf Pine Understory Plant Propagation & Establishment

Discussion: Nick Barnwell, non-Nursery Cooperative funds

Motion to Approve: Wayne Bell

2nd: John Conn

Unanimous Approval

Objective 4.

- a. Container Loblolly Root Configuration
Discussion: Morphological characteristics (caliper, height, RGP, etc.); Aug-Dec; September vs. January Seedling Survival; use more than 1 container type; trophatron; Previously studied on 5 sites in 4 states – data available (Doug Sharp)
- b. Seedling Biological Product at SC Trenton Nursery

Motion to Approve: John Conn

2nd: Wayne Bell

Unanimous Approval

Goal B.

Objective 1.

- a. Methyl Bromide
- b. Revision of Ag Handbook 473/Hardwood Nursery Guide
- c. Southern US Seedling Practice Survey
- d. Reregistration of Nursery Pesticides
- e. Maintain and Update Nursery Cooperative Website
- f. Leveraging of Nursery Cooperative Data

Objective 2.

- a. Contact Meeting
- b. Research Reports
- c. Newsletters

Objective 3.

- a. Individual and Organization Contacts
- b. Seedling Production Survey
- c. Nursery Customer Meeting Presentations
- d. Short Course 2014

Goal C.

Objective 1.

- a. Advisory Committee Meeting
- b. Nursery Cooperative Membership
- c. Pesticide Label Restrictions
- d. Update Coop Membership and Nursery Directories

Objective 2.

- a. Presentations at Meetings
- b. Publications
- c. Extramural Funding of Nursery Coop Projects
- d. Interaction with other Research Cooperatives

Discussion: Doug Sharp – We need to continue to support this cooperative very strongly as the Western Cooperative failed

Unanimous Approval

BUDGET

USDA Areawide

Annual Budget

- Paul Ensminger – Have we ever had as little as \$111,000 to carry over?
- Scott Enebak – Well, if CAFS comes through, that's \$30,000/year for 5 years, so we should be ok with that.
- Tom Starkey – Don't forget we have also have an "Associate" level with a 1/2 price membership cost
- Vote – Increase dues for next year, \$500 on October 1, 2014

Unanimous Approval

- 6) The FY 2014 Business Meeting of the Auburn University Southern Forest Nursery Management Cooperative is adjourned as of 11:01 a.m., Thursday, November 14, 2013.

AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

FY 2013 BUDGET - PROJECTED VERSUS ACTUAL

(October 2013)

FISCAL YEAR
(Oct. 1, 2012 - Sept. 30, 2013)

	<u>FY 13</u> <u>(Projected)</u>	<u>FY 13</u> <u>(Actual)</u>	<u>Difference</u>
REVENUE			
Carryover from Previous Year	265,351	230,050	0
Current Year's Income	165,775	143,000	(21,000)
Total Revenue	431,126	373,050	(21,000)
EXPENDITURES			
Personnel Costs			
Professional/Non-Faculty - Tom Starkey (61.8%)	48,649	47,192	1,457
Professional/Non-Faculty -Elizabeth Bowersock (75%)	23,543	34,000	(10,457)
Research Assistant – Barry Brooks (50%)	21,105	15,307	5,798
Research Fellow – Ben Whitaker (50%)	22,750	14,140	8,610
Graduate Students – PhD/MS	0	0	0
Student Labor	3,770	546	3,224
Employee Benefits (27%)	32,377	31,003	1,374
Total Personnel Costs	152,194	142,188	10,006
Operating Costs			
Travel	10,000	9,788	212
Vehicle Mileage	5,000	7,771	(2,771)
Supplies	8,000	5,325	2,675
Equipment	2,000	0	2,000
Total Operating Costs	25,000	22,647	2,353
Total Expenditures	177,194	164,835	12,359
CARRYOVER FOR NEXT YEAR	253,932	308,627	54,695

AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

THREE YEAR FINANCIAL STATEMENT

(October 2013)

	FISCAL YEAR		
	October 1 - September 30		
	<u>FY14</u>	<u>FY15</u>	<u>FY16</u>
	(Projected)	(Projected)	(Projected)
REVENUE			
Carryover from Previous Year	308,627	244,490	174,089
Current Year's Income	161,290	158,800	166,800
Total Revenue	469,917	403,290	340,889
EXPENDITURES			
Personnel Costs			
Research Fellow - Tom Starkey; 61.8%	48,768	49,013	49,013
Technicians - Barry Brooks; 100%	43,417	41,970	41,970
Clerical Staff - Elizabeth Bowersock; 70%	29,462	23,545	23,545
Research Assistant - 100%	30,000	40,000	40,000
Graduate Students	0	0	0
Student Labor	3,770	3,770	3,770
Employee Benefits (31%)	47,011	47,904	47,904
Total Personnel Costs	202,427	206,201	206,201
Operating Costs			
Travel	10,000	10,000	10,000
Vehicle Mileage	5,000	5,000	5,000
Supplies	6,000	6,000	6,000
Equipment	2,000	2,000	2,000
Total Operating Costs	23,000	23,000	23,000
Total Expenditures	225,427	229,201	229,201
CARRYOVER FOR NEXT YEAR	244,490	174,089	111,687

AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

FIVE YEAR PROJECTED PLANNING BUDGET

(October 2013)

	\$9,300 FY14	\$9,800 FY15	\$9,800 FY16	\$10,300 FY17	\$10,300 FY18
<u>Revenue (000s)</u>					
Carryover	308.6	244.5	174.1	111.7	49.3
Income	161.3	158.8	166.8	166.8	174.8
Total	469.9	403.3	340.9	278.5	224.1
<u>Expenditures</u>					
Personnel/Benefits	198.7	202.4	202.4	202.4	202.4
Student Labor	3.8	3.8	3.8	3.8	3.8
Graduate Student	0.0	0.0	0.0	0.0	0.0
Travel	15.0	15.0	15.0	15.0	15.0
Supplies	6.0	6.0	6.0	6.0	6.0
Equipment	2.0	2.0	2.0	2.0	2.0
Total	225.4	229.2	229.2	229.2	229.2
<u>Carry Over Balance</u>	244.5	174.1	111.7	49.3	(5.1)

Members

16	Full	\$500 Dues increase every other year beginning in FY 2011
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AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

FY 2013 ACCOMPLISHMENTS

**As presented to the Southern Forest Nursery Management Cooperative
Advisory Committee
November 13 - 14, 2013**

AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

FY 2013 ACCOMPLISHMENTS

GOAL A: RESEARCH

Objective 1. Identify, test, evaluate, and promote the registration of cost effective pesticides for use in forest tree nurseries.

Methyl Bromide Substitution

A fumigation trial testing a combination of soil fumigants as a methyl bromide alternative will be conducted at a member nursery. Depending upon the nursery, either spring fumigation or fall fumigation will be used. The study will use high barrier plastics and reduced fumigant rates to comply with the new soil fumigation rules on the production of seedlings, weed, nematode control and *Trichoderma* spp levels. We anticipate that 3 nurseries will establish a trial with TE-3: the Shellman nursery in Georgia, the Selma nursery in Alabama, and the Courtland nursery in Virginia. The Virginia location will be the first of two trials at this nursery in preparation for the Southern Forest Nursery Conference in Williamsburg, VA in the summer of 2014. These TE-3 studies will be monitored for weed activity and seedling quality. (Starkey/Enebak)

✓ *Accomplishments: A fumigation tarp problem did not allow us to set up a watch trial at Shellman. At Selma, replicated plots in coarse and fine textured soils at 2 TE-3 rates were established and data collected in 2013 and will be repeated in same area for 2014. In preparation for the 2014 nursery meeting in Williamsburg, VA, plots were and will be established to allow comparison of 1st and 2nd year land fumigated with TE-3 at the Courtland, VA nursery.*

Herbicide Trials

A number of herbicide trials will be installed to examine the effects of herbicides on specific weed pests and seedling quality:

An herbicide trial will be conducted at the East TN nursery at Delano, TN and in the greenhouse at Auburn targeting morning glory in nursery beds. The chemical to be tested is Raptor/Clearcast (ammonium salt of imazamox). This chemical was recommended by a manager from Maryland who attended the 2012 nursery meeting. (Whitaker/Brooks/Conn)

- ✓ *Accomplishments: Clearcast® was tested to control morning-glory in the East Tennessee nursery on plum and swamp chestnut oak, the Chatsworth nursery on northern red and white oak and the Shellman nursery on loblolly pine, river birch, sweetgum and swamp chestnut oak. Seedling quality and quantity will be collected at the end of this growing season and data written up into a Research Report. Due to Ben Whitaker's departure from Auburn University, the greenhouse portion of this herbicide test was not conducted.*

In order to determine survivability of galled seedlings produced from PAC trials in 2012, we will outplant galled seedlings in irrigated and non-irrigated lands during December 2012. (Whitaker/Brooks)

- ✓ *Accomplishments: Six hundred galled (300) and non-galled (300) loblolly pine seedlings were outplanted at the Shellman nursery on irrigated and non-irrigated plots in a replicated study. Seedling survival and growth was measured after one growing season with no differences among galled vs. non-galled seedlings. Plots will be monitored for another year to determine what affect, if any, herbicide galls have on seedling survival.*

A nursery manager has requested that we determine at what point in the growing season the application of PAC no longer produces galled seedlings. (Whitaker/Brooks)

- ✓ *Accomplishments: Loblolly pine seedlings were treated with either 34 or 68 oz of PAC at 8, 12 and 16 wk post sowing to determine if applications of PAC after 12 wk result in the formation of herbicide gall. Seedling quality and quantity data from those plots was collected and will be processed into a Research Report.*

An operational herbicide trial testing pre-emergent herbicide applications of Goal, Pendulum Aquacap + Goal, and Ronstar + Pendulum Aquacap + Goal will be installed simultaneously with a soil stabilizer to test the efficacy of weed control on annual sedge in one nursery. (Whitaker/Brooks)

- ✓ *Accomplishments: A 4 section/riser operational test was installed at the Weyerhaeuser's nursery in Camden AL. Weed coverage during the growing season was compared to standard weed control and seedling quantity and quality data was collected.*

An herbicide trial testing different pre-emergent combinations at varying rates of the three herbicides Ronstar®, Pendulum Aquacap®, and Goal® will be installed in multiple nurseries to examine the efficacy of tank mixes on annual sedge over different soil type. (Whitaker/Brooks)

- ✓ *Accomplishments: The tank mix of Ronstar®, Pendulum Aquacap® and Goal® were applied on loblolly and slash pine at 5 different nurseries in AL and GA (Chatsworth, Jesup, Flint River, Elberta and Camden). Seedling quality and quantity as well as soil type were evaluated to determine herbicide activity. Data will be compiled and put into a Research Report.*
- ✓ *In addition to the above planned herbicide trials, the herbicide Marengo® (indaziflam) was tested using three rates (3.75, 7.5 and 11.25 oz/ac) at the Shellman nursery at sowing (0 wk) and post-emergence (6 and 12 wk) for the control of annual grasses and sedges.*

Weed control was good, but some seedling damage was observed early in the growing season. Seedling quality and quantity was evaluated and data will be put into a Research Report.

Fusiform Rust Control

Due to personnel changes at the US Forest Service Rust Screening Center we will not conduct a fungicide study this year. The US Forest Service has just begun the process of hiring a replacement for Josh Bronson and it is unlikely that a permanent replacement will be on site before early summer. (Starkey/ Enebak)

- ✓ *Accomplishments: The USFS has yet (October 18, 2013) to fill this vacant position. It is unlikely they will have anyone in place by Spring 2014.*

Objective 2. Identify and develop economically feasible nursery cultural practices that enhance seedling quality.

Plant Growth Regulators

A nursery study will be established using the growth regulators (cyclohexaketone (Augeo), paclobutrazol (Bonzai), benzyladenine (BAP-10), and flurprimidol (Topflor)) that showed a response in 2012 on container Eucalyptus. (Starkey/Keever (Horticulture)/ Enebak)

- ✓ *Accomplishments: The nursery study was completed in October 2013. The data have been collected will be analyzed and then put into a research report. A growth response was found with Bonzai and Topflor.*

Eucalyptus Planting Depth

As a result of inconsistent outplanting survival and conflicting literature reports, a planting depth study was requested by a member that will be initiated using Auburn University Stress Facility, and Trophatron and field planting site study. The SFNMC will work with the scientists at NC State (Jose Stape) and their Eucalyptus research program to coordinate trials. (Starkey/Enebak)

- ✓ *Accomplishments: This study was completed in September 2013. The data will be analyzed and put into a research report. Under the study conditions, deep planted Eucalyptus grew more and survived better than shallow planted Eucalyptus.*

Root Electrolyte Leakage

Root electrolyte leakage (REL) is a relatively rapid test that has been used to verify freeze injury. It has been reported to be more accurate than root growth potential in spruce and larch. A study will be established determine if REL can be used to detect other forms of root injury such as may occur with seedling lifting. (Starkey/Enebak).

- ✓ *Accomplishments: This study was completed in February 2013. The data was analyzed and will put into a research report. Root electrolyte leakage was not a good predictor of root injury that occurs with seedling lifting.*

Objective 3. Develop methodologies to minimize the environmental impact of nursery cultural practices while maximizing their effectiveness including the development of integrated pest management programs.

Longleaf Pine Understory Plant Propagation and Establishment

The Nursery Cooperative was approached by the Forest Service to determine new and operational techniques for the propagation and establishment of longleaf pine understory plant species using herbicides. The following trials will be conducted but will not use Nursery Cooperative Funds. (Enebak/Brooks)

Herbicide tolerance trials using different wiregrass sources are proposed to be done at Auburn University in the Nursery Cooperative's seedling stress facility and in the field.

- ✓ *Accomplishments: Due to Dr. Jackson's departure from Auburn this trial was not conducted.*

Herbicide tolerance trials using a range of longleaf pine understory plant species are proposed to be done at the Claridge Nursery in Goldsboro, NC. Other trials at the nursery will involve seed handling and outplanting techniques.

- ✓ *Accomplishments: This study was conducted in July 2013 at the North Carolina Forest Service Claridge Nursery in Goldsboro, NC. Goal, GoalTender, Pendulum Aquacap, Sedgehammer, and Cobra were tested at a low and high rate on wiregrass, muhly grass, and Indian grass seedlings, and on wiregrass and muhly grass in a seed production area. Injury ratings of both the seedlings and established plants were recorded and the weed control within the seed production area was monitored. The data from this study will be presented in a research report.*

Objective 4. Further define the “optimal seedling” so as to maximize the cost effectiveness of artificial regeneration forestry systems.

Determination of Soil Water Retention Curve

Soil water retention curves can help nursery managers who wish to use tensiometers make decisions about irrigating their crop more objectively. This study will be continued a second year modifying our methodology for 2012 for simulating field soil bulk density in the greenhouse.

Study Dates: Jan 2013 – Nov 2013. (Starkey/Enebak)

✓ *Accomplishments: This study was completed in September 2013. The data will be analyzed and put into a research report. Most significant development from this study was the development of a method to duplicate nursery soil bulk density in the greenhouse.*

Tap Root Development in Longleaf Pine.

Historical records have shown that when toppling occurs in longleaf pine stands as a result of hurricanes, a large percentage of trees examined were container grown and did not have a taproot. A preliminary study at Auburn several years ago showed that once air pruning of the taproot occurred a percentage of these container trees never formed a taproot. Last year a container nursery put in a small field study in which the root callus on the tap root was removed in an effort to initiate tap root development. This study will combine these two previous studies and include root stimulating hormones such as IBA. This is a nursery requested study. (Starkey/Enebak)

✓ *Accomplishments: This study was started in April 2013 and will be completed in June 2014. Monthly plantings of longleaf are ongoing according to study protocol and will continue until February 2014.*

GOAL B: TECHNOLOGY TRANSFER

Objective 1. Serve as a clearinghouse of information related to nursery production and tree planting.

Methyl Bromide

In collaboration with MBr manufacturers, the Methyl Bromide Industry Panel (MBIP), the Chloropicrin Manufactures Task Force (CMTF) and applicators, the Nursery Cooperative staff will continue to keep abreast of EPA actions and/or possible legislative initiatives that may affect the

future availability of soil fumigants. We will continue to inform the membership through the Advisory Committee to keep the membership knowledgeable of these activities

The Nursery Cooperative staff will continue to keep abreast of activities related to the Quarantine pre-shipment (QPS) process. We will inform the membership of any EPA initiatives and continue to work with the AF&PA, the Crop Protection Council, USDA and APHIS to provide input and influence the QPS process if necessary.

The Nursery Cooperative staff will continue to work with the AF&PA, and USDA to inform and influence the EPA deliberations regarding pesticide regulation as it pertains to the new soil fumigation rules that will be released in spring 2013. (Starkey/Enebak)

- ✓ *Accomplishments: Participated in conference calls involving the MBIP and CMTF that updated stakeholders on EPA's progress of Risk Mitigation as it pertains to RED's, handler training and buffer zone rules finalized in December 2012.*
- ✓ *Supplied a letter of possible repercussions on seedling production to FSC headquarters in Bon, Germany concerning their proposed rules of certification of forest lands tied to the use of Goal (and other pesticides) in seedling production.*
- ✓ *There have been no requests for information from EPA, USDA etc. on any pesticide registration issues in 2013.*

Revision of Ag Handbook 473, Hardwood Nursery Guide (Hardwood Manual)

In collaboration with our US Forest Service partners and with input from Nursery Cooperative membership, Dr. McNabb will complete the Hardwood Manual editing with a final publication date of Summer of 2013 (McNabb/Bowersock)

- ✓ *Accomplishments: The lack of progress by three authors has delayed the publication of the Hardwood Manual. The manual will go forward without these chapters and the manual will go to the printer at the end of 2013.*

Re-registration of Nursery Pesticides

The Nursery Cooperative staff will continue to follow the re-registration process for pesticides currently under review under the Food Quality and Protection Act (FQPA) used in seedling production and will provide information to the necessary regulatory agencies (USDA, APHIS, EPA, etc) when necessary. (Enebak/Starkey/Whitaker)

- ✓ *Accomplishments: The pesticide atrazine was up for re-registration and there were concerns from EPA, USDA ARS and Syngenta that the 'forest uses' were too broad. Responded to their requests for atrazine's use in southern US nurseries and Christmas tree growers.*

- ✓ *Accomplishments: The use of Captan as a fungicide is being reevaluated in 2013 by EPA. Based upon the response to the nursery practice survey this fungicide has minimal use in southern nurseries.*

Maintain and Update Nursery Cooperative Web Site

The Nursery Cooperative staff will continue to update the Nursery Cooperative website for use by Nursery Cooperative Members and increase the “searchable” status of the Cooperative’s data and reports. (Bowersock)

- ✓ *Accomplishments: The website is updated with Contact Meeting & Advisory Agenda’s with each speaker’s presentation available for Nursery Cooperative Members. Research Reports and Technical Notes are updated and “searchable” by topics. Changes in Nursery Cooperative staff updated and current.*

Leveraging Nursery Cooperative Data

The Nursery Cooperative staff will continue to stress the importance of Cooperative membership and when possible, leverage Cooperative information for grant proposals and data cite license for the seedling production survey. (Staff)

- ✓ *Accomplishments: The Nursery Cooperative is in year 3 of a 5-yr agreement to share seedling production data under a Cite License. For an annual fee of \$10,000, seedling production data will be given to USFS Washington Office for them to use in their planning and reporting programs. Funds are used towards Elizabeth Bowersock’s salary to compensate for her time.*
- ✓ *Two grant proposals were submitted by Nursery Cooperative personnel that used Nursery Cooperative funds as a match/leverage. These included one to the Center for Advanced Forestry Systems (CAFS). If approved, Auburn University will be the “member” site and we will share \$60,000 annually with the Forest Health Cooperative.*
- ✓ *The second proposal went to the USFS Special Technical Development Project - Pitch Canker – This proposal will compare the multi-loci genetic marker developed for a rapid screening process that can be used to examine both seed and planting material for the presence and absence of the pitch canker fungus. The proposal is for three years and is for \$63,000 per year to bring on a post-doctoral student to develop a method to screen pine seed for pitch canker infestation.*

Objective 2. Efficiently and regularly transfer the results of cooperative research to the membership.

Contact Meeting

The Nursery Cooperative Contact meeting will be conducted as a 2 day program will be held in the Henderson, NC region in mid-July, 2013. Trips could include the Cradle of Forestry, the USFS Rust Screening Laboratory, the NC Arboretum and tour the VanWingerden Greenhouse in Mills River, NC. The agenda will cover presentations by Nursery Cooperative staff on current activities and results. (Enebak/Bowersock)

- ✓ *Accomplishments: The 2013 Nursery Cooperative Contact meeting was held on July 9-11, 2013 in Hendersonville, NC and was attended by 39 Nursery Cooperative members. In addition, Nursery Cooperative staff presented information to the entire group on cool storage and freeze tolerance and shortleaf pine myths. Guest lectures included an update on Sudden Oak Death caused by the fungus *Phytophthora ramorum*, the upcoming pulpwood shortage and the progress of introducing American Chestnut back into the forests and the problems with seedling production of the resistant planting stock. The field trips at this meeting deviated from the typical tour and included a stop at the USFS Rust Screening Laboratory, the NC Arboretum and tour the VanWingerden Greenhouse in Mills River, NC.*

Research Reports (Staff)

We plan on producing Research Reports and Technical Notes in FY13.

- ✓ *Accomplishments: We produced 5 Research Reports and one Technical Note that covered the following topics.*

RR 13-01 EVALUATION OF METHYL BROMIDE ALTERNATIVES ON LOBLOLLY PINE PRODUCTION AND SEEDLING QUALITY OVER THREE GROWING SEASONS AT THE PINE HILL NURSERY IN CAMDEN, ALABAMA - Enebak, Starkey, Jackson, Quicke

RR 13-02 EVALUATION OF PLASTIC, REDUCED RATES AND LOW IMPACT APPLICATION METHODS ON LOBLOLLY PINE PRODUCTION AND SEEDLING QUALITY OVER THREE GROWING SEASONS - Enebak, Starkey, Jackson, Brooks

RR 13-03 THE EFFECT OF HARDWOOD SEED SIZE, SPECIES AND NURSERY SOILS ON THE FORMATION OF STEM GALLS AND SEEDLING TOLERANCE TO APPLICATIONS OF PENDULUM® AQUACAP - Enebak, Whitaker, Brooks, Jackson

RR 13-04 ANNUAL SEDGE (CYPERUS COMPRESSUS) CONTROL IN LOBLOLLY

PINE - Enebak, Whitaker, Brooks, Jackson

RR 13-05 CONTROLLING MORNING GLORY (IPOMOEA SP.) IN HARDWOODS USING PRE AND POST-EMERGENCE HERBICIDES AT THE EAST TENNESSEE AND NATIVE FOREST NURSERIES - Enebak, Whitaker, Brooks, Jackson

TN 13-01. FOREST TREE SEEDLING PRODUCTION IN THE SOUTHERN UNITED STATES FOR THE 2012-2013 PLANTING SEASON. Enebak.

Newsletters

Newsletter distribution will be planned for March and September 2013. Members are encouraged to submit articles and organizational updates. (Staff)

- ✓ *Accomplishments: A Spring 2013 and Fall 2013 Newsletter was sent to all Nursery Cooperative Members in March and September with 102 on the mailing list. Topics included:*

*2013 Contact and Advisory Meetings
Mitigation, CUE and QPS
pesticides
New Herbicides
Electrolyte Leakage
Nursery 101
Longleaf Pine Needles
Tip Blight
Zinc Coatings
Rainfall in July 2013
Label Language Review
Recovering from Freeze injury*

*Nursery Production Survey Risk
USDA Areawide MBr Playing with
Damping off control methods
Know weeds
Herbicide Trials
Leadership 101
Confusing Terminology
Seed Polymers
Eucalyptus planted Deep
Purdue ID App
Adjuvants, Surfactants and Stickers
Nursery News*

Management Alerts

Timely and important information needed for nursery operations will be distributed via a Management Alert. (Staff)

- ✓ *Accomplishments: No management alerts were published this growing season.*

Objective 3. Provide a limited consultancy function to the membership in the area of nursery seedling production and outplanting.

Individual and Organization Contacts

An on-going activity and is handled as individual situations within each organization within the Nursery Cooperative as cases arise during the growing and planting season.
(Starkey/Whitaker/Enebak)

- ✓ *Accomplishments: The following numbers of contacts were made with Nursery Cooperative members.*

	Starkey	Whitaker	Enebak
Phone calls	75	12	37
Letters	34	0	0
Emails	35	36	58
Site Visits	27	6	4
Diagnosis	34	1	11

Seedling Production Survey

The Nursery Cooperative staff will continue the seedling production survey initiated in FY 03. The same questionnaire will be used to obtain production figures for the 2012 to 2013 planting season. The survey will be sent out in June 2013. (Enebak/Bowersock)

- ✓ *Accomplishments: A mailing list that included 79 nurseries was mailed in May 2013 throughout the southern US to gauge seedling production for the 2012-2013 planting season. Data was compiled and put into Technical Note 13-01 which will be mailed to all participating nurseries.*

Short Course

The Nursery Cooperative will conduct a short course in Auburn for nursery personnel based on nursery requests. This will be in September 2013. (Staff)

- ✓ *Accomplishments. There were no requests in conducting a short course this past year.*

GOAL C: COOP DEVELOPMENT

- Objective 1.** **Provide for the continual relevancy and efficiency of the Cooperative research and technology transfer programs.**

Advisory Committee Meeting

The FY14 Advisory Committee Meeting will be held on November 13-14, 2013. A 2, half-day meeting will be planned. If there are any meetings that conflict with this time frame, let us know and we can try and accommodate Advisory Members. (Enebak/Bowersock)

- ✓ *Accomplishments: Nursery Cooperative Advisory Meeting was held in Auburn on November 13-14, 2013.*

Nursery Cooperative Membership

The Nursery Cooperative staff will make an effort to recruit new members among those nurseries that will benefit from activities of the Nursery Cooperative. (Staff)

- ✓ *Accomplishments: Efforts continue with discussions with Tim Sheenan of Kentucky, Neal Kicklighter of Lewis Taylor Farms, Warren Bryant of White City Nursery, and Tommy Conwell of Westervelt Corporation.*

Pesticide Label Restrictions

If possible, the Nursery Cooperative staff will continue to investigate the possibility of restricting new pesticide labels to Nursery Cooperative members. (Enebak/Starkey/Whitaker)

- ✓ *Accomplishments: No new pesticides were identified that might fit into a forest-seedling production system.*

Update the Coop Membership and Nursery Directories

An on-going activity with an updated directory distributed annually to each member. (Bowersock)

- ✓ *Accomplishments: Nursery Cooperative Membership Directories were updated and sent to Cooperative Members in October.*

Objective 2. Increase the visibility and effectiveness of the Cooperative as a source of information on issues related to seedling production and plantation establishment.

Presentations at Meetings

Nursery Cooperative staff will continue to be encouraged to participate as a speaker or attendee in regional and national meetings related to artificial regeneration. (Staff)

- ✓ *Accomplishments: Nursery Cooperative staff at Auburn University presented 4 talks on nursery related topics to regional and local groups. Topics and Titles are listed below:*
- ✓ *Enebak, SE, TE Starkey, DP Jackson, M Quicke. 2013. Project – South Atlantic Region: Forest-Tree Nurseries: A 5-yr summary. Poster SAF Meeting*
- ✓ *Nursery Cooperative personnel attended and presented information at the joint 2013 Annual Meeting of the Western Forestry and Conservation Nursery Association meeting in Olympia, WA August 6-7, 2013.*
- ✓ *Nursery Cooperative personnel presented research information for nursery employees for IFCO on seedling production issues. August 2013.*
- ✓ *Nursery Cooperative personnel presented research information for nursery employees for Weyerhaeuser on seedling production issues. August 2013.*

Publications

Nursery Cooperative staff is encouraged to publish research results in scientific journals. (Staff)

- ✓ *Accomplishments: Nursery Cooperative staff at Auburn University published 4 manuscripts on nursery related topics in national and international journals. Titles and journals are listed below:*
- 1. *Enebak, S.A., Jackson, D.P., Starkey, T.E. Quicke, M. 2013. Evaluation of methyl bromide alternatives on loblolly pine production and seedling quality over three growing seasons at the Pine Hill Nursery in Camden, Alabama. Journal Horticulture and Forestry. 6:41-47.*
- 2. *Enebak, S.A., Starkey, T.E., Quicke, M., and Jackson, D.P. 2013. Evaluation of Plastic Tarps, Reduced Rates and Low-Impact Application Methods of Soil Fumigants on Loblolly Pine Seedling Production. Open Forest Science Journal. 6:7-13.*

3. *Barlow, B, TR Clark, TE Starkey 2013. Tree Planting Contracts for Landowners: FAQs, ACES ANR-1458. 8p.*
4. *Starkey TE. 2012. The history and future of methyl bromide alternatives in the southern United States. In: Haase DL, Pinto JR, Riley LE, technical coordinators. National Proceedings: Forest and Conservation Nursery Associations—2011. Fort Collins (CO): USDA Forest Service, Rocky Mountain Research Station. Proceedings RMRS-P-68. 31-35.*

Extramural Funding of Nursery Cooperative Projects

Nursery Cooperative staff will continue to be encouraged to locate and generate extramural funding opportunities directly related to artificial regeneration. (Staff)

- ✓ *Accomplishments: The Southern Forest Nursery Cooperative and the Forest Health Cooperative jointly applied for membership within the Center for Advanced Forestry Systems (CAFS) through the National Science Foundation (NSF) in September. The 5-year proposal (\$300,000) will allow a broader exposure of our research to others in the forest industry arena to solve complex, region-wide forest issues. There is the potential of \$60,000/year that will be used to direct Nursery Cooperative and Forest Health Cooperative research. Notification of funding is expected by June 2014.*
- ✓ *A proposal to the US Forest Service to examine pitch canker and seed infestation that will compare the rapid screening protocol to the blotter paper method in southern pine seed was funded in July 2013. The \$209,925 3-yr request will work with Dr. Jason Smith of University of Florida and Dr. Steve Oak, USFS Asheville. We have begun the process of hiring a post-doc by January 1, 2014 to work on this important disease on pine seed.*

Interaction with other Research Cooperatives

The Nursery Cooperative staff will make efforts to interact, attend, work with other regional and national forest research Cooperatives in an attempt to broaden and strengthen research ties that can benefit seedling production.

- ✓ *Accomplishments: Attended the 2013 CAFS annual meeting at St. Simons Island, Georgia and presented Nursery Cooperative and Forest Health Cooperative Research Objectives, April 9-11, 2013.*

AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

FY 2014 WORK PLAN

**As approved by the Southern Forest Nursery Management
Cooperative Advisory Committee
November 13 - 14, 2013**

AUBURN UNIVERSITY
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

FY 2014 WORK PLAN

GOAL A: RESEARCH

Objective 1. Identify, test, evaluate, and promote the registration of cost effective pesticides for use in forest tree nurseries.

Methyl Bromide Substitution

A fumigation trial testing a combination of soil fumigants as a methyl bromide alternative will be conducted at in a member nursery. Depending upon the nursery, either spring fumigation or fall fumigation will be used. The study will use high barrier plastics and reduced fumigant rates to comply with the new soil fumigation rules on the production of seedlings, weed, nematode control and *Trichoderma* spp levels. We will establish plots in second year Trifecta[®] (TE-3) land at Selma, similar to 2013. At Courtland, VA, plots will be established in second year Trifecta[®] (TE-3) land and new plots in land that will be fumigated in Spring 2014 with Trifecta[®]. These plots will form the basis for plots we will visit at the 2014 Williamsburg, VA meeting and will be monitored for weed activity and seedling quality. (Starkey/Enebak)

Herbicide Trials

A number of herbicide trials will be installed to examine the effects of herbicides on specific weed pests and seedling quality. These will take into account the herbicide trials conducted in 2013 and working with the Research Assistant will develop trials in January 2014 that will be installed for the 2014 growing season. The following herbicide trials are planned.

- A herbicide trial that looks at the control of liverwort using a number of products (TerraCyte[®]) in container growing systems. (Research Assistant/Enebak)
- There is some evidence that either soil type or soil temperatures may have an effect on the production of herbicide stem galls when Pendulum AquaCap[®] (PAC) is used after sowing. A greenhouse trail will be established in Auburn that uses different soil types, but keeps soil temperatures the same to separate the effects of soil x temperature. (Research Assistant / Enebak)
- Black Willow seeding into container and bareroot nurseries has been a long-term issue. Herbicide trials that test the ability to spray over the top of conifer seedlings and control black

- willow will be installed. (Research Assistant / Enebak)
- Morning Glory control in hardwoods has been a long-term issue. Herbicide trails that test the ability to control morning glory will be installed at the East Tennessee Nursery. (Research Assistant / Enebak)

Fusiform Rust Control

Due to personnel changes at the US Forest Service Rust Screening Center we will not conduct a fungicide study again this year. The US Forest Service has yet to hire a replacement for Josh Bronson and it is unlikely that a permanent replacement will be on site before early summer. We will contact the search committee to see how the Nursery Cooperative can move the process along so as to not lose another growing season. (Starkey/ Enebak)

Objective 2. Identify and develop economically feasible nursery cultural practices that enhance seedling quality.

Seed Treatment using seed polymers

As a follow-up to studies initiated in 2013, the use of commercial seed treatment polymers as a possible replacement for latex will be established in nurseries during 2014 sowing season. The Nursery Cooperative will work with bareroot nurseries using gravity-drop seed sowers such as Love-Ojyard, a precision sower such as Summit and container nurseries using vacuum-drum sower. The Nursery Cooperative will provide study protocols for application and data collection by the nursery. This study will be established in April/May 2014. (Starkey/Enebak)

Seed Treatment of loblolly and longleaf pine seed and foliar applications using ApronMaxx[®]

In recent years several nurseries growing longleaf and loblolly pine have reported losses at and shortly after germination. The vigor of surviving seedlings for the remainder of the season is low. ApronMaxx[®] is a seed treatment fungicide for soybean sold by Syngenta that contains mefenoxam a fungicide for *Pythium* / *Phytophthora* and fludioxonil a fungicide for *Fusarium* and *Rhizoctonia*. A nursery study will be established looking at fungicide efficacy on a strong and weak longleaf seedlot of both using seed and foliar applications. This study will be established in April/May 2014. (Starkey/Enebak)

Eucalyptus Planting Depth

If *Eucalyptus benthamii* seedlings are available in April 2014, a planting depth study will be established in fallow ground of a fine textured nursery soil to determine if seedling growth and survival is related to soil texture. This study will be established in April/May 2014 at the ArborGen Supertree nursery in Selma, AL. (Starkey/Enebak)

Does a second “late season” undercutting reduce seedling survival and growth?

At the request of a nursery, we will examine the effect of a second late season under-cutting in January or February on seedling RGP, survival and growth. Seedlings will be collected from the nursery and planted in our Stress Facility and Trophatron at Auburn University. Seedling RGP will also be determined in the greenhouse. This study will be established in January /February 2014 at Plum Creek’s nursery in Shubuta and Jesup. (Starkey/Enebak)

Objective 3. Develop methodologies to minimize the environmental impact of nursery cultural practices while maximizing their effectiveness including the development of integrated pest management programs.

Longleaf Pine Understory Plant Propagation and Establishment

The Nursery Cooperative was approached by the Forest Service to determine new and operational techniques for the propagation and establishment of longleaf pine understory plant species using herbicides. The following trials within this project will be conducted but will not use Nursery Cooperative Funds. (Barnwell/Enebak)

- Herbicide tolerance trials using different wiregrass sources are proposed to be done at Auburn University in the Nursery Cooperative’s seedling stress facility and in the field. . The study will determine if the mesic or xeric wiregrass seeds react differently to the application of the herbicides that were applied in July 2013 at the Claridge Nursery in Goldsboro, NC
- Herbicide tolerance trials using a range of longleaf pine understory plant species are proposed to be done at the IFCO Nursery in Moultrie, GA. Several herbicides will be applied at low and high rates to study the control of several weeds such as ragweed, morning glory, dog fennel, and others. This study will take place in multiple sites, including seed production sites and container seedling areas, near Moultrie, GA. These studies will record the seedlings and plants response to the herbicides as well as the control that these chemicals will have on troublesome weeds.
- A bioassay of imazapyr will also be conducted to determine when it is safe to sow longleaf seed after the application of imazapyr. A variety of plants such as tomato, cucumber, lettuce, cabbage, and sorghum will be sown along with longleaf seed. When both the longleaf seed and one of the other seeds both successfully germinate, then that other plant will be the indicator species that land managers can use to determine if the chemical content of the soil is at acceptable levels to sow longleaf seed.

Objective 4. Further define the “optimal seedling” so as to maximize the cost effectiveness of artificial regeneration forestry systems.

Container Loblolly Root Configuration

Spatial root growth formation from containers used in the southern US following outplanting is not known and has been at times a point of heated discussion. To examine root formation we have constructed 12”x 12”x12” plexiglass boxes with an interior grid of 1” x 1” x 1” fishing line. In the top/middle of each box a 6-month old loblolly pine ready for outplanting will be placed in the middle of each box and maintained in the greenhouse under normal water and fertilizer requirement. Root growth will be examined, quantified and photographed at the end of the study. The containers selected for this study are representative of those used in the south including Cooperblock 415B, IFCO 128, IFCO 120S, Steuve FT135 and Meeks 6”. There will be 3 replications of each container type. This study will be established in November 2013. (Starkey/Enebak)

Morphological Comparison of Container Loblolly

The same loblolly pine family will be grown in the 4 most common container configuration used in the southern US. Each month beginning in August and continuing through at least November seedling from each set will be evaluated for the morphological variation in RCD, Height, RGP and root and shoot biomass. There will be 4 replications per container type/month. (Starkey/Enebak)

Seedling Biological Product at SC Trenton Nursery

At the request of the Trenton SC nursery manager we will establish a nursery research protocol for a biological product that he has been requested to test at his nursery. The product will be applied next season in a replicated fashion and maintained under current nursery practices. This study will be established in April 2014, Nursery Cooperative exposure will be limited to study plan design and analysis. (Starkey/Enebak)

GOAL B: TECHNOLOGY TRANSFER

Objective 1. Serve as a clearinghouse of information related to nursery production and tree planting.

Methyl Bromide

In collaboration with MBr manufacturers, the Methyl Bromide Industry Panel (MBIP), the Chloropicrin Manufactures Task Force (CMTF) and applicators, the Nursery Cooperative staff will continue to keep abreast of EPA actions and/or possible legislative initiatives that may affect the future availability of soil fumigants. We will continue to inform the membership through the Advisory Committee to keep the membership knowledgeable of these activities

The Nursery Cooperative staff will continue to keep abreast of activities related to the Quarantine pre-shipment (QPS) process. We will inform the membership of any EPA initiatives and continue to work with the AF&PA, the Crop Protection Council, USDA and APHIS to provide input and influence the QPS process if necessary.

The Nursery Cooperative staff will continue to work with the AF&PA, and USDA to inform and influence the EPA deliberations regarding pesticide regulation as it pertains to the new soil fumigation rules that were released in spring 2013. (Starkey/Enebak)

Revision of Ag Handbook 473, Hardwood Nursery Guide (Hardwood Manual)

In collaboration with our US Forest Service partners and with input from Nursery Cooperative membership, Dr. McNabb will complete the Hardwood Manual editing with a final publication date of Summer of 2014. (McNabb/Bowersock)

Southern US Seedling Practice Survey

In collaboration with our US Forest Service partners and with survey data from Nursery Cooperative members and non-members, we will complete the Seedling Practice survey with a final publication date of Fall 2014. (Starkey/Enebak)

Re-registration of Nursery Pesticides

The Nursery Cooperative staff will continue to follow the re-registration process for pesticides currently under review under the Food Quality and Protection Act (FQPA) used in seedling production and will provide information to the necessary regulatory agencies (USDA, APHIS, EPA, etc) when necessary. (Enebak/Starkey)

Maintain and Update Nursery Cooperative Web Site

The Nursery Cooperative staff will continue to update the Nursery Cooperative website for use by Nursery Cooperative Members and increase the “searchable” status of the Cooperative’s data and reports. (Bowersock)

Leveraging Nursery Cooperative Data

The Nursery Cooperative staff will continue to stress the importance of Cooperative membership and when possible, leverage Cooperative information for grant proposals and data cite license for the seedling production survey. (Staff)

Objective 2. Efficiently and regularly transfer the results of cooperative research to the membership.

Contact Meeting

The Nursery Cooperative Contact meeting will be conducted as a 1/2 day program will be held in conjunction with the biannual Southern Forest Nursery Association meeting in Williamsburg, VA, July 21-24, 2014. The Nursery Cooperative’s Contact Meeting will occur on the afternoon prior to the SNFA meeting on July 21 with the SNFA beginning that evening. We are currently working with Dwight Stallard and the nursery tour that will showcase soil fumigation trials. The agenda will cover presentations by Nursery Cooperative staff on current activities and results. (Enebak/Bowersock)

Research Reports (Staff)

We plan on producing Research Reports and Technical Notes in FY14.

Newsletters

Newsletter distribution will be planned for March and September 2014. Members are encouraged to submit articles and organizational updates. (Staff)

Objective 3. Provide a limited consultancy function to the membership in the area of nursery seedling production and outplanting.

Individual and Organization Contacts

An on-going activity and is handled as individual situations within each organization within the Nursery Cooperative as cases arise during the growing and planting season. (Starkey/Enebak)

Seedling Production Survey

The Nursery Cooperative staff will continue the seedling production survey initiated in FY 03. The same questionnaire will be used to obtain production figures for the 2012 to 2013 planting season. The survey will be sent out in June 2013. (Enebak/Bowersock)

Nursery Customer Meeting Presentations

Over the past several years as schedules and travel permits, Nursery Cooperative personnel have participated customer (internal and external) meetings at nurseries in an effort to encourage and improve customer relations and educate nursery customers on seedling planting and successful plantation establishment. 30-minute presentations such as “Why Did My Seedlings Die/” and “The Ten Commandments of Seedling Survival” are presentation the staff have made.

Short Course

The Nursery Cooperative will conduct a short course in Auburn for nursery personnel based on nursery requests. This will be in September 2014. (Staff)

GOAL C: COOP DEVELOPMENT

Objective 1. Provide for the continual relevancy and efficiency of the Cooperative research and technology transfer programs.

Advisory Committee Meeting

The FY14 Advisory Committee Meeting will be held on November 12-13, 2014. A 2, half-day meeting will be planned. If there are any meetings that conflict with this time frame, let us know and we can try and accommodate Advisory Members. (Enebak/Bowersock)

Nursery Cooperative Membership

The Nursery Cooperative staff will make an effort to recruit new members among those nurseries that will benefit from activities of the Nursery Cooperative. (Staff)

Update the Coop Membership and Nursery Directories

An on-going activity with an updated directory distributed annually to each member. (Bowersock)

Objective 2. Increase the visibility and effectiveness of the Cooperative as a source of information on issues related to seedling production and plantation establishment.

Presentations at Meetings

Nursery Cooperative staff will continue to be encouraged to participate as a speaker or attendee in regional and national meetings related to artificial regeneration. (Staff)

Publications

Nursery Cooperative staff is encouraged to publish research results in scientific journals. (Staff)

Extramural Funding of Nursery Cooperative Projects

Nursery Cooperative staff will continue to be encouraged to locate and generate extramural funding opportunities directly related to artificial regeneration. (Staff)

Interaction with other Research Cooperatives

The Nursery Cooperative staff will make efforts to interact, attend, work with other regional and national forest research Cooperatives in an attempt to broaden and strengthen research ties that can benefit seedling production.