

Simplify and consolidate all information and instructions needed to write grants into one user-friendly source and keep it updated

Baseline:

Grant-writing resources are currently housed on various CAES and UGA websites, including those maintained by the Associate Dean for Research, the CAES Business Office, and the UGA Office of the Vice President for Research (OVPR). Various audiences, including faculty across research, instruction, and extension, along with departmental and unit accountants, need access to a centralized site directing them to the correct information needed in the grant development and submission process.

Benchmark:

CAES will create and maintain a central web portal which will feature necessary CAES Business Office and UGA Contracts and Grants forms and information, along with hyperlinks for faculty and/or personnel who need access to other centralized UGA grant-related resources available through OVPR and/or the Office of Sponsored Programs (OSP).

Recommendations:

- Administer a survey for faculty (across functions) and support staff to identify 1) information needed for grant proposal development by faculty, and 2) grant-related information and data needed by grants support staff such as grant coordinators and departmental/unit accountants (short-term, no cost)
- Assemble a central clearinghouse site, housed through the CAES Business Office, which will feature all necessary CAES Business Office and UGA Contracts and Grants forms, policies, and procedures, templates, and links to OSP/ OVPR resources based on input from faculty survey. This will minimize duplication of information and direct investigators to appropriate forms, policies, and units based on their needs (medium-term, low-cost)
- Publicize the funding web portal and encourage use among faculty members in collaboration with CAES Business Office personnel (medium-term, low-cost)
- Maintain and update grants clearinghouse site (long-term, low-cost)

Establish a mentoring program for new faculty

Baseline:

All CAES departments currently provide mentoring opportunities for new faculty, usually in the form of a Mentoring Committee. The level at which these Committees are being utilized, and the breadth and depth of their advice related to funding and grantsmanship, is variable. OSP offers funding resources and workshops for new faculty, but these are often underutilized. The CAES provides financial support to departments and faculty members to participate in regional or national grantsmanship workshops, although this effort is not focused specifically on new faculty. UGA's Study in a Second Discipline program allows more senior (tenured) faculty to explore new directions and reinvigorate their work through interdisciplinary scholarship, but there has only been one CAES participant since the program's inception.

Benchmark:

Faculty mentoring will continue to be a primary responsibility of individual departments, but its status and quality will be enhanced through periodic mentoring workshops and an annual Faculty Mentoring Award at the college level. All new academic faculty hires are introduced to funding resources and

support staff in the CAES Business Office, the CAES Office of External Affairs, and OSP during their first semester with CAES. All new academic faculty will also participate in a regional or national grantsmanship workshop within their first 2 years with CAES. The CAES will invest “seed money” into a Junior Faculty Research Fellows Program, Faculty Professional Development Program, and/or Seed Grants Program to allow the exploration of new research areas or enable the development of more competitive proposals. One tenured CAES faculty member per year will be nominated for the university-wide Study in a Second Discipline program.

Recommendations:

- Provide an individualized introduction of each new faculty hire to funding resources and personnel in the CAES Business Office, the Office of College Advancement, and OSP shortly after their arrival on campus (short-term, no cost)
- Fund all new junior faculty hires to participate in a regional or national grantsmanship workshop during their first 2 years (short-term, low-cost)
- Establish a CAES Faculty Mentoring Award (short-term, low-cost)
- At the beginning of each Fall Semester, encourage department heads to nominate faculty members for the Study in a Second Discipline program (short-term, no cost)
- Establish a 1-year, intensive Junior Faculty Research Fellows Program for which junior faculty members can apply and are awarded competitively (cohort of 3 to 4 per year – medium term, cost: \$20,000 per year)
- Establish competitively awarded Faculty Professional Development Awards for mid-career scientists to launch new research initiatives or collaborations, learn new techniques, for travel to work in laboratories, etc. (medium term, 3 to 5 awards totaling \$15,000 to 30,000 per year)
- Reestablish CAES Seed Grants program as contingency funding becomes available (medium-term, \$100,000 per year)

Form an advisory group composed of successful grant writers who are willing to share their expertise

Baseline:

It is difficult to find pre-submission reviewers with the expertise and time to provide critical reviews of grant proposals prior to their submission to national programs. Some engineering and medical programs have formalized in-house review teams to facilitate this task and thereby improve proposal quality. At UGA, first steps toward establishing a centralized pool of volunteer reviewers has been initiated by OVPR, but this program is not yet operational at the time of this writing.

Benchmark:

CAES faculty will have a centralized pool of volunteer reviewers available to provide quality and timely pre-submission reviews of grant proposals. Incentives will be provided to increase participation of volunteer reviewers.

Recommendations:

- Support development of OVPR’s centralized reviewer pool and ensure that the expertise to support proposals from the CAES is well represented; if necessary, develop a college-specific pool of reviewers (short-term, no cost)

- Allocate funds to provide honoraria to reviewers of CAES proposal to ensure the quality reviews and rapid turnaround needed to make this program a success (short-term, low-cost)

Create an infrastructure for grant development and processing

Baseline:

The current CAES grants support process states that the respective Assistant Deans will advise in strategic areas such as appropriateness of project and identification of alternative funding opportunities, as well as identifying potential collaborators. The Grants Coordinator will support the PI during the pre-submission process and work with the CAES Business Office. More specifically, this position will set and monitor project submission milestones, provide logistical and clerical support, and assemble the basic proposal. Finally, the Sponsored Programs group within the CAES Business Office will be available during proposal development, conduct the final review, and submit the proposal.

Benchmark:

Additional faculty support will be provided during the pre-submission phase, especially for the development of templates or detailed budget justifications required by the CAES Business Office, University policy, and federal guidelines.

Recommendations:

- Develop and post a set of previously approved budget justifications that fit typical categories for federal and non-federal sponsors; examples provided in Appendix I (short-term, no cost)
- Make additional previously approved forms (e.g., facilities & other resources, equipment, collaborative arrangements, consulting agreements, scope of work, logic models) available to CAES investigators who are writing proposals (short-term, no cost)
- Allocate capital and resources to keep these resources updated to reflect new proposal types and new forms required by federal sponsors (long-term, low-cost)

Ensure management and support for interdisciplinary efforts

Baseline:

CAES research and extension faculty are frequently organized into specific commodity teams and involved in interdisciplinary problem-solving. Since CAES academic departments tend to be discipline-specific, finding interdisciplinary collaborators in other departments requires maintaining a visible public profile and utilizing databases such as FRED (Faculty Research Expertise Database) and Community of Science-Pivot. FRED is maintained by OVPR from the faculty-maintained narrative of interests and expertise stored in the Faculty Activity Repository (FAR). While resources such as FRED are available, few faculty members are aware of them or have populated the required fields with key words and phrases that are likely to be used when searching for specific expertise. COS-Pivot is a clearinghouse for COS (Community of Science) profiles, but again these are of little value if CAES faculty do not sign up and create a searchable profile.

Benchmark:

Participation in internal and external databases that enable scholars to identify and network with interdisciplinary collaborators will be encouraged. Prior to submitting proposals, successful

interdisciplinary teams need time to develop a master agreement that stipulates a cohesive set of operating procedures including expectations for productivity, communication protocols, press releases, authorship of publications, data handling, conflict resolution, intellectual property, deliverables, and evaluation tools for analyzing project success.

Recommendations:

- Faculty should be encouraged to populate and utilize all fields in the FAR, including the fields that are not directly related to annual performance evaluations (medium-term, no cost)
- Faculty members interested in pursuing additional research opportunities with partner institutions should take advantage of databases such as COS-Pivot (short-term, no cost)
- CAES administration should continue supporting interdisciplinary research collaboration by funding faculty to attend intensive grantsmanship workshops focusing on interdisciplinary collaboration (short-term, low-cost)
- Support interdisciplinary teambuilding exercises and provide example team master agreements for use by faculty during the proposal development process (medium-term, low-cost)

Increase tools and resources to support successful fundraising efforts

Baseline:

Over the past 5 years, the college has averaged \$8,000,000 /year coming into the College Development Fund. Approximately \$2,000,000 of this is targeted to aid 4-H programs, \$500,000 comes in as annual fund solicitations, and \$5,500,000 as designated funds for specific research, extension and teaching programs. While most fundraising activities are handled by the Office of College Advancement, every county office, 4-H group, and many special college projects are also involved in fundraising.

Benchmark:

Outside of gifts for 4-H and designated funds for research, extension and teaching, fundraising in the college averages \$500,000/year. We should double that.

Recommendations:

- Build trust throughout the College and engage all. People need to know that if they help the College bring in resources, the distribution of those resources will be mutually beneficial (medium to long-term, low-cost)
- Establish an Internal College Campaign, and ensure as close to 100% participation as possible (medium term, low-cost)
- Host past examples of fundraising efforts, successful or not, on a web site (short-term, low-cost)
- Provide guidance and examples of when to contact CAES Office of College of Advancement or UGA Office of Corporate and Foundation Relations (short-term, low cost)
- Establish infrastructure to support applications for foundation funding for research, extension and teaching by CAES faculty
- Specify appropriate accounts available to receive revenue generated from fundraising

Increase generated funds from sales, services and facility rentals, and optimize the flexibility for efficient use of these funds

Baseline:

We are able to recover costs on services or products we provide as an adjunct to instruction, outreach or research activities. Many programs currently do not recover these costs. We identified two challenges to increasing fees from sales, services, and rentals: accounting issues and fee assessment issues.

Benchmark:

Establish procedures to assess fees and utilize the funds recovered. This could double fees assessed over the next 5 years.

Recommendations:

Accounting: The new leadership in the CAES Business Office is already in the process of creating standardized guidelines and focusing on facilitating fee collections. These changes are being communicated via the "What's New" section on their web site, at quarterly staff meetings and via listservs.

Action Items:

- Put fact sheets, budget guidance and other helpful documents concerning accounting aspects of Sales and Services accounts online where staff and faculty can consult them. Remove out-of-date or unclear documents (short-term, low cost)
- Develop procedures and safeguards that will allow the acceptance of credit cards to pay for sales, services and products provided (short-term, low cost)
- Insure that any cost recovery is delivered to the program or faculty members involved in the educational, teaching or research effort (short-term, low cost)

Fee Assessment: No guidelines are in place to calculate cost recovery. Some costs are obvious (supplies, printing, rental fees) others are not (office space, heat, telephone, computers used on project, etc.).

Action Items:

- Create guidelines for faculty on cost recovery outlining appropriate direct and indirect costs to be recovered (short-term, low cost)
- Create a generic fee schedule for educational, research and teaching programs (short-term, low cost)

Invest in selected equipment and infrastructure that would make CAES more competitive in grant solicitation and fund development

Baseline:

CAES department heads are asked periodically to submit requests and provide input to the Office of the Associate Dean for Research on needs for equipment and facility improvements. There is no formal process, or annual deadlines, that individuals or teams of faculty can follow except to contact their department heads to request these resources. There is also no formal process to prioritize requests within and among departments and across CAES, for example with regard to the ability to increase capital funding or extramural resources. Prior to requesting new equipment or facilities there is no straightforward means of determining if the needed equipment or resources are currently available on campus; however, there is now a standing committee at the OVPR level that is assessing this need. The policy for matching investments between funding agencies, OVPR, CAES, and departments is negotiated on an ad hoc basis. Recovery of overhead for use in equipment and maintenance is also addressed on

an ad hoc basis and must be negotiated at each level of the administration. There is currently a list of requested equipment and facilities within CAES, but this is not widely distributed to faculty. Furthermore, faculty have little interaction with development officers on how to best to raise resources for equipment and facilities from sources outside the university and state budget; planning meetings with the development office are starting to occur to reverse this perception. A major campaign (>\$1 million/year) is currently underway to provide upgrades to farm infrastructure and equipment at CAES Research & Education Centers and departmental farms, using bond funds provided by the State Legislature, but there is no such effort for laboratory equipment.

Benchmark:

The CAES will have a more transparent process for requesting equipment and infrastructure that would broadly facilitate efforts to obtain resources for these needs. Similarly, the process for determining priorities will be clearly communicated to faculty. This might start with a determination whether the equipment or similar equipment already is available within UGA centers or departments. The process will be based on outlined output metrics, and expectations of level of contribution by departments or extramural sources are communicated to all faculty. As part of the request, plans for equipment maintenance and repair are developed, and commitment of future resources for these expenses is determined at the time of the request. The CAES Office of External Affairs will be engaged more closely to help identify sources of extramural funding for equipment and facilities from foundations and donors. An overarching 5 to 10-year development list and plan for CAES is presented each year for review and comment by faculty.

Recommendations:

Develop a transparent protocol with rubrics to prioritize the need for new equipment and infrastructure with a focus on how these resources will be used to increase extramural funding, starting at the faculty level. Support implementation of the searchable equipment data base being envisioned by OVPR to help avoid duplication. Combine this information into a short-term (1 to 2-year) and longer-term (5 to 10-year) equipment and infrastructure needs list. Update these lists regularly and make them available to faculty as well as the Office of College Advancement.

Inasmuch as possible equip the four research focus areas recommended in the CAES Strategic Plan as CAES-wide core facilities (e.g., growth funding of \$7.5 to 10 million total). Similarly, UGA Capital Campaign requests may be most appropriate for core facilities and for equipment needs in high-visibility and high-return programs.

The process outlined above will raise awareness for equipment needs within the CAES and OVPR, and to stakeholders on how resources are being put to good use. Although additional upfront equipment proposals may be needed as part of this process, these documents may be used by development officers in fundraising for new equipment and infrastructure. Budgets would likely be detailed to a level that would allow for targeting particular donors.

Approach commodity groups and other organizations for support of CAES programs

Baseline:

We currently receive internal and external funding from a wide range of sources for various programs in support of the college's mission. However, it is clear that the college is not receiving the maximum

amount of potential funding. It is critical to insure that funding sources for the college and departments are not underutilized.

Benchmark:

Establish clear processes and procedures to identify, prioritize, and enhance various funding sources. We have identified three offices within the college that are fundamental to establishing these procedures: External Affairs, Research, and Business

Action Items:

- Develop transparent procedures for reporting gifts and donations for all funds contributed to the college (short-term, no cost)
- Develop an internal marketing (communications) campaign for CAES with funding resources and access to relevant databases (short-term, low cost)
- Conduct a census of state, local, government sources, private foundations and corporate funding sources that are currently giving to CAES; identify and target potential sources that are either not being utilized or underutilized (medium term, low cost)
- For commodity groups, calculate ratio of annual contributions to annual farm gate value to determine relative levels of support; conduct educational campaign with the goal of raising all commodity group support levels above current median (medium term, low cost)

Encourage collaboration and resource sharing between the Office of College Advancement and grant support personnel

Baseline:

Currently there is a low level of collaboration between CAES Business Office grants personnel and the CAES Office of External Affairs. The Office of External Affairs directs faculty interested in raising funds for their programs to the UGA Office for Corporate and Foundation Relations or to the Cooperative Extension Grants Coordinator as appropriate for assistance on grant-related projects. There is a training program in Cooperative Extension that covers the continuum from grants to gifts. Recently, the Office of Corporate and Foundation Relations held a day-long workshop where faculty and staff could share funding needs and seek potential funders for their projects. There is limited awareness in the Office of External Affairs on the work of faculty across campus, of grants that are being applied for or have been awarded, or of the award process.

Benchmark:

Faculty and staff will have clear guidelines on when to contact the Office of External Affairs, the CAES Business Office, or the Office of Corporate and Foundation Relations. Notification of gifts or grants attained by UGA faculty to the Office of External Affairs will enable maximizing funding opportunities. Trainings and examples will be provided to personnel online with links to resources for faculty and staff. The Office of Communications and Technology Services will work with the two offices to house the trainings and documents in a user-friendly format.

Recommendations:

- Continue foundation funding workshops with UGA Office of Corporate and Foundation Relations at least annually (short-term, no cost)
- Establish quarterly meetings between CAES Business Office and Office of External Affairs staff; reciprocally share information on grants applied for and awarded (short-term, no cost)

- Develop trainings and online resources that clearly outline the responsibilities of the various UGA/ CAES offices involved in grants and fundraising, and how individual faculty members can best utilize them (short-term, low-cost)
- A fully staffed Office of Grants Attainment, as suggested elsewhere in this report, will maximize collaborative opportunities among the various entities involved in grants and fundraising (medium-term, would require significant funding for adequate staffing)

Appendix I. Example budget justifications that have been approved by the CAES Business Office.

Examples 1a-b. Single year proposal to non-federal sponsor that does not allow indirect costs.

Example 2a-b. Single year proposal to non-federal sponsor that allows indirect costs.

Example 3a-c. Multiyear proposal to federal agency, but no subcontracts.

Example 4a-b. Multiyear proposal to federal agency where UGA is a subcontract in a larger project to be submitted by another institution.

Example 5a-b. Multiyear proposal to a federal agency where UGA is the prime (submitting) institution with subcontract(s).

Example 1a. Single year proposal to non-federal sponsor that does not allow indirect costs.

Salaries and wages

Technical support	\$10,000
Fringe benefits	\$145

Support

Materials and Supplies	\$5,000
Travel	\$1,000
Nonexpendable equipment	\$0
Total direct costs	\$16,145

Total request	\$16,145
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Budget Justification

No salary funds are requested to support the primary investigator. Funds (\$10,000 total) are requested to support temporary technicians that will assist with plot layout, planting, sampling, data management, crop maintenance, and harvest. Fringe benefits (\$145 total) for the technician are calculated at the UGA approved rate of 1.45% (actual). Material and supply funds (\$5,000 total) are requested to cover the cost of purchasing fertilizer (\$1,000), shipping costs for seed treatment (\$500) insecticides and herbicides (\$1000), research vehicle operating costs (\$1000), ethyl alcohol (\$250), sample vials (\$250), and a page charges for a journal article (\$1,000). Travel funds (\$1,000 total) are requested to present the results of the project at a scientific meeting, such as the 2012 Annual Meeting of the Entomological Society of America to be held November 11-14, at Knoxville, Tennessee.

Example 1b. Single year proposal to non-federal sponsor that does not allow indirect costs.

Proposed Budget:

Salaries and wages	
Temporary Technical support	\$7,156
Fringe benefits	\$2,604
Student Labor	\$0
Support	
Materials and supplies	\$17,240
Travel	\$2,000
Total request	\$29,000

Budget Justification

No salary funds are requested to support the primary investigators. Funds **(\$7156 total)** are requested to support Laboratory Tech II that will assist with weekly stink bug sampling in the field and monthly grain sampling during storage. Fringe benefits **(\$2604 total)** for the technician are calculated at the UGA approved rate of 36.3844% (actual). Material and supply funds **(\$17,240 total)** will be used for covering the cost of purchasing corn seed (\$1500), fertilizer (\$3,000), insecticides and herbicides (\$1500), aflatoxin testing (240 samples at \$12 each = \$2880), grain grading (240 samples at \$14 each = \$3360), equipment repair (\$1000), research vehicle operating expenses (\$3000), lab supplies (\$500 for sample vials, bags, tape, sample flags, pens and markers), and drums (\$500). Travel funds **(\$2,000 total)** are requested to allow the investigators to present the results of the project at a national scientific meeting, such as the 2013 Annual Meeting of the Entomological Society of America.

Example 2a. Single year proposal to non-federal sponsor that allows indirect costs.

Salaries and wages	
Technical support	\$8,750
Fringe benefits	\$825
Support	
Nonexpendable equipment	\$0
Materials and supplies	\$4,000
Travel	\$2,500
Total direct costs	\$16,075
Indirect costs	\$24,11
Total Request	\$18,486

Budget Justification

No salary funds are requested for the principal investigators. Funds **(\$8750)** are requested to support 3 months' salary (actual) for a post doc that will be processing, enumerating, and identifying the specimens from Georgia and Alabama. Fringe benefits **(\$825)** for the post doc are calculated at the rate of 9.43% (actual). Material and supply funds **(\$4000)** will be used for purchasing fertilizer, insecticides, herbicides, plant growth regulator, defoliation chemical, sample collection vials, ethyl alcohol, sprayer operation, shipping seed, transport of agricultural equipment, and research vehicle operating expenses (fuel, repair, and maintenance). Travel money **(\$2500)** will support two trips. The first trip will cover travel expenses to a scientific meeting for data presentation of the research objective; the second trip is the supplemental travel request to set up collaborative relationships with scientists in Texas. Indirect costs **(\$2411)** are calculated at the negotiated rate of 15%.

Example 2b. Single year proposal to non-federal sponsor that allows indirect costs.

Proposed Budget:

Salaries and wages	
Technical support	\$5000
Fringe benefits	\$1819
Support	
Nonexpendable equipment	\$0
Materials and supplies	\$5094
Travel	\$2000
Total direct costs	\$13,913
Indirect costs	\$2,087
Total Request	\$16,000

Budget Justification

No salary funds are requested for the principal investigators. Funds **(\$5000)** are requested to support salary for a laboratory technician that will be processing, enumerating, and identifying the specimens from Georgia and Alabama. Fringe benefits **(\$1819)** for the laboratory technician are calculated at 36.3844% (actual). Material and supply funds **(\$5094)** will be used for purchasing fertilizer, liquid nitrogen, insecticides, herbicides, plant growth regulator, defoliation chemicals, sample collection vials, ethyl alcohol, sprayer operation and maintenance, transport of agricultural equipment to research sites, and research vehicle operating expenses (fuel, repair, and maintenance). Travel money **(\$2000)** will support travel expenses for the PI and a graduate student to attend a scientific meeting for data presentation of the research objectives. Indirect costs **(\$2087)** are calculated at the negotiated rate of 15%.

Example 3a. Multiyear proposal to federal agency, but no subcontracts.

BUDGET JUSTIFICATION

PERSONNEL

Personnel plus benefits is estimated at \$127,926 for the three years. Two graduate students will be partially funded by and will be responsible for different aspects of the project. It is likely that these students will major in Plant Breeding, Genetics, and Genomics where most graduate students are funded with assistantships at 0.45-0.5EFT (~\$22,857) plus 5% benefits (\$1143) annually. Funding is therefore requested for this stipend level for 6.3 months (yr1 – 1 graduate student, \$12,000), 21 mo (yr2 – 2 graduate students, \$40,000) and 24 months (yr3, 2 graduate students, \$45,714) totaling \$97,714 for the 3-yr project plus respective fringe benefits of \$4886. The controlled environment facility will require the programming expertise of an engineer for which 1 month of time per year (\$4242) is allocated at 33% benefits (\$1400) for a total of \$16,926 over the 3-yr project. Student labor (\$8400) will be needed for field data collection.

EQUIPMENT

A water activity meter is necessary for measuring pod and seed response to drought and identifying samples for downstream analysis. An AquaLab 4TE (Decagon Devices) is the most suitable instrument for this purpose. \$7974 is budgeted in yr 1 to cover its purchase.

TRAVEL

Funds will cover travel to at least one meeting in the U.S. per year (e.g., Plant and Animal Genome,) for a PI or co-PI and one of the two graduate students. Funds also are included for PI meetings organized by AFRI. Costs for lodging and meals are anticipated to be \$250-300 per day and airfare \$300-500 per trip. Some funds also are requested for overnight travel between participating locations (Tifton, GA - Athens, GA - Stoneville, MS) which is expected to be more frequent in yrs 2&3. Of the \$8500 total, it is expected that \$2000 will be needed for airfare and the remaining \$6500 for lodging and meals.

MATERIALS AND SUPPLIES

Total supplies are estimated at \$63,600 for yr 1, \$67,628 for yr 2, and \$30,000 for yr 3.

Sensors and controls. These will include 8 sensors per plot with 24 plots per shelter, dataloggers to handle the required number of sensors, ethernet adapters, multiplexers, control port expansion modules, analog output modules, heating cables, and software. Total cost is estimated at \$36,000 in yr 1.

PCR, RT-PCR or Immunoassay. Approximately 3600 PCR reactions for year 1 (\$6600) and 10,000 reactions in each of years 2 and 3 are estimated as necessary to achieve sufficient sampling of genotypes organs and treatments. A subset of these samples will be selected based on PCR results and ~6000 will be assayed over the course of the project by RT-PCR or immunoassay. \$20,000 yr 2; \$20,000 yr 3.

Sequencing (\$27,000) will include a service for library construction plus reagents and related expenses to consume a single Illumina HiSeq run.

Genotyping. Genotyping costs are estimated at \$21628 and include synthesis of Illumina OPAs (if the GoldenGate platform is used) and the service for GoldenGate genotyping.

General. \$10,000 per year. Other materials and supplies for the project are expected to include enzymes, oligonucleotide synthesis, DNA sequencing supplies and services, software for sequence analysis, reagents for molecular biology (extraction reagents, enzymes, gel matrix, nucleotides, etc.), plastic disposables, glassware, greenhouse supplies (pesticides, pots, potting media, labels, etc.), minor equipment repairs, small equipment items (water baths, stir plates, pipettors, etc.), gas for travel in state vehicles, and hazardous waste disposal fees.

Indirect costs are calculated at the allowable rate of 22% of total Federal funds which is \$26,715 for yr 1, \$34,204 for yr 2, and \$25,284 for yr 3.

Example 3b. Multiyear proposal to federal agency, but no subcontracts.

BUDGET

Category	Year 1	Year 2	Year 3
Personnel	<p><u>\$13,500</u> for salary of a Post-doctoral Research Professional who will: direct, maintain, and evaluate small-plot field trials. Duties will include mulch installation, conducting weed counts, crop stringing and staking, harvest and data entry. Approximately one-third of the scientist’s time will be devoted to extension-based activities including entering, analyzing and presenting the data to various stakeholders. The scientist will be responsible for generating all technology transfer publications (GA Pest Management Handbook, commodity newsletters, Extension fact sheets, popular press articles). The scientist will also make professional presentations at the Southern Weed Science Society and International Research Conference on Methyl bromide Alternatives and Emission Reductions meetings.</p> <p><u>\$5,000</u> for the salary of one full-time laborer to assist the Research</p>	<p><u>\$13,500</u> for salary of a Post-doctoral Research Professional who will: direct, maintain, and evaluate small-plot field trials. Duties will include mulch installation, conducting weed counts, crop stringing and staking, harvest and data entry. Approximately one-third of the scientist’s time will be devoted to extension-based activities including entering, analyzing and presenting the data to various stakeholders. The scientist will be responsible for generating all technology transfer publications (GA Pest Management Handbook, commodity newsletters, Extension fact sheets, popular press articles). The scientist will also make professional presentations at the Southern Weed Science Society and International Research Conference on Methyl bromide Alternatives and Emission Reductions meetings.</p> <p><u>\$5,000</u> for the salary of one full-time laborer to assist the Research</p>	<p><u>\$13,500</u> for salary of a Post-doctoral Research Professional who will: direct, maintain, and evaluate on-farm demonstration trials. Duties will include mulch installation, conducting weed counts, crop stringing and staking, harvest and data entry. Approximately one-third of the scientist’s time will be devoted to extension-based activities including entering, analyzing and presenting the data to various stakeholders. The scientist will be responsible for generating all technology transfer publications (GA Pest Management Handbook, commodity newsletters, Extension fact sheets, popular press articles). The scientist will also make professional presentations at the Southern Weed Science Society and International Research Conference on Methyl bromide Alternatives and Emission Reductions meetings.</p> <p><u>\$5,000</u> for the salary of one full-time</p>

	<p>Professional. Duties will include mulch installation, sample collections and counts, crop stringing and staking, harvest, and mulch and material removal following the cropping season.</p> <p><u>\$10,000</u> for the salaries of two student laborers to assist the Research Professional. Duties will include mulch installation, sample collections and counts, crop stringing and staking, harvest, and mulch and material removal following the cropping season.</p>	<p>Professional. Duties will include mulch installation, sample collections and counts, crop stringing and staking, harvest, and mulch and material removal following the cropping season.</p> <p><u>\$10,000</u> for the salaries of two student laborers to assist the Research Professional. Duties will include mulch installation, sample collections and counts, crop stringing and staking, harvest, and mulch and material removal following the cropping season.</p>	<p>laborer to assist the Research Professional with the on-farm demonstration trials. Duties will include mulch installation, sample collections and counts, crop stringing and staking, harvest, and mulch and material removal following the cropping season.</p> <p><u>\$10,000</u> for the salaries of two student laborers to assist the Research Professional with the on-farm demonstration trials. Duties will include mulch installation, sample collections and counts, crop stringing and staking, harvest, and mulch and material removal following the cropping season.</p>
Benefits	<p>Benefits for Research Professional computed at a rate of 33% of base salary= <u>\$4,455</u>.</p> <p>Benefits for (1) laborer computed at a rate of 12% of base salary= <u>\$600</u>.</p>	<p>Benefits for Research Professional computed at a rate of 33% of base salary= <u>\$4,455</u>.</p> <p>Benefits for (1) laborer computed at a rate of 12% of base salary= <u>\$600</u>.</p>	<p>Benefits for Research Professional computed at a rate of 33% of base salary= <u>\$4,455</u>.</p> <p>Benefits for (1) laborer computed at a rate of 12% of base salary= <u>\$600</u>.</p>
Supplies	<p><u>\$8,200</u> is requested to cover the costs of services, supplies, and materials required to establish, maintain, evaluate and harvest small-plot trials. The purchase of field stakes and flags (~\$300) will be required to delineate</p>	<p><u>\$5,200</u> is requested to cover the costs of services, supplies, and materials required to establish, maintain, evaluate and harvest small-plot trials. The purchase of field stakes and flags (~\$300) will be required to delineate individual plots with</p>	<p><u>\$11,800</u> is requested to cover the costs for materials required to establish, maintain, evaluate and harvest large, on-farm demonstration trials. The purchase of field stakes and flags (~\$300) will be required to delineate</p>

	<p>individual plots with the larger experiments. Funds will be used to purchase rye and watermelon transplants (~\$1,500) which are need to establish the field sites in which the study will be conducted. Chemical purchases of MeBr, 1,3-D, PicChlor 60, metham-sodium, and herbicides (~\$1,500), are needed to establish the fumigants standards and the herbicide treatments that are being evaluated in all of the experiments. Plastic mulch (~\$600) is required to prevent fumigant out-gassing. Pre-plant granular and in-crop liquid fertilizers (~\$1,000) are will ensure optimal plant growth and development. Personal protection equipment (~\$300) will be purchased to protect workers from the pesticides applied. Funds will be used to make a one-time purchase of temperature and moisture data loggers (\$3,000) to determine how soil temperature and moisture are affected by the rye and plastic covers.</p>	<p>the larger experiments. Funds will be used to purchase rye and watermelon transplants (~\$1,500) which are need to establish the field sites in which the study will be conducted. Chemical purchases of MeBr, 1,3-D, PicChlor 60, metham-sodium, and herbicides (~\$1,500), are needed to establish the fumigants standards and the herbicide treatments that are being evaluated in all of the experiments. Plastic mulch (~\$600) is required to prevent fumigant out-gassing. Granular and liquid fertilizers (~\$1,000) are needed to ensure optimal plant growth and development. Personal protection equipment (~\$300) will be purchased to protect workers from the pesticides applied.</p>	<p>individual plots with the larger experiments. Funds will be used to purchase rye and watermelon transplants (~\$3,000) which are need to establish the field sites in which the study will be conducted. Chemical purchases of MeBr, 1,3-D, PicChlor 60, metham-sodium, and herbicides (~\$3,000), are needed to establish the fumigants standards and the herbicide treatments that are being evaluated in all of the experiments. Plastic mulch (\$1,200) is required to prevent fumigant out-gassing. Granular and liquid fertilizers (~\$2,000) will ensure optimal plant growth and development. Personal protection equipment (~\$300) will be purchased to protect workers from the pesticides applied.</p> <p><u>\$2,000</u> for the purchase of supplies and materials needed for on-farm grower demonstration field days.</p>
Travel	<u>\$2,500</u> for support of costs associated with travel to research plots and professional meetings.	<u>\$2,500</u> for support of costs associated with travel to research plots and professional meetings.	<u>\$2,500</u> for support of costs associated with travel to on-farm trials, and professional meetings.

Publishing and other direct costs	<u>\$500</u> to conduct economic cost/benefit analyses on the proposed weed management plan. Costs reflect payments to Mr. Bill Brims, owner, operator and financial officer of Lewis Taylor Farms LLC for 5 days work at \$100/day to compile, analyze and evaluate economic data.	<u>\$500</u> to conduct economic cost/benefit analyses on the proposed weed management plan. Costs reflect payments to Mr. Bill Brims, owner, operator and financial officer of Lewis Taylor Farms LLC for 5 days work at \$100/day to compile, analyze and evaluate economic data.	<u>\$1,000</u> to conduct economic cost/benefit analyses on the proposed weed management plan. Costs reflect payments to Mr. Bill Brims, owner, operator and financial officer of Lewis Taylor Farms LLC for 10 days work at \$100/day to compile, analyze and evaluate economic data. <u>\$1,000</u> is being requested to publish two articles in peer reviewed manuscripts.
Direct costs	\$44,755	\$41,755	\$49,365
Indirect costs	\$12,623	\$11,779	\$14,064
Total	\$57,378	\$53,534	\$63,919
Grand Total	\$174,831		

All of the funds (\$49,365 in direct costs) for year three of the project are specifically devoted to extension activities. Years one and two will be devoted to refining the methodology needed to adopt and utilize cover crops in a typical melon production system. In year three, the resultant integrated weed management program will be instituted on several commercial farms, which will serve as demonstration plots for the greater agricultural community.

Matching funds are not being requested for this grant from non-federal sources. The proposed research, while immediately applicable to all methyl bromide watermelons and cantaloupes has applicability to all vegetables produced in plasticulture production. Furthermore, specific commodity groups do not exist in the southeastern US for minor use crops; the authors of this grant would be unable to satisfy the matching funds requirement.

Example 3c. Multiyear proposal to federal agency, but no subcontracts.**BUDGET**

Category	Year 1	Year 2
Personnel	<p><u>\$10,000</u> for salary of a Post-doctoral Research Professional who will: direct, maintain, and evaluate small-plot field trials; administer stakeholder surveys; compile and analyze data and present and publish results.</p> <p><u>\$5,000</u> for the salary of a student worker to assist the Research Professional.</p>	<p><u>\$15,000</u> for salary of a Post-doctoral Research Professional who will: direct, maintain, and evaluate small-plot field trials; administer stakeholder surveys; compile and analyze data and present and publish results.</p> <p><u>\$5,000</u> for the salary of a student worker to assist the Research Professional.</p>
Benefits	<p>Benefits for Research Professional computed at a rate of 33% of base salary= <u>\$3,300</u>.</p> <p>Benefits for student worker computed at a rate of 12% of base salary= <u>\$600</u>.</p>	<p>Benefits for Research Professional computed at a rate of 33% of base salary= <u>\$4,950</u>.</p> <p>Benefits for student worker computed at a rate of 12% of base salary= <u>\$600</u>.</p>
Supplies	<p><u>\$8,000</u> is requested to cover the costs of services, supplies, and materials required to establish, maintain, evaluate and harvest small-plot trials. The purchase of field stakes and flags (~\$200) will be required to delineate individual plots with the larger experiments. Funds will be used to purchase rye and cotton seed (~\$1,500) which are need to establish the agricultural field sites in which the study will be conducted. Chemical purchases such as herbicides and other pesticides, fertilizer, cotton defoliant, and fuel for field equipment (~\$3,500), are needed to establish the integrated management treatment that is being evaluated in all of the experiments. Personal protection equipment (~\$100) will be purchased to protect workers from the pesticides applied. Funds will be used to conduct soil</p>	<p><u>\$5,500</u> is requested to cover the costs of services, supplies, and materials required to establish, maintain, evaluate and harvest small-plot trials. The purchase of field stakes and flags (~\$200) will be required to delineate individual plots with the larger experiments. Funds will be used to purchase rye and cotton seed (~\$1,500) which are need to establish the agricultural field sites in which the study will be conducted. Chemical purchases such as herbicides and other pesticides, fertilizer, cotton defoliant, and fuel for field equipment (~\$3,500), are needed to establish the integrated management treatment that is being evaluated in all of the experiments. Personal protection equipment (~\$100) will be purchased to protect workers from the pesticides applied. Funds will be used to conduct soil</p>

	<p>fertility tests (~\$200) and the one-time purchase temperature and moisture data loggers (\$2,500); this information will be used to determine the overall improvements in soil quality as affected by the integrated program.</p> <p><u>\$1000</u> is requested for the development, administration, and compilation of the surveys. This includes the purchase of survey supplies necessary to print and mail questionnaires.</p>	<p>fertility tests (~\$200) and purchase temperature and moisture data loggers (\$2,500); this information will be used to determine the overall improvements in soil quality as affected by the integrated program.</p> <p><u>\$10,500</u> is requested to cover the costs for materials required to establish, maintain, evaluate and harvest on-farm demonstration trials. The purchase of field stakes and flags (~\$200) will be required to delineate individual plots with the larger experiments. Funds will be used to purchase rye and cotton seed (~\$3,000) which are need to establish the agricultural field sites in which the study will be conducted. Chemical purchases such as herbicides and other pesticides, fertilizer, cotton defoliant, and fuel for field equipment (~\$7,000), are needed to establish the integrated management treatment that is being evaluated in all of the experiments. Personal protection equipment (~\$100) will be purchased to protect workers from the pesticides applied. Funds will be also used to conduct soil fertility tests (~\$200)</p> <p><u>\$3,000</u> is requested to cover the costs of producing fact sheets and CT cotton production DVDs.</p>
Travel	<p><u>\$2,000</u> for support of costs associated with travel to small-plot research trials and professional meetings. The majority of research travel will be to and from field sites located in/near Macon County, Georgia, which is 90 miles away from the University of Georgia, Tifton Campus. It is estimated that the scientists will travel between 1000 and 2000 miles per year in</p>	<p><u>\$4,050</u> for support of costs associated with travel to research plots and on-farm trials, and professional meetings. The majority of research travel will be to and from the field sites located in/near Macon County, Georgia, which is 90 miles away from the University of Georgia, Tifton Campus. It is estimated that the scientists will travel between 2000 and 4000 miles per year in</p>

	support of the project (~10 times/year). No overnight trips will be required when traveling to and from field sites. A portion of the funds will be allocated to assist with travel to local and regional cotton production and weed science meetings.	support of the project (~10 times/year/site). No overnight trips will be required when traveling to and from field sites. A portion of the funds will be allocated to assist with travel to local and regional cotton production and weed science meetings.
Direct costs	\$29,900	\$48,600
Indirect costs	\$11,661(39% Research Rate)	\$18,954(39% Research Rate)
Grand total	\$109,115	

Example 4a. Multiyear proposal to federal agency where UGA is a subcontract in a larger project to be submitted by another institution.

University of Georgia Budget Justification

Salaries (\$24,000)

Temporary technician (\$10/hr for 20 wk for all three years)

Technician will be responsible for assisting with planting, crop maintenance, data collection, and rearing stink bugs.

Fringe Benefits (\$2,880)

Fringe benefits are calculated at 12% for the temporary technician.

Travel (\$1500)

Funds (\$500 per year for each year) are requested to allow the PI to travel to a professional meeting to present data.

Materials and Supplies (\$8,000)

Materials and supplies (\$3,000 each in yr 1 and yr 2, \$2000 in yr 3) are requested. Those supplied include research vehicle maintenance and operation costs, pesticides, seed, fertilizer, marking flags, marking tape, wire, green beans for stink bug rearing, rearing dishes, rearing containers, organically grown beans, organic sunflower seeds, organic peanuts, cleaning agents, sweep nets, vials ziplock bags, flags, laboratory equipment operation and maintenance, collection drawers, backpacks, insect cages, and imaging filters.

Publication Costs (\$1000)

Funds are requested to publish a single 10 page journal article at a cost of \$100 per page.

Indirect Costs

Per section 7D on the RFA, there are no indirect costs allowed on this project.

Total costs for the University of Georgia =\$37,380.

Example 4b. Multiyear USDA grant with UGA as subcontract in a larger grant submitted by another institution.

University of Georgia Budget Justification

Personnel:

During year 1, Personnel funds include 3 months salary for a laboratory technician (\$5521) and 12 months salary for a graduate student (\$15,810). The laboratory technician will be assisting Dr. Toews with all aspects of sticky trap sampling and soybean sampling, while the graduate student will be assisting Dr. Moore with genetic analyses and flight mill tests.

During year 2, Personnel funds include 3 months salary for a laboratory technician (\$5521), and 12 months salary for a graduate student (\$15,810). The laboratory technician will be assisting Dr. Toews with all aspects of sticky trap sampling and soybean sampling, while the graduate student will be assisting Dr. Moore with genetic analyses and flight mill tests.

During year 3, No personnel funds are requested.

Fringe Benefits

In year 1, Fringe benefits for the laboratory technician (\$2009) are calculated at 36.38% (actual), fringe benefits for the graduate student (\$791) are calculated at 5% (estimated).

In year 2, Fringe benefits for the laboratory technician (\$2009) are calculated at 36.38% (actual), fringe benefits for the graduate student (\$791) are calculated at 5% (estimated).

In year 3, No fringe benefits are requested.

Equipment:

No durable equipment is being requested for this project.

Travel:

In year 1, \$0 total is requested for domestic travel.

In year 2, \$750 total is requested for Dr. Toews to travel to a domestic professional meeting (roundtrip airfare \$250 and four nights lodging at \$125 each), such as the Annual Meeting of the Entomological Society of America.

In year 3, \$1250 total is requested for domestic travel. Funding is requested for Dr. Toews to present data at the Annual Meeting of the Entomological Society of America (roundtrip airfare \$250 and four nights lodging at \$125 each). Funding is also requested to allow the graduate student to attend a professional meeting such as the southwestern branch of the Entomological Society of America (four nights lodging at \$125 each).

Other Direct Costs:

Materials and Supplies

In year 1, \$10,527 total is requested. PI Moore (\$3127 total) is requesting pots (\$140), soil (\$50), insect rearing cages (\$1000), mesh for cages (\$100), hardware for custom cage construction (\$300), petri dishes (\$100), micro-centrifuge tubes (\$25), fine forceps (\$312), insect sampling nets (\$50), and plastic

storage boxes (\$50) to complete objective 1. In addition, a dedicated PC (\$1000) to run the flight mill data logging software is requested to successfully complete objective 1. PI Toews (\$7400 total) is requesting sticky fly paper (\$2500), PVC pipe and caps (\$150), rebar (\$150), buckets and coroplast for making traps (\$200), UV lamps (\$200) for use in the field, fluorescent powder (\$500) for marking insects, sweep nets (\$200), fertilizer (\$800), insecticides (\$200), and research vehicle operating costs (\$2500) including fuel, repair, and maintenance to complete objectives 2 and 3..

In year 2, \$6615 total is requested. PI Moore (\$415 total) is requesting pots (\$140), soil (\$50), petri dishes (\$200, and micro-centrifuge tubes (\$25) to complete objective 1. PI Toews (\$6200 total) is requesting fly paper (\$2500), fertilizer (\$800), insecticides (\$200), sweep nets (\$200) and research vehicle operating costs (\$2500) including fuel, repair, and maintenance to complete objectives 2 and 3.

In year 3, \$415 total is requested. PI Moore (\$415 total) is requesting pots (\$140), soil (\$50), petri dishes (\$200, and micro-centrifuge tubes (\$25) to complete objective 1.

Indirect Costs

No indirect costs are allowed under this program.

Example 5a. Multiyear proposal to a federal agency where UGA is the prime (submitting) institution with subcontract(s).

University of Georgia Budget Justification

Personnel:

During year 1, Personnel funds include 3 months salary for a laboratory technician (\$5521), 1 month salary for a Research Professional I (\$2800), and 6 months salary for a graduate student (\$10,502). The laboratory technician and graduate student will be assisting Drs. Toews and Dr. Roberts with all aspects of plot layout and field sampling, while the Research professional I will be coordinating web-based information dissemination for kudzubug.org and on eXtension.

During year 2, Personnel funds include 3 months salary for a laboratory technician (\$5521), 1 month salary for a Research Professional I (\$2800), and 6 months salary for a graduate student (\$10,502). The laboratory technician and graduate student will be assisting Drs. Toews and Dr. Roberts with all aspects of plot layout and field sampling, while the Research professional I will be coordinating web-based information dissemination for kudzubug.org and on eXtension.

Fringe Benefits

In year 1, Fringe benefits for the laboratory technician (\$2009) are calculated at 36.38% (actual), fringe benefits for the Research Professional I (\$1512) are calculated at 54% (actual), and fringe benefits for the graduate student (\$525) are calculated at 5% (estimated).

In year 2, Fringe benefits for the laboratory technician (\$2009) are calculated at 36.38% (actual), fringe benefits for the Research Professional I (\$1512) are calculated at 54% (actual), and fringe benefits for the graduate student (\$525) are calculated at 5% (estimated).

Equipment:

No durable equipment is being requested for this project.

Travel:

In year 1, \$3000 total is requested for domestic travel. Dr. Toews is requesting funding (\$750) for travel to the NIFA annual investigator meeting in Washington DC (roundtrip airfare \$500 plus two nights lodging at \$125 each). Funding is also requested for Dr. Toews, Dr. Roberts, and the graduate student to attend and present data at the Annual Meeting of the Entomological Society of America (roundtrip airfare \$250 and four nights lodging at \$125 each).

In year 2, \$2250 total is requested for domestic travel. Funding is requested for Dr. Toews, Dr. Roberts, and the graduate student to attend and present data at the Annual Meeting of the Entomological Society of America (roundtrip airfare \$250 and four nights lodging at \$125 each).

Other Direct Costs:

Materials and Supplies

In year 1, \$1500 is requested by PI Toews for sample nets (\$250), insecticide (\$500), and research vehicle operating costs (\$750).

In year 2, \$1250 is requested by PI Toews for insecticide (\$500) and research vehicle operating costs (\$750).

Subawards

Clemson University is requesting \$26,600 in year 1 and year 2 to complete their portion of the project, \$53,200 total.

North Carolina State University is requesting \$26,240 in year 1 and year 2 to complete their portion of the project, \$52,480 total.

Indirect Cost Type

Indirect costs are calculated using the University of Georgia Experiment Station rate of 39% MTDC as negotiated with the U.S. Department of Health and Human Services Division of Cost Allocation.

Example 5b. Multiyear proposal to a federal agency where UGA is the prime (submitting) institution with subcontract(s).

University of Georgia Budget Justification

Personnel:

During year 1, PI Smith (Extension) is requesting 3 months of salary (**\$13,755 total**) and PI Jones (Extension and Education) is requesting 1.5 months of salary (**\$12,000 total**). Additional personnel funds include a post doc (**\$45,000**), graduate student (**\$21,000**) and a technician (**\$5504**, two months effort) to assist Dr. Toews, Dr. Acme, and Mr. Smith with all aspects of stink bug field collection, pathogen culturing in the lab, cotton cultivation in the greenhouse, optical sampling device damage detection, and smartphone app development in Georgia. A graduate student (**\$7000**, three months effort) will assist Dr. Jones with the economic analyses of yield and fiber quality data. Finally, a graduate student (**\$20,900**), and technician (**\$22,794**, 6 months effort) are requested to assist Dr. Anonymous with boll image acquisition, boll image processing, and boll image analyses.

During year 2, PI Smith (Extension) is requesting 3 months of salary (**\$13,755 total**) and PI Jones (Extension and Education) is requesting 1.5 months of salary (**\$12,000 total**). Additional personnel funds include a post doc (**\$45,000**), graduate student (**\$21,000**), undergraduate student (**\$10,000**), and a technician (**\$5504**, two months effort) to assist Dr. Toews, Dr. Acme, and Mr. Smith with all aspects of stink bug field collection, pathogen culturing in the lab, cotton cultivation in the greenhouse, optical sampling device damage detection, and smartphone app development in Georgia. A graduate student (**\$7000**, three months effort) will assist Dr. Jones with the economic analyses of yield and fiber quality data. Finally, a graduate student (**\$20,900**), and technician (**\$22,794**, 6 months effort) are requested to assist Dr. Anonymous with boll image acquisition, boll image processing, and boll image analyses.

During year 3, PI Smith (Extension) is requesting 3 months of salary (**\$13,755 total**) and PI Jones (Extension and Education) is requesting 1.5 months of salary (**\$12,000 total**). Additional personnel funds include a post doc (**\$45,000**), graduate student (**\$21,000**), undergraduate student (**\$10,000**), and a technician (**\$5504**, two months effort) to assist Dr. Toews, Dr. Acme, and Mr. Smith with all aspects of stink bug field collection, pathogen culturing in the lab, cotton cultivation in the greenhouse, optical sampling device damage detection, and smartphone app development in Georgia. A graduate student (**\$7000**, three months effort) will assist Dr. Jones with the economic analyses of yield and fiber quality data. Finally, a graduate student (**\$20,900**), and technician (**\$22,794**, 6 months effort) are requested to assist Dr. Anonymous with boll image acquisition, boll image processing, and boll image analyses.

During year 4, PI Smith(Extension) is requesting 3 months of salary (**\$13,755 total**) and PI Jones (Extension and Education) is requesting 1.5 months of salary (**\$12,000 total**). Additional personnel funds include a graduate student (**\$21,000**), two undergraduate students (**\$20,000**), and a technician (**\$5504**, two months effort) to assist Dr. Toews, Dr. Acme, and Mr. Smith with all aspects of stink bug field collection, pathogen culturing in the lab, cotton cultivation in the greenhouse, optical sampling device damage detection, and smartphone app development and maintenance. A graduate student (**\$7000**, three months effort) will assist Dr. Jones with the economic analyses of yield and fiber quality data. Finally, a graduate student (**\$20,900**), and technician (**\$22,794**, 6 months effort) are requested to assist Dr. Anonymous with boll image acquisition, boll image processing, and boll image analyses.

Fringe Benefits

In year 1, Fringe benefits for Mr. Smith (**\$5227**) are calculated at 38.0% (actual), Dr. Jones (**\$3093**) at 25.775% (actual), the post doc (**\$18,900**) at 42% (estimated), graduate students (**\$2445**) at 5% (estimated), and technicians (**\$12,545 total**: \$22,794 at 42% and \$5,504 at 54%) (estimated).

In year 2, Fringe benefits for Mr. Smith (**\$5227**) are calculated at 38.0% (actual), Dr. Jones (**\$3093**) at 25.775% (actual), the post doc (**\$18,900**) at 42% (estimated), graduate students (**\$2445**) at 5% (estimated), undergraduate student (\$0) at 0%, and technicians (**\$12,545 total**: \$22,794 at 42% and \$5,504 at 54%) (both estimated).

In year 3, Fringe benefits for Mr. Smith (**\$5227**) are calculated at 38.0% (actual), Dr. Jones (**\$3093**) at 25.775% (actual), the post doc (**\$18,900**) at 42% (estimated), graduate students (**\$2445**) at 5% (estimated), undergraduate student (\$0) at 0%, and technicians (**\$12,545 total**: \$22,794 at 42% and \$5,504 at 54%) (both estimated).

In year 4, Fringe benefits for Mr. Smith (**\$5227**) are calculated at 38.0% (actual), Dr. Jones (**\$3093**) at 25.775% (actual), graduate students (**\$2445**) at 5% (estimated), undergraduate students (\$0) at 0%, and technicians (**\$12,545 total**: \$22,794 at 42% and \$5,504 at 54%) (both estimated).

Equipment:

No durable equipment is being requested for this project.

Travel:

In year 1, **\$9,500** total is requested for domestic travel. Dr. Toews is requesting funding (\$500) for travel to the NIFA annual investigator meeting in Washington DC (roundtrip airfare \$250, two nights lodging at \$125 each). Funding is requested for nine individuals (Dr. Toews, Dr. Acme, Dr. Jones, Dr. Anonymous, Mr. Smith, the post doc, and the three graduate students) to travel to the Beltwide Conferences to present data and attend the annual project meeting (roundtrip airfare \$300, four nights lodging at \$125 each, and 4 days per diem at \$50 per day).

In year 2, **\$9,500** total is requested for domestic travel. Dr. Toews is requesting funding (\$500) for travel to a regional scientific meeting such as the southeaster branch of the ESA (roundtrip airfare \$250, two nights lodging at \$125 each). Funding is requested for nine individuals (Dr. Toews, Dr. Acme, Dr. Jones, Dr. Anonymous, Mr. Smith, the post doc, and the three graduate students) to travel to the Beltwide Conferences to present data and attend the annual project meeting (roundtrip airfare \$300, four nights lodging at \$125 each, and 4 days per diem at \$50 per day).

In year 3, **\$9,500** total is requested for domestic travel. Dr. Toews is requesting funding (\$500) for travel to a regional scientific meeting such as the southeaster branch of the ESA (roundtrip airfare \$250, two nights lodging at \$125 each). Funding is requested for nine individuals (Dr. Toews, Dr. Acme, Dr. Jones, Dr. Anonymous, Mr. Smith, the post doc, and the three graduate students) to travel to the Beltwide Conferences to present data and attend the annual project meeting (roundtrip airfare \$300, four nights lodging at \$125 each, and 4 days per diem at \$50 per day).

In year 4, **\$9,500** total is requested for domestic travel. Dr. Toews is requesting funding (\$500) for travel to a regional scientific meeting such as the southeaster branch of the ESA (roundtrip airfare \$250, two nights lodging at \$125 each). Funding is requested for nine individuals (Dr. Toews, Dr. Acme, Dr. Jones, Dr. Anonymous, Mr. Smith, a technician, and the three graduate students) to travel to the Beltwide

Conferences to present data and attend the annual project meeting (roundtrip airfare \$300, four nights lodging at \$125 each, and 4 days per diem at \$50 per day).

Other Direct Costs

Materials and Supplies:

In year 1, \$6,500 is requested by PI Toews (Research and Education) for pesticides, pots, soil, seed, fertilizer, marking flags, marking tape, wire, support poles, greenhouse upkeep, greenhouse watering system maintenance, greenhouse heating system maintenance, stink bug rearing media, antibiotics, rearing dishes, rearing containers, organically grown beans, organic sunflower seeds, organic peanuts, sweep nets, research vehicle operating costs and maintenance, pipette tips, microtubes, petri dishes, ethyl alcohol, culture media, cleaning agents, reagents, sweep nets, vials ziplock bags, flags, laboratory equipment operation and maintenance, collection drawers, backpacks, insect cages, imaging filters, two toner cartridges, and insect shipping costs. The toner cartridges will be used solely for printing insect data sheets for use in the field (~3000 sheets), hard copies of data (~250 sheets), and manuscript preparation and revision (~1000 sheets). **\$750** is requested by PI Acme (Extension) for vehicle operating costs, sweep nets, collection vials, and insect shipping costs. **\$4000** is requested by PI Smith (Extension) for an apple development computer (\$1500), Apple Developers subscription (\$100), iPhone (\$300), iPhone contract (\$900), Android phone (\$300) and Android contract (\$900). The developmental computer, subscription, iPhone, Android phone, and contracts will be used solely for this project to develop and field test the code necessary to produce the software application described in Objective 4. In order to develop software for use on Apple computers the subscription must be paid each year. **\$1750** is requested by PI Anonymous (Research and Education) for filters, vials, laboratory equipment operation and maintenance, LED illuminators, CCD cameras, microprocessors, sampling tubes, and sample shipping costs. All material and supply funds will be used to complete objectives 1 through 4.

In year 2, \$6,500 is requested by PI Toews (Research and Education) for pesticides, pots, soil, seed, fertilizer, marking flags, marking tape, wire, support poles, greenhouse upkeep, greenhouse watering system maintenance, greenhouse heating system maintenance, stink bug rearing media, antibiotics, rearing dishes, rearing containers, organically grown beans, organic sunflower seeds, organic peanuts, sweep nets, research vehicle operating costs and maintenance, pipette tips, microtubes, petri dishes, ethyl alcohol, culture media, cleaning agents, reagents, sweep nets, vials ziplock bags, flags, laboratory equipment operation and maintenance, collection drawers, backpacks, insect cages, imaging filters, two toner cartridges, and insect shipping costs. The toner cartridges will be used solely for printing insect data sheets for use in the field (~3000 sheets), hard copies of data (~250 sheets), and manuscript preparation and revision (~1000 sheets). **\$750** is requested by PI Acme (Extension) for vehicle operating costs, sweep nets, collection vials, and insect shipping costs. **\$4000** is requested by PI Smith (Extension) for a windows development computer (\$2100), Apple developer's subscription (\$100), iPhone contract (\$900) and Android contract (\$900). The developmental computer, subscription, and contracts will be used solely for this project to develop the code necessary to produce and field test the software application described in Objective 4. In order to develop software for use on Apple computers the subscription must be paid each year. **\$1750** is requested by PI Anonymous (Research and Education) for filters, vials, laboratory equipment operation and maintenance, LED illuminators, CCD cameras,

microprocessors, sampling tubes, and sample shipping costs. All material and supply funds will be used to complete objectives 1 through 4.

In year 3, \$6,500 is requested by PI Toews (Research and Education) for pesticides, pots, soil, seed, fertilizer, marking flags, marking tape, wire, support poles, greenhouse upkeep, greenhouse watering system maintenance, greenhouse heating system maintenance, stink bug rearing media, antibiotics, rearing dishes, rearing containers, organically grown beans, organic sunflower seeds, organic peanuts, sweep nets, research vehicle operating costs and maintenance, pipette tips, microtubes, petri dishes, ethyl alcohol, culture media, cleaning agents, reagents, sweep nets, vials ziplock bags, flags, laboratory equipment operation and maintenance, collection drawers, backpacks, insect cages, imaging filters, two toner cartridges, and insect shipping costs. The toner cartridges will be used solely for printing insect data sheets for use in the field (~3000 sheets), hard copies of data (~250 sheets), and manuscript preparation and revision (~1000 sheets). **\$750** is requested by PI Acme (Extension) for vehicle operating costs, sweep nets, collection vials, and insect shipping costs. **\$4000** is requested by PI Smith (Extension) for an apple development computer (\$1500), Apple Developers subscription (\$100), iPhone (\$300), iPhone contract (\$900), Android phone (\$300) and Android contract (\$900). The developmental computer, subscription, iPhone, Android phone, and contracts will be used solely for this project to develop and field test the code necessary to produce the software application described in Objective 4. In order to develop software for use on Apple computers the subscription must be paid each year. **\$1750** is requested by PI Anonymous (Research and Education) for filters, vials, laboratory equipment operation and maintenance, LED illuminators, CCD cameras, microprocessors, sampling tubes, and sample shipping costs. All material and supply funds will be used to complete objectives 1 through 4.

In year 4, \$6,500 is requested by PI Toews (Research and Education) for pesticides, pots, soil, seed, fertilizer, marking flags, marking tape, wire, support poles, greenhouse upkeep, greenhouse watering system maintenance, greenhouse heating system maintenance, stink bug rearing media, antibiotics, rearing dishes, rearing containers, organically grown beans, organic sunflower seeds, organic peanuts, sweep nets, research vehicle operating costs and maintenance, pipette tips, microtubes, petri dishes, ethyl alcohol, culture media, cleaning agents, reagents, sweep nets, vials ziplock bags, flags, laboratory equipment operation and maintenance, collection drawers, backpacks, insect cages, imaging filters, two toner cartridges, and insect shipping costs. The toner cartridges will be used solely for printing insect data sheets for use in the field (~3000 sheets), hard copies of data (~250 sheets), and manuscript preparation and revision (~1000 sheets). **\$750** is requested by PI Acme (Extension) for vehicle operating costs, sweep nets, collection vials, and insect shipping costs. **\$4000** is requested by PI Smith (Extension) for an Apple Developers subscription (\$100), iPhone contract (\$900), Android contract (\$900), iPad (\$800), Android tablet (\$800), iPod touch (\$250), and Kindle Fire (\$250). The developmental computer, subscription, iPhone and Android contracts, iPad, Android Tablet, iPod Touch, and Kindle Fire and contracts will be used solely for this project to develop the code necessary to product the app described in Objective 4. In order to develop software for use on Apple computers the subscription must be paid each year. The iPad, Android tablets, iPod Touch and Kindle fire will be purchased to test the capability of the software devices on larger devicdes and those not connected to a cellular network. **\$1750** is requested by PI Anonymous (Research and Education) for filters, vials, laboratory equipment operation

and maintenance, LED illuminators, CCD cameras, microprocessors, sampling tubes, and sample shipping costs. All material and supply funds will be used to complete objectives 1 through 4.

Publications

In year 1, **\$1500** is requested for publication of two peer reviewed research publications. Journal articles (5 pages by \$150 per page will cost about \$750 per manuscript).

In year 2, **\$1500** is requested for publication of two peer reviewed research publications. Journal articles (5 pages by \$150 per page will cost about \$750 per manuscript).

In year 2, **\$1500** is requested for publication of two peer reviewed research publications. Journal articles (5 pages by \$150 per page will cost about \$750 per manuscript).

In year 2, **\$1500** is requested for publication of two peer reviewed research publications. Journal articles (5 pages by \$150 per page will cost about \$750 per manuscript).

Subawards

Clemson University is requesting **\$491,141** to complete their portion of the project.

North Carolina State University is requesting **\$67,152** to complete their portion of the project.

USDA ARS SPARC is requesting **\$799,326** to complete their portion of the project.