Forages for Smallholders Project

ANNEXES

A Proposal for: Australian International Development Assistance Bureau (AIDAB)

Project Administrator: CIAT

Centro Internacional de Agricultura Tropical
Cali, Colombia

Project Managers: Tropical Forages Program
CIAT, Cali, Colombia

Division of Tropical Crops and Pastures
CSIRO, Brisbane, Australia

April 1994

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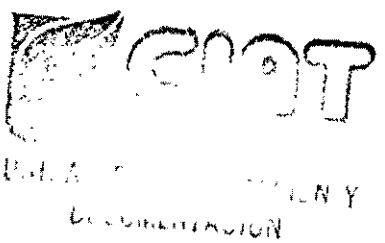

ANNEX 1.1 ACTIVITY AND RESOURCES SCHEDULE

CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	QNTY	YR 1 94-95		YEAR 2 1995-96				YEAR 3 1996-97				YEAR 4 1997-98				YEAR 5 1998-99				YR 6 99-00	
				QUARTER		QUARTER				QUARTER				QUARTER				QUARTER				QUARTER	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Component 1	**SELECTION OF FORAGES**																						
Output 1	Forages available for different ecoregions and farming systems	New forage species	20	5				5					5				5						
Activities																							
1.1	Assessment of natural grasslands																						
1.1.1	Identification of species	Survey	2				1				1												
1.1.2	Publication of booklet	Booklet	1										1										
1.2	Introduction of forages																						
1.2.1	Establishment of sites	Sites-expt stations	7	4		3																	
1.2.2	Maintenance of sites	"	7	4	4	7	7	7	7	7	7	3	3	3	3	3	3						
1.3	Evaluation in agroecosystems																						
1.3.1	Establishment of regional trials	Sites on-farm	21	7			7			7													
1.3.2	Maintenance of trials	"	21	7	7	7	14	14	14	21	21	14	14	14	7	7	7						
1.4	Multiplication of promising species																						
1.4.1	Establishment of plots	Seed prodn sites	2	1				1															
1.4.2	Collection, storage, distribution	20 species at 2 sites	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1
Inputs																							
	GOA funded																						
Personnel	Forage agronomists	Person mths	22	2	2	2	2	1.5	1.5	1.5	1.5	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Assistant - CSIRO	Person mths	60	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Assistant - to CIAT agronomist	Person mths	18	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
	Assistant - to CSIRO agronomist	Person mths	34	3	3	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1
	Consultant in Taxonomy	Person mths	1				0.5				0.5												
Procurement	Vehicle	Land cruiser	1	1																			
	Field supplies	Annual cost	5	0.5		1				1				1				1				0.5	
Training	Nil																						
Other	Travel	Monthly visits	40	3	3	3	3	3	3	3	3	3	3	3	3	2	2						
	Vehicle maintenance	Annual cost	5	0.5		1				1				1				1				0.5	
	Publication of booklet	Booklet	1										1										
	Maintenance-evaluation	Quarterly cost/trial	21	7	7	7	14	14	14	21	21	14	14	14	7	7	7						
	Maintenance-multiplication	Quarterley cost/site	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	1
	R.G. funded																						
	Personnel, provision of sites																						
	GOI	Person mths	132	12	12	12	12	12	12	12	12	6	6	6	6	3	3	3	3				
	GOL	Person mths	144	12	12	12	12	12	12	12	12	6	6	6	6	3	3	3	3	3	3	3	3
	GOP	Person mths	132	12	12	12	12	12	12	12	12	6	6	6	6	3	3	3	3				
	GOSC	Person mths	24	3	3	3	3	3	3	3	3												
	GOT	Person mths	30	3	3	3	3	3	3	3	3	3	3										
	GOV	Person mths	180	12	12	12	12	12	12	12	12	9	9	9	9	9	9	6	6	6	6	3	3

ANNEX 1.1 ACTIVITY AND RESOURCES SCHEDULE

CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	QNTY	YR 1 94-95		YEAR 2 1995-9				YEAR 3 1996-97				YEAR 4 1997-98				YEAR 5 1998-99				YR 6 99-00	
				QUARTER		QUARTER				QUARTER				QUARTER				QUARTER				QUARTER	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Component 2	**DELIVERY OF FORAGE SYSTEMS**																						
Output 2	Forages integrated into smallholder	Target areas	18																				
	farming systems	farmers per area	40												6				6				6
		+ multiplier effect																					
Activities																							
2.1	RRA of farming systems																						
2.1.1	Surveys	Target areas	18			2	4		4		4		4										
2.1.2	Data processing	Target areas	18			2	4		4		4		4										
2.2	Evaluation of forages on farms																						
2.2.1	Selection of sites	Sites	18				2	4		4		4		4									
2.2.2	Maintenance of field sites	Sites	18				2	6	6	10	10	14	14	18	18	18	18	18	18	18	18	18	18
2.3	Training farmers in forage mgt																						
2.3.1	Field days	Short courses	54				2	4		4	2	8		8		4		4	4	4	4	4	2
2.4	Multiplication & distribution systems																						
2.4.1	Field demonstrations	Multiplication sites	18						2	4		4		4		4							
2.4.2	Training farmers in multiplicat	Short courses	36						2	4		4	2	4	4	4	4		4		4		
2.4.3	Revolving fund	Revolving funds	4							4													
Inputs																							
	GOA funded																						
Personnel	Senior Agronomists	Person mths	38	1	1	1	1	1.5	1.5	1.5	1.5	2	2	2	2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Assistant - to CIAT agronomist	Person mths	42	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3
	Assistant - to CSIRO agronomist	Person mths	26							1	1	2	2	2	2	2	2	2	2	2	2	2	2
Procurement	Vehicle	Land cruiser	1							1													
	Motor bikes	Motor bike	8		4		4																
	Seed supplies	kg	360				40			80		80		80		80							
	Field supplies	Annual cost	5	0.5		1				1				1				1				0.5	
Training	Training materials	Package	36				2	4	2	8		4		8		8							
Other	Travel	Monthly visits	80	3	3	3	3	3	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5
	Vehicle maintenance	Annual cost	5	0.5		1				1				1				1				0.5	
	Translation cost	No. brochures	15			5				5				5									
	Maintenance of on-farm sites	Annual cost/site	18				2	6	6	10	10	14	14	18	18	18	18	18	18	18	18	18	18
	Revolving fund	Country	4							4													
	R.G. funded																						
	Extension personnel, vehicles																						
	GOI	Person mths	240	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	GOL	Person mths	212	8	8	8	8	9	9	9	9	12	12	12	12	12	12	12	12	12	12	12	12
	GOP	Person mths	240	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	GOSC	Person mths	60	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	GOT	Person mths	96	3	3	3	3	3	3	3	3	6	6	6	6	6	6	6	6	6	6	6	6
	GOV	Person mths	198	3	3	6	6	9	9	9	9	12	12	12	12	12	12	12	12	12	12	12	12

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CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	QNTY	YR 1 94-95		YEAR 2 1995-96				YEAR 3 1996-97				YEAR 4 1997-98				YEAR 5 1998-99				YR 6 99-00	
				QUARTER		QUARTER				QUARTER				QUARTER				QUARTER				QUARTER	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Component 3	**STAFF DEVELOPMENT**																						
Output 3	Local staff trained in forage agrono and technology transfer	No staff	120							10	20	20	10		12	12	6		12	12	6		
Activities																							
3 1	Individual training																						
3.1 1	On-site training	Persons	10			2				2				2				2				2	
3.2	English language training																						
3.2 1	Instruction	Courses	2	1		1																	
3.2.2	Travel & accomodation	Persons	12	6		6																	
3.3	RRA & participatory research																						
3.3.1	Regional course	Workshop(10 pers)	1			1																	
3.3.2	In-country	Courses (ea10 pers)	5				2	2	1														
3 4	Forage agronomy																						
3 4.1	Regional course	Workshop (10 pers)	1							1													
3.4.2	In-country	Courses (ea 6-10 per	15								2	2	1		2	2	1		2	2	1		
3 4 3	Visit to Australia	Visit for 5 persons	1		1																		
3.4.4	Visit to Grassland Congr/Workshop	Visit for 5 persons	1										1										
Inputs																							
	GOA funded																						
Personnel	Senior Agronomists	person mths	30	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Consultant- English language teachi	person mths	8	3	1	3	1																
	Consultant-participatory research	person mths	2			2																	
	Consultant-seed distribution system	person mths	2							2													
Procurement	Training materials-regional courses	Booklets	50			25				25													
	Training materials-incountry course	Booklets	400				40	40	20		40	40	20		40	40	20		40	40	20		
Training																							
3 1.1	On-site training	Persons	10			1				1				1				1				1	
3.2.2	Travel & accom (English training)	Persons	12	6		6																	
3.3.1	Travel & accom (Participatory R&	Workshop-regional	1			1																	
3.3.2	Travel & accom (Participatory R&	Courses-incountry	5				2	2	1														
3 4 1	Travel & accom (Forage agronomy)	Workshop-regional	1							1													
3.4.2	Travel & accom (Forage agronomy)	Courses-incountry	15								2	2	1		2	2	1		2	2	1		
3.4 3	Travel & accomodation	Visit-Australia	1		1																		
3.4.4	Travel & accomodation	Visit-IGC Workshop	1										1										
Other	Translation costs for booklets	Courses	10				2	2	1		2	2	1										
	Travel&accom-consultants	Visits	2			1				1													
	R.G. funded																						
	Provision of facilities																						
	GOI	Courses	4				1				1				1				1				
	GOL	Courses	4				1				1				1				1				
	GOP	Courses	4					1				1				1				1			
	GOT	Course	2					1								1							
	GOSC	Course	2									1								1			
	GOV	Courses	4						1				1				1				1		

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CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	QNTY	YR 1 94-95		YEAR 2 1995-9				YEAR 3 1996-97				YEAR 4 1997-98				YEAR 5 1998-99				YR 6 99-00	
				QUARTER		QUARTER				QUARTER				QUARTER				QUARTER				QUARTER	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Component 4	**INFORMATION SYSTEMS**																						
Output 4	Information systems on forage R&	Regional network	1			1																	
		Local networks	7			1																	
Activities																							
4 1	Regional project meetings	Meeting	5	1				1				1				1				1			
4 2	Communication in-country																						
4.2.1	Liason with other projects	Visit	100	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4.2.2	Country newsheet production	Issue	35		7				7				7				7				7		
4.3	Regional network																						
4 3 1	In-country reporting	Report to FSP	14	1	1		1	1	1		1	1	1		1	1	1		1		1		1
4 3 2	Regional newsletter.	Issue	10		1		1		1		1		1		1		1		1		1		1
Inputs																							
	GOA funded																						
Personnel	Senior Agronomists	Person mths	15	1	1		1	1	1		1	1	1		1	1	1		1	1	1		1
	National system coordinators	Reports from coord.	15	1	1		1	1	1		1	1	1		1	1	1		1	1	1		1
Procurement	Newsletter supplies and productio	Issue	10		1		1		1		1		1		1		1		1		1		1
	Newsheet production	Issue	35		7				7				7				7				7		
Training	Regional project meetings	Meeting	5	1				1				1				1				1			
	Regional Conference		1																				1
Other	Nil																						
	R.G. funded																						
	Supply of information																						
	GOI	Person mths	5		0 5		0 5		0.5		0 5		0.5		0 5		0 5		0 5		0.5		0 5
	GOL	Person mths	5		0.5		0 5		0.5		0 5		0 5		0.5		0.5		0 5		0.5		0 5
	GOM	Person mths	5		0.5		0.5		0.5		0.5		0 5		0.5		0.5		0.5		0.5		0 5
	GOP	Person mths	5		0 5		0 5		0.5		0 5		0 5		0 5		0 5		0 5		0.5		0.5
	GOSC	Person mths	5		0 5		0 5		0.5		0 5		0 5		0 5		0 5		0 5		0.5		0 5
	GOT	Person mths	5		0 5		0.5		0.5		0.5		0.5		0 5		0.5		0 5		0.5		0 5
	GOV	Person mths	5		0 5		0.5		0 5		0.5		0 5		0 5		0.5		0 5		0.5		0 5

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CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	QNTY	YR 1 94-95		YEAR 2 1995-9				YEAR 3 1996-97				YEAR 4 1997-98				YEAR 5 1998-99				YR 6 99-00	
				QUARTER		QUARTER				QUARTER				QUARTER				QUARTER				QUARTER	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Component 5	**PROJECT MANAGEMENT**																						
Output 5	Efficient project management																						
Activities																							
5.1	Project administration																						
5.1.1	Liason within project	Visits	5					1				1				1				1		1	
5.1.2	Liason with Project Managers	Visits	2				2				2				2				2				
5.2	Preparation of PID																						
5.2.1	Visits to R.G. countries	Visits	1	1																			
5.2.2	Writing of PID	Report	1		1																		
5.3	Internal monitoring & review																						
5.3.1	Visits by Project Managers	Annual visit	5	1				1				1				1				1			1
5.4	Financial mgt., reporting to AIDAB																						
5.4.1	Prepartion of 6-mthly reports	Reports	9	1		1		1		1		1		1		1		1		1			
5.4.2	Prepartion of annual report	Report	5	1				1				1				1				1			
5.4.3	Preparation of draft completion rpt	Report	1																				1
Inputs																							
	GOA funded																						
Personnel	Senior Agronomists	Person mths	15	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5
	Secretary	Person mths	120	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Driver	Person mths	120	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Program leader CIAT	Person mths	8	1.5				1.5				1.5				1.5				1.5			0.5
	Program leader CSIRO	Person mths	5.5	1				1				1				1				1			0.5
Procurement	Office equipment	Package	2	2																			
	Office supplies	Annual cost	5	0.5		1				1				1				1				0.5	
Training	Nil																						
Other																							
	Travel-Agronomists liason in regio	Visits	5					1				1				1				1			
	Travel-Agron. consult. CIAT/CSI	Visits	8				2				2				2				2				
	PID preparation	Report	1	1																			
	Travel-visit to project by managers	Visits	5	1				1				1				1				1			
	Office services	Monthly cost	60	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	Maintenance office equipment	Annual cost	5	0.5		1				1				1				1				0.5	
	Preparation of draft completion rep	Report	1																				1
	R.G. funded																						
	Project Coordinators																						
	GOI	Person mths	12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	GOL	Person mths	12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	GOM	Person mths	2	1		1		1		1		1		1		1		1		1		1	
	GOP	Person mths	12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	GOSC	Person mths	2	1		1		1		1		1		1		1		1		1		1	
	GOT	Person mths	2	1		1		1		1		1		1		1		1		1		1	
	GOV	Person mths	12	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

ANNEX 1.2 COST SCHEDULE - FSP

CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	UNIT COST AU$	QNTY	YR 1 94-95 QUARTER 1	2	TOTAL YEAR 1	YEAR 2 1995-96 QUARTER 3	4	5	6	TOTAL YEAR 2	YEAR 3 1996-97 QUARTER 7	8	9	10	TOTAL YEAR 3
Component 1	**SELECTION OF FORAGES**																
Output 1	Forages available for different ecoregions and farming systems	New forage species		20	5						5					5	
Inputs																	
	GOA funded																
Personnel	Forage agronomists	Person mths	13333	22	26666	26666	53332	26666	26666	20000	20000	93331	20000	20000	13333	13333	66665
	Assistant - CSIRO	Person mths	1667	60	5001	5001	10002	5001	5001	5001	5001	20004	5001	5001	5001	5001	20004
	Assistant - to CIAT agronomist	Person mths	1000	18	2000	2000	4000	1000	1000	1000	1000	4000	1000	1000	1000	1000	4000
	Assistant - to CSIRO agronomist	Person mths	750	34	2250	2250	4500	2250	2250	2250	2250	9000	1500	1500	750	750	4500
	Consultant in Taxonomy	Person mths	12000	1					6000			6000		6000			6000
	Sub-Total Personnel				35917	35917	71834	34917	40917	28251	28251	132335	27501	33501	20084	20084	101169
Procurement	Vehicle	Land cruiser	30000	1	30000		30000										
	Field supplies	Annual cost	6000	5	3000		3000	6000				6000	6000				6000
	Sub-Total Procurement				33000		33000	6000				6000	6000				6000
Training	Nil																
	Sub-Total Training																
Other	Travel	Monthly visits	1000	40	3000	3000	6000	3000	3000	3000	3000	12000	3000	3000	3000	3000	12000
	Vehicle maintenance	Annual cost	6000	5	3000		3000	6000				6000	6000				6000
	Publication of booklet	booklet	4000	1												4000	4000
	Maintenance-evaluation	Quarterly cost/trial	500	21	3500	3500	7000	3500	7000	7000	7000	24500	10500	10500	7000	7000	35000
	Maintenance-multiplication	Quarterly cost/site	1500	2	1500	1500	3000	1500	1500	1500	1500	6000	3000	3000	3000	3000	12000
	Sub-Total Other				11000	8000	19000	14000	11500	11500	11500	48500	22500	16500	13000	17000	69000
	R.G. funded																
	Personnel, provision of sites																
	GOI	Person mths	300	132	3600	3600	7200	3600	3600	3600	3600	14400	3600	3600	1800	1800	10800
	GOL	Person mths	150	144	1800	1800	3600	1800	1800	1800	1800	7200	1800	1800	900	900	5400
	GOP	Person mths	200	132	2400	2400	4800	2400	2400	2400	2400	9600	2400	2400	1200	1200	7200
	GOSC	Person mths	300	24	900	900	1800	900	900	900	900	3600	900	900			1800
	GOT	Person mths	500	30	1500	1500	3000	1500	1500	1500	1500	6000	1500	1500	1500	1500	6000
	GOV	Person mths	150	180	1800	1800	3600	1800	1800	1800	1800	7200	1800	1800	1350	1350	6300
	Sub-total R G. funded				12000	12000	24000	12000	12000	12000	12000	48000	12000	12000	6750	6750	37500

ANNEX 1.2 COST SCHEDULE - FSP

CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	YEAR 4 1997-98 QUARTER				TOTAL YEAR	YEAR 5 1998-99 QUARTER				TOTAL YEAR	YR 6 99-00 QUARTER		TOTAL YEAR	TOTAL COST
		11	12	13	14	4	15	16	17	18	5	19	20	6	AU$
Component 1	**SELECTION OF FORAGES**														
Output 1	Forages available for different ecoregions and farming systems				5										
Inputs															
	GOA funded														
Personnel	Forage agronomists	13333	13333	6666.5	6666.5	39999	6666 5	6666.5	6666.5	6666 5	26666	6666 5	6666.5	13333	293326
	Assistant - CSIRO	5001	5001	5001	5001	20004	5001	5001	5001	5001	20004	5001	5001	10002	100020
	Assistant - to CIAT agronomist	1000	1000	1000	1000	4000	1000	1000			2000				18000
	Assistant - to CSIRO agronomist	750	750	750	750	3000	750	750	750	750	3000	750	750	1500	25500
	Consultant in Taxonomy														12000
	Sub-Total Personnel	20084	20084	13418	13418	67003	13418	13418	12418	12418	51670	12418	12418	24835	448846
Procurement	Vehicle														30000
	Field supplies	6000				6000	6000				6000	3000		3000	30000
	Sub-Total Procurement	6000				6000	6000				6000	3000		3000	60000
Training	Nil														
	Sub-Total Training														
Other	Travel	3000	3000	2000	2000	10000									40000
	Vehicle maintenance	6000				6000	6000				6000	3000		3000	30000
	Publication of booklet														4000
	Maintenance-evaluation	7000	3500	3500	3500	17500									84000
	Maintenance-multiplication	3000	3000	3000	3000	12000	3000	3000	1500	1500	9000	1500	1500	3000	45000
	Sub-Total Other	19000	9500	8500	8500	45500	9000	3000	1500	1500	15000	4500	1500	6000	203000
	R.G. funded														
	Personnel, provision of sites														
	GOI	1800	1800	900	900	5400	900	900			1800				39600
	GOL	900	900	450	450	2700	450	450	450	450	1800	450	450	900	21600
	GOP	1200	1200	600	600	3600	600	600			1200				26400
	GOSC														7200
	GOT														15000
	GOV	1350	1350	1350	1350	5400	900	900	900	900	3600	450	450	900	27000
	Sub-total R G funded	5250	5250	3300	3300	17100	2850	2850	1350	1350	8400	900	900	1800	136800

ANNEX 1.2 COST SCHEDULE - FSP

CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	UNIT COST AU$	QNTY	YR 1 94-95 QUARTER 1	2	TOTAL YEAR 1	YEAR 2 1995-96 QUARTER 3	4	5	6	TOTAL YEAR 2	YEAR 3 1996-97 QUARTER 7	8	9	10	TOTAL YEAR 3
Component 2	**DELIVERY OF FORAGE SYS**	**EMS**															
Output 2	Forages integrated into smallhold r farming systems																
Inputs																	
	GOA funded																
Personnel	Senior Agronomists	Person mths	13333	38	13333	13333	26666	13333	13333	20000	20000	66665	20000	20000	26666	26666	93331
	Assistant - to CIAT agronomist	Person mths	1000	42	1000	1000	2000	2000	2000	2000	2000	8000	2000	2000	2000	2000	8000
	Assistant - to CSIRO agronomist	Person mths	750	26									750	750	1500	1500	4500
	Sub-Total Personnel				14333	14333	28666	15333	15333	22000	22000	74665	22750	22750	30166	30166	105831
Procurement	Vehicle	Land cruiser	30000	1									30000				30000
	Motor bikes	Motor bike	1500	8		6000	6000		6000			6000					
	Seed supplies	kg	30	360					1200			1200	2400		2400		4800
	Field supplies	Annual cost	10000	5	5000		5000	10000				10000	10000				10000
	Sub-Total Procurement			36	5000	6000	11000	10000	7200			17200	42400		2400		44800
Training	Training materials	Package	300	36					600	1200	600	2400	2400		1200		3600
	Sub-Total Training								600	1200	600	2400	2400		1200		3600
Other	Travel	Monthly cost	1000	80	3000	3000	6000	3000	3000	3000	3000	12000	3000	3000	3000	3000	12000
	Vehicle maintenance	Annual cost	6000	5	3000		3000	6000				6000	6000				6000
	Translation cost	No brochures	300	15				1500				1500	1500				1500
	Maintenance of on-farm sites	Quarterly cost/site	500	18					1000	3000	3000	7000	5000	5000	7000	7000	24000
	Revolving fund	Country	2000	4									8000				8000
	Sub-Total Other				6000	3000	9000	10500	4000	6000	6000	26500	23500	8000	10000	10000	51500
	R.G. funded																
	Extension personnel, vehicles																
	GOI	Person mths	300	240	3600	3600	7200	3600	3600	3600	3600	14400	3600	3600	3600	3600	14400
	GOL	Person mths	150	212	1200	1200	2400	1200	1200	1350	1350	5100	1350	1350	1800	1800	6300
	GOP	Person mths	200	240	2400	2400	4800	2400	2400	2400	2400	9600	2400	2400	2400	2400	9600
	GOSC	Person mths	300	60	900	900	1800	900	900	900	900	3600	900	900	900	900	3600
	GOT	Person mths	500	96	1500	1500	3000	1500	1500	1500	1500	6000	1500	1500	3000	3000	9000
	GOV	Person mths	150	198	450	450	900	900	900	1350	1350	4500	1350	1350	1800	1800	
	Sub-Total R G funded				10050	10050	20100	10500	10500	11100	11100	43200	11100	11100	13500	13500	42900

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CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	YEAR 4 1997-98 QUARTER				TOTAL YEAR	YEAR 5 1998-99 QUARTER				TOTAL YEAR	YR 6 99-00 QUARTER		TOTAL YEAR	TOTAL COST
		11	12	13	14	4	15	16	17	18	5	19	20	6	AU$
Component 2	**DELIVERY OF FORAGE SYS**														
Output 2	Forages integrated into smallhold farming systems														
Inputs															
	GOA funded														
Personnel	Senior Agronomists	26666	26666	33333	33333	119997	33333	33333	33333	33333	133330	33333	33333	66665	506654
	Assistant - to CIAT agronomist	2000	2000	2000	2000	8000	2000	2000	3000	3000	10000	3000	3000	6000	42000
	Assistant - to CSIRO agronomist	1500	1500	1500	1500	6000	1500	1500	1500	1500	6000	1500	1500	3000	19500
	Sub-Total Personnel	30166	30166	36833	36833	133997	36833	36833	37833	37833	149330	37833	37833	75665	568154
Procurement	Vehicle														30000
	Motor bikes														12000
	Seed supplies	2400		2400		4800									10800
	Field supplies	10000				10000	10000				10000	5000		5000	50000
	Sub-Total Procurement	12400		2400		14800	10000				10000	5000		5000	102800
Training	Training materials	2400		2400		4800									10800
	Sub-Total Training	2400		2400		4800									8400
Other	Travel	5000	5000	5000	5000	20000	5000	5000	5000	5000	20000	5000	5000	10000	80000
	Vehicle maintenance	6000				6000	6000				6000	3000		3000	30000
	Translation cost	1500				1500									4500
	Maintenance of on-farm sites	9000	9000	9000	9000	36000	9000	9000	9000	9000	36000	9000	9000	18000	121000
	Revolving fund														8000
	Sub-Total Other	21500	14000	14000	14000	63500	20000	14000	14000	14000	62000	17000	14000	31000	243500
	R.G. funded														
	Extension personnel, vehicles														
	GOI	3600	3600	3600	3600	14400	3600	3600	3600	3600	14400	3600	3600	7200	72000
	GOL	1800	1800	1800	1800	7200	1800	1800	1800	1800	7200	1800	1800	3600	31800
	GOP	2400	2400	2400	2400	9600	2400	2400	2400	2400	9600	2400	2400	4800	48000
	GOSC	900	900	900	900	3600	900	900	900	900	3600	900	900	1800	18000
	GOT	3000	3000	3000	3000	12000	3000	3000	3000	3000	12000	3000	3000	6000	48000
	GOV	1800	1800	1800	1800	7200	1800	1800	1800	1800	7200	1800	1800	3600	23400
	Sub-Total R G funded	13500	13500	13500	13500	54000	13500	13500	13500	13500	54000	13500	13500	27000	241200

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CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	UNIT COST AU$	QNTY	YR 1 94-95 QUARTER 1	2	TOTAL YEAR 1	YEAR 2 1995-96 QUARTER 3	4	5	6	TOTAL YEAR 2	YEAR 3 1996-97 QUARTER 7	8	9	10	TOTAL YEAR 3
Component 3	**STAFF DEVELOPMENT**																
Output 3	Local staff trained in forage agrono and technology transfer	y															
Inputs																	
	GOA funded																
Personnel	Senior Agronomists	person mths	13333	30	20000	20000	39999	20000	20000	20000	20000	79998	20000	20000	20000	20000	79998
	Consultant- English language teach	person mths	2000	8	6000	2000	8000	6000	2000			8000					
	Consultant-participatory research	person mths	12000	2				24000				24000					
	Consultant-seed distribution syste	person mths	12000	2									24000				24000
	Sub-Total Personnel				26000	22000	47999	50000	22000	20000	20000	111998	44000	20000	20000	20000	103998
Procurement	Training materials-regional courses	Booklets	20	50				500				500	500				500
	Training materials-incountry cours	Booklets	10	400					400	400	200	1000		400	400	200	1000
	Sub-Total Procurement							500	400	400	200	1500	500	400	400	200	1500
Training																	
3.1.1	On-site training	Persons	2500	10				5000				5000	5000				5000
3.2.2	Travel & accom (English training)	Persons	500	12	3000		3000	3000				3000					
3.3.1	Travel & accom (Participatory R&	Workshop-regional	30000	1				30000				30000					
3.3.2	Travel & accom (Participatory R&	Courses-incountry	6000	5					12000	12000	6000	30000					
3.4.1	Travel & accom (Forage agronomy	Workshop-regional	30000	1									30000				30000
3.4.2	Travel & accom (Forage agronomy	Courses-incountry	6000	15										12000	12000	6000	30000
3.4.3	Travel & accomodation	Visit-Australia	30000	1		30000	30000										
3.4.4	Travel & accomodation	Visit-IGC Workshop	20000	1												20000	20000
	Sub-Total Training				3000	30000	33000	38000	12000	12000	6000	68000	35000	12000	12000	26000	85000
Other	Translation costs for booklets	Courses	500	10					1000	1000	500	2500		1000	1000	500	2500
	Travel&accom.-consultants	Visits	8000	2				8000				8000	8000				8000
	Sub-Total Other							8000	1000	1000	500	10500	8000	1000	1000	500	10500
	R.G. funded																
	Provision of facilities																
	GOI	Courses	2000	4					2000			2000		2000			2000
	GOL	Courses	2000	4					2000			2000		2000			2000
	GOP	Courses	2000	4						2000		2000			2000		2000
	GOT	Course	2000	2						2000		2000					
	GOSC	Course	2000	2											2000		2000
	GOV	Courses	2000	4							2000	2000				2000	2000
	Sub-Total R.G. funded								4000	4000	2000	10000		4000	4000	2000	10000

ANNEX 1.2 COST SCHEDULE

COMPONENTS		YEAR 4 1997-98 QUARTER				TOTAL YEAR	YEAR 5 1998-99 QUARTER				TOTAL YEAR	YR 6 99-00 QUARTER		TOTAL YEAR	TOTAL COST
		11	12	13	14	4	15	16	17	18	5	19	20	6	AU$
Component 3	**STAFF DEVELOPMENT**														
Output 3	Local staff trained in forage agrono and technology transfer														
Inputs															
	GOA funded														
Personnel	Senior Agronomists	20000	20000	20000	20000	79998	20000	20000	20000	20000	79998	20000	20000	39999	399990
	Consultant- English language teach														16000
	Consultant-participatory research														24000
	Consultant-seed distribution syste														24000
	Sub-Total Personnel	20000	20000	20000	20000	79998	20000	20000	20000	20000	79998	20000	20000	39999	463990
Procurement	Training materials-regional courses														1000
	Training materials-incountry cours		400	400	200	1000		400	400	200					3000
	Sub-Total Procurement		400	400	200	1000		400	400	200					4000
Training															
3.1.1	On-site training	5000				5000	5000				5000	5000		5000	25000
3.2.2	Travel & accom (English training)														6000
3.3 1	Travel & accom (Participatory R&														30000
3.3.2	Travel & accom (Participatory R&														30000
3 4 1	Travel & accom (Forage agronomy														30000
3 4 2	Travel & accom (Forage agronomy		12000	12000	6000	30000		12000	12000	6000	30000				90000
3 4.3	Travel & accomodation														30000
3 4.4	Travel & accomodation														
	Sub-Total Training	5000	12000	12000	6000	35000	5000	12000	12000	6000	35000	5000		5000	261000
Other	Translation costs for booklets														5000
	Travel&accom.-consultants														16000
	Sub-Total Other														21000
	R.G. funded														
	Provision of facilities														
	GOI		2000			2000		2000			2000				8000
	GOL		2000			2000		2000			2000				8000
	GOP			2000		2000			2000		2000				8000
	GOT			2000		2000									4000
	GOSC								2000		2000				4000
	GOV				2000	2000				2000	2000				8000
	Sub-Total R.G funded		4000	4000	2000	10000		4000	4000	2000	10000				40000

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CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	UNIT COST AU$	QNTY	YR 1 94-95 QUARTER 1	2	TOTAL YEAR 1	YEAR 2 1995-96 QUARTER 3	4	5	6	TOTAL YEAR 2	YEAR 3 1996-97 QUARTER 7	8	9	10	TOTAL YEAR 3
Component 4	**INFORMATION SYSTEMS**																
Output 4	Information systems on forage R&																
inputs																	
	GOA funded																
Personnel	Senior Agronomists	Person mths	13333	15	13333	13333	26666		13333	13333	13333	39999		13333	13333	13333	39999
	National system coordinators	Reports from coord.	1000	15	1000	1000	2000		1000	1000	1000	3000		1000	1000	1000	3000
	Sub-Total Personnel				14333	14333	28666		14333	14333	14333	42999		14333	14333	14333	42999
Procurement	Newsletter supplies and production	Issue	2500	10		2500	2500		2500		2500	5000		2500		2500	5000
	Newsheet production	Issue	200	35		1400	1400				1400	1400				1400	1400
	Sub-Total Procurement						3900		2500		3900	6400		2500		3900	6400
Training	Regional project meetings	Meeting	20000	5	20000		20000			20000		20000			20000		20000
	Regional conference		40000	1													
	Sub-Total Training				20000		20000			20000		20000			20000		20000
Other	Nil																
	Sub-Total Other																
	R.G. funded																
	Supply of information																
	GOI	Person mths	1500	5		750	750		750		750	1500		750		750	1500
	GOL	Person mths	1500	5		750	750		750		750	1500		750		750	1500
	GOM	Person mths	1500	5		750	750		750		750	1500		750		750	1500
	GOP	Person mths	1500	5		750	750		750		750	1500		750		750	1500
	GOSC	Person mths	1500	5		750	750		750		750	1500		750		750	1500
	GOT	Person mths	1500	5		750	750		750		750	1500		750		750	1500
	GOV	Person mths	1500	5		750	750		750		750	1500		750		750	1500
	Sub-Total R.G. Funded					5250	5250		5250		5250	10500		5250		5250	10500

ANNEX 1.2 COST SCHEDULE

CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	YEAR 4 1997-98 QUARTER				TOTAL YEAR 4	YEAR 5 1998-99 QUARTER				TOTAL YEAR 5	YR 6 99-00 QUARTER		TOTAL YEAR 6	TOTAL COST AU$
		11	12	13	14		15	16	17	18		19	20		
Component 4	**INFORMATION SYSTEMS**														
Output 4	Information systems on forage R														
inputs															
	GOA funded														
Personnel	Senior Agronomists		13333	13333	13333	39999		13333	13333	13333	39999		13333	13333	199995
	National system coordinators		1000	1000	1000	3000		1000	1000	1000	3000		1000	1000	15000
	Sub-Total Personnel		14333	14333	14333	42999		14333	14333	14333	42999		14333	14333	214995
Procurement	Newsletter supplies and productio		2500		2500	5000		2500		2500	5000		2500	2500	25000
	Newsheet production				1400	1400				1400	1400				7000
	Sub-Total Procurement		2500		3900	6400		2500		3900	6400		2500	2500	32000
Training	Regional project meetings			20000		20000			20000		20000				100000
	Regional conference												40000	40000	40000
	Sub-Total Training			20000		20000			20000		20000		40000	40000	140000
Other	Nil														
	Sub-Total Other														
	R.G. funded														
	Supply of information														
	GOI		750		750	1500		750		750	1500		750	750	7500
	GOL		750		750	1500		750		750	1500		750	750	7500
	GOM		750		750	1500		750		750	1500		750	750	7500
	GOP		750		750	1500		750		750	1500		750	750	7500
	GOSC		750		750	1500		750		750	1500		750	750	7500
	GOT		750		750	1500		750		750	1500		750	750	7500
	GOV		750		750	1500		750		750	1500		750	750	7500
	Sub-Total R.G. Funded		5250		5250	10500		5250		5250	10500		5250	5250	52500

ANNEX 1.2 COST SCHEDULE - FSP

CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	UNIT	UNIT COST AU$	QNTY	YR 1 94-95 QUARTER 1	2	TOTAL YEAR 1	YEAR 2 1995-96 QUARTER 3	4	5	6	TOTAL YEAR 2	YEAR 3 1996-97 QUARTER 7	8	9	10	TOTAL YEAR 3
Component 5	**PROJECT MANAGEMENT**																
Output 5	Efficient project management																
Inputs																	
	GOA funded																
Personnel	Senior Agronomists	Person mths	13333	15	13333	6666.5	20000	13333	6666.5	13333	6666.5	39999	13333	6666.5	13333	6666.5	39999
	Secretary	Person mths	500	120	1500	1500	3000	1500	1500	1500	1500	6000	1500	1500	1500	1500	6000
	Driver	Person mths	250	120	750	750	1500	750	750	750	750	3000	750	750	750	750	3000
	Program leader CIAT	Person mths	12000	8	18000		18000			18000		18000			18000		18000
	Program leader CSIRO	Person mths	12000	5.5	12000		12000			12000		12000			12000		12000
	Sub-Total Personnel				45583	8916.5	54500	15583	8916.5	45583	8916.5	78999	15583	8916.5	45583	8916.5	78999
Procurement	Office equipment	Package	10000	2	20000		20000										
	Office supplies	Annual cost	12000	5	6000		6000	12000				12000	12000				12000
	Sub-Total Procurement				26000		26000	12000				12000	12000				12000
Training	Nil																
	Sub-Total Training																
Other																	
	Travel-Agronomists liason in regio	Visits	2000	5						2000		2000			2000		2000
	Travel-Agron. consult. CIAT/CSIR	Visits	4000	8					8000			8000		8000			8000
	PID preparation	Visit & report	10000	1	10000		10000										
	Travel-visit to project by managers	Visits	10000	5	10000		10000			10000		10000			10000		10000
	Office services	Monthly cost	2000	60	6000	6000	12000	6000	6000	6000	6000	24000	6000	6000	6000	6000	24000
	Maintenance office equipment	Annual cost	2000	5	1000		1000	2000				2000	2000				2000
	Preparation of draft completion rep	Visit &report	10000	1													
	Sub-Total Other				27000	6000	33000	8000	14000	18000	6000	46000	8000	14000	18000	6000	46000
	R.G. funded																
	Project Coordinators																
	GOI	Person mths	300	12	900	900	1800	900	900	900	900	3600	900	900	900	900	3600
	GOL	Person mths	150	12	450	450	900	450	450	450	450	1800	450	450	450	450	1800
	GOM	Person mths	400	2	400		400	400		400		800	400		400		800
	GOP	Person mths	200	12	900	900	1800	900	900	900	900	3600	900	900	900	900	3600
	GOSC	Person mths	300	2	300		300	300		300		600	300		300		600
	GOT	Person mths	500	2	500		500	500		500		1000	500		500		1000
	GOV	Person mths	150	12	450	450	900	450	450	450	450	1800	450	450	450	450	1800
	Sub-Total R.G. Funded				3900	2700	6600	3900	2700	3900	2700	13200	3900	2700	3900	2700	13200

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CODE/ CATEGORY	OUTPUT/ACTIVITY/INPUT	YEAR 4 1997-98 QUARTER				TOTAL YEAR	YEAR 5 1998-99 QUARTER				TOTAL YEAR	YR 6 99-00 QUARTER		TOTAL YEAR	TOTAL COST
		11	12	13	14	4	15	16	17	18	5	19	20	6	AU$
Component 5	**PROJECT MANAGEMENT**														
Output 5	Efficient project management														
Inputs															
	GOA funded														
Personnel	Senior Agronomists	13333	6666.5	13333	6666.5	39999	13333	6666.5	13333	6666.5	39999	13333	6666.5	20000	199995
	Secretary	1500	1500	1500	1500	6000	1500	1500	1500	1500	6000	1500	1500	3000	30000
	Driver	750	750	750	750	3000	750	750	750	750	3000	750	750	1500	15000
	Program leader CIAT			18000		18000			18000		18000		6000	6000	96000
	Program leader CSIRO			12000		12000			12000		12000		6000	6000	66000
	Sub-Total Personnel	15583	8916.5	45583	8916.5	78999	15583	8916.5	45583	8916.5	78999	15583	20917	36500	406995
Procurement	Office equipment														20000
	Office supplies	12000				12000	12000				12000	6000		6000	60000
	Sub-Total Procurement	12000				12000	12000				12000	6000		6000	80000
Training	Nil														
	Sub-Total Training														
Other															
	Travel-Agronomists liason in regio			2000		2000			2000		2000				8000
	Travel-Agron. consult. CIAT/CSIR		8000			8000		8000			8000				32000
	PID preparation														10000
	Travel-visit to project by managers			10000		10000			10000		10000				50000
	Office services	6000	6000	6000	6000	24000	6000	6000	6000	6000	24000	6000	6000	12000	120000
	Maintenance office equipment	2000				2000	2000				2000	1000		1000	10000
	Preparation of draft completion rep												10000	10000	10000
	Sub-Total Other	8000	14000	18000	6000	46000	8000	14000	18000	6000	46000	7000	16000	23000	240000
	R.G. funded														
	Project Coordinators														
	GOI	900	900	900	900	3600	900	900	900	900	3600	900	900	1800	18000
	GOL	450	450	450	450	1800	450	450	450	450	1800	450	450	900	9000
	GOM	400		400		800	400		400		800	400		400	4000
	GOP	900	900	900	900	3600	900	900	900	900	3600	900	900	1800	18000
	GOSC	300		300		600	300		300		600	300		300	3000
	GOT	500		500		1000	500		500		1000	500		500	5000
	GOV	450	450	450	450	1800	450	450	450	450	1800	450	450	900	9000
	Sub-Total R.G. Funded	3900	2700	3900	2700	13200	3900	2700	3900	2700	13200	3900	2700	6600	66000

1.3 Curriculum Vitae and Duty Statements 3

CIAT C.V.

Centro Internacional de Agricultura Tropical

Peter C. Kerridge

Position in Project:

Project Administrator/Project Manager

Managerial Experience:

Centro Internacional de Agricultura Tropical (CIAT)
Cali, Colombia (1992-present)
Leader, Tropical Forages Program. Responsible for supervision of scientists and projects within the Program and liason with other CIAT Programs and national and donor organizations.

Division of Tropical Crops and Pastures (DTCP) CSIRO
Brisbane, Australia (1978-1992)
Project Leader 'Phosphorus requirements for beef cattle' (1981-90) 'Grazing, legumes and sustainability of savannas' (1990-92)

Malaysian Agricultural Research and Development Institute (MARDI)
Serdang, Malaysia (1973-1978) AIDAB secondment
Responsible for Australian contribution to development of a forage research and development unit within MARDI.

Research Experience:

CIAT, Cali, Colombia (1992-present).
Adaptation of tropical forages to soil and climate.

DTCP-CSIRO (1978-1992)
Nutrient requirements for plants and cattle.
Adaptation of forage legumes to different soils.
Smallholder feeding systems for livestock -Southeast Asia.

MARDI (1973-1978)
Adaptation of tropical forages.
Nutrient and rhizobia requirements of forage legumes.
Productivity of tropical forages for beef and milk production.

DTCP-CSIRO (1968-1973)
Fertilizer requirements of tropical pastures used for milk production.
Molybdenum requirements of legumes.

Oregon State University, Corvallis Ore. USA (1964-78)
Tolerance of aluminium toxicity in wheat.

Agricultural University, Bogor, Indonesia. (1961-1964)
Adaptation of forage legumes to acid soils.
Use of crop residues for draught animals.

University of Queensland, Brisbane. (1958-61)
Fodder conservaton in Western Queensland.
Ecology of a native legume -Psoralea eriantha.

Consultancies:

In areas of research managment, review of research and development and project design to Indonesia, Philippines, Thailand, Fiji, Brazil, Colombia and Ethiopia.

Education:

Ph.D. Plant Nutrition. Oregon State University, 1978.

B.Agr.Sci. University of Queensland, 1957.

Professional Development Courses (CSIRO and CIAT)
Project Management, Communication.

Languages:

English -Fluent
Indonesian, Spanish -Conversational

Citizenship:

Australian

Country of Residency:

Colombia

Recent Publications:

Kerridge, P.C. and Mclean, R.W. 1989. Soil fertility and beef production in the semi-arid tropics. XVI International Grassland Congress.p 1191.

Kerridge, P.C., Gilbert, M.A. and Coates, D.B. 1990. Phosphorus and beef production in northern Australia. 8. The status and management of soil phosphorus in relation to beef production. Trop. Grassl.24:221.

Kerridge, P.C. 1991. Adaptation of shrub legumes to acid soils. Proc. Symp. Plant-Soil Interactions at Low pH. p.977.

Kerridge,P.C., McLean, R.W. and Jones, R.M. 1992. The impact of soil fertility and legume on the yield and persistence of buffel grass. Proc. Aust. Agron. Conf. p

Kerridge, P.C. and Lascano, C.E. 1993. Primary and secondary evaluation of forage germplasm. AFRNET Workshop, Bamako, Mali. 14p.

Kerridge, P.C. and Argel, P.J. 1993. *Arachis pintoi*: Una leguminosa productivia y persistente para pastos tropicales. Ciencia e Investigación Agraria (Chile) 20:29

Kerridge, P.C. 1994. Opportunities for forage research and development in tropical Latin America. ACIAR Conference: Strategic Directions for Tropical Pasture Research in ACIAR. Brisbane November 1993.

ANNEX 1.3 DUTY STATEMENTS

Forage Agronomist (appointed by CIAT- based in the Philippines)

1. Take primary responsibility for the coordination of FSP activities in Indonesia, Malaysia, Philippines and South China as outlined in the Workplan (Figure 2) and Schedule of Activities (Annex 1.2).

2. Take primary responsibility for the establishment of the SEAFRAD (Southeast Asia Forage Research and Development Network) and the production and distribution of a newsletter.

3. Contribute to FSP activities in Lao PDR, Thailand And Vietnam through the CSIRO Senior Agronomist.

4. Liase with the CSIRO Senior Agronomist in regard to all FSP activities.

5. Report to the CIAT Manager.

6. Prepare six-monthly technical reports and the technical aspects of the Annual Plan in collaboration with the CSIRO agronomist.

7. Contribute to the preparation of the PID and the Completion Report.

Forage Agronomist (appointed by CSIRO- based in Lao PDR)

1. Take primary responsibility for the coordination of FSP activities in Lao PDR, Thailand and Vietnam as outlined in the Workplan (Figure 2) and Schedule of Activities (Annex 1.2).

2. Contribute to FSP activities in Indonesia, Malaysia, Philippines and South China.

3. Liase with the CIAT Senior Agronomist in regard to all FSP activities.

4. Report to the CSIRO Manager.

5. Prepare six-monthly technical reports and the technical aspects of the Annual Plan in collaboration with the CIAT agronomist.

6. Contribute to the preparation of the PID and the Completion Report.

ANNEX 2.1 VISIT REPORT

Visit to Southeast Asia to determine the need and support for Phase II of the AIDAB funded Regional Forage Seeds Project. 17 January-15 February 1994

1. Background

The Regional Forage Seeds (FSP)project was set up as a result of a resolution by a regional meeting of representatives from Malaysia, Thailand, Philippines, China and Sri Lanka requesting a Southeast Asian Forage and Pasture R & D regional network be set up under the auspices of CIAT and CSIRO (CIAT 1989) and the subsequent funding by AIDAB to a joint proposal by CIAT and CSIRO (Appendix I, AIDAB 1992). The FSP commenced in January 1992 and was restricted to operation in Indonesia, Malaysia, Philippines and Thailand due to limited availability of funding. It is funded until December 1994.

The goal of the FSP is to increase animal production through the introduction of appropriate varieties of forage species into smallholder farming systems. The main activities are:

(i) Introduction, primary evaluation and multiplication of improved forages,
(ii) Regional evaluation by recipient government (R.G.) collaborators for environmental adaptation,
(iii) On-farm evaluation with farmer participation in conjunction with development programs to determine the suitability of adapted forages for particular farming systems and multiplication of promising forage species,
(iv) Training of local staff in forage evaluation and seed multiplication,
(v) Regular consultation between CIAT/CSIRO staff and R.G. collaborators.

While CIAT has the overall responsibility for management and reporting to AIDAB, the Project is a joint effort with the two organisations complementing one another in forage genetic resources, experience and activities. CIAT has an officer stationed at IRRI, Los Baños, Philippines and CSIRO an officer stationed at the Division of Tropical Crops and Pastures, Brisbane.

The FSP has had success in identifying new forage species for different farming systems in the four participating countries within the two years of operation (FSP Annual Report 1993-94). Some of these have been multiplied and are being used by smallholders.

However, further regional evaluation is required of species introduced for the first time to the region from CIAT and there is a need for continued input into developing forages for particular farming systems e.g. fallow and agroforestry systems. It has become clear that to achieve acceptance, forages must be evaluated by farmers within their own farming system.

It was anticipated that the goal and all activities could not be completed within a three year time frame and a subsequent phase would be necessary, in particular, to emphasise seed production and extension of forages into smallholder systems (AIDAB 1992).

In discussions with AIDAB in October 1993, it was inferred that a proposal for a second Phase of the FSP would receive favorable consideration. Under Southeast Asia Regional Project funding, collaborative activities could be extended to Lao PDR and Vietnam with limited activity in China.

Participants to the second regional meeting of the FSP held in the Philippines in October 1993 gave strong

support for the continuation of the FSP in the region. Other projects (e.g. the AIDAB funded PPAEP in the Philippines), ACIAR , other development agencies (e.g. EEC funded projects in the Philippines and Thailand) and international centres (e.g. IRRI), have also expressed the need for new forage materials, in particular, forage legumes and strongly support the operation of the project in the region.

Prior to preparation of a Design Document for Phase II, visits were made to Indonesia, Thailand, Lao PDR, Vietnam and Philippines to discuss the needs of these countries and determine what support might be given to a continuing project. More time was spent in Lao and Vietnam than the other countries because of limited prior contact with these countries. The visit was made by Dr. P.C. Kerridge, Leader Tropical Forages Program at CIAT and Dr J.B. Hacker, Leader of the Australian Tropical Forage Genetic Resource Centre, CSIRO. Dr W.W. Stur, CIAT agronomist for the FSP, visited with representatives from Malaysia and China. Firm commitments were made by senior government officials to support a second phase of the project (Appendix 3).

2. Visit to Indonesia. 17-19 January

Discussions were held with the Director General, Department of Livestock Services and his staff and officers of the Central Research Institute for Animal Sciences (see Appendices 1 and 2 for itinerary and list of persons visited).

2.1 Organisation

Forage development activities are supervised by the Livestock Production Division within the Directorate General of Livestock Services (DGLS) under the Ministry of Agriculture (MA). They are implemented by the Head of the Veterinary Service in each Province under the coordination of the Chief Agricultural Officer and the Governor. There is coordination and planning of activities in the agriculture, livestock and forestry sectors by the Planning Bureau within the Ministry.

The majority of funds are now distributed directly to the Provinces though some special project funds are distributed through the DGLS. Aid projects are coordinated by the DGLS. Additional funds for national and Provincial activities are provided through projects put forward by officers within DGLS. An example of this is an application for funds by the Head of the Sub-Directorate of Forage and Crop Production, Livestock Production Division, DGLS to conduct a national training course on the introduction of new forages and seed production. This will be conducted by persons trained in Australia under Phase I of the FSP. Application must be made nine months prior to the commencement of the financial year in April.

Forage research is conducted by the Central Research Institute for Animal Sciences (CRIAS), in particular, at the research stations at Ciawi and in South Sulawesi), and by staff of many universities, in particular, those at Bali, Bogor, Yogyakarta, and northern Sulawesi.

2.2 Policy on livestock and forage development

There is an increasing demand for livestock products, particularly, in the larger cities. A senior official indicated that while attention had been given to increasing livestock numbers by importation into Kalimantan and other areas, insufficient planning had been given to feed sources for large livestock. Most attention has been devoted to increasing poultry production. Nevertheless, ruminant production has increased from 300,000 to 1.2 m tons in the last 20 years even though the proportion of beef to total livestock products has dropped from 49 to 27 percent. The government projection for the next 20 years is for a 6 percent increase in livestock products but only a 2.7 percent increase in food crops.

The government considers four sectors in agriculture - subsistence, semi-commercial, commercial and industry. Increasing emphasis is being given to the private sector becoming more involved in development or agribusiness. The FSP would operate more at the semi-commercial level and in seed production with agribusiness.

More attention is now being given to integrated farm development rather than a focus on individual commodities and livestock development should be considered in this context.

The Government is keen for the FSP activity to continue in Kalimantan and would support an extension of activity to West Sumatra. They indicated consideration should also be given to eastern Indonesia.

2.3 Possible linkages with government and other donor programs

Now that the FSP has established excellent working relationships within the DGLS it would be useful to establish linkages with the Central Research Institute for Animal Science, the SR-CRSP (Small Ruminant Collaborative Research Program) financed by US aid within CRIAS and the universities with strong forage programs. In this way new forages identified in the FSP would be spread more widely.

AIDAB supported the former BPT Forage Research Project within CRIAS and the Nusa Tenggara Integrated Livestock Development Project under DGLS. ACIAR funded two forage projects, ' Tree and Shrub Forage Legumes for the Tropics' (with CRIAS and CSIRO-DTCP) and the 'Forages under Plantation Crops' (between universities at Denpasar and Manado and the University of Queensland/CSIRO-DTCP.

Other recent projects under DGLS were the IFAD Phase II Small Holder Development Project and the ADB Kalimantan II Livestock Development Project. The latter two projects had large components of beef cattle distribution and forage development and focused on transmigration areas in the outer Indonesian islands. The FSP has had contacts with these Projects. They will be completed in 1994 but an extension of IFAD activities is planned for eastern Indonesia.

In Phase II, the FSP could also interact with the Indonesian-IRRI Upland rice systems project and an Indonesian government Integrated Development Project for Smallholders.

The Indonesian-IRRI integrated upland rice systems project is situated at Sitiung in West Sumatra and has requested involvement of the FSP to investigate the use of forage legumes for soil improvement. The USAID funded Tropsoils Project has also been active in the area and ICRAF is exploring a project there. This would give an opportunity for FSP activities to be integrated with those of agroforestry as well as agriculture.

The Sitiung district is also included as a target area by the Ministry of Agriculture project 'Integrated Development Project for Smallholders'. The project is directed at improvement of marginal lands and will involve the total agricultural sector. The FSP is already active in some of the districts selected for the project, e.g., at Kutai in East Kalimantan. This national project gives the opportunity to extend information obtained at FSP sites to other relevant areas of Indonesia through the districts that have been selected in each Province in Indonesia.

2.4 Summary and comments

The FSP should build on the success that has been achieved, particularly in East Kalimantan. Participation in integrated development projects would allow an entry point for forages into the farming system. It is important to support the in-country training proposed by DGLS. Seed or vegetative multiplication systems

need to be developed for adapted and useful forage cultivars. Activity could be expanded to West Sumatra provided there is continued involvement of the Indonesian-IRRI project at Sitiung.

2.5 Understanding with senior government officials

At the final meeting chaired by the Secretary to the Director General DGLS the following understanding was reached as to activities in a proposed Phase II of the FSP:

(i) The project should extend the results obtained in Kalimantan and work with farmers to see how they can adopt these forages in their farms.
(ii) Adoption of forages by farmers should be promulgated using participatory methods where possible. Forages would be offered as one component of an integrated farming system.
(iii) Cooperation will be sought with the 'Integrated Development Project for Smallholders' which is presently being established by the Ministry of Agriculture in areas where the FSP is active and with the CRIFC-IRRI upland farming systems project in Sitiung, West Sumatra.
(iv) Seed production. More attention should be given to multiplication of useful forage varieties in local farming communities by both seed and vegetative propagation. A scheme needs to be established to buy and sell seed produced by farmers. The UPT Centres could be used to produce basic seed.
(v) Liason can be made with the Central Research Institute for Animal Science in addition to DGLS for reporting results obtained in the FSP, distributing new forage varieties and collaboration in research to solve local problems.
(vi) Assistance would be given to short-term training of selected Indonesian staff overseas and to in-country training. Advice would be sought from FSP consultants in extending the results from FSP sites to other Provinces.
(vii) Indonesia would participate in a Southeast Asia Regional Forage Network. One of the University staff from IPB might be approached to assist in networking within Indonesia. The possibility of a local R & D forage network would be investigated.
(viii) The present Letter of Understanding would be extended for the proposed Phase II of the Project.

3. Visit to Thailand. 20-22 January

Discussions were held with officials of the Department of Livestock Development (DLD) and the Animal Nutrition Laboratory at Khon Kaen.

3.1 Organization

The Department of Livestock Development is responsible for planning and coordination of research and development of forages though regional offices have autonomy in operation.

The independent Dairy Livestock Organisation promotes forage development within the dairy industry. Considerable forage research is conducted at the Universities.

3.2 Policy on livestock and forage development

There are currently 5.8 million cattle and 4.9 million water buffalo but there is a deficiency of beef and milk products. Hence the Government has actively promoted livestock production through the dairy promotion scheme, distribution of beef and draft cattle to smallholders and production of forage seed. Large amounts of forage seed have been produced through government supported schemes but attempts at creating a fully commercial forage seed industry have not been successful to date. Some cattle distribution

schemes have not been successful because of feed shortages in areas where cattle have been introduced. This should be of concern to Australia because most cattle for these schemes were imported from Australia. There has been considerable activity in forage research and extension over the last 20 years. Forages, however, have not been well integrated into cropping systems. There is a current need for suitable forages for infertile acid soils in the Northeast because of the decline in cassava production due to poor markets. Some forages introduced during Phase I of the Project such as gamba grass and Stylo 184 have the potential to make a considerable impact once seed supplies have been increased. There is also a need for more acid tolerant forage germplasm in southern Thailand which could be evaluated at the DLD Animal Nutrition Research Center at Narathiwat and the sub-station at Sungai Padi.

3.3 Possible linkages

Opportunities for linkages exist with the CIAT Regional Cassava Program which also operates in the Northeast and with JICA project in Southern Thailand.

Formal contacts would be maintained with DLD, the executing agency and informal contacts with AUSTREX, the DLO, Khon Kaen and Kasetsart Universities and with the Asian Institute of Technology, all of which are associated with forage evaluation.

3.4 Summary

Thailand has well trained forage scientists who have demonstrated their ability to conduct research on forages and organise forage seed production through smallholders. This activity could serve as an example to other countries in Southeast Asia.

The DLD remains the most significant body involved in forage development and should remain the main contact for the FSP. Informal linkages with Khon Kaen and Kasetsart Universities through networking would help to coordinate activities and result in more focus on forage development.

The main role that the Forage program could play in a second Phase of the FSP is the introduction of acid tolerant forage germplasm for the more acid soils for southern Thailand, continue promotion of on-farm research in the Northeast and involve both forage research and development workers in a regional forage network.

3.5 Understanding with senior with government officials

In discussions it was agreed that:

(i) Participatory evaluation by farmers of promising new forage varieties identified in Phase I should continue.
(ii) The Northeast is the priority area for forage improvement but some forage evaluation work needs to be carried out in southern Thailand.
(iii) Thailand would participate in a Regional Forage Network for Southeast Asia.
(iv) The Project could work directly with officers in the regions provided that the Director of the Division of Animal Nutrition, DLD, be kept informed and invited to participate in planning activities.
(v) The present Letter of Understanding could be amended/extended for Phase II of the FSP.

Funding to Thailand under a second phase of the FSP would be limited to

(i) A contribution to integrated on-farm experiments in the Northeast and to new evaluation in the South.
(ii) Visits by specialists to assist with special problems, e.g. seed production of *Brachiaria decumbens*
(iii) Participation in regional meetings and a Southeast Asia Regional Forage Research and Development Network.
(iv) Some contribution to training where this was still considered necessary.

4. Visit to Laos. 23-30 January, 1994

The main discussions were with officers of the Department of Livestock and Veterinary Services (DLVS) of the Ministry of Agriculture and Forestry (MAF). Discussions were also held at the National Agriculture Research Centre, Soil Survey and Land Classification Centre, Nabong Agricultural College, with the Chief Agriculture and Forestry Officer in Luang Prabang Province and various aid project personnel. Field visits were made to Luang Prabang and the Nam Suang and the NARC research stations. A concluding discussion was held with the Vice Minister, MAF.

4.1 Background - The Livestock Industry

Livestock play a significant role in the Lao economy with an estimated contribution to GDP of 11% and with exports of cattle and buffalo to Thailand worth US$7 million or 15% of foreign exchange earnings (ADB 1990). There is a potential to increase export earnings to US$23 with improvements in animal health and nutrition and by utilizing new areas.

At present the main areas of cattle and livestock production are associated with the more intensive agricultural areas where animals are used for draft. In intensive rained lowland rice systems, livestock sales account for 25 -50% of the cash flow of the household where the mean annual income is $250. Increased livestock production and sales would facilitate the use of inputs such as fertilizers into the cropping system.

Planners look for increased livestock production from the open grasslands, from areas presently under shifting cultivation and for livestock to be produced in an agroforestry system. Government policy is to reduce the production of rice and other food crops under shifting cultivation.

4.2 Organization of livestock and forage activities

The forage R & D activities are organized within the Adaptive Research Sub-Division of the Division of Livestock Production within the Department of Livestock and Veterinary Services (DLVS). There are two other Divisions, Veterinary Services and Fisheries. Divisions have both research and extensions roles. However, development and most extension activities are under the control of the Provinces and coordinated by the Chief of the Agricultural and Forestry Service.

Nevertheless the DLVS has strong linkages to the Provincial Livestock Services. The Province is divided into districts, to be staffed by extensionists, and villages, which largely rely on volunteer workers and model farmers for extension or activities such as vaccination. Some 3,000 of the villages out of 12,000 now have volunteer workers who can carry out vaccinations.

The Division of Adaptative Research has three research stations, Nam Suang in Vientiane municipality, Larsen in Xiang Khoang (200 km NE of Vientiane) and Pak Xong in Cham Pasak (500 km SE).

While forage R & D is located within DLVS there is considerable interest and some activity with forages in the Swiss funded Lao-IRRI project and other overseas funded projects which operate with the Department of Agriculture or directly with the Ministry of Agriculture.

4.3 Visits and discussions

Visits with DLVS staff

Introductory talks with senior DLVS staff showed there was a concern not only with increasing livestock production but in meeting overall government policy objectives with respect to agriculture and the environment. Thus DLVS needed to work towards achieving sustainable farming systems. Of particular concern was the objective of reducing the 'slash and burn' system of agriculture. Alternatives were forestry, agroforestry (where teak and livestock production might be combined) and sedentary upland systems in which improved fallows and livestock might play a role. Likewise, DLVS could work with the National Agricultural Research Centre in investigating the use of short-term forages into rained lowland rice systems to ensure sufficient dry season feed for buffalo and cattle.

The proposed project should also consider the need to develop a better understanding of the native grasslands and consider opportunities for their improvement as well as working with introduced forages. Mention was made of approaches by private interests from overseas to develop some of the grassland areas provided a long-term lease was granted. An alternative was seen in community-based development of these areas.

It was emphasised that DLVS lacked sufficient well trained persons at this stage to implement its planned activities. Currently, considerable attention was being given to vaccination campaigns to improve the health of livestock. The incidence of foot and mouth disease and haemorrhagic septicaemia could affect livestock exports to Thailand.

Recent activities of the Adaptive Research Sub-Division had been (a) a national grassland survey (b) a study of local farming systems and (c) adaptive research which included research on forages.

A visit was made to Nam Suang Research Station, 42 km north of Vientiane. It has two units, one of 20 ha where the main facilitates are located and another 150 ha in area with a shed used for processing seed. It is situated in a somewhat elevated area in an extensive region of rained lowland rice farming. Facilities include good offices and accommodation for visitors and workshop delegates.

Forage work being carried out at Nam Suang included a nursery area with a limited collection of tropical grasses and legumes and demonstration pastures with gamba grass, guinea, signal or koronivia oversown with a mixture of legumes. The signal grass and Gamba grass were best adapted to dry season conditions with seca stylo and common centro being quite prominent in some pastures. Grazing pressure was heavy for the dry season (c. 100 ha and 100 cattle) with little management input. Nam Suang is suitable for initial introductions and seed multiplication but it would be preferable to conduct any other activities off station.

The Head of the Adaptive Research Sub-Division is stationed at Nam Suang. He has diplomas from Gatton College and East Germany and has a good knowledge of the grasslands and forages. He suggested that more attention should be given to native grass species, reinforcing concern for native grasslands previously expressed by others in DLVS. Local species could be included in future evaluation trials, where seed was available. It would also be useful to contribute to a semi-popular publication on the predominant native grasses and other species in the natural grasslands. These would include the Pek grasslands, Xiang Khoang

and the Bolovens Plateau.

Other projects within DLVS

There was an AIDAB funded livestock project from 1982-1988 with a second phase from 1988-1990. This project worked with the Provinces at a village level as well as building a research station at Nam Suang. A considerable amount of information is available on livestock and forage activities in the reports of this project (see Appendix).

The HQ for an IFAD project involving community development and infrastructure within Xieng Xuang Province is situated adjacent to DLVS. A large portion of the project area is natural grassland. Cattle numbers are now much lower than previously. Credit is given for livestock purchase and a consultant familiar with livestock and forages has recently been hired. Problems in redeveloping this area were seen to be (a) low availability of cattle for restocking, (b) poor quality of local seed (c) expense of land preparation and fencing, (d) slow use of available loan funds, (e) too few local technicians with adequate training and experience, (f) no control of burning.

DLVS is scheduled to receive some operational funding for 1994 through FAO for identifying forages and browse for improving native grasslands. Six sites are targeted in Vientiane, Champasak, Savannakhet, Luang Namtha and Xiang Xhoang Provinces. Two other regional FAO Projects concerned with conservation and use of genetic resources and utilisation of locally available feed resources will have some limited input into Lao.

Overseas companies from Thailand and Korea have made approaches to the Lao government to develop large natural grazing areas in the fertile Bolovens Plateau and Xiang Xhoang under 40 year leases.

Visit to Luang Prabang

In a visit to Luang Prabang visits were made to the Provincial Kouay Khot Station and discussions held with the Provincial Head of the Agriculture and Forestry Department and the Livestock Officer. The main work on forages has been initiated by overseas funded development projects.

The Lao-IRRI upland rice project is experimenting with forage legumes to improve soil fertility during the fallow period, as barriers to control erosion and as covers to reduce weed competition with food crops. Many of the promising species were obtained through the FSP in the Philippines. The soils in this area are not very infertile or acid and there are good possibilities to introduce species to improve the 'bush fallow' to give sustainability to the system and allow it to be used by cattle. Cattle are used for draft in both the lowland rained rice areas in the valleys and in the hillsides and are important as a source of wealth and thus cash reserve. Forages could well be combined with teak within an agroforestry system.

Both the Lao-Swedish Cooperation Project and the Lao-EEC Micro-projects teams in Luang Prabang are also involved in shifting cultivation farming systems and see the need for forages in the system. They have had limited success to date. The more focused effort by the Lao-IRRI project has also resulted in the most progress. A concentrated effort into forages for upland systems would have a large potential impact for the whole region.

Livestock Services are approaching the goal of increasing livestock production by the provision of credit to farmers to purchase cattle. There are 11 project areas each involving 20 -30 farmers who receive loans to purchase 4 to 30 head of cattle. Disease and nutrition are considered the main limitation to cattle production though the annual death rate of adults is only 1-2 %. The Province is prepared to appoint/assign

a person to work with forage improvement. Official policy is to reduce the clearing of forest areas for shifting cultivation. Cattle production and teak planting are seen as alternatives. An agroforestry system with teak and cattle is seen as a possibility.

Visits with other Departments and Institutes

Food crops. Discussions were held with the Director of the National Agricultural and Research Centre (NARC) and the Team Leader of the Lao-IRRI Rice project. NARC now has good facilities for staff offices and a new training centre. There are staff and on-farm research activities associated with the project in 15 Provinces.

It was again emphasised that the national objective is to reduce the rice production in upland rice areas and to concentrate on production of rained lowland rice. The former is largely in hilly country in the north of the country, and comprises 34% of the harvested rice area. It is grown under the 'slash and burn' system.

The main objectives in lowland rice are to introduce improved varieties acceptable to the people (95% rice produced in Lao is glutinous rice) and improve management, in particular, to overcome nutrient deficiencies. The main deficiency is phosphorus but low household incomes preclude purchase of inputs. As livestock provide up to 50% of the cash income in the rained lowland rice areas, there is an interest in increasing livestock production. This would be achieved by sowing an annual forage legume after the rice is harvested or the water level has been reduced. The Lao-IRRI project would welcome the involvement of the FSP through DLVS and are prepared to allocate some of their resources to the activity. Considerable research has been done on growing and incorporating green manures prior to the rice crop.

The Lao-IRRI Project operates within the national program and does not employ technicians. This is considered to be a very effective *modus operandi.* Travelling allowances are provided rather than supplements to salaries. Short-term training is considered to be an essential component of the Lao-IRRI program. Some of this is done at IRRI in the Philippines and other training at the NARC. Intensive training in English is given prior to staff going for training overseas.

Upland Project. A large and many faceted Upland Project, funded by World Bank/AIDAB/CIRAD, is operating in Vientiane and Cham Pasak provinces from an office in Vientiane city. The main activities are on road and irrigation facility construction, the coffee industry in Cham Pasak and community development. Livestock is not a designated activity though community development activity has involved vaccination of livestock.

Nabong Agricultural College. This operates under the Ministry of Agriculture. It is situated 33 km south of Vientiane and each year trains about 100 students to intermediate level (3 years) and 20 to diploma level (2 years) after intermediate graduates have worked for two years in the province which sponsored them. Students receive a general training but specialise in Agriculture or Animal Husbandry in the final year. This training scheme, part-funded by UNDP, has largely taken the place of overseas training, which was extensive during the 1975-85 period. Many people currently employed in MAF were trained in the USSR, eastern European countries or Cuba.

When UNDP funding ceases in April 1994, funding will be taken over in part by France. The Lao government currently provides c. 35% of the budget and the provinces fund the students, which is an indication of the government's perception of the importance of the College to the country's future. It is intended that the course be further developed to degree level. Students return to the provinces for six months practical work and could work on small research projects. The college has a facility for translating and producing booklets in the Lao language.

Demonstration areas were visited where tropical forages were being grown in nursery plots and where forage species sown several years ago were being intermittently grazed. Gamba grass and Seca stylo would appear to form a good combination but work needs to be done to see if the stylo can re-establish in competition with the grass. Some research on seed production might be undertaken at the college with guidance from the project.

4.4 Summary and comments

Improved grasses and legumes introduced into the various farming systems in Lao could make a major impact on livestock development. The main limitations besides species are shortage of trained manpower and the absence of a tradition of forage as a crop that needs to be managed like food crops. Thus attention needs to be focused on areas such as smallholder adoption and control of grazing in addition to evaluation of forages. Seed production of annual forages by smallholders would be a limitation for adoption of annual forages in rained lowland rice systems.

Lao officials, both at the national and provincial level, and expatriates involved in related projects were very helpful in providing information on the present situation and supportive of involvement of the FSP in Lao. Vientiane would be a good site to locate a second FSP forage scientist in Southeast Asia from the viewpoint of the need in Lao and proximity to Vietnam and Northeast Thailand.

Opportunities for forage development are envisaged in the following areas:

(i) Upland areas, as a grazing resource in the 2-10 year inter-crop fallow/ley period, to enhance soil fertility for subsequent food crops, decrease weeds and reduce shifting agriculture;
(ii) Upland areas in developing an agroforestry system based around re-afforestation with teak;
(iii) In improvement of natural native pastures (Xiang Khoang, Bolovens Plateau, pek grasslands) and,
(iv) Rained lowland rice systems, as an annual dry-season forage following rice, perennial forages on bunds and perennial pastures in holding paddocks used in the wet-season.

Five sites were identified with the potential to address these situations. The choice was based on Lao government priorities (reducing slash and burn cultivation), activities of other projects (Lao-IRRI project, FAO-UNDP project) and ecogeographic considerations. Provisional arrangements were made relating to a national local co-ordinator, coordinators at each of the five principal sites and pre-project training in English.

4.5 Understanding reached with Government officials

In summary sessions, both Mr Sitaheng Rasphone, Vice-Minister of the Ministry of Agriculture and Forestry and Dr Singkham Phonvisay Director General Department of Livestock and Veterinary Services approved the proposal put to them. It was agreed in principle that:

(i) The FSP would conduct forage evaluation and associated on-farm studies for different farming systems on soils differing in fertility and in different climatic areas e.g. lowland and upland areas to 1500m. Forages would be selected for the following farming systems: a) To stabilise upland farming areas (base Luang Prabang with a second site in Oudom Xai, b) to improve open grasslands (Xieng Kuang and Champassak), c) to provide dry season fodder for rained lowland rice areas (Cham Passak and Vientiane);
(ii) On-farm evaluation work would be done in collaboration with other sectors and projects where feasible;

(iii) MAF would appoint an overall Coordinator for the Project. Also MAF staff chosen to coordinate research at each of the five sites should have had some formal training at the degree or diploma level in agronomy and be assigned to work specifically with forage research and development for the length of the project;

(iv) The project would provide funds for external and in-country training;

(v) The current FSP would provide some new species for planting at the Nam Suang experiment station and seek funds for the training of Lao staff in English.

5. Visit to Vietnam. 30 January - 6 February

The main contact was with officials of the Ministry of Agriculture and Food Industries including the Animal Husbandry Research Institute, Animal and Feed Production Corporation, Cattle and Forage Research Centre, Ba Vi, Department of Agricultural Science and Technology, Goat and Rabbit Research Centre, Ba Vi, National Institute for Agricultural Planning and Projection and the Vietnam Agricultural Science Institute. Visits were also made to the Centre for Natural Resources Management and Environmental Studies, University of Hanoi, and the Faculty of Soil and Water Management, Hanoi Agricultural University. The Department of Foreign Economic Relations of the State Planning Committee was consulted with respect to approval for use of aid funds. Useful contact was also made with officials involved in development assistance at the Australian and Swedish Embassies.

5.1 Background

Vietnam is situated between latitudes 10° and 23°N. The climate is generally monsoonal with plentiful rain in summer and a pronounced dry season. Temperatures are moderated by mountains to the west and in the central districts. Most of the country is climatically well suited to tropical forages, although the cool winters and elevation in the north are likely to limit growth of some species. Extensive clearing, shifting agriculture, overgrazing and military activities have resulted in large areas of 'unused' or "bare" land, with acute erosion, particularly in the central districts (Table 1). Estimates for this area vary between 10 million and 14 million ha, depending on criteria used. Much of the unused land is, in fact, cultivated under a shifting form of agriculture and a considerable proportion has been allocated to farmers (Me et al. 1993). An estimated area of 2.5 million ha is covered with "thin grass" and 6 million ha and is used under shifting cultivation. There is apparently very little natural grassland. Much of the 'forest' land (> 20% slope) is also used for crops and livestock.

Table 1. Land use in Vietnam (source - Me, Van and Warfvinge, 1993)

Category	Area (Million ha)	% of Country
Agricultural	7.0	21
Forest	9.4	28
Special use	1.0	3
Residential	0.8	3
Unused	14.9	45

Institutes within the MAFI tend to work within agricultural land and thus their figures often refer only to this and exclude the land used for grazing in the forestry and 'unused' areas. Thus the reduction in the area of pasture from 1.3 million ha to 0.3 million ha between 1978 and 1989 refers to 'arable or agricultural' land (Ly 1993). However, total livestock numbers have also declined substantially due to insufficient forage for draft animals in the delta areas (which are now being increasingly cultivated by hand) and uncontrolled export via Lao to Thailand.

The UNDP Environment and Natural Resource Management Action Plan for 1993 indicates that primary forests in Vietnam are being reduced at a rate of 100,000 - 200,000 ha each year and aims to bring 10 million ha of "barren land" back into sustainable production. A key element is the return of 7 million ha to smallholders. Although the focus of this plan is re-afforestation, there will be a component of cropping and livestock production in most areas.

Seven different economic zones are recognised - Hilly northwest, Red River Delta, North Central, Coastal Central, Plateau, the NE corner of South Vietnam and the Mekong River Delta, which largely equate with ecological regions. The main region with potential for cattle appears to be in central Vietnam. Of this the inland plateau has fertile soils and is used for plantation crops while the subcoastal districts are hilly, with severely eroded acid soils which require stabilisation.

Pigs account for 70% of the total livestock products. Almost all cattle and buffalo are used for draft, apart from a very small dairy industry. 75% of the buffalo are in north Vietnam and 60% of the cattle in the central region. Owing to dense populations and intensive rice cultivation in the Mekong and Red River Deltas, livestock in those regions are largely dependant on crop residues.

Nevertheless, cattle and buffalo remain very important as draught animals in the 'arable', 'unused' and 'forestry' areas. Limited attention has been given to forage improvement though some useful species have been introduced from Cuba and Australia.

5.2 Organisation of Forage Research and Development

An outline of agricultural R & D was provided by Dr Nguyen ngoc Kinh, Director of the Department of Agricultural Science and Technology (DAST), a department of the Ministry of Agriculture and Food Industries (MAFI). DAST is one of 12 departments in MAFI. It manages agricultural activities, quality control, development of product standards, international cooperation and arranges postgraduate training in Vietnam and overseas. The Director of DAST is secretary of the Agricultural Science and Technology Committee.

Within (and outside MAFI ?) there are some 31 Agricultural Institutes and Centres spread across the country with a greater concentration in the north. At present coordination with respect to allocation of responsibilites to and collaboration between institutes is poor. There is a move, however, to re-organise agricultural R & D in order to reduce the numbers of institutes and achieve better coordination between north and south. This could result in a single institute for animal husbandry and another for food crops.

MAFI appears to be taking the lead in this reorganisation. Nevertheless, there is considerable activity in agricultural R & D outside MAFI and little coordination of this with that in MAFI. Universities appear to be able to set up collaborative projects with donors without the approval of DAST or MAFI. Further, the Provincial People's Committees have considerable autonomy and below them the District and Village Committees. Thus if a village people's committee decides on a course of action with respect to land redistribution or introduction of new technologies, this is respected by higher levels of authority because of the philosophy of power residing ultimately in the people. Work in the Provinces does need to be approved by provincial officials.

In order to achieve some coordination, operational monies for R & D are distributed through National Programs. There are c.30 National Programs for 1991-95 across all sectors. For each Program, a Management Committee has been appointed with representatives of research institutions and the universities. Three of Programs (KNO1, KNO2 and KCO8) are the responsibility of the Ministry of Agriculture and Food Industries.

KNO1 includes 19 topics and is concerned with research and development of food crops. The object is the breeding of new varieties and the development of methods for intensive farming. Since 1990, there has been substantial improvement in agriculture. A surplus of rice is produced and with new cultivars of maize and legumes and use of integrated pest management yields of other crops has increased.

KNO2 carries out research and development on animal husbandry and includes three objectives and 22 topics. The first objective is livestock breeding. Most importance is given to pig breeding, to increase the proportion of lean meat. In cattle, there are hybridisation programs with exotic breeds to increase liveweight while retaining good adaptation and also, for near-city districts, to create new dairy breeds. There are also topics on poultry, goats (for meat and milk production) and horses. The second objective is to improve animal health and the third objective is to improve quality of feeds through processing byproducts and introducing collections of forage grasses and legumes. The program is managed by the former director of the National Institute of Animal Husbandry.

KCO8 is a biotechnology program aimed at developing new plant cultivars, vaccines and plant protection methods.

The government has a policy of spending 2% of GDP on technological research, but at this stage the actual level is 1%. Thus, there is insufficient capital for research and equipment is outdated. Funds are adequate for salaries but not for operational expenses. Training is still a high priority area. In the past, Vietnam relied on inexpensive training through USSR and the Soviet bloc, but now staff training has to be carried out within projects.

The Animal Husbandry Research Institute (AHRI), which is situated close to Hanoi, appears to place considerable emphasis on forage R & D among its various activities. It has responsibility for ten research centres and stations, distributed throughout the country, each focussing on specific livestock or activity (eg Feedmill). It also has access to technology transfer centers located in each Province.

The AHRI headquarter site is located on the fertile soil of the Red River delta. There is an experimental area where forages are said to undergo preliminary evaluation and some trials are carried out. Leucaena was growing magnificiently. A more appropriate location for forage introduction is the Cattle and Forage Research Centre (also the Goat and Rabbit Centre) located at Ba Vi, 55 km west of Hanoi. The Centre functions largely as a cooperative dairy production enterprise, using model farms as a means of undertaking R&D with farmers. While the Centre could be used for introduction of forages, little impact could be made in areas we were shown because of the intensive nature of the agriculture in this 'interzone' between the delta and the uplands and the high degree of technological development on the model farms.

Another institute situated near Hanoi, the Vietnam Agricultural Science Institute, also responsible to MAFI, includes departments for germplasm conservation and animal nutrition.

The genetic resources unit was said to have responsibility for all crops, including forages. However, it does not have the capability or capacity to handle these crops and forages would have a low priority. Nevertheless, the seed storage facility is very good and there is also an in-vitro culture facility for crops such as cassava and bananas.

Another prominent institute involved in forage research is the Institute of Agricultural Science of South Vietnam, Ho Chi Minh City, which was not visited.

Forage development activities are partly the responsibility of the Animal Feed and Production Corporations, one being located in Hanoi and the other in Ho Chi Minh City. They are also responsible to MAFI. The Corporation in the north manages 32 units, 12 of which are concerned with cattle. The main role of the Corporation was said to be breeding but it also manages Moc Chau, a dairy production area in the

highlands west of Hanoi and at which there has been some Australian involvement. The Corporation appears to have little contact with other institutes involved with livestock or agriculture.

There are four agricultural universities, responsible to the Ministry of Education and Training. Their research capabilities are said to be limited because of lack of funding which has to be obtained through MAFI. However, we spoke to persons who were involved in an agroforestry project aimed at minimisng land degradation.

At the University of Hanoi there are departments with which the FSP could become involved. The Centre for Natural Resources Management and Environmental Studies is involved in technology generation and transfer projects using participatory methodology. They work in the 'unused' land areas where there is an urgent need to develop stable agricultural systems and could provide assistance in the location of sites. Because of the success of their approach they are able to attract overseas funding for projects. The Department of Soil Science and Environment has had a strong program in use of leguminous trees on 'waste' or 'unused lands' and is submitting a research proposal to ACIAR for further work in this area. In summary, though forage R & D is officially organised through MAFI, there are considerable activities outside MAFI which are reaching to the 'forest' and 'unused' land beyond the 'agricultural' land use domain which has been the area of main activity or influence of MAFI. It is in these other areas that the use of forages for soil improvement and erosion control offers considerable potential. This is clear through talking to foresters and organisations who work in the 'forest' and 'unused' land zones.

5.3 Policy on Livestock and Forages

Now that there is self-sufficiency in rice production (2m tons of the 20m ton production is exported) the government is giving more priority to livestock production. The first priority is for pigs, followed by poultry and ruminants. Livestock officials see the development of a milk industry as contributing to the reduction of malnutrition among children, said to be 40% of children under five.

Since 1981, the General Department of Land Management has been re-allocating land from collectives and communes to individual households. This has been largely completed in the delta areas and more intensive upland areas but not in the 'forest' land or 'unused' land.

Opportunities for improving the supply of forage in the deltas are limited, numbers of cattle and buffalo are decreasing, their place being taken by hand-labour. There is some opportunity in the more intensive upland 'agriculture' land. For example, the former collective dairy farms at Moc Chau and Ba Vi have been re-distributed to farmers. Land allocation has been 0.1-0.2 ha per cow. Hence cattle are largely kept indoors and fed with fertilized grass and concentrates under quite an efficient system of management. There is no necessity for farmers to use allocated land for growing forages and present milk prices seem to be marginal to encourage such land use. There is an opportunity to introduce more acid tolerant shrub legumes and it is likely that not all farmers are following the advanced practices found on model farms.

While, MAFI, in general, has not been concerned much with the 'unused' lands (We et al. 1993), our perception is that there is much more opportunity for forage development in these 'unused' lands and the 'forest' land than in the 'agricultural land'. Crops and livestock are important in these marginal agricultural lands though activities are not well documented. The approach in these areas would be to use forages to increase productivity and prevent overgrazing on derived grazing lands, stabilise land on steep slopes with erosion barriers and contribute to an improved fallow system in present areas of shifting cultivation. This would lead to more sedentary forms of agriculture which conforms to the government has a policy of reducing shifting cultivation. Re-distribution of land in these areas has proceeded slowly due to farmers not having alternatives and not accepting an authoritarian approach to land distribution. A participatory approach has been shown to be successful both in the 'forest' area to which the Swedish aid is directed and in 'unused' land in project areas managed by the University of Hanoi. This participatory approach

combined with a new policy of MAFI to become involved in the agriculture of marginal lands offers a chance of making some impact with forages.

5.4 Possible Linkages within Vietnam

Interaction between organisations within Vietnam appears to be poor. There is little interaction between MAFI Institutes and the Animal Feed and Production Corporation, nor between those institutions and the Universities. Linkages between the MAFI Institutions are likely to improve with the proposed restructuring.

It has been suggested that the FSP work through the National Institute of Animal Husbandry. However, DAST has indicated that linkages could also be developed with projects in other organizations such as the agroforestry project of Hanoi Agricultural University and the forage and ecological projects of the University of Hanoi.

Possibilities also exist for interacting with SIDA (Swedish International Development Authority) in the 'forest' lands. SIDA has been active in Vietnam since 1975 and has developed successful approaches to technology development and transfer.

5.6 Summary

Forage development has a lower priority in Vietnam than in Lao PDR. Opportunities exist for introduction of leguminous shrubs better adapted to acid soils for use as fodder in both intensive and extensive systems, for grasses for land stabilisation in eroding areas and for pasture species undersown to forestry plantings.

A more extensive survey needs to be undertaken at the commencement of Phase II to better define sites for operation and extend contacts with organizations that are already working in agricultural development.

Vietnamese government officials have the expectation that Projects meet all costs associated with them. This may limit the extent of involvement compared to that with other countries in the region.

5.7 Agreement or Understanding

The Director of DAST-MAFI was in agreement with the suggested operation of the FSP in Vietnam and Dr Ung, DG of the Department of Foreign Economic Relations, State Planning Committee, was also supportive and indicated that approval would be given as the project was not accessing bi-lateral funding.

It was agreed that:

(i) The local counterpart for the project would be AHRI, with DAST as the administrative agency,
(ii) MAFI would allocate staff to the project and facilitate transport arrangements within the country,
(iii) That MAFI and AHRI would facilitate contact and cooperation with other agencies,
(iv) The a participatory research approach be used for on-farm activities once initial evaluation was undertaken,
(v) Seed samples of appropriate forages would be sent to AHRI before the start of the project.

Australia and Vietnam have an umbrella Memorandum of Understanding, which should facilitate setting up a Letter of Understanding with MAFI.

Reference

Vu van Me, Nguyen Tuong Van and H. Warfvinge. 1993. Land classification and land allocation in Vietnam and in Tu Ne Commune of Tan Lac District, Hoa Binh Province. Ministry of Forestry, Hanoi.

APPENDIX 1. ITINERARY

15 January	Travel to Jakarta, Indonesia
17-19 Jan	Directorate General of Livestock Services Central Research Institute for Food Crops Central Research Institute for Animal Science
20 Jan	Travel to Bangkok
20-22 Jan	Bangkok. Arrange visas for Lao and Vietnam Department of Livestock Development IRRI-Bangkok office CIAT-Bangkok office
23 Jan	Travel to Vientiane, Lao PDR
24	Department of Livestock and Veterinary Services Lao-IRRR Project IFAD Project Upland Project Australian Embassy, Development Assistance
25	National Agricultural Research Centre Fly to Luang Prabang Houay Khot Upland Research Station EEC Upland Micro-Project
26	Provincial Veterinary Service Provincial Agriculture and Forestry Office Lao-Swedish Shifting Cultivation Project Fly to Vientiane
27	Nam Suang Research Station
28	Department of Livestock and Veterinary Services Nabong Agricultural College Ministry of Agriculture
29	Report Writing
30	Travel to Hanoi, Vietnam
31	Australian Embassy, Development Assistance Research Institute for Animal Husbandry
1 Feb	Hanoi Agricultural University Animal and Feed Production Corporation
2	Ba Vi Dairy development area
3	Swedish Embassy Department of Planning and Projection
4	Hanoi University Department of Agricultural Science and Technology
5	Report Writing State Planning Committee
6 Feb	Fly to Manilla and Los Baños
7	PCAARD IRRI
8, 9	Design Document Preparation
10	Asian Development Bank Fly to Canberra
12, 13	Design Document Preparation
14	AIDAB and ACIAR
15	Fly to Cali

APPENDIX 2. ORGANIZATION AND PERSONS VISITED

Indonesia

Directorate General Livestock Services -
- Dr Soehadji, Director-General
- Dr Soedjasmiran Prodjodihardjo, Secretary to the DG
- Mrs Haryati, Foreign Aid and Technical Cooperation
- Ir Soepodo Boediman, Director, Division Livestock Production
- Ir Siagian, Chief,Subdirectorate of Forage and Crop Production Mrs Maimunah Tuhulele, Secretary and Assistant to Ir Siagian

Central Research Institute for Animal Science, Bogor -
- Dr Budi Haryanto - Animal nutritist, small ruminants

Department of Agriculture, Planning Bureau -
- Ir Argus, re Integrated Development Project for Smallholders

Lao PDR

Ministry of Agriculture and Forestry (MAF) -
- Mr Sitaheng Rasphone, Vice Minister

Department of Livestock and Veterinary Services (DLVS) -
- Dr Singkham Phonvisay, Director-General
- Dr Boun Kouang Souvannaphanh, Deputy Director-General
- Dr Bounthong Bouahom, Director, Livestock Production Division
- Mr Vanthong Phengvichith, Deputy Director, Livestock Adaptive Research

IFAD Development Project, DLVS
- Mr Jim Archer, Team Leader

National Agricultural Research Center, Department of Agriculture
- Dr Viravanh Phannourath, Director
- Dr John Schiller, Team Leader, Lao/IRRI Project
- Mr Steeve Godilano, GIS Specialist visiting from IRRI
- Mr Viengsavanh Manivong - Project Coordinator, Lao/IRRI Project
- Dr Phoudalay Lathvilayvong - Research Leader Soil Fertility
- Mr Phoumy Inthapanya - Research Leader Variety Improvement
- Mr Somvang Phanthavong - Assist. Agronomist Green Manure Studies

Lao Upland Agricultural Development Project, MAF
- Mr Bryan Gorddard, Team Leader
- Mr John Connell, Extension Advisor
- Mr Ted Winston, Research Advisor

Soil Survey & Land Classification Center
- Mr Ty Phommasack, Director

Nabong Agricultural College -
- Dr Sayamang Vongsak, Director
- Mr Thongly Xayachack, Vice Director

Agriculture and Forestry Service, Luang Prabang Province
Mr Onechanh Boonnaphol, Chief
Mr Outhonk Sengta, Head Provincial Livestock Service
Dr Walter Roder, Agronomist, Lao/IRRI Project Upland Program
Mr Bouakham Phouaravanh - Upland Research Leader
Mr Peter Hansen, Agricultural Advisor, Lao-Swedish Forestry Cooperation Program
Department of Forestry, Shifting Cultivation Project
Mr Joost Foppes, Agronomist, Lao-EEC Micro Projects

Australian Embassy -
Mr Ian Miller, First Secretary, Development Cooperation

Malaysia

Malaysian Agricultural Research and Development Institute
Mr Chen Chin Peng, Leader Forage Program, Division of Livestock Production

Philippines

Philippine Council of Agriculture
Dr Arturo Arganosa, Head Division of Livestock Production
Mrs Elaine Lanting, Head of Forage Section

International Rice Research Institute (IRRI)-
Dr K Fischer, Director of Research

Asian Development Bank
Mr John Eyers, Alternative Executive Director
Dr R M Bradley, Director Agriculture Department

South China

Tropical Pasture Research Center, SCATU, Hainan
Lui Guodao, Leader

Thailand

Department of Livestock Development -
Mr Udon Senagus, representing the Director-General, Animal Nutrition Division
Ms Chureerat Satjipano, Head of Forage Research, Khon Kaen Research Station
Mrs Tasanee Thitakamol, Animal Nutrition Division

IRRI -
Dr D.W. Puckridge, Agronomist & Liason Officer Thailand and Vietnam

CIAT -
Dr R.H. Howeler, Agronomist Cassava Program

Vietnam

State Planning Committee -
Dr Duong duc Ung, Director-General, Department for Foreign Economic Relations

Ministry of Agriculture and Food Industries (MAFI),

Department of Agricultural Science and Technology (DAST) -
Dr Nguyen ngoc Kinh, Director
Mr Phi manh Hung, Expert for International Cooperation
Mr Trinh quang Tuân, Interpreter

Animal Husbandry Research Institute -
Dr Le viet Ly, Vice Director & Director National Beef Research Project
Dr Nguyen manh Dzung, International Project Assistant
Mr Nguyen ngoc Ha, Head Division Grass and Forage Research
Mguyen chi Mui, Grass and Forage Pasture Division
Dr Bui van Chinh, Head Division of Nutrition and Feeds Division
Eng. Nguyen kim Ninh, Director Cattle and Forage Research Centre, Ba Vi
Mr Dinh Van Binh, Director Goat and Rabbit Research Centre, Ba Vi

National Institute of Agricultural Science (INSA)
Dr Nguyen dang Khoi, Deputy Director National Coordinator, Plant Genetic Resource Systems

Animal and Feed Production Corporation
Dr Le quang Nghiep, Vice-Director
Tran trong Chien, Production Manager (Pig production)

National Institute of Agricultural Planning and Projection
Dr Tran an Phong, Deputy Director

Centre for Natural Resources Management and Environmental Studies (CRES)
University of Hanoi -
Dr Le trong Cuc, Ecologist Deputy Director

Hanoi Agricultural University (No.1)
Dr Ha quang Hung, Head of International Section & Dept of Entomology
Dr Ha hoc Ngo, Dean Faculty of Soil and Water Management
Dr Dao chau Thu, Soil Scientist and International Cooperation Office

Australian Embassy -
Andrew Alwast, Counsellor, Development Cooperation

Swedish Embassy -
Per Anders Eriksson, Programme Officer, Development Cooperation Office
Hans Warfvinge, Senior Consultant, Forest Economics (SIDA)

DEPARTMENT OF LIVESTOCK DEVELOPMENT
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No. AC 0613/๕๘

February ๑๘, 1994

Dr. Peter C. Kerridge
Leader
Tropical Forages Program
CIAT, A.A. 6713
Cali
C O L U M B I A
Fax 57-23-647243

Dear Dr. Kerridge,

Re: Southeast Asian Regional Forage Seeds Project

Thank you very much for your letter dated 22 January 1994 concerning about the Southeast Asian Regional Forage Seeds Project and your visit in Bangkok last month which I have been informed by my staffs from Division of Animal Nutrition. I am glad to hear that the research in the next phase would be integrated with other crop research as forages and livestock are usually only one component of the farm activity, and the project work would be carried out directly with officers in the regions provided that the Director of the Division of Animal Nutrition be kept informed and invited to participate in planning activities. Therefore, Department of Livestock Development agrees to support the proposed Phase II of the Southeast Asian Regional Forage Seeds Project.

Yours sincerely,

Mr. TWEESACKDI SESAWEECH
DIRECTOR GENERAL

OFFICE OF THE EXECUTIVE DIRECTOR

February 9, 1994

Dr. Gustavo Nores
Director-General
CIAT A.A. 6713
Cali, Columbia

Dear Dr. Nores:

We wish to inform you that we are pleased with the accomplishments in the Philippines of the Southeast-Asian Forage Seeds Production Project (FSP) being funded by AIDAB through CIAT and CSIRO. Notably impressive are the screening of forage germplasm in different locations of the country and the distribution of planting materials (seeds) of very promising forage varieties to a number of both private and government institutions in the country and to the other participating countries (Indonesia, Malaysia and Thailand) of FSP. Undoubtedly, the FSP is of much help to our current efforts in improving the country's existing gene pool of forage/pasture crop species.

It is for this reason that PCARRD is again enthusiastic to participate in the FSP-Phase II. We hope AIDAB will continue funding the project beyond 1994 since we believe that this kind of efforts should be on a continuing basis.

Thank you and we look forward to more collaborative undertakings with your institution.

Very truly yours,

CLEDUALDO B. PEREZ
Executive Director

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Lao PDR
Ministry of Agriculture and Forestry
Department of Livestock and Veterinary Services

28 Jan. 1994

Dear : Dr. Gustavo Nores
Director General. CIAT
A.A 6713
Cali.
Columbia

Subject : ***Regional Forage Seed Production (Phase II)***

During the visit of Dr. Peter KERRIDGE-CIAT and Dr. Brian Hacker- CSIRO on 24-30 January 1994 to study the feasibility of Lao PDR to join the project for phase II .

The aim of the Forage Seed Project is to provide selected grasses and legumes for small holder farming systems in Southeast Asia to improve the feed supplement for livestock and soil productivity.

The Department of Livestock and Veterinary Services is very pleased to collaborate with this project to improve forage development in Lao PDR and exchange information with project member countries.

With best regards

Singkham PHONVISAY
Director General

cc
H.E Mr. Sitaheng RASPHON
Vice minister of Agriculture and Forestry
For information and guidance.

DEPARTMENT OF AGRICULTURE
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Jakarta, 27 January 1994

DR GUSTAVO A NORES
Director General of CIAT
Apartado Aereo 6713
Cali Colombia

Dear DR Nores,

Having met DR Kerridge and discussed the possibilities of a Phase II of the Forage Seed Project, herewith I would like to highlight some aspects that have been discussed here, i.e. :

1. Superior varieties of forage legumes and grasses have been identified for acid and marginal soils in Kalimantan in Phase I of the FSP. Some of these varieties are now being grown by farmers in the project area. More input now needs to be made in extending these results and working with farmers to see how they can adopt these forages in their farms.

2. More input into propagation methods to increase the material locally should also be made, and more information on the most appropriate methods to use and how this will be organized is needed, too.

3. A new program is being organized by the Government of Indonesia to improve the welfare of smallholder farmers in the marginal areas through integration of information and inputs from different agricultural sub-sectors. We consider livestock and forages have an important role to play in this project. Some of the selected districts are in Kalimantan, where the FSP has been operating. Therefore, we support the proposal that introduction of improved forages should be investigated as a component of an integrated farming system. One area where intensive research on improving productivity of upland rice is underway is in Sitiung, West Sumatera. We will support the Project, working with the Central Research Institute for Food Crops in this area.

4. We consider the training of local staffs has been very useful for them. More training opportunities should be given, and also support to use these personnel in conducting local courses in Indonesia on the use of forages.

5. We also support the idea of exchanging ideas, and a collaboration in the Southeast Asia region. It would be useful to have translations of newsletters and reports into Indonesian language for the use of district officers.

Based on these highlights, we plan to use the experience that is being obtained from the project, and to extend it to other areas in Indonesia. The DGLS has the ability to propose development plans for use in different provinces. Therefore, we wish to support your request to the Australian International Development and Assistance Bureau (AIDAB) for continued funding of the Southeast Asia Regional Forage Seed Project.

Looking forward to your further information, I would like to thank you for your attention and cooperation.

Yours sincerely,

Dr. SOEHADJI

Director General of
Livestock Services.

Cc. DR. PETER C. KERRIDGE
Leader of Tropical Forages Program
of CIAT

INSTITUT PENYELIDIKAN DAN KEMAJUAN PERTANIAN MALAYSIA
MALAYSIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE

29th. February, 1994

Dr. Gustavo Nores
Director General
Centro Internacional de Agricultura Tropical
Apdo. O'ereo 6713
Cali, Colombia

Dear Dr. Nores,

Ref: Forages for smallhoders Project - Phase II

With reference to the discussion held between Dr. Werner Stür (CIAT Agronomist, Manila) and Mr. Chen Chin Peng (MARDI Pasture agronomist) in early February 1994. I would like to re-affirm that we are keen to continue to participate in the Phase II. We hope to maintain a higher achievement record in our future cooperation.

May I take this opportunity to express our appreciation for being the beneficiary in forage seed production for smallholders programme in Malaysia. Thank you.

Yours sincerely,

AHMAD TAJUDDIN ZAINUDDIN
Director
Livestock Research Division
MARDI

DEPARTMENT OF AGRICULTURAL SCIENCE & TECHNOLOGY
MINISTRY OF AGRICULTURE AND FOOD INDUSTRIES OF VIETNAM

Hanoi 5th February 1994

To Dr. Gustavo Nores
Director - General
CIAT
A.A. 6713
Cali
Colombia

Dear sir,

First of all I would like to express my sincere thank to you for paying attention to Vietnam in terms of extension of the phase 2 of the Southeast Asia Regional Forage Seeds Project (FSP) and for assigning the two scientists to pay a preliminary visit Vietnam studying the status of forage research, planting and usage with the purpose that FSP in the phase 2 will be performed in the region including Vietnam and Laos.

Dept. of Agricultural Science and Technology (DAST) on behalf of the Ministry of Agriculture and Food Industries of Vietnam unanimously (MAFI) approves the project to be carried out in Vietnam and nominates the Animal Husbandry Research Institute to be the counterpart and executive agency for FSP in Vietnam.

Regarding nomination of a national coordinator for the project, MAFI will assign the Animal Husbandry Research Institute to deal with.

Once again thank you for your support and hopefully that the project will get many successes in the region and also in Vietnam.

With my best regards,

Yours sincerely

Dr. Nguyen ngoc Kinh
Director - DAST - MAFI
Bachthao - Hanoi - Vietnam

華南熱帶作物科學研究院

SOUTH CHINA ACADEMY OF TROPICAL CROPS

Baodao Xincun, Danxian, Hainan 571737, China Cable: 4282 DANXIAN, HAINAN

January 26, 1994
Hotel Pangrango
Bogor,
INDONESIA

Dr Peter C. Kerridge
Leader,
Tropical Forage Program
CIAT
Cali, COLOMBIA

Dear Dr Kerridge

Many thanks for your letter of 6 December 1993. In this letter I would like to show you that SCATC Tropical Pasture Research Center are very interested in a Forage Project in Southeast Asia and are willing to participate in a Tropical Forage Network in the region. This is really an excellent opportunity for us to develop closer ties with other tropical forage researchers in Southeast Asia and with CIAT and CSIRO.

In China we have very different ecological environments for forage germplasm evaluation between the provinces of southern China. For example, in Southwest Hainan, rainfall about 1000mm we can evaluate the germplasn from CSIRO and in central Hainan, rainfall about 2400mm, we can evaluate the germplasn from CIAT. In East Hainan, where the soil pH is very low, we can select the acid tolerance germplasn, in Guangdong Province, We can select the germplasn for plantation intercropping and evaluate the income from Forage-Agriculture System, and in Yunnan, Guangxi Province we can select the cool tolerance germplasm and so on.

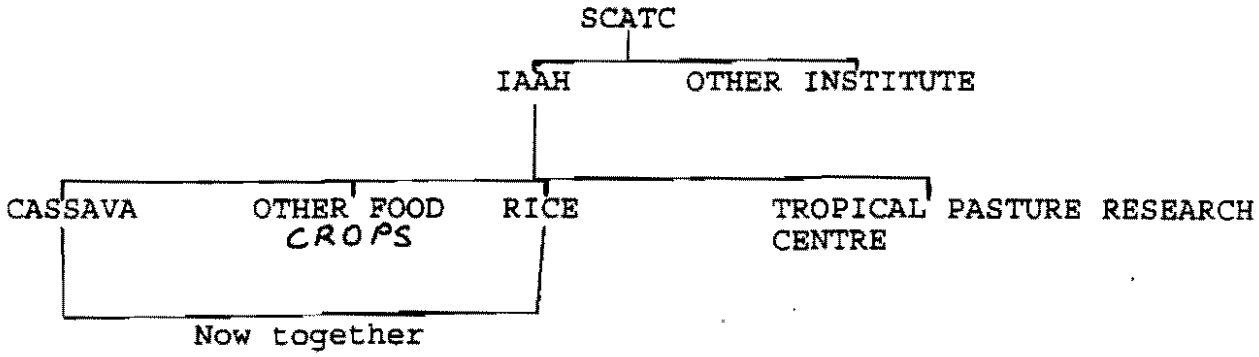
I am lucky that I have met with Dr Werner Stür in Bogor, Indonesia on the Leucaena Research and Development Workkshop. He handed your letter to me. Maybe I have left Hainan when your letter arrived. I will find time to talk with Dr Stür.

The most appropriate person for you to write to are:-

1. Mr Wu Xiaogiang, Yunnan Province
2. Lui Jianxiu, Fujian Agriculture University, Fuzhou Fujian Province, China
3. Lai Zhigiang, Institute of Animal Science of Guangxi, Nanning, Guangxi Province, China.

I cannot remember the exact addresses for these three persons but I will send them to you when I return to Hainan on 30 January, 1994.

The new institute, IAAH, still belong to SCATC. The IAAH's preparation work is still not finished. Now Mr Wang Shurzn,mr Xin Yinen and I are in charge of the preparation work.



Warm Regards,

Yours sincerely

刘国道

Lui Guodao
Leader
Tropical Pasture Research Center
SCATC Danzhou 571737
Hainan, P.R.China
Fax: 86 890 323776

c.c. Dr Werner Stür

Forage Seeds Project

Donor:	**Australian International Development Assistance Bureau (AIDAB)**		
Location:	Indonesia, Malaysia, Philippines and Thailand	**Duration:**	3 years (1991- 1994)
Status:	Ongoing	**Amount:**	US$ 791,500

Livestock form an important component of farming systems in Southeast Asia where they are important as draught animals and a source of wealth for small farmers. There is also an increasing demand for animal products by the urban population as per capita incomes increase.

Feed is the main limitation to increasing animal productivity and animal numbers. Yet high population pressure limits the amount of available land for pastures. Thus forages must be grown in association with other crops in integrated systems such as under trees and plantation crops, in the fallow or ley phase of rotational agricultural systems, along fence lines and crop boundaries and as a short term crop following food crops. Preliminary evaluation of forage germplasm from CIAT and CSIRO ha identified a number of grasses and legumes which shoe great potential for contributing to an increased animal feed supply.

The project aims both to enhance animal feed supply and contribute to soil improvement and erosion control in the participating countries. It will establish a regional mechanism to screen, select and introduce forages to smallholder farmers in various farming systems in order to improve their economic welfare. This regional AIDAB/ CIAT/CSIRO Project has close links with national and donor agencies in the four countries. It will contribute to regional institutions playing a stronger role in distribution and integration of forages into farming systems in the region.

The benefits in the form of increased income and human nutrition will flow directly to smallholders who own most of the livestock in the region.

CIAT personnel involved:	**Partners:**
Dr. Peter Kerridge, Leader Tropical Forages Program	Centro Internacional de Agricultura Tropical (CIAT) Colombia CSIRO Division of Tropical Crops and Pastures Australia

Farmer Participation in Technology Design and Transfer

Donor:	**W. K. Kellogg Foundation**		
Location:	**Colombia**	**Duration:**	**4 years (Phase II) (1990-1994)**
Status:	**Ongoing**	**Amount:**	**US$ 854, 000**

The overall goal of this project is to improve the welfare of small farmers in poor rural communities by institutionalizing their active role, through participatory methods, in generating appropriate agricultural technology for their community. The development of local leadership for farmer participation in agricultural technology development requires the project to build skills, experience, and confidence among all participants in order for farmers to be recognized by the scientific community as capable partners in adaptive technology testing. This will generate documented experience and systematic methodology which the project distills into training materials. These materials are the basis for disseminating and multplying the approach. The project is therefore developing an organizational model, or a social technology, which can be (and indeed is being) adopted by other institutions.

The project's strategy is to implement farmer participation methods for adaptive technology testing with the community committees with public sector agricultural research agencies (like CIAT) via intermediate organizations (like NGOs and farmer cooperatives). The strategy envisages expanding the number of communities linked into farmer participation in agricultural technology generation via community-to-community transfer and training.

CIAT expects that farmer participation will improve access to new technology for an estimated 1,600 to 3,200 farm families during the life of the project. Improved welfare of small farmers and farm communities will result from direct food and income benefits generated by adoption of locally-adapted technology

CIAT personnel involved: **Dr. Jacqueline A. Ashby** **Leader** **Hillsides Program**	**Partners:** **Centro Internacional de Agricultura Tropical (CIAT)**

Subregional Training Systems

Donor: Inter - American Development Bank (IDB)

Location: Latin American countries	**Duration:** 2 years and 3 months (1991 - 1993)
Status: Completed	**Amount:** US$ 1,130,000

During the past decade, CIAT has contributed in the training of specialists to generate technology for improvement in the production of rice, beans, cassava, and tropical pastures. However, thus far the technology transfer area has been scarcely emphasized due to resource constraints and national preferences towards investigation. In addition, to accommodate to new CGIAR demands, CIAT is now shifting its focus toward more strategic research, thus delegating responsibilities of applied investigation and technology transfer to national institutions. This, coupled with the need to introduce improved varieties that will not deteriorate the environment while lowering production costs, has created a growing demand for professionals specialized in technology transfer. It is therefore necessary to pave the road for an ordered transference of training responsibilities from CIAT to national entities for the proper transmittal of production technology.

This project seeked to increase the efficiency of agricultural technology generation and transfer. The general objective was to strengthen the national institutions' capability to operate subregional training systems in adaptive investigation and technology transfer. The institutionalization of these training responsibilities brought about the best results for the production of beans, cassava, and rice. The project was carried out by CIAT in collaboration with the regional bean research network, PROFRIJOL, creating (1) a subregional training system in bean production for Central America, Mexico and the Dominican Republic; (2) a subregional training system in Cassava production for Brazil, Paraguay and Argentina; and (3) a subregional training system in rice production for Venezuela, Colombia, and Ecuador.

CIAT personnel involved: **Dr. Vicente Zapata** **Education Specialist**	**Partners:** **Centro Internacional de Agricultura Tropical (CIAT)** **Programa Cooperativo Regional de Frijol para Centro América, México y el Caribe-PROFRIJOL**