From:	Bill Rooney
To:	"Brant Bullard"
Cc:	"Karen L Prihoda"
Subject:	FW: INTSORMIL BUDGET AWARD 2010
Date:	Wednesday, August 19, 2009 11:46:00 AM
Attachments:	2009_10 BUDGET GUIDELINES.doc 2009-11 Budget Template.xls TAM101 Years 4 and 5 Budget.xls TAM101 Yr 4 and 5 Budget Objs.xls TAM101 POW Year 4 and 5.doc

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Brant:

The work plan and budgets for Years 4 and 5 of my INTSORMIL grant are due in the management entities offices by Friday, August 21.

So, first, I apologize in getting this to you folks on short notice, but that is the situation. I was able to use previous budget work ups from the RF, so hopefully my calculations/adjustments are correct but they should be checked. We are required to submit one work plan and a separate budget for each of Year 4 and 5.

My budget for TAM101 is [redacted] year for each year (see below and disregard the regional budget - that stays in Nebraska). Attached you will find the guidelines for submission that came from the management entity.

Could move the budget through the RF and make sure the numbers match and are correct? I don't remember if RF sent this forward or if I did that last year, but I'll do it either way, depending on your preferences.

Thanks for you help on this again.

regards,

bill

Dr. William L. Rooney
Professor, Sorghum Breeding and Genetics
Chair, Plant Release Committee
Texas A&M University
College Station, Texas 77843-2474
979 845 2151

-----Original Message-----
From: Joan Frederick [mailto:jfrederi@unlnotes.unl.edu]
Sent: Wednesday, July 22, 2009 10:07 AM
To: wlr@tamu.edu
Cc: jyohe1@unl.edu
Subject: INTSORMIL BUDGET AWARD 2010

July 22, 2009

To: William Rooney

Project: TAM 101

Award: [redacted] each year (2009-2010 and 2010-2011)

Project: Central America Regional Program
Award: [redacted] each year (2009-2010 and 2010-2011)

The INTSORMIL ME was given additional time to submit the Annual Workplans for U.S. Projects and Regional Programs for FY 2010 and FY 2011 (October 1, 2009 – September 2011). The funds allocated for the U.S. and Regional programs have received an increase.

The due date is now **Friday, August 21, 2009**. Please submit your documents (workplan and budget) to Joan Frederick (jfrederick1@unl.edu). The forms are also on the INTSORMIL website (http://intsormil.org). If you have any questions on the attached documents, please let us know.

Best regards,
Joan Frederick

(See attached file: 2009_10 BUDGET GUIDELINES.doc)(See attached file: Work Plans 2009_2011.doc)

(See attached file: 2009-11 Budget Template.xls) (See attached file: 2009-11 Budget Objectives.xls)

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Joan Frederick
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INTSORMIL Budget Guidelines

Budget Template
A separate budget should be developed for each fiscal year

The following definitions should be helpful in completing the attached budget forms:

Collaborating Countries: List the country(ies) you work "in", "for", or "on behalf of" in the column heading spaces provided on the form.

Collaborating Country expenditures are defined as funds expended exclusively "in", "for", or "on behalf of" collaborating country, i.e., LDC graduate student stipend, computer for an LDC, salaries for staff or labor working in the LDC, research expenses, etc.

Domestic expenditures are defined as funds "in" the U.S. "for" general sorghum and/or millet improvement, i.e., a computer for a U.S. lab, a U.S. graduate student stipend, technicians, research supplies, etc. working in the U.S.

Academic Scientist Staff defined as U.S. university faculty in permanent or temporary positions working in the U.S.

Other Salaries: Clerical or any hourly labor, i.e., work-study students or field workers

Supplies: paper, tags, bags, computers, etc. (under $5,000)

Equipment: vehicle, CO_2 analyzer, etc. (**any one item over $5,000**)

Travel: All travel, which is done exclusively in the U.S., will be listed under U.S.
International: for example travel to Mali and back, airfare will be listed under Mali; travel to Mali and
Niger on the same trip, then one-half of your airfare will be listed under Mali, and the other one-half listed under Niger.

Budget Objectives: Indicate the percentage of your budget allocated to the seven objectives of the INTSORMIL CRSP Budget Objectives as appropriate to your project

In addition to the budget breakdown by expense, item, and country, **please gives a good estimate, in percent, of funds spent on sorghum, millet or other grains, s requested on the budget form.**

<u>Pass thru funds</u>
If there are funds you want to have held at the Management Entity for direct transfer to one of our collaborating sites, you should list it in a separate column and mark it as "pass through funds" and list which site. These funds will then be held from your budget and passed directly to the site from the Management Entity.

For each pass thru list amount, organization, and scientist receiving funds and a short (paragraph) narrative work plan.

Matching Requirements

The Grantee will provide a minimum of 25% matching per CRSP guidelines. The following costs in a CRSP effort are excluded from the matching requirements: *a) "Funds committed under the terms of a formal CRSP host country sub-agreement, including funds for facilities, host country personnel services, and equipment and commodity purchases by a participating U.S. institution for use by a host country entity or by the U.S. institution in a host country. Funds for these costs may be held apart in research by the participating U.S. institution until expended directly to a vendor for the goods and services described. Also, the funds may be passed to the host country for its purchases and use in accordance with the agreement. b) Costs for training of participan6ts as defined in ADS 253. Provisions for such training normally would be made in the formal sub-agreement. c) Hospital and medical costs of U.S. personnel of the CRSP while serving overseas.*

All USAID financed costs borne by USAID that are associated with the performance of employees of participating U.S. institutions, working in the U.S. and in the developing countries on both short and long-term assignments, where federally funded under the CRSP, are program costs of the CRSP and must be matched."

Sorghum, Millet and Other Grains CRSP Research Project Budget
September 30, 20__ to September 29, 20__

Project Title:

Principal Investigator: **Project No.**

Pass Through Funds Should be Indicated							
		List Host Countries and Funds Spent on/or in Behalf of Each Country					
Budget Line Items	**U.S.**						**Totals**
I. Personnel							
1. Academic Staff Salaries							
2. Academic Staff Fringe Benefits							
3. Post-Doc/Technical Salaries							
4. Other Salaries, Clerical/hourly							
5. Fringe Benefits on #3 and #4							
6. Graduate Stipend and Fringe							
II. Operating Expenses							
7. Supplies							
8. Equipment							
9. Travel							
10. Other Direct Operating Expenses							
Sub-totals							
III. Institutional Overhead (%)							
IV. Totals							
V. Institutional Match and Non-Matching Funds							

Total Crop Allocations should equal 100%

Sorghum %	Millet %	Other Grains %

IEHA Countries: Ghana, Kenya, Mali, Mozambique, Niger, Senegal, Uganda, and Zambia

TAM101: BREEDING SORGHUM FOR IMPROVED GRAIN, FORAGE QUALITY, AND YIELD FOR CENTRAL AMERICA

PRINCIPAL INVESTIGATOR

Dr. William L. Rooney, Plant Breeding and Genetics, Texas A&M University, Department of Soil and Crop Sciences, College Station, TX, 77843-2474, USA.

COLLABORATORS

Ing. Reneé Clará Valencia, Plant Breeder, Centro Nacional, de Technologia, Agricola (CENTA) de El Salvador, San Salvador, EL SALVADOR.

Ing. Rafael Obando Solis, Agronomist, CNIA/INTA, Apdo 1247, Managua, Nicaragua

Dr. Javier Bueso-Ucles, Associate Professor, Escuela Agricola Panamericano, Zamarano, Honduras

Dr. Lloyd W. Rooney, Food Science and Technology, Texas A&M University, Department of Soil and Crop Sciences, College Station, TX 77843-2474, USA.

Dr. Gary C. Peterson, Plant Breeding and Genetics, Texas A&M Research & Extension Center, Route 3, Box 219, Lubbock, Texas 79401-9757, USA.

Dr. Gary N. Odvody, Sorghum and Corn Plant Pathology, Texas A&M Research & Extension Center, Corpus Christi, Texas, USA.

Dr. John E. Mullet, Molecular Biology, Department of Biochemistry, Department of Biochemistry & Biophysics, Texas A&M University, College Station, Texas 77843-2128, USA.

Dr. Patricia G. Klein, Molecular Geneticist, Dep. of Horticultural Sciences, Texas A&M University, College Station, Texas 77843

Dr. Jurg Blumenthal, Sorghum Cropping System Specialist, Texas A&M University, College Station, Tx 77845.

Dr. Dirk B. Hays, Texas A&M University, Department of Soil and Crop Sciences, College Station, TX, 77843-2474, USA

Dr. Tom Isakeit, Dep of Plant Pathology, Texas A&M University, College Station, Texas 77843

Dr. Medson Chisi, Sorghum Breeding, Private Bag 7, Mt. Makulu Research Station, Chilanga, ZAMBIA.

Dr. Joe D. Hancock, Department of Animal Science, Kansas State University, Maniatan, KS

Executive Summary

Sorghum is an important feed grain, food grain and forage in Central America. In this region it is produced by a range of groups, from subsistence farmers who consider sorghum as a food security crop to commercial producers, who consider it a cash grain or forage crop. There is substantial need to improve the yield and quality of this germplasm and to incorporate tolerance traits to minimize losses due to drought, disease and insect pests. The overall goal of this proposal is to enhance the genetic yield and quality potential of sorghum genotypes adapted to Central America for use as a feed grain, food grain and forage crop. To meet this goal, previously established linkages with collaborators in the Central American region will be used (i) to coordinate in-country research studies and breeding evaluations, (ii) to identify quality students for training through involvement in ongoing projects at Texas A&M University, and (iii) to enhance technology transfer for sorghum in the Central American region. The specific objectives are: (1) to develop high-yielding, locally-adapted sorghum varieties and hybrids with improved grain and/or forage quality and stress resistance for both Maicillo Criollos-type cultivars and photoperiod insensitive sorghums, (2) to identify disease resistance genes for important diseases in Central America and utilize these sources in breeding, (3) to identify genes related to grain quality and utilize them in breeding, and (4) to provide technology transfer to promote the use of improved sorghums in Central America. To accomplish these objectives, germplasm will be developed at Texas A&M and by collaborators in El Salvador and evaluated across the region to document improvements. Genetic characterization results will be applied to the improvement process when feasible. The success of this project will be measured by the productivity of cultivars and hybrids in Central America that were developed in this project. While the efforts of this project are targeted to Central America, the technology and personnel developed in this project will be useful to sorghum programs around the world. This project will address directly or indirectly all seven major goals of the Sorghum, Millet and Other Grains CRSP.

Introduction and Justification

Throughout Central America, (defined as the countries of Guatamala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica and Panama), sorghum (*Sorghum bicolor* L. Moench)was grown and harvested for grain on approximately 250,000 hectares in 2005 (FAO, 2006). The majority of this production is located in the countries of El Salvador, Nicaragua, Honduras and Guatamala. The crop is typically grown in the dry season due to its enhanced drought tolerance and ability to produce a crop under limited water availability. Average yields in the region vary dramatically and are dependent on the production systems, environment and types of sorghums that are being produced. Depending on the situation, the crop is grown as a feed grain, animal forage and in many situations as a food grain when supplies of corn are limited.

Within the region, there are two distinct sorghum production systems. The first is a traditional hillside sorghum production system that uses landrace and/or improved sorghum cultivars known as Maicillos Criollos. These sorghums are a very distinct and unique group because they are very photoperiod sensitive, meaning that they require short daylengths to induce reproductive growth. In fact, Maicillos require even shorter daylengths to initiate flowering than most photoperiod sensitive sorghum from other regions of the world (Rosenow, 1988). They are primarily grown in intercropping systems with maize on small, steeply sloping farms where the maize matures before the Maicillos begin to flower. Because they are drought tolerant, they are grown primarily as food security crop where the grain is used extensively primarily to produce tortillas. The forage and excess grain produced by these crops are valued as animal feed. Traditional landrace Maicillos Criollos varieties are typically low yielding with relatively low grain quality. Previous research has resulted in the release and distribution of several improved Maicillos Criollos cultivars with higher yield potential and better grain quality (Rosenow, 1988). In addition to Maicillos Criollos, hillside production systems also utilize earlier maturing sorghum (ie, photoperiod insensitive) for food and forage. Significant research has also been devoted to their improvement, resulting in the release release of cultivars such as Sureno and Tortillero that are now commonly grown throughout the region (Meckenstock et al., 1993). These cultivars have been adopted and used in the region as a food grain on small farms as well as a dual purpose crop (grain, forage) in mid-size commercial farms.

In addition to small farm production, sorghum is also grown in significant quantities on commercial farms in the Central American region. While some of these producers utilize cultivars for this production, most have adopted hybrids and are growing the crop as a feed grain for use in poultry, livestock and dairy production. More recently, there is significant growth of the crop in the region for grazing, hay and silage. This interest in sorghum forage has been increasing due to the increased dairy and beef production in the region, combined with the inherent drought tolerance of the crop, especially in the second, drier cropping season. In both grain and forage, the hybrids that Central American producers use are usually sold by commercial seed companies. In most cases, research and development for sorghum improvement in the region is relatively minimal. Hybrids grown in this region usually rely on improved germplasm from national programs as well as U.S. based sorghum improvement programs.

While the two production regions differ for types of germplasm, the constraints to productivity and profitability are similar. First, there is a continual need to enhance yield of both grain and biomass. The Maicillos Criollos cultivars have low but stable yield potential. Small farmers place a high value on stable yields as they grown to provide food security. Thus, they will adopt higher yield varieties only if they provide stability of yield as well. As feed grain demand continues to increase, yield increases are also needed in commercial hybrid production as well to make their production more economically profitable. Sufficient genetic variation is present in both germplasm pools to enhance yield potential, provided that effective evaluation, screening and selection can be completed in the region (Santos and Clara, 1988).

Improvement in grain and forage quality are also continually in demand. Most of the grain sorghum grown in the region is acceptable as a feed grain, but would not be acceptable as a food grain. The changes needed to make an acceptable food grain (plant color and grain color) are relatively simple and highly heritable traits that are easily manipulated. If adopted, these changes will facilitate to opportunity to partially substitute domestically produced sorghum flour for more expensive imported wheat flour (INTSORMIL report #6, 2006, www.intsormil.org). However, food quality sorghum must possess resistance to grain mold and weathering to protect the quality of the grain prior to harvest. For forage, there has been relatively little improvement in the forage quality of sorghum grown in Central America. The development and adoption of brown midrib forage sorghums in the U.S. indicate that high quality forage sorghums can be produced (Oliver et al., 2005). The challenge is to introduce these characteristics into forage sorghum adapted to the Central American region.

As improvements in yield and quality are made, these must be protected from biotic stresses that are commonly present in the region. Biotic stresses also pose a significant threat to yield and quality in sorghum production. Insect damage due to an early season lepidopterous pest complex known as the langosta by Honduran farmers is major problem for both maize and sorghum producers (Pitre, 1988). For the past twenty years, sorghum downy mildew (SDM) is a significant disease in Maicillos Criollos production. In Central America, the predominant SDM pathotype is P5 and this pathotype is known to cause significant yield reductions in areas of the region where environmental conditions are conducive to disease development (Frederiksen, 1988). While chemical control is a possibility, the most logical and reliable control mechanism is the incorporation of genetic resistance. Another disease of importance is anthracnose (caused by *Colletotrichum graminicola*), a fungal pathogen that is capable of infecting all above ground tissues of the plant that is endemic throughout the region. Because it can infect all above ground parts of the plant, it can cause significant reductions in both forage and grain yield and quality. Again, genetic resistance provides the only effective mean of managing this disease. Finally, grain mold (caused by a complex of fungi) is a common problem throughout the region and it reduces the quality of the grain as both a feed and food grain. In all of these abiotic and biotic stresses, sorghum germplasm has sufficient diversity to enable breeding programs to identify and select for tolerance and/or resistance to the specific stress or pathogen.

As with biotic stresses, abiotic stresses will also reduce the yield and quality of sorghum in the region. Drought stress likely has the greatest effect on yield potential, and given where and how sorghum is typically produced, drought tolerance is always an important trait for sorghum (Boyer, 1982). The impact of drought on the evolution of sorghum is obvious; the plant has evolved many different mechanisms to manage water stress, resulting in a crop that is highly water use efficient compared to other cereal grains (Rosenow and Clark, 1981). Given this natural selection pressure, there is significant variation among sorghum genotypes for a wide array of different drought resistance mechanisms. Over the past twenty years, the genetic control of some of these drought tolerance traits have been dissected and we are now on the verge of being able to use marker-assisted breeding and even transformation to move these resistance genes within and across species (Mullet et al., personal communication). All of these technologies should be used to further improve this important trait.

Objectives and Implementation

Given the goals of the Sorghum, Millet and Other Grains CRSP and the needs of the Central American region, the overall goal of this proposal is to enhance the genetic yield and quality potential of sorghum genotypes adapted to Central America for use as a feed grain, food grain and forage crop. To meet this goal, we will use previously established linkages with collaborators in the Central American region (i) to coordinate in-country research studies and breeding evaluations, (ii) to identify quality students for training through involvement in ongoing projects at Texas A&M University, and (iii) to enhance technology transfer for sorghum in the Central American region.

The objectives, the location of the research, and the collaborators include:

1. DEVELOP HIGH-YIELDING, LOCALLY-ADAPTED SORGHUM VARIETIES AND HYBRIDS WITH IMPROVED GRAIN AND/OR FORAGE QUALITY, DROUGHT TOLERANCE, AND DISEASE RESISTANCE USING BOTH CONVENTIONAL BREEDING TECHNIQUES AND MARKER-ASSISTED SELECTION TECHNOLOGY. Populations pertinent to this objective will be created and then distributed segregating populations to the international collaborators (Clara, Obando) for selection and cultivar development.
2. IDENTIFY AND CHARACTERIZE GENES RELATED TO DISEASE RESISTANCE IN SORGHUM WITH SPECIFIC EMPHASIS IN DOWNY MILDEW, ANTHRACNOSE AND GRAIN MOLD. UTILIZE THESE SOURCES OF RESISTANCE IN BREEDING IMPROVED CULTIVARS AND HYBRIDS FOR CENTRAL AMERICA. Our program has screened numerous accessions and identified specific sources of resistance to anthracnose, downy mildew and grain mold. These lines and populations derived from them will be evaluated in domestic and Central American sites to determine which sources will provide the most stable resistance. Populations of these will be evaluated to determine heritability and to transfer the resistance to locally adapted sorghum. Phenotypic evaluation of these lines and populations will occur in the appropriate domestic (Texas with C. Magill, G. Odvody and T. Isakeit) and international locations (Clara in Central America and Chisi in Southern Africa).
3. IDENTIFY AND MAP GENES RELATED TO GRAIN QUALITY SUCH PROTEIN DIGESTABILITY, NUTRACEUTICAL POTENTIAL AND GRAIN QUALITY PARAMETERS *PER SE*. Variants that possess unique grain traits such as increased protein digestibility and enhanced antioxidant characters have been identified and characterized in our program. The purpose of this project is to assess the feasibility of producing cultivars that possess these characteristics. In collaboration with the TAMU grain quality program (L. Rooney, D. Hays), we are assessing the feasibility of combining both grain mold resistance and enhanced digestibility. Phenotypic evaluation of this material will occur in Texas and international locations (Central America and Southern Africa) in cooperation with the domestic (Peterson) and international (Clara, Obando, Chisi) collaborators.
4. PROVIDE TECHNOLOGY TRANSFER AND TECHNICAL ASSISTANCE IN PROMOTING THE USE OF IMPROVED SORGHUMS AS A FEED GRAIN, FOOD GRAIN AND A FORAGE CROP IN CENTRAL AMERICA. The purpose of this objective is to

transfer the technology and knowledge needed to effectively produce and utilize the forage and/or grain produced from the improved sorghum cultivars (Maicillos Criollos, lines and hybrids). As appropriate, our program will coordinate these workshops with collaborating scientists in the specific area of expertise, such as animal feeding (J. Hancock) grain quality and utilization for human food (L Rooney), and agronomy and forage quality (J. Blumenthal). The technical assistance efforts will focus on industry and academic leaders in El Salvador and Nicaragua.

These objectives merge together to provide a project that will have both short-term and long-term results. Ultimately, the success of this program will be measured by the productivity of cultivars and hybrids developed in this project and how effectively they are utilized throughout Central America. For objectives 1 through 4, training of students from cooperating countries will be an integral part of the projects and potential students will be identified based on recommendations from researchers in the region and the in-country interaction of the PI with potential candidates. Finally, objective 5 is crucial because if the first four objectives are successful, additional sorghum (both forage and grain) with improved quality will be produced. It is imperative that there be the infrastructure (both technological and scientific) to utilize this grain. The efforts of this project are targeted to Central America, but the technology, basic knowledge, and personnel developed in this project will also be useful to sorghum and millet improvement programs around the world. Because of these factors and their interrelationships, this project will address directly or indirectly all seven major goals of the Sorghum, Millet and Other Grains CRSP.

Approach

In year 4, research trials will be planted in Texas and in cooperation with collaborators in El Salvador and Nicaragua. Other locations will be used as appropriate. Agronomic and Quality research projects in El Salvador and Nicaragua will be complemented by the addition of germplasm developed from this project. For disease resistance and quality components, germplasm is being selected in Texas in Year 4; plans are to test this material in the region in Years 4 and 5. In collaboration with Rene Clara and Rafael Obando, we will used demonstration plots and field days to promote the varieties and hybrids (both grain and forage) released by El Salvadoran and Nicaraguan national programs (with funding from INTSORMIL). In collaboration with Vilma Ruth Calderon, we will utilize improved quality grain sorghums (including varieties, macios, and hybrids) as a substitute for some wheat flour in baked goods.

Collaboration between sorghum, millet and other grain PIs, scientists in the target area as well as existing collaborations with U.S. scientists are critical to the success of this project. The U.S. collaborators described in this proposal will provide technical assistance for addressing questions related to cereal chemistry, plant pathology, and molecular biology. These scientists represent some of the world's leading sorghum experts in their respective research fields. The international collaborators identified in this proposal have been carefully selected as they are the experts in sorghum in Central America. Our program has over ten years of collaboration history with these scientists. Based on this history, we fully expect to be able to complete the described research in an efficient and effective manner. In addition, these international linkages will ensure rapid deployment of improved varieties and hybrids in these regions.

Benchmarks and Indicators, Throughputs

Objectives	**Targets**	**Benchmarks and Indicators**	**Throughputs**	***Milestones***
1. Supply chain/market development	- Increased yields and incomes - Increased grain sorghum quality -Increased use of sorghum as a feed source	- Increased farmer incomes - Increase in production area - Elimination of tannin in feed–type cultivars	- Farmer incomes increased by 30% - Farmer incomes increased by 20% - 200% increase in markets for sorghum as a feed source	*- 15% increase by Yr 4 and 30% by Yr 5* *- 5% increase by Yr 4 and 20% by Yr 5* *- 60% increase by Yr 4 and 200% by Yr 5*
2. Nutrition, health and grain quality	-Higher grain quality cultivars -New cultivar acceptance - Increased nutrition of food and feed products	- High digestibility cultivars selected - Widespread adoption of cultivars	- 4 high grain quality varieties developed - 30% of farmers accept new cultivars	*- 4 varieties released by Yr 4 and 10 by Yr 5* *- 20% of farmers accept new cultivars by Yr 4 and 60% by Yr 5* *- 10% decrease by Yr 4 and 25% by Yr 5*

3. ICSM	- Increased and stable grain yields - Improved crop, soil and water management	- Integration of ICSM components into packages	- 30% yield increase due to ICSM adoption - 70% of farmers using ICSM practices	*- 10% increase by Yr 4 and 30% by Yr 5* *- 25% using ICSM practices by Yr 4 and 70% by Yr 5*
4. IPM	-Increased grain and forage yield and quality - Efficient pest management tactics	- Tolerance or resistance to grain insects, pathogens - IPM packages developed	- 20% decrease in pest damaged grain and forage - 2 lines/hybrids or varieties with disease resistance released	*- 5% decrease by Yr 4 and 20% by Yr 5* *- 1 variety released by Yr 3 and 2 released by Yr 5* *- 20% decrease by Yr 4 and 50% by Yr 5*
5. Genetic enhancement	-Stable yielding genotypes -More efficient water use by genotypes	- Genotypes with less variation in yields - Decrease in drought damage	- 3 stable yielding genotypes released - 5 drought tolerant genotypes released	*- 2 genotypes released by Yr 4 and 3 by Yr 5* *- 3 genotypes released by Yr 4 and 2 by Yr 5*
6. Genetic resources and biodiversity	- Germplasm with unique genes for valuable traits.	- Screening and selection of sorghum to identify unique variants. - Decrease in rate of loss of biodiversity sensitive areas	- 10 new lines with biotic or abiotic stress resistance	*- Completed by Yr 5*
7. Partnerships and networking	*- Increased joint programs with partners*	*- Networks established involving all stakeholders (private industry, NGOs, farmers, international agencies, CG centers, research and technology transfer agencies)*	*- High research throughputs and high level of technology transfer activity*	*- 20% increase in grain production and 50% of farmers using best management practices by Yr 5*

Description of Proposed Training

Capacity Building Programs	Benchmarks
Degree Education	1 M.S. Graduate by 2010 1 Ph.D. Graduate by 2010, each partially funded by INTSORMIL
Visiting Scientists and Post-Doctoral Fellows	2 Visiting Scientist 1 PostDoctoral Scientist
Short-Term Training	15 - Number of Participants in Workshops, Seminars, Conferences 30 - Number of Participants Who Adopt the New Technologies and Methodologies 10 - Number of Participants Who Transfer Information Learned to Other Professionals, Scientists, and Entrepreneurs
Internet – Distance Education	0 - Functioning Interactive Internet Site 0 - Number of Participants in Distance-education Programs

Texas A&M Research Foundation
RF# 0801751

Project Dates: 09/30/2010 - 09/29/2011

DIRECT COSTS	US	on behalf El Salvador	on behalf Nicaragua	TOTAL
Salaries				
William Rooney PI 11% Time, 12 Months	0	0	0	0
To be named Student Workers Hourly as needed	[redacted]	0	0	[redacted]
To Be Named Graduate Student 50% Time, 9 Months	0	[redacted]	[redacted]	[redacted]
Subtotal	[redacted]	[redacted]	[redacted]	[redacted]
Total Salaries and Wages	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total Personnel Costs	[redacted]	[redacted]	[redacted]	[redacted]
Materials & Supplies	[redacted]	[redacted]	[redacted]	[redacted]
Travel	[redacted]	[redacted]	[redacted]	[redacted]
Modified Total Direct Costs (MTDC)	[redacted]	[redacted]	[redacted]	[redacted]
Tuition	[redacted]	[redacted]	[redacted]	[redacted]
Total Direct Costs	[redacted]	[redacted]	[redacted]	[redacted]
INDIRECT COSTS				
Indirect Costs MTDC *45.5%	[redacted]	[redacted]	[redacted]	[redacted]
TOTAL PROJECT COSTS	[redacted]	[redacted]	[redacted]	[redacted]

Texas A&M Research Foundation
RF# 0801751

Project Dates: 09/30/2009 - 09/29/2010

DIRECT COSTS	US	on behalf El Salvador	on behalf Nicaragua	TOTAL
Salaries				
William Rooney PI 11% Time, 12 Months	0	0	0	0
To be named Student Workers Hourly as needed	[redacted]	0	0	[redacted]
To Be Named Graduate Student 50% Time, 9 Months	0	[redacted]	[redacted]	[redacted]
Subtotal	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total Personnel Costs	[redacted]	[redacted]	[redacted]	[redacted]
Materials & Supplies	[redacted]	[redacted]	[redacted]	[redacted]
Travel	[redacted]	[redacted]	[redacted]	[redacted]
Modified Total Direct Costs (MTDC)	[redacted]	[redacted]	[redacted]	[redacted]
Tuition	[redacted]	[redacted]	[redacted]	[redacted]
Total Direct Costs	[redacted]	[redacted]	[redacted]	[redacted]
INDIRECT COSTS				
Indirect Costs MTDC *45.5%	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Medical & Fringe Calculations

Monthly	FTE Salary	Mon. Ins	Actual %	Months	Name	Fringe Benefi		
						Year 1	Year 2	Year 3
0.00	$0	0	0%	0	Rooney	0	0	0
0.00	$0	0	0%	0	Grad Stude	[redacted]	0	0
0.00	$0	364	50%	9	Grad Stude	0	[redacted]	[redacted]

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-

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-

ts
Total
0
[redacted]
[redacted]

INTSORMIL CRSP Budget Objectives: Page 2

Percent of Project Effort %		Objectives of the INTSORMIL CRSP Program
15	1	Facilitate the growth of the rapidly expanding markets for sorghum and millet
20	2	Improve the food and nutritional quality of sorghum and pearl millet to enhance marketability and consumer health.
20	3	Increae the stability and yield level of sorghum and pearl millet through crop, soil and water management while maintaining or improving the natural resources of soil (land) and water
10	4	Develop and disseminate information on management of biotic stresses in an integrated system to increase grain yield and quality
20	5	Enhance the stability and yield of sorghum and pearl millet through use of genetic technologies
5	6	Enhance global sorghum and pearl millet genetic resources and the conservation of bio-diversity
10	7	Develop effective partnerships with national and international agencies engaged in the improvement of sorghum and pearl millet production and the betterment of people dependent on these crops for their livelihoods.
100%		