

Organic Cover Crop Seed Production as a Sustainable Enterprise for the Southeast

Final Project Report

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Funding provided by OFRF: \$2,536 awarded in Spring of 2009 (year 1)
\$2,156 awarded in Fall of 2010 (year 2)
Year 2 funded in partnership with Seed Matters

Project period: 2008-2011

Report submitted: March 2012

PROJECT SUMMARY:

Cereal and legume cover crops are integral to organic production systems and the NOP standards indicate that organic seed should be used when available; however, organic cover crop seeds are not widely available and there is little to no organic seed production in the southeastern United States. If organic cover crop seed production is a viable enterprise for growers, it will improve the availability of varieties adapted to the Southeast, provide a source for locally grown seeds, as well as adding another profit center for certified organic growers, seed cleaners and local seed companies. We propose to evaluate whether the production of certified organic crimson clover (*Trifolium incarnatum* var. Dixie) and annual rye seed (*Secale cereale* var. Wren Abruzzi) can be a profitable enterprise. The on-farm trials will be conducted on land that has been in organic production for six years (certified in 2005). Our objectives are to determine: seed yields, seed quality, profitability, and special equipment adaptations or infrastructure needs. One-third acre plots were randomly assigned to either annual rye or crimson clover with three replicates for each cover crop. Plots assigned to annual rye were fertilized with 3 tons/ac poultry litter prior to disking. Poultry litter was not applied to the crimson clover plots. Yields will be determined using a small plot weighing combine, which will allow a more accurate determination of seed yield in these relatively small plots. Seeds will be dried in bins with a blower the day they are harvested and cleaned by a certified organic seed cleaner. Germination and purity tests will be run by the Georgia Department of Agriculture lab in Tifton, Georgia. Profitability will be initially assessed by developing a production budget and comparing current certified organic rye and crimson clover seed prices to the production costs. Results of the study will be disseminated as a Crop Management Update on the Sustainable Agriculture website (www.SustainAgGa.org), at farm field days, and at the Georgia Organics Annual Conference. The Georgia Organics conference attracted over 700 attendees at their 2008 conference and would be expected to provide access to a wider audience than solely conducting a field day at the farm. Results will also be used in training a newly formed University of Georgia extension Organic Production Team (county agents and specialists trained to provide technical support for organic farmers).

OBJECTIVES:

We propose to evaluate in an on-farm trial whether the production of certified organic seed of crimson clover (*Trifolium incarnatum* var. Dixie) and annual rye (*Secale cereale* var. Wren Abruzzi) can be a profitable enterprise. We begin with these varieties because these are commonly used by growers, not proprietary, and do not require special equipment. Our objectives are:

1. Quantify expected seed yields. We will measure yields for both crimson clover and annual rye in replicated plots. Yields greater than 200 lbs./ac for crimson clover and 30 bu./ac for annual rye will be considered a viable success, assuming costs are in line with profit goals.
2. Determine seed quality. We will have seeds tested for germination, percentage of other seed, and percentage of noxious weeds by the Georgia Department of Agriculture as required by the Georgia Seed Law. Germination rates greater than 75% will be considered viable success.
3. Evaluate profitability. We will track cost of production and develop a production budget to compare against current certified organic cover crop seed prices. Target profit per acre is \$250 per acre.
4. Evaluate special equipment adaptations or infrastructure needs. We will track equipment used and evaluate the performance of the standard field preparation, planting, seed drying and cleaning equipment. We will also evaluate the extra time needed to clean and adapt equipment to maintain the certified organic status. This will help us determine if specialized equipment is needed or additional infrastructure would be needed to develop cover crop seed production on a moderate scale.

Data collected will allow certified organic growers in the Southeast to determine if certified seed production could be another profit center and identify the facility needs for development of a local or regional certified organic infrastructure for seed drying, cleaning, and bagging. These facilities could also be used for processing and handling of certified organic grains.

ISSUES ADDRESSED:

Cereal and legume cover crops are integral to organic production systems and the NOP standards indicate that organic seed should be used when available; however, organic cover seeds are not widely available and there is little to no organic cover crop seed production in the southeastern United States. Further, many of the varieties developed and adapted for the south such as AU Sunrise Crimson Clover or Cahaba White Vetch do not produce well in the Northwest where cover crops seeds are typically produced. In 2005, the Save Our Seeds project was funded by Southern SARE to help develop a means of producing seed varieties adapted to the Southeast. This project was begun to address:

- “Recent heavy consolidation within the seed industry
- Unique offerings dropped as seed companies shift to more profitable, widely adapted hybrid varieties
- Minimal attention paid to the needs of the organic farming community
- Low availability of certified organic seed required under the USDA's National Organic Program” (Save Our Seeds webpage www.savingourseed.org)

The Save Our Seed project has concentrated on vegetable seed production, but similar issues are present for certified organic cover crop seeds. If organic cover crop seed production is a viable enterprise for growers, it will improve the availability of varieties adapted to the Southeast, provide a source for locally grown seeds, as well as providing another profit center for certified organic growers, seed cleaners and local seed companies.

The project was developed in response to a certified organic grower’s (Ms. Relinda Walker, Walker Farms) request for help in evaluating the potential for certified organic cover crop seed production. Ms. Walker has had success growing crimson clover and rye as cover crops and has been approached by growers looking for certified organic rye seed. There were no data available to help her evaluate organic cover crop seed production as a profit center. In response to her request, we assembled a group of investigators and collaborators led by the county agent to develop an approach to answering her question. The research took place on her farm and she was involved throughout the project.

LITERATURE SEARCH:

Currently little cover crop seed is produced in the Southeast, although significant production has occurred in Georgia and Alabama in the past. Commercial clover seed is usually produced in Oregon due to dry conditions during harvest and growers there have developed specialized harvest equipment and methods to maximize yields. Several varieties of clovers adapted to the Southeast have been developed at the University of Georgia Experiment Station in Griffin, GA, at the Natural Resources Conservation Service (NRCS) Plant Materials Center in Americus, GA, and at Auburn University in Alabama. Variety development has continued at the NRCS Plant Materials Center and at Auburn University.

Ball et al. (1974) indicated that clover seed production in arrow leaf clover *Yuchi* was dominantly affected by day length. An NRCS Technical Note indicated that *AU Early Sunrise* crimson clover could be harvested by direct combining with yields of 100-200 lbs. of clean seed per acre (Owsley et al., 1997). Dr. Carl Hoveland, University of Georgia Professor Emeritus and renowned forage breeder, indicated similar yields could be expected for other crimson clover varieties. These yields would be substantially less than those in Oregon.

Mr. Jimmy Adams of Adams-Briscoe Seed Company, Jackson, GA, reported that several producers have been successful in production of both *Tibee* and *AU Robin* crimson clover in Georgia. Further, Mr. Adams indicated that demand for seed of other crops (turf) had decreased domestic seed production and significant quantities of clover seeds were being imported from Europe. Mr. Adams expressed interest in helping market certified organic seed. Conversations with Mr. Cricket Rakita (Save Our Seeds Project) indicated a need for certified organic cover crop seed, and he confirmed the Save Our Seeds project had not investigated the potential for clover production beyond a survey of the Crop Improvement Associations in the Southeast. Consequently, as far as we can identify, there is no certified organic clover seed production in the Southeast nor has there been a systematic investigation of whether certified organic clover seed production would be a profitable enterprise.

Annual rye is commonly grown by many row crop farmers in Georgia with seed saved for their own use. Ms. Walker has successfully produced rye seed for her own use and for limited sales; however, we have not seen any budgets developed for certified organic rye seed production.

FIRST YEAR METHODS:

A four-acre area consisting of two fields at Walker Farms (certified organic) was used to evaluate crimson clover (*AU Robin* or *Dixie*) and annual rye (*Wrens Abruzzi*) seed production for the growing season. First year test plots were laid out and planted in October 2008. Six 1/3-acre plots were randomly located within the four-acre area. The plots were 30' wide and 437' long with 12' buffers between plots. The field was prepared for planting by disking and using a peanut digger in one area that contained a high proportion of nutsedge. Plots assigned to annual rye were fertilized with 3 tons/ac poultry litter prior to disking. Poultry litter was not applied to the crimson clover plots.

Cover crops were planted in fall (October) of 2008. Crimson clover was planted with a grain drill at a rate of 20 lb./ac. Annual rye was planted with the grain drill at 2.5 bu./ac. The October planting date will create an opportunity for maximum tillering in the rye and give the crimson clover time for root development before colder weather. The area received a long soaking rain two days after planting. Good germination and stands were reported. In addition to the replicated plots, an area of crimson clover was planted to allow calibration of the combine for harvesting. This test area will allow us to determine the optimal combine settings before we begin harvesting the plots.

Seeds were harvested by a small plot weighing combine that was air cleaned and pressure washed according to the organic certification protocol. Yields were determined by weighing seeds harvested in each plot. Although the small plot weighing combine is not standard farm equipment, it allows a more accurate determination of seed yield in these relatively small plots. If this initial work indicates seed production can be profitable, we will test using a standard combine in the future. Seeds were dried in bins with a blower the day they were harvested and cleaned by a certified organic seed cleaner. Germination and purity tests were run by the Georgia Department of Agriculture lab in Tifton, Georgia.

After harvest, the plots will be planted to three varieties of open-pollinated pearl millet (*Pennisetum glaucum*). These varieties are being evaluated by Dr. Wilson for yield responses in organic production following the crimson clover or fertilized rye. Pearl millet can be used as a summer cover crop in onion and vegetable cropping systems, and the grain is being marketed in the ethnic Indian community.

Profitability will be initially assessed by developing a production budget. Inputs including man-hours to prepare the field, plant the seeds, weeding (if necessary), harvest and transport the seed to the seed cleaners will be recorded. We will also track the time to clean equipment or storage areas to maintain organic certification. Current

certified organic cover crop seed prices will be collected and compared to the production costs to determine potential profitability.

ORGANIC CERTIFICATION:

The trials were carried out on land that has been in organic production for six years, with original certification in 2005. Plots are part of Walker Farms, which now has fifty acres certified organic by the Georgia Crop Improvement Association. Seed was cleaned and bagged at Paul K. Newton and Sons, Inc., a certified organic seed handling facility seven miles from Walker Farms.

First Year Results:

Harvested clover on 5/13/2009 using an Alamo Plot Combine SPC 40. Plot #1 yielded 16.1 lbs. on .27 ac. Plot #2 yielded 25.6 lbs. on .27 ac. and Plot #3 yielded 31.8 lbs. on .29 ac. Average on per acre basis was 88 lbs. per acre. Clover bedded down and we had some harvest loss due to this. Suggestions for next year are to harvest on a timely manner before the crop lodges over. In discussions with Dr. Don Ball, Extension Forage Crops Agronomist at Auburn University, yields of 100 to 200 lbs. per acre in the South would be acceptable. The clover seed was sold at \$7 per pound and was in demand here in the South.

The rye was harvested on 6/8/2009 using an Allis Chalmers All Crop Combine pulled by a 75 hp. John Deere tractor. Plot # 1 yielded 275.45 lbs. on .35 ac. Plot #2 yielded 282.7 lbs. on .35 ac and plot #3 yielded 96.6 lbs. on .25 ac. Average on per acre basis was 660 lbs. or 11.8 bu./ac. This yield is lower than we had expected. Thoughts for next year are to side-dress rye in February with additional nitrogen to help boost yield. Also, suppression of wild turnips is needed to improve quality of seed. Turnip is considered a noxious weed and can cause problems if in seed. The rye seed was sold at \$42 per bu. (56 lbs.).

With the planting of the pearl millet we got a good stand but the birds found it delicious as it matured. A complete loss was attributed to bird damage.

SECOND YEAR METHODS AND RESULTS:

A four-acre area consisting of two fields at Walker Farms (certified organic) was used to evaluate crimson clover (*AU Robin* or *Dixie*) and annual rye (*Wrens Abruzzi*) seed production for the growing season. Second year test plots were laid out and planted in October 2009. Six 1/3-acre plots were randomly located within the four-acre area. The plots were 30' wide and 437' long with 12' buffers between plots. The field was prepared for planting by disking. Plots assigned to annual rye were fertilized with 3

tons/ac poultry litter prior to disking. Poultry litter was not applied to the crimson clover plots. Cover crops were planted in fall (October) of 2009. Crimson clover was planted with a grain drill at a rate of 20 lb./ac. Annual rye was planted with the grain drill at 2.5 bu./ac. The October planting date will create an opportunity for maximum tillering in the rye and give the crimson clover time for root development before colder weather. Good germination and stands were reported.

Harvested clover on 5/10/10 using Allis Chalmers All Crop Combine pulled by a 75 hp. John Deere Tractor. Plot #1 yielded 514 lbs./ac, Plot #2 yielded 403 lbs./ac and Plot #3 yielded 281 lbs./ac for an average of 399 lbs./ac.

The rye was harvested on 6/3/10 using the same All Crop Combine as clover. Yield in Plot #1 was 18 bu./ac, Plot #2 was 12 bu./ac and Plot #3 was 15 bu./ac for an average of 15 bu./acre.

Clover and rye seed yield data from Walker Farms, 2009 and 2010.

	yield	
	Clover seed (lb./ac)	Rye seed (lb./ac)
2009		
Plot 1	59.6	787
Plot 2	94.8	807.7
Plot 3	109.7	386.4
average	88	660.4
2010	(lb./ac)	(bu./ac)
Plot 1	514	18
Plot 2	403	12
Plot 3	281	15
average	399	15

OUTREACH:

Results have been displayed in a poster format and presented at the State Meeting of Georgia County Agricultural Agents annual meeting in Savannah, Georgia, in Nov. 2009. Over 150 agents from Georgia and surrounding states were present. Agent Hicks also made an oral presentation on the project at this session.

A poster was also presented at the Southeast Fruit and Vegetable Conference in Savannah, Georgia in January '10. This is an internationally attended conference with

over 500 attendees. A poster was presented at the Georgia Organics Conference in February '10 in Athens, Georgia, and in February '11 in Savannah, Georgia. This conference is attended by over 1,300 international participants. Also, the poster was presented to the National Meeting of Extension Agents in Charleston, SC, in July '12.

Agent Hicks has presented the results at 20 workshops and field days conducted at the farm and in classroom meetings over the past few years. This has been presented to 20 fellow agents, 40 government employees in training workshops and to 100 new and existing producers.

Conclusions:

In year one we realized a profit from both rye and clover under harvested yield of 88 lbs. /acre of clover and selling price of \$7.00 per pound and rye yield at 12 bu./acre and selling price of \$42.00 per bu.

In year two our yields were up in clover and equal in rye. Price declined in clover to \$5.60/lb. but with the higher yield it was still profitable. With rye, the price declined to \$20/bu. so the profit margin was greatly reduced.

As you can see from the following budgets, a profit can be made from the growing of clover and rye seed in the Southeast. If a producer can keep costs down in harvesting and develop a market, a profit can be realized.

LITERATURE CITED

Ball, D.M., C.S. Hoveland, and G.A. Buchanan. 1974. Flower and seed production in Yuchi arrowleaf clover. *Agronomy J.* 66:581-583.

Owsley, Charles M., Donald Surrency, and Malcome S. Kirkland. 1997. Crimson clover-- Technical Note. Accessed at:

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Organic Clover and Rye Cover Crop Seed Enterprise Budgets Screven County, GA, 2009

The following budgets were based on data collected during the 2009 crop year on the Walker Organic Farm. The data represent actual inputs and estimated associated expenditures for each crop. As such, these costs may not reflect another individual's farm or situation. The following paragraphs outline the primary assumptions behind the budgets.

Yield and Price – Yields were less than typically achieved through conventional production, especially during the first crop year (2009). Price was based on the 2009 market price for organic clover and rye seed. Organic markets can be volatile. Sometimes there is strong demand relative to available supply and other times there are few buyers. This will result in price fluctuations. Marketing skills are important for organic producers. Necessary marketing skills include knowing where a market is located, negotiating a fair price for the producer and buyer, and establishing a long-term relationship with the buyer.

Seed Prices (for planting) – Organic certified seed is required; however, conventionally-grown untreated seed can be used if organic seed is not commercially available. Untreated Dixie Crimson Clover Seed cost \$60 per 50-pound bag. Wren's Abruzzi Winter Rye Grain, a USDA certified organic seed, cost \$14 per bushel.

Fertility – There were no fertility requirements for the crimson clover. Chicken litter was used to fertilize the rye.

Weed and Insect Control – The producer relies on crop rotations and the use of cover crops for weed and insect control.

Fuel – A rate of \$3.00 per gallon of farm diesel was used for the 2009 crop year.

Labor – Labor was expensed at \$11.00 per hour. Labor was more intensive than on a conventional farm.

Cost to Borrow Funds – This cost is dependent on what lending institutions pay for the funds they borrow. Most farm operating loans are based on the prime rate plus 1-3%. The rate that reflects the 2009 crop year is 7.5%.

Miscellaneous Overhead and Management – This includes machinery housing and insurance, liability insurance and license fees of trucks, organic certification and inspection fees, land taxes, general farm utilities, other legal fees and management expenses.

A detailed sensitivity analysis with variations in yield and price is also included in each budget. Assuming market price and demand remained consistent with 2009, there appears to be the potential for profit in producing both organic clover and rye seed.

ORGANIC CLOVER COVER CROP SEED						
Enterprise Budget						
SCREVEN COUNTY, GEORGIA, 2009						
		Unit	Number of Units	\$/Unit	Receipts/ Acre	
Gross Receipts						
Organic Clover Cover Crop Seed		pounds	88	\$ 7.00	\$ 616.00	
Variable Costs:		Unit	Number of Units	\$/Unit	Cost/ Acre	
Seed		pounds	20	\$ 2.00	\$ 40.00	
Fertilizer (Chicken Litter)		ton	0	\$ 30.00	\$0.00	
Weed Control		acre	1	\$ -	\$ -	
Insect Control		acre	1	\$ -	\$ -	
<i>Machinery: Preharvest</i>						
Fuel		gallon	1.84	\$ 3.00	\$ 5.52	
Repairs & Maintenance		acre	1	\$ 5.01	\$ 5.01	
<i>Machinery: Harvest</i>						
Fuel		gallon	1.97	\$ 3.00	\$ 5.90	
Repairs & Maintenance		acre	1	\$ 3.02	\$ 3.02	
Labor		hrs	4.30	\$ 11.00	\$ 47.26	
Interest on Operating capital		percent	\$60.78	7.5%	\$ 4.56	
Cleaning and Drying		pounds	89	\$ 0.0028	\$ 0.25	
Total Variable Costs					\$ 111.52	
Fixed Costs:						
<i>Machinery: Depreciation, Taxes, Insurance, and Housing</i>						
Preharvest		acre	1.00	\$ 13.19	\$ 13.19	
Harvest		acre	1.00	\$ 19.08	\$ 19.08	
General Overhead		% of variable costs	\$95.53	5.00%	\$ 4.78	
Management		% of variable costs	\$95.53	5.00%	\$ 4.78	
Total Fixed Costs					\$ 41.82	
Total Costs Excluding Land					\$ 153.34	
ESTIMATED LABOR AND MACHINERY COSTS PER ACRE						
PREHARVEST OPERATIONS						
			Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs (\$/Ac)	Fixed Costs (\$/Ac)
Operation						
Disk Harrow with 75 hp 4WD Tractor			0.57	1.08	\$ 2.22	\$ 5.89
Lay Plots			0.57	-	-	-
Conservation Drill with 75 hp 4WD Tractor			0.57	0.76	\$ 2.80	\$ 7.30
Total Preharvest Fuel, Repairs, Fixed Costs, & Labor			1.70	1.84	\$ 5.01	\$13.19
HARVEST OPERATIONS						
			Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs (\$/Ac)	Fixed Costs (\$/Ac)
Operation						
5' Swather with 2 Row Combine			2.60	1.60	\$ 2.63	\$17.30
Grain Cart with 75 hp 4WD Tractor			-	0.36	\$ 0.40	\$ 1.78
Total Harvest Fuel, Repairs, Fixed Costs, and Labor			2.60	1.97	\$ 3.02	\$19.08
Prepared By: Amanda R Smith, UGA Extension Economist, Department of Agricultural & Applied Economics						
Acknowledgements: The author gratefully acknowledges the contributions of Relinda Walker, Ray Hicks, Julia Gaskin and Jeff Wilson.						

ORGANIC RYE COVER CROP SEED						
Enterprise Budget						
SCREVEN COUNTY, GEORGIA, 2009						
Gross Receipts	Unit	Number of Units	\$/Unit	Receipts/ Acre		
Organic Rye Cover Crop Seed	bu	12	\$ 42.00	\$ 495.28		
Variable Costs:	Unit	Number of Units	\$/Unit	Cost/ Acre		
Seed	bu	3	\$ 14.00	\$ 42.00		
Fertilizer (Chicken Litter)	ton	3	\$ 30.00	\$ 90.00		
Weed Control	acre	1	\$ -	\$ -		
Insect Control	acre	1	\$ -	\$ -		
<i>Machinery: Preharvest</i>						
Fuel	gallon	2.00	\$ 3.00	\$ 6.01		
Repairs & Maintenance	acre	1	\$ 5.42	\$ 5.42		
<i>Machinery: Harvest</i>						
Fuel	gallon	1.92	\$ 3.00	\$ 5.76		
Repairs & Maintenance	acre	1	\$ 3.08	\$ 3.08		
Labor	hrs	8.57	\$ 11.00	\$ 94.29		
Interest on Operating capital	percent	\$165.20	7.5%	\$ 12.39		
Cleaning	bu	12	\$ 0.022	\$ 0.26		
Total Variable Costs				\$ 258.95		
Fixed Costs:						
<i>Machinery: Depreciation, Taxes, Insurance, and Housing</i>						
Preharvest	acre	1.00	\$ 14.27	\$ 14.27		
Harvest	acre	1.00	\$ 18.80	\$ 18.80		
General Overhead	% of variable costs	\$258.95	5.00%	\$ 12.95		
Management	% of variable costs	\$258.95	5.00%	\$ 12.95		
Total Fixed Costs				\$ 58.96		
Total Costs Excluding Land				\$ 317.92		
ESTIMATED LABOR AND MACHINERY COSTS PER ACRE						
PREHARVEST OPERATIONS						
			Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs (\$/Ac)	Fixed Costs (\$/Ac)
Operation						
Disk Harrow with 75 hp 4WD Tractor			0.56	1.08	\$ 2.22	\$ 5.89
Spread Fertilizer with 75 hp 4WD Tractor			1.05	0.16	\$ 0.41	\$ 1.08
Lay Plots			0.56	-	-	-
Conservation Drill with 75 hp 4WD Tractor			0.56	0.76	\$ 2.80	\$ 7.30
Total Preharvest Fuel, Repairs, Fixed Costs, &			2.75	2.00	\$ 5.42	\$14.27
HARVEST OPERATIONS						
			Labor Use (Hr.)	Fuel Use (Gal./Ac)	Machinery Repairs (\$/Ac)	Fixed Costs (\$/Ac)
Operation						
2 Row Combine with Samll Grain Header			5.82	1.56	\$ 2.69	\$17.01
Grain Cart with 75 hp 4WD Tractor			-	0.36	\$ 0.40	\$ 1.78
Total Harvest Fuel, Repairs, Fixed Costs, and			5.82	1.92	\$ 3.08	\$18.80
Prepared By: Amanda R Smith, UGA Extension Economist, Department of Agricultural & Applied Economics						
Acknowledgements: The author gratefully acknowledges the contributions of Relinda Walker, Ray Hicks, Julia Gaskin and Jeff Wilson.						

Planting seed with
conservation drill



Clover harvest with plot combine





Harvested Clover seed



Rye harvest with
All Crop Combine

Rye before harvest



Cooperator Relinda Walker in
clover field before harvest





Organic Cover Crop Seed Production As A Sustainable Enterprise For the Southeast

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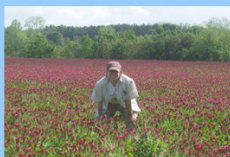
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Abstract:

Cereal and legume cover crops are integral to organic production systems and the NOP standards indicate that organic seed should be used when available; however, organic cover crop seeds are not widely available and there is little to no organic seed production in the southeastern United States. If organic cover crop seed production is a viable enterprise for growers, it will improve the availability of varieties adapted to the Southeast; provide a source for locally grown seeds, as well as adding another profit center for certified organic growers, seed cleaners and local seed companies.

Objective:

We propose to evaluate whether the production of certified organic crimson clover (*Trifolium incarnatum* var. Dixie) and annual rye seed (*Secale cereale* var. Wren Abruzzi) can be a profitable enterprise. Our objectives are to determine: seed yields, seed quality, profitability, and special equipment adaptations or infrastructure needs.

Situation:

This is a two year project. In fall of 2008 one third acre plots were randomly assigned to either annual rye or crimson clover with three replicates for each cover crop. Plots assigned to annual rye were fertilized with 3 tons/ac poultry litter prior to discing. Poultry litter was not applied to the crimson clover plots. Seeding rate of 20 pounds of clover and 171 pounds (3 bu.) of rye were used. Yields were determined using a small plot weighing combine, which will allow a more accurate determination of seed yield in these relatively small plots. Profitability will be initially assessed by developing a production budget and comparing current certified organic rye and crimson clover seed prices to production costs.



Results For 2009 Crop:

Clover	88 lbs/a
Rye	12 bu/a

Observations For 2009 Crop:

Find some desiccant for clover to speed drying.
Apply additional nitrogen fertilizer for rye in spring.
Harvest on time to keep crop from bedding down.



Conclusions for Year one:

Production of organic clover and rye seed can be obtained in the Southeast. A budget will be developed by Extension Economist using two years data to see if it is economically profitable.

Acknowledgements:

Special thanks to National Organic Research Foundation for \$6000 grant to fund this two year project.



THE UNIVERSITY OF GEORGIA

COOPERATIVE EXTENSION

Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences