BUDGET NARRATIVE

a. PERSONNEL (All rates are in line with university guidelines and local rates, to ensure project is cost effective.

Request – Year 1 $27,750 Year 2 $43,350 Year 3 $43,350 Total $114,450

Extension Associate/Assistant: A 0.75 FTE extension associate/assistant will oversee the technical aspects of this project (i.e. plot establishment and maintenance, sample collections, field measurements, data entry, and harvest). The salary for the extension associate/assistant will be $27,750/year, $83,250 for 3 years.

Graduate Research Assistant: In years 2 and 3, request includes a 12-month (per year) stipend for $15,600 per year for a GRA. In year 2, the GRA will conduct literature reviews, collect other data for the profitability and risk analyses, develop the database for experiment demonstration data and other data, and develop the modeling framework for the profitability and risk analyses. In year 3, the GRA will conduct the profitability and risk analysis using 3 years of experiment data. The total cost for the stipends is $31,200.

Match – Year 1 $47,797 Year 2 $58,388 Year 3 $60,140 Total $166,325

Match for this project includes a portion of PIs' salaries, for the time they will spend on the project. A 3% increase is included in years 2 and 3. The percent contributed by each PI is summarized below:

- Professor: contribute 30% of his time to this project each year to oversee project activity and be responsible for experimental design, trial establishment, data collection, conducting demonstration activities, writing summary reports and extension publications, and delivering extension talks in Tennessee.
- Associate Professor: contribute 10% of his time to this project each year to conduct Extension and outreach activities in Tennessee.
- Associate Professor: contributes 10% of his time to this project each year to conduct Extension and outreach activities in Tennessee.
- Associate Professor: contributes 12.5% of his time to the project in year 1 and 25% of his time to the project in years 2 and 3, to supervise the GRA, participate in planning of the third year experiment demonstrations, and conduct analyses using the experiment demonstration data.

b. FRINGE BENEFITS:

Request – Year 1 $8,325 Year 2 $10,701 Year 3 $10,701 Total $29,727

Extension Associate/Assistant: The benefits are calculated at 30%, in line with university rates, which is $8,325/year and $24,975 for 3 years.

MS Graduate Research Assistant: In year 2 and year 3, benefits for the GRA are calculated at $2,376 per year ($94/month for health insurance and 8% of the stipend amount)

Match – Year 1 $15,189 Year 2 $19,161 Year 3 $19,736 Total $54,086

Benefits for PIs providing match are based on the salaries included in personnel, above, times the individuals' current benefit rates. These range from 26.1% – 38.4%.

c. TRAVEL:

Request – Year 1 $2,983 Year 2 $2,983 Year 3 $2,983 Total $8,949

Travels to the demonstration sites: 10 round trips to the each of the three demonstration sites (64 miles each) each year, the total mileage will be 64*10*3=1,920 miles for the three sites per year.

Each mile costs $0.46 according to current regulations. Therefore, the cost will be 1,920*0.46=$883 each year, and $2,649 for 3 years.
Travel to extension and industry meetings, etc. will be $2,100/year (to cover lodging, air/ground travel, and meals and per diem for 4 trips/year by 4 PIs) and $6,300 for three years.

e. SUPPLIES

Request – Year 1 $12,370 Year 2 $10,210 Year 3 $10,210 Total $32,790

Analysis of soil samples: We will have 9 large strip plots (3 treatments with 3 replicates) for each location. Each strip plot will be divided into 10 subplots. So we have 90 subplots per location and 270 subplots in total for the three locations. In the first year, we will collect two soil samples from each subplot – one prior to treatment initiation and the other after cotton harvest in the fall. The total samples will be 540 for the first year. We will collect one soil sample for each subplot in the fall of the second and third years. The total samples will be 270 each year for the second and third years. Each sample costs $8. The total cost will be $4,320 for the first year, $2,160 each year for the second and third years, and $8,640 in total for 3 years and all the three locations.
Analysis of leaf samples: We have 9 large strip plots (3 treatments with 3 replicates) per location. Each strip plot will be divided into 10 subplots. So we have 90 subplots per location and 270 subplots in total for the three locations. We will collect three samples at three different growing stages from each subplot during the season each year. The total leaf samples will be 810 each year. Each sample will only cost $5 by using our own nitrogen analyzer. The total cost will be $4050 each year, and $12,150 in total for three years and three locations.
Chemicals: We will apply fertilizers, pesticides, etc. There are about 7 acres per location and 28 acres for three locations in total. The costs will be $4,000 each year, and $12,000 for 3 years.

f. CONTRACTUAL

Request – Year 1 $131,237 Year 2 $127,732 Year 3 $133,838 Total $392,807

Subcontracts are included for the three partnering organizations – ABC University, MNO State University, and the University of XYZ. See budget narratives provided by subcontractors, below, and attached letters of commitment and scope of work.

Match – Year 1 $141,578 Year 2 $126,598 Year 3 $126,598 Total $394,774

Subcontractor match is primarily PI salaries, benefits, and the allowed 15% indirect costs. See subcontractors' budget narratives and summary of match, below.

h. OTHER

Request – Year 1 $0 Year 2 $9,203 Year 3 $9,755 Total $18,958

Tuition is requested for the GRA working on the project in years 2 and 3. Amounts requested are $9,203 in year 2 (2 semesters and 1 summer session, assuming 6% inflation over current tuition rates) and $9,755 in year 3 (2 semesters and 1 summer session, assuming 6% inflation rate over year 2 tuition rates).

j. INDIRECT CHARGES

Request – Year 1 $27,974 Year 2 $12,586 Year 3 $12,586 Total $53,146

Match – Year 1 $11,115 Year 2 $13,685 Year 3 $14,096 Total $38,896

Indirect costs are included at the lower of 15% of the federal request and our federally-approved indirect cost rates. See agreement (attached) supporting off-campus rates of 26% of modified total direct costs (MTDC) for research expenses and 13% of MTDC for extension.

BUDGET NARRATIVE

SUBCONTACTOR BUDGET NARRATIVES (see scope of work statements with letters)

ABC University

A. **Personnel Salaries:** The research associate will be involved in planning and executing all field activities related to planting, collection of sensor data and soil/plant samples, processing of samples, and harvesting. He/she will be in-charge of the archive/storage of all soil and plant samples collected from the experimental site, and will ensure the availability of equipment, facilities, instruments, and supplies needed for both field and laboratory works.

Funding will be used to pay a portion of the stipend of a graduate student and one transient worker. They will provide assistance in all phases of the experiment including plot maintenance, field data collection, and data management.

Table 1. Personnel salaries requested.

Personnel	Year 1	Year 2	Year 3	Total
Research Assoc.	$ 16,000	$ 16,640	$ 17,306	$ 49,946
Fringe, 36%	$ 5,760	$ 5,990	$ 6,230	$ 17,980
Graduate Student	$ 10,000	$ 10,000	$ 10,000	$ 30,000
Transient Worker (1)	$ 3,480	$ 3,504	$ 3,528	$ 10,512
Fringe, 7.65%	$ 266	$ 268	$ 270	$ 804
Total	**$ 35,506**	**$ 36,402**	**$ 37,334**	**$ 109,242**

Notes: RA salary for 6 calendar month; an annual increase at a rate of 4%; The requested funding for graduate student will pay 10% of his/her stipend; Transient worker: $7.25/hour, 20 hours/week, 24 weeks (6 months); pay increase annually by $ 0.05/hour

B. Travel: $ 4,680

Travel funds are requested for in-state travel to experimental site located in "town" located 150 miles from the main campus and about 100 miles from Research Station. Travels will be made by the key personnel to experimental site on days where there will be major field operations. These operations will include planting, harvesting, implementation of treatments, sensor data collection and sampling (e.g. soil core samples, biomass/leaf tissue samples). On an annual basis, about 6 trips to research stations will be made. Some of these trips may require two days of work, thus funds will be also used to pay for lodging and per diem.

Funds are also requested for travel to attend or present research findings in professional society annual conference. The investigators will attend conference meetings (specific list here). Travel for professional meeting/conferences will cover transportation, registration, lodging and per diem, the total cost is estimated to be around $1800.

Year	Destination	Purpose	Personnel	‡Cost	# Trip/Other Remarks
1	**($360)**				
	town	Field Operations	3	$ 360	6
2	**($360)**				
	area	Field Operations	3	$ 360	6
3	**($3960)**				
	region	Field Operations	3	$ 360	6
	City, State (Nov. 3-7, 2013)	Conference meeting (who)	2	$ 3,600	Include air fare, per diem, hotel, registration

Notes for travel fund details: ‡ - cost covers transportation, registration, per diem and lodging for conference meetings. Cost also covers in-state travel to experimental site in "town" Time required for travel and to accomplish scheduled field activities may sum up to more than 12 hours. The activities that may potentially require more than 12 hours of in-state travel are listed in the table.

BUDGET NARRATIVE

Per diem rate for 12 hours duration in travel status is $20 (breakfast and lunch)

C. **Other Direct Costs:** Materials and Supplies: $22,950 - Research Station is about 150 miles from main campus and about 100 miles from other Research Station. Funds will be needed to purchase fuel for trips to research site. There will be field trips that will require taking probe truck for intact core sample collection. Funds will also be used to purchase supplies for field use such as fertilizers, herbicides, flags, fuel for equipment, labeling materials, paper bags for sample collection, and hand tools. Funds will be allocated for laboratory supplies. These include chemical reagents for soil and plant analyses (e.g. Mehlich 3-extractable elements, nutrients in soil and plant tissue samples, KCl- extractable NH_4^+ and NO_3^-), glassware, containers for processed samples, gas/fuel to run instruments, cartridge/filter (deionized water), and other materials. Details on a yearly basis are provided in the table. Funds will also be allocated for maintenance of sensor.Table 3. Funding allocation for materials and supplies

Yr	Item	Description	Amount
1	**($7,650)**		
	†Fuel – for field trips (planting, treatment application, sampling, and harvesting), probe truck will be taken	6 trips; An estimated total of 500 miles to experimental site from campus and Research Station, 2-way; truck runs 23 miles/gallon; $3.00/gallon fuel –average probe truck will be taken at least 3 times; this will originate from campus, 300 miles to experimental site, 2-way; truck runs 23 miles/gallon; $3.00/gallon fuel - average	$ 650
	Field supplies	Fertilizers, herbicides, flags, fuel for equipments, labeling materials, paper bags, hand tools, seeds	$ 3,000
	‡Laboratory supplies	Chemical reagents, cartridge for deionized water, fuel/gas to run instruments, glassware, containers for sample archiving	$ 4,000
2	**($7,650)**		
	†Fuel – for field trips (planting, treatment application, sampling, and harvesting)	6 trips; An estimated total of 500 miles to experimental site from campus and Research Station, 2-way; truck runs 23 miles/gallon; $3.00/gallon fuel –average probe truck will be taken at least 3 times; this will originate from campus, 300 miles to experimental site, 2-way; truck runs 23 miles/gallon; $3.00/gallon fuel - average	$ 650
	Field supplies	Fertilizers, herbicides, flags, fuel for equipments, labeling materials, paper bags, hand tools, seeds	$ 3,000
	Laboratory supplies	Chemical reagents, cartridge for deionized water, fuel/gas to run instruments, glassware, containers for sample archiving	$ 4,000
3	**($7,650)**		
	†Fuel – for field trips (planting, treatment application, sampling, and harvesting)	6 trips; An estimated total of 500 miles to experimental site from campus and Research Station, 2-way; truck runs 23 miles/gallon; $3.00/gallon fuel –average probe truck will be taken at least 3 times; this will originate from LSU campus, 300 miles to experimental site, 2-way; truck runs 23 miles/gallon; $3.00/gallon fuel - average	$ 650
	Field supplies	Fertilizers, herbicides, flags, fuel for equipments, labeling materials, paper bags, hand tools, seeds	$ 3,000
	‡Laboratory supplies	Chemical reagents, cartridge for deionized water, fuel/gas to run instruments, glassware, containers for sample archiving	$ 4,000

Notes: Funds for materials and supplies:

† - Research Station is about 150 miles from the main campus and about 100 miles from other Research Station. On an annual basis, about 6 trips to research stations will be made for collection of soil core/biomass samples and sensor data, and for major field operations (planting, harvesting, and treatment applications). Additional

travel may also be incurred such as travel to purchase supplies from store. Allocation for fuel may change if the experimental site will be at a producer's field since transport of major equipment from the research station may be required.

‡ - Analyses such as Mehlich 3- extractable elements, KCl- extractable NH_4 and NO_3, and other routine analyses for soil characterization will be conducted. Funds will be allocated to pay for chemical reagents, glassware, cartridge/filter (deionized water) and fuel/gas for some instrumentation (e.g. ICP, autoanalyzer) needed for these analyses. An additional fund of $500 will be allocated for gas to run ICP (routine analysis, Mehlich-3 extractable elements, etc.) and auto-analyzer.

D. Indirect Costs: $24,153 15% of Total Federal Funding

INSTITUTIONAL MATCH: $161,805 – Professor Y will contribute 25% of her time, while Dr. Z will contribute 22% of his time to accomplish the goals of the proposed research project. Fringe benefit will be applied at the rate of 36%, plus overhead (15% MTDC).

MNO University - Budget Narrative

To facilitate this nutrient management demonstration site preparation in terms of geo-referencing of designated areas and soil sampling requires the use of temporary help in the form of undergraduate student labor. Scouting and cotton leaf sampling within the growing season also requires the use of student labor. Laboratory analyses of soil and plant materials will be supported with student labor. To achieve field scouting for N stress, a handheld sensor is necessary. In the process of collecting soil and plant samples, preparing them for analysis, and subsequent analysis requires various consumables. To accomplish highly accurate variable rate application of fertilizer N, it will be necessary to retrofit a liquid fertilizer N applicator with NJect technology. Demonstration sites will located 100 plus miles the home institution and frequent travel will be necessary for onsite visits for sampling and scouting. Travel will be necessary to meet with producers, project coordination meetings, and to present findings at row crop workshops/short courses, and grower meetings.

Year 1

Budget categories/descriptions	NRCS	Match
Personnel – Undergraduate student labor is needed to provide field and lab labor and to assist in data collection and processing. Estimate 1,250 h/year @$8:00/h. **Match:** Project will require Dr. Z (Soil Scientist) active participation @25.78%.	10,000	22,964
Fringe- fringe rate is 33.5%.	59	7,693
Travel: Travel to and from sights including overnight housing and meals and travel to grower and professional meetings to present and discuss results.	3,000	0.0
Equipment: Field scouting data acquisition. This is a one-time purchase. School policy requires this item to be inventoried. Considered equipment since it is a piece of scientific instrument costing greater than $,1000.	2,000	0.0
Materials and supplies: Consumables necessary for conducting field sampling and laboratory analyses each year. This includes paper and plastic bags, lab chemicals, soil probes, and consumables necessary for automated N analysis. Costs include purchase of Capstan NJect	7,000	0.0

BUDGET NARRATIVE

hardware to retrofit liquid N applicator for variable rate.		
Contractual: Acquisition of multispectral aerial imagery. Aerial flyovers are estimated at $1,000/flight @ 4 flights/year.	4,000	0.0
Indirect costs: federally negotiated indirect rate is 44.5% and this indirect is lower	4,598	0.0
Total	30,657	30,657

Year 2

Budget categories/descriptions	**NRCS**	**Match**
Personnel – Undergraduate student labor is needed to provide field and lab labor and to assist in data collection and processing. Estimate 1,250 h/year @$8:00/h. **Match:** Project will require Dr. Z's active participation @20.83%.	10,000	18,558
Fringe- School fringe rate is 33.5%.	59	6,217
Travel: Travel to and from sights including overnight housing and meals and travel to grower and professional meetings to present and discuss results.	3,000	0.0
Equipment: Not applicable.	0.0	0.0
Materials and supplies: Consumables necessary for conducting field sampling and laboratory analyses each year. This includes paper and plastic bags, lab chemicals, soil probes, and consumables necessary for automated N analysis. Costs include purchase of Capstan NJect hardware to retrofit liquid N applicator for variable rate.	4,000	0.0
Contractual: Acquisition of multispectral aerial imagery. Aerial flyovers are estimated at $1,000/flight @ 4 flights/year.	4,000	0.0
Indirect costs: School federally negotiated indirect rate is 44.5% and this indirect is lower.	3,716	0.0
Total	24,775	24,775

Year 3

Budget categories/descriptions	**NRCS**	**Match**
Personnel – Undergraduate student labor is needed to provide field and lab labor and to assist in data collection and processing. Estimate 1,250 h/year @$8:00/h. **Match:** Project will require Dr. Z's active participation @20.83%.	10,000	18,558
Fringe- MSU's fringe rate is 33.5%	59	6,217
Travel: Travel to and from sights including overnight housing and meals and travel to grower and professional meetings to present and discuss results.	3,000	0.0
Equipment: Not applicable.	0.0	0.0
Materials and supplies: Consumables necessary for conducting field sampling and laboratory analyses each year. This includes paper and plastic bags, lab chemicals, soil probes, and consumables necessary for automated N analysis. Costs include purchase of Capstan NJect hardware to retrofit liquid N applicator for variable rate.	4,000	0.0

BUDGET NARRATIVE

Contractual: Acquisition of multispectral aerial imagery. Aerial flyovers are estimated at $1,000/flight @ 4 flights/year.	4,000	0.0
Indirect costs: federally negotiated indirect rate is 44.5% and this indirect is lower.	3,716	0.0
Total	24,775	24,775
	NRCS	**Match**
CUMULATIVE TOTAL	**$80,207**	**$80,207**

University of XYZ - Budget Justification

Personnel – Funds are requested for Research/Extension Specialist salary and benefits. Project duties will be carried out by several different Specialists in different groups. Duties will be divided according to proximity, experience, and skills of the Specialists on staff, and salary money will be divided according to work carried out.

The Principal Investigator will contribute 15% of his effort as a ***matching*** contribution. Also contributing effort as support is an extension professor, who will contribute 10% in the first year and 7% in subsequent years. Fringe benefits are calculated at the estimated federal rate of 24.98% for fiscal year 2012.

Supplies – Supplies will consist of custom-made brackets and other supplies needed to carry out demonstrations of sensor-based N fertilizer applications.

Travel – Travel is requested for in-state travel to and from farms for demonstrations. This is calculated based on $0.47/mile for ground transport, $42 per day for occasional meal reimbursement, and $75/night for motel rooms when personnel stay overnight in southeast city.

Indirect costs–These costs support University infrastructure necessary to carrying out the project and are calculated at the allowable rate of 15% of direct cost for NRCS and University of V contributions.

Additional cash match–Support for the School portion of this project is also coming from ABC Incorporated and from gift monies.

In-kind match–Producers participating in demonstrations will have variable-rate capable fertilizer applicators. They will be donating the use of these applicators for carrying out the demonstrations. The value of these donations will be calculated at market rate for lease of this type of equipment. They will also be donating their time to accomplish the demonstrations during one of their busiest times of year. We will estimate the value of this time by estimating their gross income per field day and how much additional time the demonstration took compared to performing the same operation in the way that they normally would. We do not have letters of commitment from individual cotton producers because we do not yet know which farmers will conduct demonstrations each year. We will try to work with new producers each year to maximize the educational value of the field demonstrations. It is not feasible to set up three years of demonstrations in advance with new producers each year.