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**Terminal Report
Report No. 26**

**Agricultural Management Support Services Contract
(Contract No. 386-0000-C-00-5039-00)
Winrock International**

June 30, 1992

INTRODUCTION:

This is the final report of the Management Support Services Contract. It summarizes data on all project activities for the seven-and-one-half years since work under the contract was initiated in January, 1985. It is the 26th report prepared over these years. Of these, Reports 5, 9, 13, 17 and 21 were identified as "Annual" Reports. All others were "Quarterly" Reports. Each report, however, gave details of the quarter just ending plus cumulative or other data for the entire period.

In this tradition the present report will give details on activities during the final quarter, April-June, 1992 and also summarize all activities over the course of the entire contract period.

In most respects the presentation will follow the format of earlier reports so that comparisons with earlier reports can readily be made. It will, of course, not include work plans like all the earlier reports.

The Agricultural Research Project (ARP) became operational in 1985 initially with only two subprojects, viz., Soybean Processing and Utilization (SPU) and Post Harvest Technology of Fruits and Vegetables (PHT-FV). Subsequently, more subprojects and pre-projects were added from time-to-time. It reached its fullest development in June, 1990 when it comprised nine sub-projects and seven pre-projects. One of the pre-projects on Plant Genetic Resources later developed into a stand-alone project and was funded separately outside the ARP. The other six pre-projects were formulated in March 1990 through an agreement reflected in PIL 39 which was included as Annexure 9 in quarterly report No.17. This agreement provided for the preparation of a project design paper, implementation of some training activities and limited procurement of equipment in respect of three new subject matter areas, viz., Tissue Culture of Horticultural Crops (TCHC), Integrated Pest Management (IPM) and Animal Genetic Resource Conservation including Fish Genetic Resources (AGRC). The PIL 39 also provided some funds for similar purposes in respect of three other pre-projects, in the case of which the project design papers had been prepared earlier. Preparation of design papers in respect of two of these pre-projects, viz., On-Farm Water Management (OFWM) and Farm Machinery (FM) were funded under the budget of the Project Implementation Unit (PIU) functioning in ICAR. Design paper in respect of a third pre-project viz. Protected Cultivation and Green Houses (PCGH) was

prepared by Dr. Dave Mears, a then USAID staff. PIU funds were also used for the design of a sub-project on Integrated Nutrient Supply and Management (INSAM). However, due to funding constraint, no additional allocation was made for this area.

After the April-June 1990 quarter, the ARP started scaling down as individual constituent sub-projects started completing their designated life span. Under the Plant Genetic Resources (PGR) no activity was undertaken after June, 1990. The Forestry Faculty Training (FFT) terminated on September 30, 1990. Soybean Processing & Utilization (SPU) and Post Harvest Technology of Fruits and Vegetables (PHT-FV) terminated on March 31, 1991. Three animal science subprojects viz., Embryo Transfer Technology (ETT), Conversion of Bio-degradable Animal Wastes (CBAW) and Intra-cellular Blood Protista (IBP) completed their designated life span on March 31, 1992. The remaining two subprojects, viz., Agroforestry (AGROFOR) and Agrometerology (AGROMET) as well as all the six pre-projects are completing their designated life span on June 30, 1992 when the ARP itself is coming to a close. The life span and final funding status of the ARP, the MSS, the sub-projects and the pre-projects are given in Table 1.

Table 1. Life span of ARP, MSS, Sub-projects and Pre-projects

Sl.No.	Units	Starting Date	Termination Date	Life of Project Budget
1.	ARP	June 30, 1983	June 30, 1992	20,000,000
2.	SPU	Nov. 20, 1984	Mar. 31, 1991	1,743,075
3.	PHT-FV	Jan. 25, 1985	"	2,926,092
4.	MSS	Sept. 30, 1985	June 30, 1992	3,269,878
5.	PIU	Mar. 16, 1986	June 30, 1992	947,602
6.	FFT	Apr. 28, 1986	Sept. 30, 1990	3,181,387
7.	IBP	Nov. 26, 1986	Mar. 31, 1992	1,315,485
8.	ETT	Jan. 09, 1987	"	1,141,070
9.	CBAW	Jan. 21, 1987	"	1,104,441
10.	PGR *	July 01, 1987	June 30, 1990	200,000
11.	AGROFOR	June 28, 1988	June 30, 1992	2,044,403
12.	AGROMET	July 26, 1988	"	1,554,985
13.	IPM	Mar. 21, 1990	"	150,000
14.	AGRC	"	"	150,000
15.	TCHC	"	"	150,000
16.	PCGH	"	"	150,000
17.	OFWM	"	"	150,000
18.	FM	"	"	150,000

* After June 1990 activities under this sub-project have been undertaken through a US\$14.75 million stand-alone project "Plant Genetic Resources".

THE MSS CONTRACT:

It should be recalled that the Agricultural Research Project (ARP) which the MSS served, initially had a seven-year life span which subsequently was extended to nine years to give it a termination date of June 30, 1992. During its first two and one half years, the ARP was managed directly by the AGRE office of USAID. The MSS came into being as a management entity on September 30, 1985 and became operational on January 1, 1986. To begin with the MSS had a 5-year life span but this was extended several times through contract amendments so that the MSS and the ARP both would conclude their work on the same date i.e. June 30, 1992. In addition to contract amendments which extended the MSS's life, there were also amendments which provided funds and various operational procedures. These amendments are listed in Annexe I of this report.

The data given in this report cover activities and expenditures from September 30, 1985 to June 30, 1992, the period during which the MSS was operational. Earlier reports had also included several consultants that were brought in directly by USAID before the MSS started functioning. These have been excluded from the present report. An additional departure from previous reports is that whereas the previous reports included estimated cost data for activities that were still in progress, the present and final report is based solely on actual data after the work had been completed.

Amendment No. 14 to the MSS contract, signed August 8, 1991, provided additional funds to continue the MSS through March 31, 1992. It also called for a work plan to show how the funds for various Sub-projects and Pre-projects were to be utilized. This work plan is summarized in Table 2.

Table 2. Activities planned by Sub-projects/Pre-projects and scheduled during July 01, 1991 - June 30, 1992. (Based on workplan developed and approved under Amendment No.14 and No.16 to MSS contract)

Sub-project/ Estimated Pre-project	Tech. Asst.			Training			Commodities		Total Cost	
	PM	FX	LC	PM	FX	LC	FX	LC	FX	LC
	PIU	4.00	64	-	-	-	-	-	-	64
IBP	4.00	64	-	15.75	95	-	-	-	159	-
ETT	2.00	32	-	18.75	113	-	40	-	185	-
CBAW	3.00	48	-	0.75 ^{1/}	5	-	-	-	53	-
AGROFOR	3.00	48	-	21.00 ^{2/}	-	51	95	160	143	211
AGROMET	9.00	144	-	30.00	120	16	126	-	390	-
IPM	2.00	32	-	21.00	126	-	30	-	188	-
AGRC	2.00	32	-	9.00	54	-	55	-	141	-
TC	2.00	32	-	9.00	54	-	20	-	106	-
PC	0.50	8	-	15.00	110	-	5	-	123	-
OFWM	2.00	32	-	16.00	96	-	20	-	148	-
FARM MACH.	2.25	36	-	17.25	103	-	-	-	139	-
TOTAL	35.75	572	-	173.50	876	67	391	160	1839	211

^{1/} Does not include 2 person-months of training for one participant who departed to U.S.A. on March 14, 1991 and returned to India on August 31, 1991.

^{2/} Does not include 62 person-months of training of 6 participants who were already undergoing training in U.S.A.

Recognizing the time constraints that could surface during the course of its implementation, the work plan implied that implementation of all the listed activities was subject to timely approval from ICAR/DARE/DEA, issue of I.Os from USAID, acceptance by U.S. institutions of the placement of trainees and availability of U.S. consultants.

Amendment No. 15 dated August 15, 1991 authorized the use of dollar funds under training component to provide within India computer training to Indian scientists from the AGROFOR sub-project. Amendment No. 16 dated January 23, 1992 authorized a no-cost extension of the MSS contract through June 30, 1992, the final closing date of ARP. It also authorized use of dollar funds under training component to provide within India computer training to Indian scientists from the Agrometeorology sub-project.

Simultaneously with the approval of Amendment 16, USAID informed Winrock of a potential problem of merged funds which would call for unusually prompt accounting and reporting of all final contract expenditures. The actual extent of this problem would depend partially on how close the MSS would come to implementing the entire Workplan and utilizing the available funds. This, in turn would determine the extent to which payments would be switched from merged to non-merged funds at the time of ARP termination, which in turn would determine the magnitude and the acuteness of time constraint.

THE AGRICULTURAL RESEARCH PROJECT (ARP):

The Agricultural Research Project, initiated on June 30, 1983, had an initial life span of seven years. Subsequently, it was extended by two years so that its final termination date became June 30, 1992, the date of this report. From its initiation on June 30, 1983 until September 30, 1985, the ARP was managed directly by USAID. The services of Winrock International were then contracted to provide the management services required to accomplish the project objectives.

In April-May, 1992 a final evaluation of the ARP was made by a four-person team who did their review directly under the management of USAID. This outside review team was instructed by USAID. The main purpose of this evaluation was to provide an end-of-project assessment of the degree of success obtained in reaching the projects long term goals, objectives and purposes. More specifically, the evaluation was to assess the research capabilities in terms of facilities, staff, training and equipment; research accomplishments; technology transfer (realized or potential); commercialization of any developed or potential products; and discuss the prospect for continuity and sustainability of the research work after termination of U.S. assistance. The Executive Summary of this review is included as Annexe II of this Terminal Report.

Performance During Extension Period.

Table 3 summarizes the work actually done during the 12-month period from July 1, 1991 to June 30, 1992. Summary figures show that \$1,450,000 was utilized against a budgeted Workplan total of \$1,839,000. The shortfalls that occurred in respect to training and technical assistance arose mostly because of problems in matching requests from ICAR with availability of consultants and training opportunities in U.S. institutions. These were to some extent offset by proposals not included in the Workplan but subsequently proposed by ICAR/DEA and approved by USAID.

**Table 3. Activities completed during July 1, 1991-June 30, 1992.
(Cost in 000's of dollars).**

Sub-proj./ Pre-proj.	Tech. Asst.			Training			Commodities		Total Cost	
	PM	FX	LC	PM	FX	LC	FX	LC	FX	LC
PIU	2.25	38	-	-	-	-	-	-	38	-
IBP	0.50	15	-	15.00	106	-	-	-	121	-
ETT	0.75	25	-	12.50	105	-	10	-	140	-
CBAW	3.50	76	-	-	-	-	-	-	76	-
AGROFOR	1.00	28	-	21.00	-	25	79	-	107	25
AGROMET	7.25	124	-	24.00	87	15	67	-	278	15
IPM	-	-	-	7.25	71	-	37	-	108	-
AGRC	1.50	34	-	6.00	43	-	39	-	116	-
TC	-	-	-	8.00	82	-	31	-	113	-
PC	0.50	10	-	3.75	36	-	31	-	77	-
OFWM	1.50	33	-	10.25	101	-	0	-	134	-
FM	1.00	21	-	12.00	81	-	-	-	102	-
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	19.75	404	-	119.75	712	40	294	-	1410	40

There was a significant shortfall in within-India procurement of computers for the Agroforestry Sub-project as called for under the Workplan. In this case, there was no problem in obtaining local bids for the computer hardware and in fact all the requisite steps had been taken up to the point that a contract could have been signed. However, it was not possible to procure the software from the U.S. (for which an NMIC would be required) and install the software and to deliver the equipment at sites within the time available before June 30, 1992. The decision was, therefore, made to cancel this procurement, for without the software, the equipment could not be effectively used for the intended purpose. Annexe III-a provides some of the background for this case.

Another significant shortfall in the procurement of equipment was in respect of the IVRI centre of the ETT sub-project. Summarized account of the events leading to this short fall are given in Annexe III-b.

Cumulative Performance.

Table 4, 5, 6, 7 and 8 summarize the work actually done during the entire duration of the MSS from September 30, 1985 to June 30, 1992.

Table 4. Sub-Project expenditure levels from September 30, 1985. In Dollars ('000)

Sub-Proj./ Pre-proj.	Technical Assistance			Training			Commodities
	Cumulative Total to June, '92			Cumulative Total to June, '92			Cumulative Total to June, '92
	Pers.	Pers. Mths.	Cost	Pers.	Pers. Mths.	Cost	Cost
SPU	9	9	154	27	71	388	640
PHT-FV	11	13	221	36	120	716	1,247
PIU	40	34	507	13	9	80	2
FFT	*	*	*	72	864	3,319	**
IBP	10	14	167	15	41	193	723
ETT	8	5	109	18	25	226	330
CBAW	12	10	202	25	91	438	461
PGR	10	5	74	11	17	119	**
AGROFOR ^{1/}	20	13.5	261	66	254	858	627
AGROMET ^{2/}	17	11.5	191	36	87	443	870
IPM	-	-	-	15	22	153	37
AGRC	2	2	32	7	9	73	39
TCHC	-	-	-	4	8	82	31
PCGH	1	0.5	11	9	16	119	31
OFWM	2	1.5	28	7	10	101	-
FM	1	1	21	6	12	81	**
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	143	120	1,978	367	1,656	7,386	5,038 ^{3/}

* No consultancies were planned.

** No equipment was planned.

^{1/} AGROFOR includes in-country training for 41 participants.

^{2/} AGROMET includes in-country training for 17 participants.

^{3/} Excludes \$385,000 transferred to Sheladia sub-contract for procurement.

The commodity figure indicated in Table 4 is a close estimate incurred by sub-project and comprises actual FOB cost plus 24% to provide for forwarding, freight, insurance, transshipment, clearance and inland transportation.

The figures indicated in Table 5 is the actual consolidated cost incurred for all the sub-projects by quarter and this results in the difference between the commodity totals of Table 4 and 5. However, for the purpose of computing actual totals the figure in Table 5 is correct.

Table 5. Quarterly Sub-project expenditure by line items- October, 1985 through June, 1992. (\$)

<u>Quarter</u>	<u>Tech.Asst.</u>	<u>Training</u>	<u>Commodities</u>	<u>Total</u>
Oct-Dec '85 ^{1/}	-	-	-	-
1986				
Jan-Mar ^{1/}	-	-	-	-
Apr-Jun	-	30,621	-	30,621
Jul-Sept	99,150	817,767	142,746	1,059,663
Oct-Dec	28,970	98,963	156,234	284,167
1987				
Jan-Mar	237,413	41,005	-	278,418
Apr-Jun	90,079	77,441	-	167,520
Jul-Sept	4,240	1,461,179	-	1,465,419
Oct-Dec	-	191,186	-	191,186
1988				
Jan-Mar	46,980	-	-	46,980
Apr-Jun	69,837	108,166	-	178,003
Jul-Sept	24,307	493,696	-	518,003
Oct-Dec	109,190	177,514	-	286,704
1989				
Jan-Mar	11,900	82,652	148	94,700
Apr-Jun	18,169	118,261	-	136,430
Jul-Sep	50,638	193,309	9,578	253,525
Oct-Dec	30,132	348,967	78,969	458,068
1990				
Jan-Mar	79,411	426,280	309,417	815,108
Apr-Jun	208,986	324,745	376,209	909,940
Jul-Sep	52,605	466,849	775,405	1,294,859
Oct-Dec	172,776	333,470	1,416,150	1,922,396
1991				
Jan-Mar	94,798	283,763	287,406	665,968
Apr-Jun	149,650	260,964	824,758	1,235,372
Jul-Sep	28,030	209,198	58,359	295,587
Oct-Dec	127,874	126,952	49,901	304,726
1992				
Jan-Mar	100,499	171,439	166,263	438,201
Apr-Jun	142,134	541,661	422,170	1,105,965
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TOTAL	1,977,768	7,386,048	5,073,713	14,437,529

^{1/} There was no activity during Oct-Dec '85 and Jan-Mar '86 quarters.

Table 6. U.S. scientists coming to India. (Numbers of persons, person-months and cumulative total costs)

Sub-proj/ Pre-proj	Total to Mar. '92		Actuals Apr-Jun 1992		Cumulative Total to June, 1992		
	Nos.	PM	Nos.	PM	Nos.	PM	Cost (\$'000)
SPU	9	9	-	-	9	9	154
PHT-FV	11	13	-	-	11	13	221
PIU	39	33	1	1	40	34	531
IBP	10	14	-	-	10	14	167
ETT	8	5	-	-	8	5	109
CBAW	12	10	-	-	12	10	202
PGR	10	5	-	-	10	5	74
AGROFOR	18	12	2	1.5	20	13.5	261
AGROMET	15	10	2	1.5	17	11.5	191
IPM	-	-	-	-	-	-	-
AGRC	2	2	-	-	2	2	32
TCHC	-	-	-	-	-	-	-
PCGH	1	0.5	-	-	1	0.5	11
CFWM	2	1.5	-	-	2	1.5	28
FM	-	-	-	-	-	1	21
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Total	137	115	6	5	143	120	2002

Table 7. Indian scientists to the U.S. (Numbers of persons, person-months and cumulative total costs)

Sub-proj/ Pre-proj	Total to Mar.'92		Actuals Apr-Jun 1992		Cumulative Total to June, 1992		
	Nos.	PM	Nos.	PM	Nos.	PM	Cost (\$'000)
SPU	27	71	-	-	27	71	388
PHT-FV	36	120	-	-	36	120	716
PIU	13	9	-	-	13	9	80
FFT	72	864	-	-	72	864	3319
IBP	15	41	-	-	15	41	193
ETT	18	25	-	-	18	25	226
CBAW	25	91	-	-	25	91	438
PGR	11	17	-	-	11	17	119
AGROFOR ^{1/}	66	254	-	-	66	254	858
AGROMET ^{2/}	17	74	19	13	36	87	443
IPM	7	15	8	7	15	22	153
AGRC	4	3	3	6	7	9	73
TCHC	4	8	-	-	4	8	82
PCGH	4	12	5	4	9	16	116
OFWM	-	-	7	10	7	10	101
FM	-	-	6	12	6	12	81
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Total	319	1604	48	52	367	1656	7386

^{1/} AGROFOR includes in-country training for 41 participants.

^{2/} AGROMET includes in-country training for 17 participants.

Table 8. Summary status of Procurement as of June 30, 1992.

Sub-proj/ Pre-proj.	Commodity Budget	Sheladia Fee	Eff. Budget	Delivered in India	Balance
PIU	22602	-	22602	2430	20172
SPU	644000	28389	615611	639564	(23953)
PHT-FV	1331000	83113	1247887	1247332	555
IBP	825000	56515	768485	722515	45970
ETT	653000	44930	608070	330000	278070
CBAW	499000	34559	464441	461172	3269
AGROFOR	856059 ^{3/}	71121	784938	626699	158239
AGROMET	965210	63225	901985	869752	32233
IPM	30000	-	30000	37200	(7200)
AGRC	55000	-	55000	38983	16017
TCHC	20000	-	20000	30826	(10826)
PCGH	25000	-	25000	31075	(6075)
OFWM	20000	-	20000	-	20000
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TOTAL	5945871	381852	5564019	5037548	526471

Notes:

- The figures in the table are inclusive of 24% estimated for warehousing, freight, insurance, clearing and inland transportation.

2. The price of the computers which is \$77,000 and \$198,000 in sub-projects Agroforestry and Agrometeorology respectively have been included in the 'delivered in India' category and does not include procurement fee since the computers were purchased locally by Winrock International.
3. The \$856,059 in sub-project Agroforestry includes \$171,059 for the procurement of additional computers which subsequently could not be procured due to a time constraint.
4. The equipment requested under the On-Farm Water Management pre-project could not be procured due to a time constraint in obtaining special import permits from the Government of India.

Financial Status USAID/GOI.

Cumulative expenditure of USAID funds for the various sub-projects/Pre-projects is given in Table 9 and that of GOI in Table 10.

Table 9. USAID inputs to the ARP through June, 1992. (\$'000)

<u>Sub-proj/ 1/</u>	<u>LOP</u>	<u>Cum Total 1/</u>	<u>Progress</u>
<u>Pre-proj</u>	<u>Target</u>	<u>thru Jun'92</u>	<u>Apr-Jun'92</u>
SPU	1,743	1,570	-
PHT-FV	2,971	2,842	-
PIU	947 2/	597	6
FFT	3,181	3,319 3/	-
IBP	1,315	1,082	-
ETT	1,141	665	-
CBAW	1,104	1,101	-
PGR	200	193	-
AGROFOR	2,044	1,745	31
AGROMET	1,555	1,503	60
PRE PROJ: 4/			
IPM	150	190	71
AGRC	150	111	41
TCHC	150	112	-
PCGH	150	158	36
OFWM	150	129	101
FM	150	102	102
MSS CORE COST	2,522 *	2,474	108
UNEARMARKED	375	-	-
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TOTAL	19,998	17,893	556

1/ Consists of actual expenditures under D.Os and I.Os plus reimbursement to ICAR for approved rupee expenditures. Values indicated in "cumulative/Jun'92" and "progress Apr.-Jun., '92" columns include cost of items delivered into India. 24% has been added to the cost of equipment, providing for freight, insurance, clearing, inland transportation and related costs.

- 2/ Includes \$100,000 for scientists exchange program approved through PIL No.23, issued on September 28, 1988.
- 3/ Includes \$167,000 non-ARP funds provided under D.O.#41 for 1987-88 group of forestry faculty training.
- 4/ Total USAID input for 6 Pre-project activities is \$900,000. (\$283,000 for technical assistance, \$467,000 for training and \$150,000 for commodities). USAID authorized pooling the components under the six pre-project activities in order to provide flexibility for optimum utilization of funds.
- * Does not include non-ARP funds \$1,367,700.

Table 10. GOI inputs to the ARP through June, 1992.

(Rs.'000)

Sub-proj/ Pre-proj	LOP Target	Cum Total thru Jun'92 ^{2/}
SPU ^{1/}	9,671	10,063
PHT ^{1/}	16,773	10,775
PIU	5,761	1,079
IBP	9,535	9,328
ETT	10,190	9,539
CBAW	11,962	9,105
PGR	-	-
FFT	-	102,000
AGROFOR	29,223	20,000
AGROMET	10,234	10,647
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TOTAL	103,349	182,536

^{1/} SPU and PHT expenditure is as of Mar 31'91 this being the termination date of the Sub-projects.

^{3/} PIU, IBP, ETT, CBAW and AGROMET expenditures are as of Dec.'90, Dec.'91, Sept.'91, Sept.'91 and Dec.'91 respectively.

SUB-PROJECTS/PRE-PROJECTS

1. Soybean Processing and Utilization (SPU).

Nine U.S. scientists involving a total of 9 person-months (Annexe IV) came to India during the period November 2, 1986 - November 28, 1990.

Twenty seven Indian scientists involving a total of 71.25 person-months (Annexe V) went to U.S.A. during the period August 25, 1986 - August 11, 1990. Two more Indian scientists involving 0.50 person-months went to China during the period June 26 - July 4, 1990 to participate in a conference on Soybean Processing and Utilization.

Expenditure of USAID funds for the SPU sub-project is given in Table 11 and that of GOI in Table 12.

Table 11. USAID inputs into Soybean Processing and Utilization through June 30, 1992.

(\$ '000)

Component	Cum Total ^{1/} thru Jun.'92		Progress Apr-Jun'92	
	FX	LC (\$ equiv)	FX	LC (\$ equiv)
U.S. Scientists to India	154	-	-	-
Indian Scientists to U.S.	388	-	-	-
Workshop, etc. in India	-	6	-	-
Workshops, Conferences, outside India	-	-	-	-
Equipment: Imported	640	-	-	-
Local	-	-	-	-
Local currency	-	382	-	-
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TOTAL (\$)	1182	388	-	-
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Combined (\$)		1570		-

^{1/} Consists of actual expenditures plus reimbursement to ICAR for approved rupee expenditures. Values indicated in "cumulative/ Jun.'92" include cost of items delivered into India. 24% has been added to the cost of equipment, providing for freight, insurance, clearing, inland transportation, and other related costs.

Table 12. GOI inputs into Soybean Processing and Utilization through June 30, 1992. (Rs. '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
Building facilities	3611	-
Office Equipment & Supplies	889	-
Vehicles	168	-
Maintenance: Office Equip.	90	-
Vehicle	22	-
Miscellaneous	32	-
Staff Salaries	4799	-
In-country travel	278	-
Contingencies	174	-
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TOTAL	10063	-

^{1/} Cumulative expenditure is as of March 31, 1991 when USAID assistance terminated.

2. Post Harvest Technology of Fruits and Vegetables (PHT-FV).

Eleven U.S. scientists involving 12 person-months (Annexe IV) came to India during June 2, 1987 - April 7, 1991.

Thirty six Indian scientists involving 120.25 person-months (Annexe V) went to U.S.A. for training during June 15, 1986 - May 28, 1991.

Expenditure of USAID funds for the PHT project is given in Table 13 and that of GOI in Table 14.

Table 13. USAID inputs in Post Harvest Technology of Fruits and Vegetables through June 30, 1992. (\$ '000)

Component	Cum Total ^{1/} thru Jun. '92		Progress Apr-Jun '92	
	\$	\$	\$	\$
U.S. Scientists to India	221	-	-	-
Indian Scientists to U.S.	716	-	-	-
Workshop, etc. in India	-	-	-	-
Workshops, Conferences outside India	-	-	-	-
Equipment: Imported	1247	-	-	-
Local Currency	-	655	-	-
	----	----	---	---
TOTAL (\$)	2184	658	-	-
	-----	-----	-----	-----
Combined (\$)	2842			-

^{1/} Consists of actual expenditures plus reimbursement to ICAR for approved rupee expenditures. Values indicated in "cumulative/Mar.'91" include cost of items delivered into India. 24% has been added to the cost of equipment, providing for freight insurance, clearing, inland transportation and other related costs.

Table 14. GOI inputs into Post Harvest Technology of Fruits and Vegetables through June 30, 1992.

(Rs. '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun. '92</u>	<u>Progress Apr-Jun '92</u>
Building facilities	4108	-
Office Equipment & Supplies	998	-
Vehicles	827	-
Maintenance: Office Equipment	113	-
Vehicle	78	-
Staff Salaries	4183	-
In-country travel	468	-
Contingencies	-	-
	-----	-----
TOTAL	10775	-

^{1/} Cumulative expenditure is as of March, 1991 when USAID assistance terminated.

3. Project Implementation Unit (PIU).

Under the PIU a total of 39 U.S. scientists involving a total of 33.25 person-months (Annexe IV) came to India during the period July 3, 1986 - December 18, 1991. Twenty of these scientists came as members of the various Sub-project/Pre-project design teams - AGROFOR, PGR, FFT, OFWM, FM, PGRC. Another six came to conduct specific Sub-project/Pre-project related training workshops - AGROFOR, AGROMET, TCHC but the costs were changed to PIU due to budget considerations. Similarly, two U.S. scientists who came for technical assessment of the Forestry Faculty Training were also changed to PIU. The remaining 11 scientists came to work as resource persons in various scientific conferences etc.

Thirteen Indian scientists involving a total of 9.75 person-months (Annexe V) went to U.S.A. during the period July 30, 1986 - October 26, 1990. Of these, eight went to attend specific training workshops/courses while five went to participate in scientific conferences.

Expenditure on activities under the PIU is given in Table 15 (USAID inputs) and Table 16 (GOI inputs). No rupee expenditure has been reported.

Table 15. USAID inputs into the Project Implementation Unit through June, 1992.

(\$ '000 and Rs. '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun. '92</u>		<u>Progress ^{1/} Apr-Jun '92</u>	
	\$	Rs.	\$	Rs.
U.S. Scientists to India	492 ^{2/}	-	6 ^{3/}	-
Indian Scientists to U.S.	62	-	-	-
Equipment: Imported	-	-	-	-
Local	-	96	-	-
Scientist Exch	33	-	-	-
	---	--	--	--
	587 ^{4/}	96	6	-
TOTAL (\$)	587	10	6	-
	-----		-----	
Combined (\$)		597		6

^{1/} Consists of actual expenditures, full estimated costs of recently completed ones, plus reimbursement to ICAR for approved rupee expenditures.

^{2/} Includes \$30,369 for Forestry Faculty technical Assessment and \$28,034 for two INSAM consultants.

^{3/} \$6,000 for Dr. Buddy Jensen for AGRC (Fisheries) pre-project activity.

^{4/} Does not include activities which were funded under PIU but not implemented by Winrock contract.

Table 16. GOI inputs into the Project Implementation Unit through June, 1992. (Rs. '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
Office equipment & Supplies	125	-
Vehicles	-	-
Maintenance: Office Equipment	22	-
Staff Salaries	917	-
In-country travel	15	-
Contingencies	-	-
	-----	---
TOTAL	1,079	-

^{1/} PIU expenditure is as on December 31, 1990 as per the last report received from ICAR.

4. Forestry Faculty Training (FFT).

Seventy two Indian faculty members involving 864 person-months (Annexe IV) went to U.S.A. for one-year long integrated training during the period August 9, 1986 and September 11, 1990. These trainees came from 13 Indian Agricultural Universities that had decided to establish a four-year B.Sc. Forestry degree programme. The faculty members went to 14 U.S. universities in four annual batches and were spread over eight major fields of training specialization.

Expenditure of USAID funds on the sub-project is given in Table 17. No counterpart funds from Government of India were provided in this sub-project budget although GOI allocated \$11.5 million for the establishment of B.Sc. forestry degree programmes at the participating universities.

Table 17. USAID inputs into Forestry Faculty Training through June, 1992.

(\$ '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
U.S. Scientists to India	-	-
Indian Scientists to U.S.	3319 ^{2/}	-
	-----	---
TOTAL (\$)	3319	-

^{1/} Consists of actual expenditures.

^{2/} Includes \$167,000 non-ARP funds provided under D.O.41 for 1987-88 group of faculty members.

5. Intra-cellular Blood Protista (IBP).

Ten U.S. scientists involving 14.25 person-months (Annexe IV) came to India during January 12, 1987 - November 1, 1991. 4 of these person-months were used by the lead consultant for services rendered in U.S.A. itself while 5.75 person-months were used by a two person-team for conducting in-country training programme at the Indian Veterinary Research Institute.

Fifteen Indian scientists involving 41 person-months (Annexe V) went to U.S.A. for training during February 18, 1987 and February 26, 1992. Eight of the Indian scientists had gone for 3-week study tours while the remaining seven scientists went for professional level formal training programmes.

Expenditure of USAID funds on Intra-Cellular Blood Protista is given in Table 18 and that of GOI funds in Table 19.

Table 18. USAID inputs into Intra-cellular Blood Protista through June, 1992. (\$ '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun'92</u>		<u>Progress ^{1/} Apr-Jun'92</u>	
	<u>FX</u>	<u>LC</u> (\$ equiv)	<u>FX</u>	<u>LC</u> (\$ equiv)
U.S. Scientists to India	167	-	-	-
Indian Scientists to U.S.	193	-	-	-
Workshop in India	-	-	-	-
Equipment: Imported	722	-	-	-
Maintenance of Res. Equip.	-	-	-	-
	---	---	---	---
TOTAL (\$)	1082			

^{1/} Consists of actual expenditures. Values indicated in "cumulative/Jun'92" include cost of items delivered into India. 24% has been added to the cost of equipment, providing for freight, insurance, clearing, inland transportation and other related costs.

Table 19. GOI inputs into Intra-cellular Blood Protista through June, 1992. (Rs. '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
Building facilities	1500	-
Vehicles	265	-
Staff salaries	4171	-
In-country travel	110	-
Op. Research	1963	-
Office Equipment & Supplies	76	-
Workshops	16	-
Res. Equipment	1227	-
	----	----
TOTAL	9328	-

^{1/} Cumulative expenditure is as of March 31, 1992 when USAID assistance terminated.

6. Embryo Transfer Technology (ETT).

Eight U.S. scientists involving 4.50 person-months (Annexe IV) came from U.S.A. during March 12, 1987 - December 17, 1991.

Eighteen Indian scientists involving 25.25 person-months (Annexe V) went to U.S.A. during April 23, 1987 - April 26, 1992. Three of these 18 scientists had gone for a 3-week study tour while all the rest went for professional level training programmes.

Procurement of a micromanipulator for NDRI, Karnal that was being processed to be delivered to the centre in the January-March, 1992 quarter has been dropped due to time constraint.

Expenditure of USAID funds for the ETT sub-project is given in Table 20 and that of GOI funds in Table 21.

Table 20. USAID inputs in Embryo Transfer Technology through June, 1992. (\$ '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun '92</u>		<u>Progress Apr-Jun '92</u>	
	<u>FX</u>	<u>LC (\$ equiv)</u>	<u>FX</u>	<u>LC (\$ equiv)</u>
U.S. Scientists to India	109	-	-	-
Indian Scientists to U.S.	226	-	-	-
Workshop, etc. in India	-	-	-	-
Workshops, Conferences outside India	-	-	-	-
Equipment: Imported	330	-	-	-
Op. Research	-	-	-	-
Staff Salaries	-	-	-	-
Maintenance of Res. equipment	-	-	-	-
	---	--	---	---
TOTAL (\$)	665	-	-	-

^{1/} Consists of actual expenditures. Values indicated in "cumulative/Jun '92" include cost of items delivered into India. 24% has been added to the cost of equipment, providing for freight, insurance, clearing, inland transportation and other related costs.

Table 21. GOI inputs in Embryo Transfer Technology through June, 1992. (Rs. '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun '92</u>	<u>Progress Apr-Jun '92</u>
Staff Salaries	4034	-
Vehicle	930	-
In-country travel	158	-
Workshops, etc.	80	-
Res. Equip.	600	-
Maintenance: Res. Equipment	258	-
Office Equipment	-	-
Op. Research	2220	-
Contingencies	1259	-
	-----	---
TOTAL	9539	-

^{1/} Cumulative expenditure is as of September 31, 1991. The project terminated on March 31, 1992.

7. Conversion of Biodegradable Animal Wastes (CBAW).

Twelve U.S. scientists involving 10.25 person-months (Annexe IV) came to India during February 16, 1987 - March 26, 1992. 2.25 of these person-months were used by the lead consultant for work done in U.S.A. itself.

Twenty five Indian scientists involving 91.00 person-months (Annexe V) went to U.S.A. for training during April 7, 1987 - August 13, 1991. Eight of these scientists had gone for 3-week study tours while all the rest went for professional level training programmes.

Expenditure of USAID funds for the CBAW sub-project is given in Table 22 and that of GOI funds in Table 23.

Table 22. USAID Inputs into Conversion of Biodegradable Animal Wastes through June, 1992. (\$ '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun'92</u>		<u>Progress Apr-Jun'92</u>	
	<u>FX</u>	<u>LC</u>	<u>FX</u>	<u>LC</u>
	(\$ equiv)		(\$ equiv)	
U.S. Scientists to India ^{2/}	202	-	-	-
Indian Scientists to U.S.	438	-	-	-
Workshop, Conferences outside India	-	-	-	-
Equipment: Imported	461	-	-	-
Op. Research	-	-	-	-
Staff Salaries	-	-	-	-
Maintenance of Res. equipment	-	-	-	-
	----	--	--	--
TOTAL (\$)	1101	-	-	-

^{1/} Consists of actual expenditures. Values indicated in "cumulative/Jun'92" include cost of items delivered into India. 24% has been added to the cost of equipment, providing for freight, insurance, clearing, inland transportation and other related costs.

^{2/} Includes consultants to workshops in India.

Table 23. GOI Inputs in CBAW through June, 1992.

(Rs. '000)

<u>Component</u>	<u>Cum Total thru Jun'92 ^{1/}</u>	<u>Progress Apr-Jun'92</u>
Building facilities	-	-
Vehicles	322	-
Maintenance :		
Research Equipment	24	-
Office Equip.	29	-
Vehicles	34	-
Staff salaries	5147	-
In-country travel	283	-
Op. Research	335	-
Office Equipment & Supplies	1780	-
Workshops	45	-
Res. Equipment	1106	-
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TOTAL	9105	-

^{1/} Cumulative/Jun'92 expenditure is as of September 30, 1991 as per the last quarterly report received from ICAR. The project terminated on March 31, 1992.

8. Plant Genetic Resources (PGR)

Ten U.S. scientists involving 4.75 person-months (Annexe IV) came to India during February 28, 1988 - December 5, 1989.

Eleven Indian scientists involving 17 person-months (Annexe V) went to U.S.A. for training during the period May 21, 1988 - March 20, 1990. Eight of these scientists went for 3-week study tours while three went for professional level training programmes of 3-5 month duration.

Table 24 reports the cumulative financial data on costs covered by USAID for this sub-project during the period it was under the purview of the MSS.

Table 24. USAID inputs into Plant Genetic Resources through June, 1992. (\$ '000)

<u>Component</u>	<u>Cum Total thru Jun'92</u>	<u>Progress during Apr-Jun'92 ^{1/}</u>
U.S. Scientists to India	74	-
Indian Scientists to U.S.	119	-
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TOTAL	193	-

^{1/} Subsequent to termination of this pre-project activity on June 30, 1990, PGR activities have been covered under a separate stand-alone project.

9. Agroforestry research (Agrofor).

A distinctive feature of this Sub-project has been that for the purpose of organization of technical assistance and training programmes the broad field of agroforestry had been divided into eight distinct technical segments and all the technical assistance/training programmes had been planned as integrated well balanced packages individually focussed on each of the eight segments. The eight segments are:

1. Tree Seed Technology
2. Tree Nursery Technology
3. Root Systems Studies
4. Nutrient Cycling
5. Ecosystem Studies
6. Agroforestry Modelling
7. Agroforestry Systems Evaluation
8. Agroforestry Germplasm

Twenty U.S. scientists involving a total of 13.25 person-months (Annexe IV) came to India during the period May 17, 1989 - May 6, 1992.

Twenty five Indian scientists involving a total of 232.75 person-months (Annexe V) went to U.S.A. for training during the period October 27, 1988 - June 18, 1992. Three of these went for 2-3 week study tours; thirteen for short-term training of 5-9 months and nine went for 18-month doctoral degree course work programme.

Forty one other Indian scientists received computer awareness training in a 2-week course organized at Delhi during September 6 - October 20, 1991.

Expenditure of USAID inputs to Agroforestry sub-project is given in Table 25.

Table 25. USAID inputs into Agroforestry Research through June, 1992. (\$ '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun'92</u>		<u>Progress^{1/} Apr-Jun'92</u>	
	<u>FX</u>	<u>LC (\$ equiv)</u>	<u>FX</u>	<u>LC (\$ equiv)</u>
U.S. Scientists to India	261	-	31	-
Indian Scientists to U.S.	858 ^{2/}	-	-	-
Equipment	626 ^{3/}	-	-	-
Workshop	-	-	-	-
Equipment Maintenance	-	-	-	-
	----	--	--	--
TOTAL	1745	-	31	-

^{1/} Consists of actual expenditures and full estimated costs of recently completed ones. Values indicated in "cumulative/ Jun'92" include cost of items delivered into India. 24% has been added to the cost of equipment, providing for freight, insurance, clearing, inland transportation and other related costs.

^{2/} Includes in-country training for 41 participants.

^{3/} \$77,000 has been included in the cumulative figure up to June, 1992. This amount is the cost of computers procured locally by Winrock/Delhi. There was no procurement fee. Also, no transportation cost has been added since this value is included in the basic cost.

10. Agrometeorology (Agromet).

Along the pattern of activities organization used in the case of Agroforestry Sub-project, the technical assistance and training programmes of the Agrometeorology Sub-project also were organized around seven technical segments of the overall subject field of Agrometeorology. These segments were:

1. Crop Growth Modelling
2. Water Production Functions
3. Agromet Database Management
4. Characterization of Agro-ecological Environments
5. Basic Micrometeorology
6. Spatial Dynamics of Insect Pests
7. Agromet Advisory Services

Seventeen U.S. scientists involving 11.25 person-months (Annexe IV) came from U.S.A. during July 31, 1989 - January 31, 1992.

Nineteen Indian scientists involving 77.50 person-months (Annexe V) went to U.S.A. during the period April 10, 1989 - June 16, 1992. Only three of these went for a 2-week study four while all the rest went for

professional level training programmes of 5-6 months duration. The training duration of the last batch of two scientists was reduced to only 2 months because of scheduled termination of the ARP/MSS on June 30, 1992. Seventeen other Indian scientists received computer awareness training in a two-week course organized at Delhi during April 13, 1992 - May 10, 1992.

Equipment worth \$671,000 has been delivered in India.

Expenditure of USAID funds and GOI funds on Agrometeorology is given in Table 26 and Table 27 respectively.

Table 26. USAID inputs into Agrometeorology through June, 1992. (\$ '000)

Component	Cum Total ^{1/} thru Jun'92		Progress Apr-Jun'92	
	FX	LC (\$ equiv)	FX	LC (\$ equiv)
U.S. Scientists to India	191	-	24	-
Indian Scientists to U.S.	443 ^{2/}	-	36	-
Workshop	-	-	-	-
Equipment	671 ^{3/}	198	-	-
Equipment Maintenance	-	-	-	-
TOTAL	1305	198	60	-

^{1/} Consists of actual expenditures under on-going activities, full estimated costs of recently approved ones. Values indicated in "cumulative/Jun'92" include cost of items delivered into India. 24% has been added to the cost of equipment, providing for freight, insurance, clearing, inland transportation and other related costs.

^{2/} Includes in-country training for 17 participants.

^{3/} \$198,000 has been included in the cumulative figure up to June, 1992 for procurement of computers locally. This amount is the cost of computers procured locally by Winrock/Delhi. There was no procurement fee. Also, no transportation cost has been added since this value is included in the basic cost.

Table 27. GOI inputs into Agronmeteorology through June, 1992.
(Rs. '000)

<u>Component</u>	<u>Cum Total ^{1/} thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
Office equipment & Supplies	548	-
Staff salaries	8601	-
In-country travel	361	-
Contingencies	1137	-
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TOTAL	10647	-

^{1/} Cumulative expenditure is as of December 31, 1991.

PRE-PROJECTS:

11. Integrated Pest Management (IPM)

A three-member team of U.S. scientists (Annexe IV) came to India for one month during the period April 11 - May 9, 1991 to finalize the design of this Pre-project. Expenditure incurred on this design team was charged to the PIU budget as per established practice.

Fifteen Indian scientists involving a total of 21.50 person-months (Annexe V) went to U.S.A. during the period July 25, 1990 - June 15, 1992. Six of them went on a 3-week study tour; four on a 3-month professional level training while five went on a reduced duration professional training programmes because there was no time for a longer duration training.

Financial data on USAID inputs in given in Table 28.

Table 28. USAID inputs into Integrated Pest Management through June, 1992.
(\$'000)

<u>Component</u>	<u>Cum Total thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
U.S. Scientists to India	-	-
Indian Scientists to USA	153	71
Equipment	37	-
	---	--
TOTAL	190	71

12. Animal Genetic Resource Conservation (AGRC)

Although initially conceived as one compact activity the Animal Genetic Resource Conservation Pre-project eventually differentiated into two distinct activities - one for the land-air based livestock and the second for fisheries. Accordingly the technical assistance and trainings also bifurcated into two distinct sets of activities oriented to AGRC and AGRC (Fisheries).

Two U.S. scientists came for 3-weeks each during the period February 14 - March 8, 1992 (Annexe IV) to finalize the design of the AGRC while one U.S. scientist came for 3 weeks during April 16 - May 7, 1992 to design AGRC (Fisheries). The expenditure incurred on the design of AGRC (Fisheries) was charged to PIU because of budgetary considerations.

Seven Indian scientists (Annexe V) involving a total of 8.75 person-months went to U.S.A. during the period January 2, 1991 - June 10, 1992. Three of them went for a 3-week study tour for AGRC, one for a 2-week study tour on AGRC (Fisheries) while three went for a 2-month long professional level training in AGRC.

Financial data on U.S. inputs are given in Table 29.

Table 29. USAID inputs into Animal Genetic Resource Conservation through June, 1992. (\$'000)

<u>Component</u>	<u>Cum Total thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
U.S. Scientists to India	32	-
Indian Scientists to U.S.	41	41
Equipment ^{1/}	38	-
	---	--
TOTAL	111	41

13. Tissue Culture in Horticultural Crops (TCHC)

Two U.S. scientists involving 1.75 person-months (Annex.IV) came to India during November 28 and December 30, 1991. The expenditure incurred on them was charged to PIU.

Seven Indian scientists involving 10.25 person-months (Annexe V) went to U.S.A. for training during February 21, 1991 - June 12, 1992. Three of them went for a 3-week study tour while four went for a 2-month professional level training, the duration of which had been reduced because of the approaching PACD of ARP/MSS.

Financial data on USAID inputs is given in Table 30.

Table 30. USAID inputs into Tissue Culture in Horticulture Crops through June, 1992. (\$'000)

<u>Component</u>	<u>Cum Total thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
U.S. Scientists to India	-	-
Indian Scientists to U.S.	82	-
Equipment ^{1/}	30	-
	---	--
TOTAL	112	-

14. Protected Cultivation and Green Houses (PCGH)

One U.S. scientist involving 0.5 person-months (Annexe IV) came to India during November 23 - December 8, 1991.

Nine Indian scientists involving 15.75 person-month (Annexe V) went for training in U.S.A. during August 22, 1991 - June 8, 1992. Five of them went for a 3-week study tour while other four went for a 3-month professional level training.

Financial data on USAID inputs is given in Table 31.

Table 31. USAID inputs into Protected Cultivation and Green Houses through June, 1992. (\$'000)

<u>Component</u>	<u>Cum Total thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
U.S. Scientists to India	11	-
Indian Scientists to U.S.	116	36
Equipment	31	-
	---	--
TOTAL	158	36

15. On-Farm Water Management (OFWM)

Two U.S. scientists involving 1.50 person-months (Annexe IV) came to India during March 13, 1992 - April 3, 1992.

Six Indian scientists involving 10.25 person-months (Annexe V) went to U.S.A. for training during April 12 - June 10, 1992. Three of them went for a 3-week study tour and four for a 2-month professional training, the duration of which had been reduced because of approaching PACD of ARP/MSS on June 30, 1992.

Financial data on USAID inputs is given in Table 32.

Table 32. USAID inputs into On-Farm Water Management through June, 1992. (\$'000)

<u>Component</u>	<u>Cum Total thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
U.S. Scientists to India	28	-
Indian Scientists to U.S.	101	101
Equipment	- ^{1/}	-
	---	---
TOTAL	129	101

^{1/} Two items, namely, a laptop computer and a Soil Moisture Gauge were requested under this pre-project activity. Neither could be procured due to a time constraint to obtain special import documents from the Government of India.

16. Farm Machinery

One U.S. scientist involving 1.00 person-months (Annexe IV) came to India during May 1-30, 1992.

Six Indian scientists involving 12.00 person-months (Annexe V) went for a 2-month professional level training to U.S.A. during April 18 - June 17, 1992.

No funds were provided for equipment procurement under this pre-project.

Financial data on USAID inputs is given in Table 33.

Table 33. USAID inputs into Farm Machinery through June, 1992. (\$'000)

<u>Component</u>	<u>Cum Total thru Jun'92</u>	<u>Progress Apr-Jun'92</u>
U.S. Scientists to India	21	21
Indian Scientists to U.S.	81	81
Equipment	-	-
	---	---
TOTAL	102	102

ANNEXURES

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ANNEXE I.

**Dates and Purposes of Amendments
pertaining to Contract No. 386-0000-C-00-5039.**

CONTRACT	DATE	PURPOSE
Original	9/30/85	To provide management support services for ARP.
A-1	11/29/85	Provides funds to the MSS contract to carry it through September 30, 1986.
A-2	8/27/86	To provide additional funds to carry the contract through September 30, 1987.
A-3	9/29/86	To provide additional funds to the contract.
A-4	9/30/86	To provide additional funds to carry the contract through September 30, 1988.
A-5	8/29/88	To provide additional funds to carry the contract through September 30, 1990.
A-6	2/8/89	To provide additional funds for sub-project activities; to change from Requirements Contract to a Standard Cost Reimbursement Contract and to clarify the relationship between the contractor and USAID.
A-7	4/4/89	To delete Section H.6 - Rights in data.
A-8	10/4/89	To establish overhead rates.
A-9	3/30/90	To provide incremental funding for sub-project activities.
A-10	6/14/90	To reallocate funds for sub-projects between technical assistance, training and commodities.
A-11	7/13/90	To extend the contract to December 31, 1990 and to transfer \$120,000 from sub-project commodities to sub-contracts.
A-12	12/24/90	To extend the contract to June 30, 1991; increase the level of effort for administrative support by 11.4 person-months; decrease the total estimated cost by \$101,379 to \$12,585,607 and increase the incremental funding by \$1,945,258 to fully fund the contract.
A-13	1/25/91	To provide accounting data left out from A-12.

ANNEXE I (contd.)

- A-14 7/17/91 To extend the contract through March 31, 1992 and revise the budget.
- A-15 8/7/91 To authorize use of dollar funds earmarked for training for computer training locally for 42 participants under Agroforestry sub-project.
- A-16 1/23/92 To extend the contract to June 30, 1992; to authorize use of dollars for local training under Agromet sub-project.

FINAL EVALUATION REPORT

INDO/U.S. AGRICULTURAL RESEARCH PROJECT

PROJECT NUMBER 386-0470

**IQC Contract No. PDC-1406-I-00-0034-00
Delivery Order No. 12**

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May 1992

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I. EXECUTIVE SUMMARY

The Indian Agriculture Research Project (ARP) terminates June 30, 1992. This completes nine years of rather successful activities associated with staff development, technology transfer, institutional building and overall improved agricultural research capability. This final evaluation, involving each of the sub-projects and pre-projects active during the program, was conducted in April-May, 1992 at the request of USAID/India.

Initially the ARP was approved for a seven year period, 1983-90, but was subsequently extended two additional years. Total project support of \$28 million was provided over the life of the project. Of this amount the Government of India (GOI) through the Indian Council Of Agricultural Research (ICAR) contributed \$8 million in Rupee equivalent and the U.S. Government through USAID contributed \$20 million in grant funds.

The overall project goal was to increase agricultural productivity, production, employment and income. The general purpose was to strengthen the capability of the Indian agricultural research system to conduct research on priority problems in certain key functional scientific areas. This was to be accomplished by building institutional research capacity through collaborative assistance with designated U.S. Land Grant Universities, the U.S. Department of Agriculture and other agricultural organizations, and by assisting in the development and transfer of agricultural technology through collaborative research between Indian and U.S. research scientists with cooperation and support from their respective participating institutions.

The ARP Project Paper placed emphasis on addressing two priority problem areas at the outset: 1) soybean processing and utilization, and 2) post harvest technology development in processing and utilization of perishable fruits and vegetable crops. Provision was made to also consider collaboration on additional sub-projects.

From a rather extensive list of priority agricultural projects proposed by ICAR a total of fifteen were identified to receive financial support: eight as sub-projects and seven as pre-projects. Approval of each of these projects to be funded was provided on the basis of being reviewed and recommended by the Indo-U.S. Subcommittee on Agriculture. This Subcommittee meets annually as a body and serves as a forum in determining issues of mutual interest between the two countries regarding agricultural research, education and development. In this function it has filled a significant role in the programs of the ARP project.

The main purpose of this final project evaluation as outlined to the review team was to assess: a) research capabilities, b) research accomplishments, c) technology transfer, d) commercialization potential, and e) continuity, sustainability and future direction of the research beyond USAID involvement. The charge also included making specific recommendations for GOI/ICAR to ensure continuity and sustainability of research activities and transfer and commercialization of technologies in priority areas to achieve the stated goal of increasing agricultural productivity, employment and income. (see Attachment 4.2 for the complete Scope of Work).

The evaluation was carried out by a joint U.S./India team of four scientists (see Attachment 4.5) with extensive experience in agricultural research and project evaluation, much of it in India.

The review team chose not to follow a formal methodology but rather an informal approach of documentation reviews and personal interviews. An Issues and Questions memorandum was developed and sent to all project research locations asking for a brief note on five main issues of the evaluation. A copy is included in Attachment 4.3. The responses were used in discussions and personal interviews, and have formed the basis for many of the team's findings and conclusions.

FINDINGS AND CONCLUSIONS

The overall goal of the project, to contribute to an increase in agricultural productivity, production, employment and income was obviously unrealistic and impossible to attain during the ARP's life span. The project's purpose, to strengthen the capacity of the Indian agricultural research system in selected key areas has been reached. There is no question that the INDO/U.S. Agricultural Research Project has made a significant contribution to the research capability of all sub-projects and pre-projects in which it has invested. The team found universal agreement that the training and technical exchange opportunities, the assistance provided by U.S. consultants in planning and implementation, and the provision of previously unavailable equipment, have provided the stimulus and means for productive research.

The review team was favorably impressed that the following components of the ARP were especially beneficial in developing and strengthening the individual sub-projects: 1) International training of Indian scientists, 2) Input of U.S. consultants, 3) Procurement and installation of modern equipment, and 4) The GOI contribution of staff, land and facilities. The main benefit to the pre-projects has been the provision of funds for planning, project design, limited consultation and equipment.

Tremendous strides have been made in the training and updating of Indian scientists in the various agricultural fields associated with the ARP sub-projects. Considering all programs combined more than 300 scientists have spent anywhere from two weeks to 18 months at training locations in the United States. This amounts to 1600 man-months of specialized training wherein these scientists have benefited from direct contact with programs of other professional scientists at locations where teaching and research activities are being conducted in scientific disciplines directly associated with their own areas of interest.

Few of the accomplishments could have been attained without the willing cooperation of the U.S. consultants who came to India to share their knowledge and expertise in their various fields

of agricultural science. A total of 51 came during the nine-year life span of the ARP. This accounted for 115 man-months of consultation, training and direct contacts. While here, these scientists interacted with hundreds of agricultural professionals including teachers and researchers. They taught courses and seminars and demonstrated the proper use of modern equipment while serving as mentors to their Indian colleagues.

As a direct result of the ARP considerable state-of-the-art laboratory and field equipment was imported from the United States and elsewhere to provide Indian research scientists the opportunity to conduct agricultural research at the cutting edge of their scientific specialties. Essentially all of the equipment purchases that were planned under the sub-projects were placed. The equipment was ordered, shipped, most had been received and installed in existing laboratories and is operating.

The research results, research products and, beyond that, possible commercialization of any developed products vary greatly from program to program. In seven pre-projects the ARP contribution was limited in funds and time and only some training, consultation and equipment could be provided. On the other hand the pre-project on plant germplasm has led to a major stand-alone project in support of India's plant germplasm conservation and exploration activities benefitting worldwide efforts in this field. The Forestry Faculty Training sub-project trained a record number of scientists in a short time to establish forestry research and education capability at 14 agricultural universities. The sub-projects with accomplishments of greatest commercial potential are Soybean Processing and Utilization with several processes and products developed; Post-Harvest Technology, with several promising techniques and products; Blood Protista, with one commercially produced vaccine; and the Conversion of Biodegradable Animal Waste

for animal feed with processes for recovering animal feed ingredients from slaughterhouses, as well as poultry and fisheries operations.

ANNEXE II (contd.)

The success of ARP is to a considerable extent due to the fact that all projects were in areas of research in which the ICAR has had considerable ongoing activities. Many of these priority projects formed an important part of the coordinated all Indian network of research. This also provides the basis for the general confidence expressed for the future. The GOI Eighth Five-Year Plan contains funding for all ARP programs and sustainability appears to be assured for the immediate future.

The GOI is to be commended on their overall interest in this broad ARP. In addition to providing the manpower that made these sub-projects possible, the GOI has lived up to its commitment to provide up-to-date facilities to house the ongoing programs. This was evident as the team made site visits and saw the facilities made available for the research. In some instances the buildings were remodeled for the needed purposes while others were new and recently occupied.

PRINCIPAL RECOMMENDATIONS

At this point in time without any anticipated prospect for USAID extension or continuation in any ARP related projects, the team found it difficult to formulate many specific recommendations.

During the team's visits, interviews and discussions one theme was constantly heard. In addition to expressions of success, appreciation and confidence in the future of the research programs, concern was repeatedly voiced about the total cessation of U.S. support.

Repeated pleas were made for some form of limited but continued U.S. involvement, particularly in the areas of consultants' participation in program planning and review and the availability of some foreign exchange for purchase of urgently needed repair parts for imported equipment.

The review team came to the conclusion that the concerns for the future lie not so much in India's agricultural research capability but in its ability to translate research results into useful, adoptable practices, processes and products. Ultimately

India's growth will depend on the development of its rural areas. Improved farming and marketing systems are the key to this process. The review offers the following recommendations:

o The review team recommends that USAID explore means to establish projects for the commercialization of promising processes and products developed from ARP sub-projects, particularly soybean processing and utilization and post harvest technology related to the processing of fruits and vegetables.

o The review team recommends that USAID explore means to establish projects for the commercialization of promising process and products developed from ARP sub-projects.

o The review team urges ICAR to build on the momentum established through the ARP and honor its commitment to continuing the projects through funding provided in the Eighth Five-Year Plan.

o The review team strongly recommends that for long term needs ICAR find a mechanism to provide foreign exchange for the purchase of repair parts and maintenance of imported scientific equipment.

o The review team recommends that ICAR explore any available means to expedite the transfer and adoption of improved technologies both within the public domain and from the public sector to private enterprise.

o The review team recommends that USAID and ICAR encourage Indian and U.S. scientists to continue professional exchanges.

o The review team recommends that USAID and ICAR maintain a regular liaison to monitor research progress, discuss scientist exchanges, use U.S. consultants in workshops, symposia, and project reviews in India, and generally assist in the continued development of agricultural research in India.



**UNITED STATES AGENCY for INTERNATIONAL DEVELOPMENT
AMERICAN EMBASSY, NEW DELHI-110021**

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FAX : 91-11-677012
91-11-6868594

12 MAR 1992

ATS	UE
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c.c.	ACM sent
File	I.Os. 134/133

March 10, 1992

Dr. Maharaj Singh
India Coordinator
Winrock International
7, Poorvi Marg, Vasant Vihar
New Delhi 110 057

Subject: USAID/India - Winrock Contract 386-0000-C-00-5039-00
Your 2/27/92 Letter Re Computer Purchase

Dear Dr. Singh:

Use of Embassy channels is not permissible for the procurement suggested in the subject letter. USAID accepts Winrock's analysis that it is not feasible to pursue the procurement of the computers at this point.

Sincerely,

Leonard Kata
Regional Contracting Officer

Short fall in computer procurement
for Agroforestry Sub-project.



Winrock
International

P.O. Box No. 8808
7, Poorvi Marg, Vasant Vihar,
New Delhi-110 057 India
Telephone : 605099, 673527
Telex : 72489 WIAD IN

USAID Agriculture Support Service Project

February 25, 1992

MEMORANDUM

To : Dr. Surjan Singh, USAID/NRM

From : Maharaj Singh

Re : Indigenous procurement of computer systems

NRM advised Winrock to arrange procurement of 18 additional computer systems with peripherals indigenously as below :

- 17 computer systems under I.O.134-24-40 of October 31, 1991
- 1 computer system under I.O.133-24-40 of October 31, 1991

Each computer system is to comprise of 4 components, viz.

- 1) Base Computer system
- 2) Accessories
- 3) Consumables
- 4) Set of Software

The procurement plan developed by Winrock and cleared by the RCO New Delhi and IRM Washington envisaged that :

The base computer and support systems such as stand-by power supply and some other accessories will be procured in India.

The math coprocessor, all the software and selected consumables will be procured in USA because of their relatively low prices in U.S. market.

Accordingly the process of procuring the raw hardware components of the base computer system minus the math coprocessor from indigenous sources in India was set in motion and the project office in NRM was requested to provide the Embassy shipping channel facility for the import of software and selected consumables for considerations of speedy clearance and safety of delicate software vide our memo of January 27, 1992.

... 2/-

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With regard to the indigenous procurement of the raw hardware component of the base computer system, we have reached a stage that the purchase orders may be issued during the first week of March 1992.

However, in respect of the procurement of math coprocessors, software and selected consumables the position that has emerged after our joint meeting with the Executive Officer on February 24, 1992 is that the Embassy channel facility will not be available for their import and Winrock will have to import them through the NMIC route or the passbook entry route.

The passbook entry route is not considered suitable for this purpose because of inherent operational problems and lack of time leaving the NMIC route as the only alternative. Resort to the NMIC route would, however, mean that the relevant goods would possibly be delivered at Delhi Customs around late May 1992, provided there is no problem in the award of the NMIC. This schedule would mean that the software will be available more than 45 days after the raw hardware component of the base computer systems would be ready for integration of the math coprocessor and for the essential performance testing after the loading of the software.

This would not leave any time for delivery of the system to sites and their installation since Winrock MSS contract terminates on June 30, 1992. It is, therefore, clear that it would not be possible for Winrock to procure and deliver to sites the integrated computer systems as required under the relevant I.Os.

We have also considered the feasibility of arranging the procurement and delivery of only the raw hardware of the base computer systems without the math coprocessor, software and selected consumables which could be later on procured by ICAR at their convenience. Technically, such a proposition is feasible because all these items are available in the Indian market although at several times the prices at which they could be procured in USA. For instance 18 sets of the software proposed will cost around \$25,000 in USA and the same 18 sets will cost around \$60,000 or more in India. The technical expertise to integrate/load on these items into the raw hardware is also adequately available in India.

... 3/-

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There are, however, several practical problems inherent in this approach. The first and foremost is that performance testing and demonstration of their functional capability to the recipient scientists at individual sites would not be possible with the relevant software and consumables.

Delivery of the non-functional raw hardware to reach centers is also likely to be scorned by the recipient scientists and can generate more illwill than goodwill for USAID/Winrock.

The recipient research centers are unlikely to expeditiously muster enough additional funds for the procurement of software and consumables and the raw hardware runs the risk of sitting for a prolonged period in dead storage leading to deterioration of the equipment.

Lastly the relevant I.Os. would probably require to be suitably amended and re-issued.

We urgently seek your guidance as to how we may proceed in this peculiar situation.

c.c. Dr. A. Colin McClung
USA Coordinator

WI:MS/SI:mb:Comp.Procure:920225.SUR(IDs.134/133/RCD)

Extract from May 18, 1992, Memo of Surjan Singh

Indian Veterinary Research Institute:

IVRI indicated their choice of a Electron Microscope to be procured under this sub-project. Thru Implementation Order #17 the contractor was informed by USAID that no order for this item should be placed until specific instructions to do so were obtained from AGRE, USAID. (February 28, 1989).

In a meeting conducted in ICAR with Dr. Acharya, Deputy Director General (Animal Sciences), it was announced there by ICAR that a decision had been made not to procure the electron microscope for IVRI. (April 25, 1989).

On June 23, 1989, Dr. P.N. Bhat, Director IVRI writes to the contractor that ICAR/DARE approval has been obtained and therefore to proceed with the procurement. With the same letter he sends elaborate justification for the import of the electron microscope.

The contractor writes back requesting Dr. Bhat to check back with the ICAR since they feel differently about this procurement. (June 27, 1989).

The contractor acting on the request of USAID requests their U.S. office to seek the opinion of Dr. Elizabeth Singh on the feasibility of procuring this equipment. (June 28, 1989).

The contractors counterpart in U.S.A. informs thru telex that he has a letter from Dr. E. Singh and that she is not convinced that a Transmission Electron Microscope is essential for research in IVRI. She feels a scanning scope which already is installed in IVRI will be more useful. (August 1, 1989).

The comments received from Dr. E. Singh are placed at Annexure V.

USAID writes to IVRI requesting alternative list of equipment to be procured since ICAR has turned down the request for a electron microscope. (August 18, 1989).

USAID informed ICAR on October 19, 1989 its inability to support the procurement of a Transmission Electron Microscope for IVRI centre Annexure VI. It may be pointed out that the cost of one unit of TEM with accessories was estimated at around \$250,000.

List of U.S. Scientists to India

Sub-project : PIU

D.O No.	Name	Home Institution	Field	Duration From - To
3	GORDON, John PROMNITZ, L.C.	Private Consult. Private Consult.	Agroforestry Design	Jul.03-Aug.16, '86
12	SKRDLA, Willis KAHN, Robert ROOS, Eric	Private Consult. Private Consult. USDA/ARS/NSSL, Fort Collins	Plant Genetic Resources Design	Sep.13-Oct.25, '86 Sep.27-Nov.06, '86
25	GORDON, John MACE, Arnett SKOK, Richard	Yale University Univ. of Florida Univ of Minnesota	Forestry Design	Mar.05-28, 1987 Mar.04-26, 1987
27	NOBE, K. REUSS, J. REDDY, M.	Colorado State University	On-Farm Water Management Design	Jan.18-Feb.28, '87 Feb.09-28, 1987
28	BAIRD, Jack HANSON, Roger	North Carolina State Univ. Univ. of Missouri	Integrated Nutrient Sup. Mngt. Design	Mar.16-Apr.25, '87
31	COCHRAN, Billy HARRINGTON, Roy	FAO, Rome Deere & Co., Illinois	Farm Machinery Design	Mar.16-Apr.25, '87
39	PINO, John JONES, G. MAU, M.	Nat.Res.Council, Washington Private Consult. HDSAU, Somerset	Plant Genetic Research Design	May 16-31, 1987 Jun.21-28, 1987 May 18-Jun.28, '87 May 25-Jun.28, '87
44	REAGAN, T.E. MARTIN, F.A.	Lousiana State Agri. Center	Sugarcane Workshop	Sep.01-08, 1987
59	HATCH, Charles RICHARDS, Doug	Univ. of Idaho Mississippi State University	Agroforestry Workshop	Apr.25-May 08, '88 Apr.24-May 08, '88
62	STEWART, Ian DUGAS, Bill	WHARF, Univ. of California, Davis Texas A & M Univ.	Agrometeoro- logy Workshop	May 29-Jun.17, '88 May 30-Jun.11, '88
69	TSAO, P.H.	Univ. of California, Davis	Pepper Workshop	Oct.20-Nov.02, '88
77	CLOUD, Kathleen	Univ. of Illinois	Women in Agriculture Conference	Nov.29-Dec.11, '88

Sub-project : PIU

I.O No.	Name	Home Institution	Field	Duration From - To
59	MEARS, David SHALES, F.	Rutger's Univ. Univ. of Maryland	Int'l.Confer. on Use of Plastics in Agriculture	Feb.24-Mar.03,'90
86	HANSON, R.G. NICHOLAIDES, J	North Carolina State University Univ. of Illinois	INSAM Workshop	Sep.20-Oct.06,'90
103	EDWARDS, C.R. FORD, R.E. STEINHAEUER,A.L	Purdue University Univ. of Illinois Univ. of Illinois	IPM Design	Apr.11-May 09,'91
104	RICHARDS, D NEWTON, R.J.	Mississippi State Univ. Texas A & M Univ.	Technical Assessment (FFT)	Nov.14-30, 1990
126	SINGH, D.N. BORGADNKAR,D.S	Meharry Medical College Cytogenetics Lab.	International Genetic Conference	Feb.12-15, 1991
139	LITZ, R.E. DANDEKAR, A.M.	Univ. of California, Davis Univ. of Illinois	Biotech. of Horti. Crops	Nov.28-Dec.18,'91
141	JENSEN, Buddy	Dexter Nat. Fish Hatchery & Tech. Center	AGRC - Fishery Design	Apr.18-May 07,'92

USAID provided directly the Design Teams for three Animal Science Projects (Ristic, Tillman and Segerson) and the Agmeteorology Project (Ian Stewart) involving a total amount of \$57,038.

List of U.S. Scientists to India

Sub-project : SPU

D.O No.	Name	Home Institution	Field	Duration From - To
21	SHOVE, G.C.	Univ. of Illinois	Soybean Storage	Nov.02-Dec.14, '86
I.O 38	LOVE, Mark	Iowa State Univ.	-Qty. Stds for Soyfoods	Dec.03-Jan.13, '90
	WEI, L.S.	Univ. of Illinois	-Prod.& Qty. Evaluation	Jan.21-Mar.05, '90
	TRIBLHORN,R.	Colorado State University	-Low Cost Extrusion	Mar.12-30, 1990
	WALKER, C.E.	Kansas State University	-Soybean Milling Tech.	Feb.08-29, 1990
55	RANHOTRA, G.S.	American Inst. of Baking	-Soybean Storage	May 10-Jun.10, '90
	SHUKLA, T.P.	Food Res. Innovation Ent.	-Research on Soyfortified Foods	Jun.28-Jul.10, '90
	DEMOS, S.A.	White Wave Inc.	-Soy Products	Aug.16-Sep.15, '90
104	KAUFFMAN, H.E.	INTSOY, Univ. of Illinois	Technical Assessment	Nov.15-28, 1990

List of U.S. Scientists to India

Sub-project : PHT-FV

D.O No.	Name	Home Institution	Field	Duration From - To
22	BUESCHER, Ron	Univ. of Arkansas	Lead Consult.	Time spent in USA
40	RIESENBERG, Lou MENEGAY, Merle	PIP, Univ. of Idaho	PIP Workshop	Jun.02-28, 1987
63	BUESCHER, Ron	Univ. of Arkansas	Consultant	Jun.16-Aug.11, '88
72	ECKERT, J.W.	Univ. of California, Riverside	PHT Pathology	Nov.12-Dec.17, '88
I.O 47	RICHARDSON, D. SPLITTSTOESSER D.F.	Oregon State Univ Cornell University	Storage Physiology Microbiology	Mar.15-Apr.15, '90 Jan.14-Feb.14, '90 Feb.02-Apr.07, '90
74	ACREE, T.E.	Cornell University	Flavour Technology	Nov.14-Dec.17, '90
104	BUESCHER, Ron	Univ. of Arkansas	Technical Assessment	Nov.14-Nov.30, '90
109	CRANDALL, P.	Univ. of Arkansas	Processing	Jan.11-Feb.08, '91
118	BUESCHER, Ron	Univ. of Arkansas	Processing	Mar.15-Apr.07, '91

List of U.S. Scientists to India

Sub-project : ETT

D.O No.	Name	Home Institution	Field	Duration From - To
30	ELSDEN, R.P. KARIHALOO, A.K.	Peter Elsdon & Associates Inc.	Annual Workshop	Mar.12-26, 1987 Mar.14-30, 1987
61	ELSDEN, R.P.	Peter Elsdon & Associates Inc.	Annual Workshop	May 29-Jun.10, '88
75	ELSDEN, R.P. KARIHALOO, A.K.	Peter Elsdon & Associates Inc. Embryo Technology Inc.	International Buffalo Congress	Dec.09-20, 1988 Dec.12-16, 1988
I.O 42	DHINDSA, D.S.	National Inst. of Health, Bethesda	Lead Consultant in U.S.A.	Dec.20, 1989- Jan.03, 1990 Dec.25, 1990- Jan.12, 1991
104	DHINDSA, D.S.	National Inst. of Health, Bethesda	Technical Assessment	Nov.09-20, 1990
138	KARIHALOO, A.K.	Embryo Technology Inc.	Consultant	Nov.24-Dec.17, '91

List of U.S. Scientists to India

Sub-project : CBAN

D.O No.	Name	Home Institution	Field	Duration From - To
29	FONTENOT, J.P. TILLMAN, Allen	Virginia Polytech. Inst. Private Consult.	Annual Workshop	Feb.16-Mar.04, '87
54	FONTENOT, J.P.	Virginia Polytech. Inst.	Annual Workshop	Feb.07-27, 1988
66	FONTENOT, J.P.	Virginia Polytech. Inst.	Lead Consultant	50 days services in U.S.A.
I.O 28	FONTENOT, J.P.	Virginia Polytech. Inst.	Workshop/ Visits	Jun.05-28, 1989
58	FONTENOT, J.P. GERKEN, Jr.,H.	Virginia Polytech. Inst.	Workshop/ Visits	Feb.21-Mar.19, '90
104	FONTENOT, J.P.	Virginia Polytech. Inst.	Technical Assessment	Nov.11-23, 1990
125	FONTENOT, J.P. RUFFIN, B.G. McCASKEY, T.A.	Virginia Polytech. Inst. Auburn University Auburn University	Workshop	Sep.13-Oct.09, '91
149	FONTENOT, J.P.	Virginia Polytech. Inst.	Final Workshop	Mar.10-26, 1992

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List of U.S. Scientists to India

Sub-project : IBP

D.O No.	Name	Home Institution	Field	Duration From - To
26	RISTIC, M BURRIDGE, M.J.	Private Consult. Univ. of Florida	Annual Workshop	Jan.12-28, 1987 Jan.12-24, 1987
53	RISTIC, M. DIERKS, R.E.	Private Consult. Univ. of Illinois	Annual Workshop	Dec.30, 1987- Jan.21, 1988 Jan.4-16, 1988
56	RISTIC, M.	Private Consult.	Lead Consultant	90 days service in U.S.A.
73	LAL, Altaf LAL, Renu	Emory Uni. Atlanta Univ of Health Ser. Bethesda	In-country training at IVRI	Dec.12, 1988- Feb.19, 1989 Oct.29, 1988- Feb.19, 1989
I.O 52	RISTIC, M.	Private Consult.	Consultant	Feb.12-Mar.11, '90
104	RISTIC, M.	Private Consult. Illinois	Technical Assessment	Nov.23-Dec.03, '90
136	BURRIDGE, M.J.	Univ. of Florida, Gainesville	Consultant	Oct.15-Nov.01, '91

List of U.S. Scientists to India

Sub-project : AGROFOR

I.O No.	Name	Home Institution	Field	Duration From - To
11	BONNER, F.T. ELAM, W.W. LAND, S.B.	Mississippi State University	Tree Seed Technology Workshop	May 17-Jun 07, '89
12	HATCH, Charles	Winrock Int'l.	Agroforestry Modelling Workshop	Mar.29-Apr.17, '90
53	NAIR, P.K.R.	Univ. of Florida	Res. Program Planning	Dec.28, 1989- Jan.13, 1990
54	HODGES, J.D. FRIEND, A.L. NELSON, L.E.	Mississippi State University	Nutrient Cycling Workshop	Mar.21-Apr.09, '90
101	ELAM, W.W.	Mississippi State University	Tree Seed Manual	Dec.08-15, 1990
104	HATCH, Charles	Winrock Int'l.	Technical Assessment	Nov.11-22, 1990
106	EMMINGHAM, W.E. ROSE, Robin	Oregon State University	Tree Nursery Tech. Workshop	May 01-29, 1991
111	KELLISON, R.C. DVORAK, W.S.	North Carolina State University	Woody Perennials Germplasm Workshop	Apr.11-May 01, '91
120	NELSON, L.E. FRIEND, A.L.	Mississippi State University	Agroforestry Ecosystems Workshop	Sep.20-Oct.09, '91
122	NAIR, P.K.R. LONG, A.J.	Univ. of Florida, Gainesville	Agroforestry Systems Evaluation Workshop	Oct.03-15, 1991

List of U.S. Scientists to India

Sub-project : AGROMET

I.O No.	Name	Home Institution	Field	Duration From - To
35	HATCH, Charles	Winrock Int'l.	Computer Selection	Jul.31-Aug.05, '89
45	TAYLOR, S.E. POLLAK, (Ms)L.M	Iowa State Univ. USDA/Agri. Research Station	Crop Modelling Workshop	Feb.11-Mar.03, '90 Feb.11-23, 1990
70	HANKS, R.J. BINGHAM, G.E.	Utah State University	Water Prod. Functions Workshop	May 07-30, 1990
80	HOOGENBOOM, G. HUBBARD, Ken	Univ. of Georgia Univ. of Nebraska	Database Management Workshop	Oct.24-Nov.06, '90 Nov.22-Dec.08, '90
104	DUGAS, Bill	Texas A & M Univ.	Technical Assessment	Nov.07-20, 1991
119	KANEMASU, E.T. FLITCROFT, I.D. D-SHAH, T.H.	Univ. of Georgia	Basic Micro-meteorology Workshop	Aug.30-Sep.09, '91
107	DUGAS, Bill DYKE, P.T.	Texas A & M Univ.	Delineation of Agro-ecological Environments Workshop	Nov.25-Dec.18, '91
135	GAGE, S.H. MERIDIA, K.M.	Michigan State University	Spatial Dynamics of Insect Pests	Jan.08-31, 1992
154	HUBBARD, Ken MEYER, Steve J	Univ. of Nebraska Lincoln	Crop Advisory Services and Response Farming	May 10-26, 1992

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List of U.S. Scientists to India

Pre-project : PGR

D.O No.	Name	Home Institution	Field	Duration From - To
55	STANWOOD, P.C. MOWDER, Jimmie	USDA, Ft.Collins USDA, Beltsville	Data Documenta- tion	Feb.28-Mar.13, '88
74	GAMBORG, O.L.	Colorado State University	Plant Tissue Culture	Nov.21-Dec.09, '88
I.O 2	STANWOOD, P.C. EBERHARDT, S. CHANG, T.T.	Colorado State University IRRI, Philippines	PGR Project Design	Feb.10-18, 1989 Feb.13-19, 1989 Feb.10-18, 1989
33	MEARS, David	Rutgers Univ.	PGR Green house Design	Aug.10-Sep.06, '89
40	DIETZ, S.M.	USDA, Pullman	Germplasm Characteri- sation, etc.	Oct.21-Nov.11, '89
49	EBERHARDT, S. CHANG, T.T.	Colorado State University IRRI, Philippines	Review PGR Building Design	Nov.26-Dec.03, '89 Nov.28-Dec.05, '89

Pre-project : AGRC

I.O No.	Name	Home Institution	Field	Duration From - To
141	PIND, John A. BRADFORD, Eric GREGORY, Keith	National Academy of Science Univ. of California US Meat Animal Research Center	AGRC Project Design	Feb.14-Mar.08, '92

List of U.S. Scientists to India

Pre-project : PCGH

I.O No.	Name	Home Institution	Field	Duration From - To
95	MEARS, David	Rutgers Univ.	PCGH Project Design	Nov.23-Dec.08, '91

Pre-project : OFWM

I.O No.	Name	Home Institution	Field	Duration From - To
144	REPLOGLE, J.A. WALTER, M.F.	ARS/USDA, Phoenix Cornell Univ.	OFWM Project Design	Mar.13-Apr.03, '92

Pre-project : FEMTC

D.O No.	Name	Home Institution	Field	Duration From - To
153	NICHOLS, Fred	Private Consult. Kansas City	FEMTC Project Design	May 02-31, 1992

List of Indian Scientists to U.S.A.

Sub-project : PIU

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
4	ADLAKHA, S.C.	ICAR	Workshop on Micro computer	Stanford University	Jul.30- Sep.2, '86
58	PARODA, R.S.	ICAR	Participant Biotech. Conference	Washington, D.C.	Apr.16-28, 1988
68	KHANNA, S.S. SINGH, M. RAMAN, K.V. AHMAD, A.	Planning Comm. NBPR NAARAM SKUAT	Higher Education Conference	Washington, D.C.	Oct.01-11, 1988
I.O 73	MAJI, C.C.	ICAR	Mngmt. of Agri.Res.	North Carolina State University	May 10- Jun.11, '88
77	LAL, Hazari MALHOTRA, J.C	DARE ICAR	Org. and Mgmt. Development Project Implement. for Agril. & Rural Development	USDA, George Washington Univ.	May 27- Jul.08, 1990 Jul.12- Aug.25, 1990
83	MANGURKAR, B. CHOPRA, S.C. SINGH, D.	BAIF ICAR PAU	Dairy Herd Improvement	Various Institutions	Jul.08- Aug.28, 1990
99	KAUR, (Ms.)P.	ICAR	Integrated Agril. and Rural Dev.	USDA Washington D.C	Sep.13- Oct.26, 1990

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List of Indian Scientists to U.S.A.

Sub-project : SPU

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
11	ALAM, A.A. ALI, Nawab SINGH, B.P.N. BHATNAGAR, P.	ICAR CIAE GBPUAT GBPUAT	Management Team Study Tour	Several Institutions	Aug.25- Sep.30, 1986
20	PATIL, R.T. SINGH, D.S. SINGH, J.	CIAE JNKVV CIAE	Soybean Prod. and Utilization Coagtd. & Fermn. Products	USDA Lab, Peoria. Colorado State University Univ. of Illinois	Oct.8, '86- Feb.2, '87. Oct.8, '86- Jan.1, '87. Oct.08- Dec.24, '86
33	GANDHI, A.P.	CIAE	Soybean Prod. & Utl.	Cornell State University	Mar.26- Aug.27, '87
57	KULKARNI, S.D BISHT, B.S. AGARWAL, Y.C MITTAL, B.K. MITTAL, S.K.	CIAE CIAE GBPUAT GBPUAT	Soybased Baking Entrepreneur ship Dev. Oil Extraction. Coagtd. and Fermn. Prod. Soy Isolates and Conc.	INTSOY, University of Illinois	Apr.23- Aug.09, '88 Apr.23- Aug.09, '88 Apr.23- Aug.27, '88 Apr.23- Aug.27, '88 Apr.23- Jul.25, '88
I.O 4	JOSHI, K.C. TANWAR, V.K. BARGALE, P.C. SINHA, L.K. SINGH, G. ALI, Nawab	GBPUAT CIAE	Soybean Processing Study Tour	Univ. of Illinois Michigan State University Kansas State University Several Universities	Mar.09- Jun.12, '89 Mar.09- Jun.27, '89 Mar.09- Jun.07, '89 Mar.03-29, 1989
67	TRIPATHI, R.N KASHYAP, M.C UNDE, P.A. DJHA, Y. TRIPATHI, H.N JHA, K.	GBPUAT GBPUAT GBPUAT CIAE GBPUAT CIAE	Soybean Processing	Soyabean Food Res. Center, Sri Lanka Colorado State Uni Texas A & M Univ Illinois State Uni Illinois State Uni	Jun.07- Sep.08, '90 May 10- Aug.11, '90
79	ALI, Nawab GANDHI, A.P.	CIAE CIAE	Soybean Processing Conference	Beijing, China	Jun.26- Jul.04, '90

List of Indian Scientists to U.S.A.

Sub-project : PHT-FV

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
2	KAUL, G.L. ROY, S.K. AMBA DAN	ICAR IARI IIHR	Management Team Study Tour	Various Institutions	Jun.15- Jul.19, '86
10	SINGH, B.P.	CIHNP	Storage Physiology	Univ. of Arkansas	Aug.12- Dec.17, '86
14	KRISHNAMURTHY (Mrs.)S.	IIHR	Storage Physiology	Univ. of Arkansas Univ. of Florida	Sep.06- Dec.17, '86
38	KALRA, S.K. KHURDIYA, D.S	CIHNP IARI	Processing Waste Util.	Purdue University	May 07- Sep.09, '87
42	SHARMA, H.S	IARI	Post Harvest Engineering	Univ. of Florida	Aug.13, '87- Jan.16, '88
43	TANDON, D.K. MAINI, S.B.	CIHNP IARI	Processing of Fruits & Vegetables	Ohio State University	Oct.28, '87- Mar. 03, '88
49	RAD, K.P.G. CHAKRAVARTHI, A.K.	IIHR IARI	Post Harvest Physiology	University of California	Nov.30, '87- Apr.04, '88
50	SETHI, Vijay SURESH, E.R.	IARI IIHR	Process Microbiology	Michigan State University	Nov.28, '87- Apr.03, '88
51	ULLASA, B.A. PRAKASH, Om	IIHR CIHNP	Post Harvest Pathology	University of California	Nov.29, '87 Apr.05, '88
78	ATTARI, B.R. MADAN, M.S. VERMA, Ajay	IARI IIHR CIHNP	Post Harvest Economics	University of Georgia	Dec.08, '88 Apr.11, '89

Sub-project : PHT-FV

D.O No.	Name	Home Inst.	Field	Training Institution	Duration From - To
79/ I.O 123	KHADER, S.E. LADANIYA, M.S.	CIHNP NRCC	Storage Physiology	Oregon State University	Dec.08, '88- Apr.11, '89
I.O 9	MURTHY, (Ms)V. NAQVI, S.A.M.	IARI NRCC	PHT Pathology	USDA, Hilo Uni of California	Apr.27- Aug.29, '89
29	MANDHAR, S.C. SINGH, M.D.	IIHR CIHNP	Packaging	Michigan State University	Aug.31- Dec.31, '89
30	GARG, Neelima	IARI	Micro- biology	Cornell State University	Sep.02, '89- Jan.01, '90
31	PAL, R.K.	IARI	Post Harvest Physiology	University of Arkansas	Oct.16, '89- Feb.17, '90
36	RAMANJANEYA, K	IIHR	PHT Processing	USDA, Hilo	Oct.15, '89- Mar.08, '90
41	GOWDA, T.N. RAM, Vidya	IIHR IARI	Post Harvest Processing	Univ. of Florida	Nov.30, '89- Mar.31, '90
75	ROY, S.K. AMBA DAN	IARI ICAR	USDA Mngmt. Agri. Res.	USDA, Washington	Jun.21- Aug.06, '90
76	SRIVASTAVA, S. DIXIT, A. SRIDHARA, S.A KUMAR, S.	IARI CIHNP IIHR CIHNP	Training - Lab Technicians	University of Arkansas	Mar.28- May 28, '91

List of Indian Scientists to U.S.A.

Sub-project : ETT

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
37	BHATTACHARYA, N KUMAR, Amaresh SINGH, Kiran	CIRG GBPUAT ICAR	Management Team Study Tour	Various Institutions	Apr.23- May 18, '87
45	MADAN, M.L. JAIN, G.C. MOGHA, I.V.	NDRI NDRI IVRI	Embryo Transfer	Embryo Tech. Inc. Hughson, California	Sep.26- Oct.22, '87
I.O 1	LOHAN, I.S. MAURYA, S.N. GOEL, A.K. SHANKER, Uma KUMAR, Parveen RAMAKRISHNA, D.	HAU GBPUAT CIRG IVRI CIRB APAU	ETT Training Int'l ET Conf. SanDiego	Embryo Tech. Inc. USDA, Nebraska Universities of Georgia/Utah/Wisconsin Florida/California/ Colorado and Louisiana State Universities	Jan.13- Feb.24, '89 Jan.13- Feb.02, '89 Jun.30- Aug.14, '89
137	NANDY, D.K. SINGLA, S.K.	CIRG NDRI	ETT Training	Texas A & M Univ	Jan.09- Mar.28, '92
143	DHANDA, O.P. RAMACHANDRAIAH RAO, S.K. JINDAL, S.K.	HAU APAU APAU CIRB	ETT Training	Embryo Tech. Inc. Louisiana State University	Mar.07- Apr.26, '92

List of Indian Scientists to U.S.A.

Sub-project : CBAW

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
36	PUNJ, M.L. PARDHAN, K. ARORA, C.L.	NDRI HAU ICAR	Management Team Study Tour	Several Institutions	Apr.07- May 01, '87
I.O 8	BAKSHI, M.P.S SINGH, Kripal SANGWAN, D.C. GUPTA, V.K. RAMACHANDRAN, P VISWANATHAN, T.	PIU HAU HAU PAU KAU KAU	Ensiling Animal Wastes	Virginia Polytechnic Institute and State University	Jul.06- Dec.08, '89 Jul.06- Dec.18, '89 Jun.01- Nov.03, '89 Jun.01- Nov.13, '89
48	SIVARAMAN, E. CHATURVEDI, D.K LANGAR, P.N. SAGAR, Vidya	KAU ICAR PAU HAU	Study Tour	Virginia Polytechnic Inst. & State Univ. Mississippi State Uni Auburn University Univ. of Illinois Washington State Univ California State Univ	Oct.16- Nov.10, '89 Oct.17- Nov.10, '89
64	YADAV, K.R. GEORGE, M.C. CHAWLA, J.S. MERCY, A.D. DESHMUKH, A.C. PATIL, M.B. SANDHU, K.S. DAS, A.M.	HAU KAU PAU KAU BVC BVC PAU BVC	Animal Nutri- tion Micro- biology	Purdue University Virginia Polytechnic Inst. & State University University of Florida	May 03- Oct.03, '90 May 17- Oct.16, '90 Apr.26- Sep.26, '90 Apr.12-
63	PUNTAMBEKAR, P.	BVC	Study Tour	Virginia Polytechnic Inst. & State Univ	Jul.15- Aug.04, '90
93	JAMES, P.C. RISHI, (Ms.) S PALIWAL, V.K.	KAU HAU HAU	CBAW for Live- stock	Purdue University Mississippi State Univ Auburn Univ	Sep.27- Feb.28, '91

List of Indian Scientists to U.S.A.

Sub-project : FFT

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
5	KALE, P.B. PILLAI, Alagia	PKV TNAU	Tree Nursery	University of Idaho	Aug.09,'86- Aug.10,'87
6	MUKEWAR, A.M. POLICE PATIL, C	UAS PKV	Tree Genetics	Mississippi State University	Aug.09,'86- Aug.10,'87
7	KHAJURIA, H.N. JAMBULINGAM, R.	PAU TNAU	Tree Genetics	N.C. State University	Aug.09,'86- Aug.10,'87
8	CHANDRASEKHAR, A GILL, S.S.	UAS PAU	Tree Nursery	University of Florida	Aug.09,'86- Aug.10,'87
9	B For. Faculty as in D.O. 5-8	PKV, UAS, PAU, TNAU	Orienta- tion Prog	WI/Washington, D.C.	Aug.08,'86- Jul.31,'87
15	PANDEY, O.N. MAGDUM, M.B. BANA, O.P.S. BHAT, M. TIWARI, S.K. CHAVAN, S.A. MOHAN KUMAR, B. BHARDWAJ, S.K. SEHGAL, R.N. ALLAH RANG	BAU KAU GBPUAT SKUAT GBPUAT KAU KAU YS Parmar YS Parmar SKUAT	Nursery " " " Genetics " Nursery " Genetics "	Oregon State University University of Minnesota Ohio State University Utah State University Michigan Univ. of Idaho	Sep.13,'86- Sep.14,'87 -Oct.1,'87 -Sep.14,'87 -Sep.21,'87 -Sep.29,'87 -Sep.14,'87 " " "
23	For.Faculty Edn. & Project Design Workshop	WI at Arkansas	Project Design	Several Institutions	Dec.15,'86- Mar.01,'87
24	SINGH, Maharaj KHOSLA, P.K. HANS, A.S.	ICAR YS Parmar ICAR	Design Team	Several Institutions	Jan.02-20, 1987

Sub-project : FFT

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To	
41	RAI, Stephen R.	TNAU	Genetics	Virginia Poly	Aug.01, '87-	
	VIJAYKUMAR, N.K.	KAU	"	-technic Inst	Jul.29, '88	
	MISRA, P.K.	JNKVV	"	Texas A & M	-Jul.30, '88	
	MALIK, S.K.	GBPUAT	"	University	-Jul.30, '88	
	KHURANA, D.K.	YS Parmar	"	University of	-Jul.30, '88	
	DEKA, P.K.	Assam Ag.Uni	"	California	Aug.07, '87-	
					Aug.05, '88	
	SUBBIAH, R.	TNAU	Nursery	University of	Aug.01, '87-	
	BORGOHAIN, M.N.	Assam Ag.Uni	"	Florida	Jul.28, '88	
	UPADHYAYA, S.D.	JNKVV	"	"	Aug.07, '87-	
	KHARA, H.S.	PAU	For.Path.	"	Aug.06, '88	
	BABU, L.C.	KAU	Genetics	"	-Aug.02, '88	
	NAYITAL, R.K.	YS Parmar	Nursery	University of	Aug.01, '87-	
	SANGWAL, S.D.	YS Parmar	"	Idaho	Jul.29, '88	
	KHAJJIDONI, S.T.	UAS	Genetics	Mississippi		
	SUDHAKARA, D.	KAU	Nursery	State Univ	-Jul.30, '88	
	SHARMA, U.S.	JNKVV	"	"		
	CHAVAN, K.N.	Konkan Ag.Un	For.Soils	"		
	KUMAR, Ravi	HAU	"	Auburn	Sep.10, '87-	
	NAIK, S.T.	UAS	For.Path.	University	Sep.08, '88	
	SRINIVASAN, V.M.	TNAU	Silvicult	"		
	SINGH, S.K.	BAU	For.Ento.	Oregon State	-Sep.10, '88	
	SINGH, R.R.	HAU	Silvicult	University		
	MADIWALAR, S.L.	UAS	"	"		
RAJPUT, P.R.	GBPUAT	"	"			
BHATIA, K.S.	CSAzad Uni	For.Soils	Michigan	-Sep.03, '88		
BANGARWA, K.S.	HAU	Genetics	State			
DHANDA, R.S.	PAU	Nursery	University	-Aug.29, '88		
DIWAKAR, M.P.	KKV	For.Path.	Florida S.Uni	-Sep.06, '88		
VERMA, N.K.	BAU	Silvicult	Michigan	-Sep.03, '88		
SALEEM, MOHD.	SKUAT	"	State Univ			
64	SINGH, Sohan	PAU	Tree Cult	Univ of Idaho	Aug.18, '88-	
	JADHAV, B.B.	KKV	Tree Pro-	Texas A & M	Aug.22, '89	
	SIDDIQUI, M.H.	BAU	pagation	University		
	BISLA, S.S.	HAU	Crop Gene	Mississippi		
	RAMSAJI, N.N.	PKV	For.Ento	State Univ.		
	KHANGA, B.	Assam Ag.Uni	Crop Pro-	Florida State		
	GOPIKUMAR, K.	KAU	pagation	University		
	NEMA, A.G.	JNKVV	Forest	Virginia Poly		
	KHAN, M.A.	SKUAT	Pathology	-technic		
MISRA, K.K.	GBPUAT	Crop Pro-	Institute			
			pagation			

Sub-project : FFT

I.O No.	Name	Home Institution	Field	Training Institute	Duration From - To
32	DHUMALE, D.B.	PKV	Genetics	Texas A & M	Sep.22, '89- Aug.21, '90
	MISHRA, P.K.	QUAT	"	"	
	KANWAR, (Ms) K.	YS Parmar Uni	Physio.	"	
	NANDAL, D.P.S.	HAU, Hisar	Nur.Mngmt	Mississippi	
	SINGH, R.V.	GBPUAT	"	"	
	ZOPE, J.S.	PKV	Genetics	"	
	RAJPUT, J.C.	KKV	"	"	
	VANANGAMUDI, K.	TNAU	Nur.Mngmt	"	
	HOODA, M.S.	HAU, Hisar	"	"	
	ASHOKAN, K.	KAU, Trichur	Physio.	Purdue	
	KOSHTA, L.D.	JNKVV	"	Purdue	
	SATPATHY, P.C.	QUAT	"	Florida	
	PATHAK, N.N.	JNKVV	Genetics	Florida	Sep.27, '89- Aug.26, '90
ABBAS, S.G.	BAU, Ranchi	"	Texas A & M	Oct.12, '89- Sep.11, '90	

List of Indian Scientists to U.S.A.

Sub-project : IBP

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
17	MALHOTRA, M.N. SHARMA, R.D. SHARMA, N.N.	ICAR HAU IVRI	Management	Several Institutions	Feb.18- Mar.12, '87
47	NATARAJAN, C.	ICAR	Study Tour	Several Institutions	Nov.28- Dec.23, '87
I.O 10	MALHOTRA, M.N. SINGH, D.K. MISRA, A.K. SARUP, Shanti	ICAR NDDB IVRI HAU	Study Tour Training	Univ. of Illinois	Mar.30- Apr.26, '89 Mar.30- Aug.22, '89 Jun.28-
56	BHATTACHARYULU DHAR, S.	HAU HAU	Study Tour	Univ. of Illinois	Apr.04- May 01, '90
57	SHARMA, R.D. CHELLAPPA, D.J	HAU TNAU	Training	Univ. of Illinois	Apr.15- Sep.16, '90
114	KAPUR, (Ms) J. RAY, D. BANSAL, G.C.	PAU IVRI IVRI	Training	Univ. of Florida	Sep.26, '91- Feb.26, '92

List of Indian Scientists to U.S.A.

Sub-project : AGROFOR

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
70	DHALL, S.P. TOKY, O.P.	YS Parmar Univ. HAU	Agfor Model Tree Seed Tech & Mgmt	University of Idaho	Oct.27, '88- Jul.26, '89 Oct.27, '88- Mar.26, '89
I.O 5	JAYARAJ, S. DEB ROY	TNAU NCA	Management Trng.	Washington State University	Apr.8-24, 1989
23	HARSH, L.N.	CAZRI	Tree Nurs. Tech & Mngt	Oregon State University	Feb.01- Jul.01, '90
24	SRIVASTAVA, A KHAN, S.A.	CSWCRTI CSAUAT	Tree Crop Ntr.Cycling	Mississippi State University	Aug.17, '89- Jan.18, '90
26	OSMAN, M. SINGH, R.K. OJASVI, P.R.	CRIDA CSWCRTI CAZRI	Ph.D. Training	Michigan/ Oregon State Universities	Sep.14, '89- Feb.13, '91
71	GUPTA, S.B. TIKKA, V.K.	IGFRI GAU	Germplasm Program	North Carolina/ Mississippi State California Univ	Jul.26- Dec.22, '90
87	KASHYAP, S.D. DAGAR, J.C.	YS Parmar CSSRI	Eval. of AgforSystem	Univ. of Florida Mississippi State California Univ.	Jan.03- Jun.02, '91
88	VENKATCHALAM MAITI, S.	TNAU BCKVV	Ecosystem Studies	Mississippi State University	Jan.10- Jun.09, '91
89	DADHWAL, K.S. PATIL, F.B.	CSWCRTI MPAU	Rootsystem Studies	Mississippi State University	Jan.10- Jun.09, '91
91	ROY, M.M. SINGH, I.P. SHARMA, N.K. MANGA, V.K. SINGH, G.	IGFRI ICAR CSWCRTI CAZRI ICAR	Ecosystem Rootsystem Germplasm Mngmt. Woody Perenials	Yale University Univ. of Florida USDA, Haiti	Sep.13, '90- Jun.16, '92 Jan.05, '91- Jun.16, '92 Jan.03, '91 Jun.16, '92
92	DHYANI, S.K.	ICAR	Doc Studies in For.Res.	Mississippi State University	Aug.13, '90- Feb.13, '92
102	CHINNAMANI, S	ICAR	Doc Studies in For.Res.	Int'l Forestry, Washington Univ. of Florida	Nov.01-22, 1990
128	41 Participants	Various Inst.	Computer Training	New Delhi	Sep.06- Oct.20, '91

List of Indian Scientists to U.S.A.

Sub-project : AGROMET

I.O No.	Name	Home Inst.	Field	Training Institute	Durztion From - To
6	BHATIA, P.C. RAMANA RAD, B.V KRISHNAN, A.	ICAR CRIDA UAS	Management Team	Several Institutions	Apr.10-25, 1989
21	RAMAKRISHNA, Y VICTOR, V.S.	CAZRI CRIDA	Crop Growth Weather Modelling	Michigan State University Iowa State University	Jun.08- Dec.21, '89 Jun.08- Nov.09, '89
22	RAD, V.U. SRIVASTAVA, N.N	HAU CRIDA	Water Production Functions	Utah State University	Aug.17, '89- Jan.18, '90
43	RAJEGOWDA, M.B CHAKRAVARTHY, N	UAS IARI	Database Mngmt.	University of Nebraska	Jan.08- Jun.07, '90
65	MATHUDA, S.S. PATIL, C.B.	PAU NARP	Database Mgmt.	Texas A & M University	May 31- Oct.31, '90
84	KHAN, S.A. SHEIKH, A.M.	BCKVV GAU	Crop Production	University of Georgia	Oct.04, '90- Mae.02, '91
108	SINGH, R.D. MURTHY, N.S.	ICAR GBPUAT	Dynamics of Insect Pests	Michigan State University	Mar.28- Aug.27, '91
127	SAVANI, D.R. RAD, K.K.	GAU A/PAU	Advisory Services & Response Farming	University of California, Davis Michigan State University	Oct.03, '91- Mar.04, '92
146	17 Participants	Various Inst.	Computer Training	New Delhi	Apr.13- May 10, '92
150	BISHNOI, O.P. WADOOD, A.	HAU BAU	Training	Texas A & M University	Apr.17- Jun.16, '92

List of Indian Scientists to U.S.A.

Pre-project : PGR

D.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
60	KHANNA, P.P. SINGH, B.P.	NBPGR NBPGR	Germplasm Conser- vation Study Tour	Several Institutions	May 21- Jun.28, '88
65	KOPPAR, M.N. THOMAS, T.A.	NBPGR NBPGR	Germplasm Evaluation Study Tour	Several Institutions	Aug.20- Sep.13, '88
76	MATHUR, V.K. VARAPRASAD, K.S	NBPGR NBPGR	Plant Quarantine Study Tour	Several Institutions	Nov.28- Dec.20, '88
I.O 3	RANA, R.S. RAMNATH	NBPGR NBPGR	Manage- ment Team	Several Institutions	Mar.07-27, 1989
37	SINGH, Neeta VERMA, B.R. CHAND, Deep	NBPGR NBPGR NBPGR	Technical Training	Nat.Seed Storage Lab. Fort Collins Various Institutions PG & GI, Beltsville	Oct.19, '89- Mar.2, '90 Oct.19, '89- Jan.19, '90

Pre-project : IPM

I.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
60	NAGARAJAN, S. RAHEJA, A.K. SINGH, S.P.	ICAR ICAR NC for IPM	Study Tour	USDA, Weslaco Universities of Maryland / Florida	Jul.25- Aug.17, '90
78	SINGH, N. SHARMA, O.P. BALLAL, (Ms) C KRISHNANDA, N	IISR NC for IPM NC for IPM CTRI	IPM Training	Texas A & M University	Aug.04- Nov.03, '90
151	TEWARI, G.C. SATYAVIR SUNDRAMURTHY	ICAR HAU CICRS	Study Tour	USDA, Weslaco. MSU Universities of California/Illinois	Apr.22- Jun.10, '92
151	DUTTAMAJUMDAR CHILLAR, B.S. SINGH, HARVIR RAJENDRAN, T.P JALALI, S.K.	IISR HAU HAU CRI ICAR	IPM Training	USDA, Beltsville Universities of Maryland/Florida Louisanna State Univ Texas A & M Univ.	May 14- Jun.15, '92

List of Indian Scientists to U.S.A.

Pre-project : AGRC

I.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
82	BALAIN, D.S. CHOPRA, S.C. ARORA, C.L. DAS, P.	NBPGR ICAR ICAR NBPGR	AGRC Study Tour AGRC (Fish) Study Tour	Several Institutions	Jan.02-22, 1991
145	PRAKASH, B. SHANKAR, V. SETHI, R.K.	NIAG NIAG CIRB	Germplasm Conserva- tion Trng.	Texas A & M University	Apr.09- Jun.10, '92

Pre-project : PCGH

I.O No.	Name	Home Inst.	Field	Training Institute	Duration From/To
112	CHANDRA, P. DADLANI, N.K. SINGH, K.PAL PRABHAKAR, B.S	IARI IARI IIHR IIHR	Green house Operation Training	Ohio State University Rutgers State University	Aug.22- Nov.22, '91
155	GILL, H.S. CHADHA, K.L. WANJARI, O.D. SINGH, B. ARORA, J.S.	IARI ICAR PAU IIHR PAU	Observa- tion Study Tour	Several Institutions	May 16- Jun.08, '92

List of Indian Scientists to U.S.A.

Pre-project : TC

I.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
117	KAUL, G.L. IYER, R.D. SHARMS, D.R.	ICAR CPCRI YS Parmar	Management Team Study Tour	Several Institutions	Feb.21- Mar.12,'92
142	SAHIJRAM, Leela SHARMA, H.C. BHARDWAJ, S.V. SHIVSHANKAR, S	IIHR IARI YS Parmar CPCRI	Tissue Culture Training	USDA, Beltsville Univ of Florida Purdue University	Mar.12- Jun.12.'92

Pre-project : OFWM

I.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
148	SHARMA, B.R. RAJPUT, R.K. SINGH, S.R.	ICAR ICAR ICAR	OFWM Study Tour	Several Institutions	Apr.12- May 12,'92
147	KUMAR, A. SINGHDHUPE, R.B SINGH, A.K. JAMES, B.K.	IARI ICAR IARI ICAR	OFWM Training	University of Arizona	Apr.09- Jun.10,'92

Pre-project : FEMTC

I.O No.	Name	Home Inst.	Field	Training Institute	Duration From - To
152	BHARDWAJ, K.C. BALASUBRAMANIAN DURAI SWAMY, G. SHARMA, V.K. CHAUHAN, G.S. MADAN, A.K.	CIAE TNAU TNAU PAU CIAE PAU	FEMTC Training	Illinois State University	Apr.18- Jun.17,'92

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List of Equipment/Supplies

Subproject : AGPOFORESTRY

Eqpt. Budget : \$856,049

NRC, JHANSI (U.P.)

Equipment	Date Delivered	FOB COST (\$)
PLANT STRESS MONITOR	20/12/91	4,166
LEAF AREA METER	23/8/91	5,756
PHOTOSYNTHESIS SYSTEM	20/12/91	26,819
SOIL MOISTURE EQUIPMENT	23/8/91	7,475
STEADY STATE POROMETER	Dec. 91	8,997
INFRARED THERMOMETER	23/8/91	3,407
AUTO KJEDAHN ANALYSER	20/12/91	26,214
SPECTROPHOTOMETER	20/12/91	2,203
BALANCE, ANALYTICAL	7/4/92	1,810
BALANCE, TOP LOADING	20/12/91	850
SPECTROPHOTOMETER, A.A.	20/12/91	35,185
SPEEGLES RELOSCOPE	20/12/91	1,656
CENTRIFUGE	20/12/91	41,284
ASSORTED EQUIPMENT	7/3/92	1,017
TREE MEASURING SET	7/3/92	1,140
POWER SAW	7/3/92	340
COMPUTERS	14/11/90	11,000
MICROSCOPE	25/6/92	5,740
GAS CHROMATOGRAPH	25/6/92	22,201
ELECTROPHORESIS SYSTEM	25/6/92	23,600
FREEZER	25/6/92	12,345
BALANCE ANALYTICAL	25/6/92	1,810
TOTAL FOB COST		\$246,015

FAIZABAD (U.P.)

Equipment	Date Delivered	FOB COST (\$)
LEAF AREA METER	4/10/91	5,756
SOIL MOISTURE EQUIPMENT	4/10/91	7,475
INFRARED THERMOMETER	4/10/91	3,407
ASSORTED EQUIPMENT	27/2/92	1,017
TREE MEASURING SET	27/2/92	1,140
COMPUTERS	27/9/90	11,000
POWER SAW	27/2/92	340
BALANCE ANALYTICAL	25/6/92	1,810
TOTAL FOB COST		\$31,945

RANCHI, BIHAR

Equipment	Date Delivered	FOB COST (\$)
LEAF AREA METER	4/10/91	5,756
SOIL MOISTURE EQUIPMENT	4/10/91	7,475
INFRARED THERMOMETER	4/10/91	3,407
ASSORTED EQUIPMENT	27/2/92	1,017
TREE MEASURING SET	27/2/92	1,140
COMPUTERS	27/9/90	11,000
POWER SAW	27/2/92	340
BALANCE ANALYTICAL	25/6/92	1,810
TOTAL FOB COST		\$31,945

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SHILLONG, MEGHALAYA

Equipment	Date Delivered	FOB COST (\$)
LEAF AREA METER	23/9/91	5,756
SOIL MOISTURE EQUIPMENT	23/9/91	7,475
INFRARED THERMOMETER	23/9/91	3,407
ASSORTED EQUIPMENT	7/3/92	1,017
TREE MEASURING SET	7/3/92	1,140
COMPUTERS	28/11/90	11,000
POWER SAW	7/3/92	340
BALANCE ANALYTICAL	25/6/92	1,810
TOTAL FOB COST		\$31,945

DHARWAD, KARNATAKA

Equipment	Date Delivered	FOB COST (\$)
LEAF AREA METER	9/9/91	5,756
SOIL MOISTURE EQUIPMENT	9/9/91	7,475
INFRARED THERMOMETER	9/9/91	3,407
ASSORTED EQUIPMENT	20/3/92	1,017
TREE MEASURING SET	20/3/92	1,140
COMPUTERS	12/10/90	11,000
POWER SAW	20/3/92	340
BALANCE ANALYTICAL	25/6/92	1,810
TOTAL FOB COST		\$31,945

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DANTIWADA, GUJARAT

Equipment	Date Delivered	FOB COST(\$)
LEAF AREA METER	27/9/91	5,756
SOIL MOISTURE EQUIPMENT	27/9/91	7,475
INFRARED THERMOMETER	27/9/91	3,407
ASSORTED EQUIPMENT	15/3/92	1,017
TREE MEASURING SET	15/3/92	1,140
COMPUTERS	14/3/91	11,000
POWER SAW	15/3/92	340
BALANCE ANALYTICAL	25/6/92	1,810
TOTAL FOB COST		\$31,945

SRINAGAR, J & K

Equipment	Date Delivered	FOB COST(\$)
LEAF AREA METER	26/8/91	5,756
SOIL MOISTURE EQUIPMENT	26/8/91	7,475
INFRARED THERMOMETER	26/8/91	3,407
ASSORTED EQUIPMENT	16/3/92	1,017
TREE MEASURING SET	16/3/92	1,140
COMPUTERS	9/10/90	11,000
POWER SAW	16/3/92	340
TOTAL FOB COST		\$30,135

EQPT DELIVERED TO 25 LOCAL CENTRES (ONE SET TO EACH)

Equipment	Date Delivered	FOB COST(\$)
ASSORTED EQUIPMENT	COMPLETED	25,425
TREE MEASURING SET	COMPLETED	28,500
POWER SAW	COMPLETED	8,500
TOTAL FOB COST		\$62,425

List of Equipment/Supplies

Subproject: AGROMETEOROLOGY

Eqpt. Budget : \$965,210

CRIDA, HYDERABAD

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET.STATION PYRANOMETER	28/5/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	28/8/91	5,756
SOIL MOISTURE GAUGE	28/8/91	8,146
INFRARED THERMOMETER	13/6/91	3,407
SPECTRORADIOMETER	13/12/91	32,625
COMPUTER - I	17/9/90	11,000
COMPUTER - II	17/9/90	11,000
BOWENS RATIO	26/6/92	12,186
TOTAL FOB COST		\$94,967

ICAR HQ. KRISHI BHAWAN, NEW DELHI

COMPUTER	21/12/90	11,000
TOTAL FOB COST FOR ICAR		\$11,000

ANANTAPUR, A.P.

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	31/5/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	8/10/91	5,756
SOIL MOISTURE GAUGE	8/10/91	8,146
INFRARED THERMOMETER	12/5/91	3,407
COMPUTER	4/10/90	11,000
TOTAL FOB COST		\$39,156

BANGALORE

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET STATION PYRANOMETER	4/6/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	Sept. 91	5,756
SOIL MOISTURE GAUGE	Sept. 91	8,146
INFRARED THERMOMETER	8/5/91	3,407
COMPUTER	9/10/90	11,000
TOTAL FOB COST		\$39,156

KOVILPATTI (TAMIL NADU)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	6/6/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	30/9/91	5,756
SOIL MOISTURE GAUGE	30/9/91	8,146
INFRARED THERMOMETER	16/5/91	3,407
COMPUTER	12/9/90	11,000
TOTAL FOB COST		\$39,156

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SOLAPUR (MAHARASHTRA)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	1/6/80	8,985
MET. DATA STATIONS	26/6/82	1,862
LEAF AREA METER	25/9/91	5,756
SOIL MOISTURE GAUGE	25/9/91	8,146
INFRARED THERMOMETER	26/6/82	3,400
COMPUTER	2/1/81	11,000
TOTAL FOB COST		\$39,149

ANAND (GUJARAT)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	26/6/80	8,985
MET. DATA STATIONS	26/6/82	1,862
LEAF AREA METER	9/9/91	5,756
SOIL MOISTURE GAUGE	9/9/91	8,146
INFRARED THERMOMETER	26/6/82	3,400
COMPUTER	1/10/90	11,000
BOWENS RATIO	26/6/82	12,186
TOTAL FOB COST		\$51,335

JODHPUR (RAJASTHAN)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	7/8/80	8,985
MET. DATA STATIONS	26/6/82	1,862
LEAF AREA METER	27/8/91	5,756
SOIL MOISTURE GAUGE	27/8/91	8,146
SPECTRORADIOMETER	13/12/91	32,625
COMPUTER	13/12/91	11,000
TOTAL FOB COST		\$68,374

IARI, NEW DELHI

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	14/6/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	26/7/91	5,756
SOIL MOISTURE GAUGE	26/7/91	8,146
INFRARED THERMOMETER	11/7/91	3,407
SPECTRORADIOMETER	11/7/91	32,625
COMPUTER	5/9/90	11,000
TOTAL FOB COST		\$71,781

LUDHIANA (PUNJAB)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	22/6/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	22/8/91	5,756
SOIL MOISTURE GAUGE	22/8/91	8,146
INFRARED THERMOMETER	26/6/92	3,400
COMPUTER	4/2/91	11,000
TOTAL FOB COST		\$39,149

HISAR (HARYANA)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	11/7/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	19/7/91	5,756
SOIL MOISTURE GAUGE	19/7/91	8,146
INFRARED THERMOMETER	19/7/91	3,407
COMPUTER	6/12/90	11,000
TOTAL FOB COST		\$39,156

RANICHAURI (U.P.)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	22/6/80	8,985
MET. DATA STATIONS	26/6/82	1,862
LEAF AREA METER	19/11/81	5,756
SOIL MOISTURE GAUGE	19/7/81	8,146
INFRARED THERMOMETER	26/6/82	3,400
COMPUTER	11/10/80	11,000
TOTAL FOB COST		\$39,149

FAIZABAD (U.P.)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET STATION PYRANOMETER	2/7/80	8,985
MET. DATA STATIONS	26/6/82	1,862
LEAF AREA METER	4/10/81	5,756
SOIL MOISTURE GAUGE	4/10/81	8,146
INFRARED THERMOMETER	26/6/82	3,400
COMPUTER	27/9/80	11,000
TOTAL FOB COST		\$39,149

JABALPUR (M.P.)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	31/7/80	8,985
MET. DATA STATIONS	26/6/82	1,862
LEAF AREA METER	31/7/81	5,756
SOIL MOISTURE GAUGE	31/7/81	8,146
INFRARED THERMOMETER	26/6/82	3,400
COMPUTER	19/2/80	11,000
TOTAL FOB COST		\$39,149

RANCHI (BIHAR)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	11/7/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	28/10/91	5,756
SOIL MOISTURE GAUGE	28/10/91	8,146
INFRARED THERMOMETER	26/6/92	3,400
COMPUTER	6/10/90	11,000
TOTAL FOB COST		\$39,149

MOHANPUR (WEST BENGAL)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET STATION PYRANOMETER	15/10/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	6/1/92	5,756
SOIL MOISTURE GAUGE	6/1/92	8,146
INFRARED THERMOMETER	6/1/92	3,457
COMPUTER	29/11/90	11,000
TOTAL FOB COST		\$39,156

SHILLONG (MEGHALAYA)

Equipment	Date Delivered	FOB COST (\$)
LINE QUANTUM SENSORS/MET. STATION PYRANOMETER	14/11/90	8,985
MET. DATA STATIONS	26/6/92	1,862
LEAF AREA METER	23/9/91	5,756
SOIL MOISTURE GAUGE	23/9/91	8,146
COMPUTER	28/11/90	11,000
TOTAL FOB COST		\$35,749

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List of Equipment/Supplies

Eqpt. Budget : \$499,000

Subproject : CBAW

HAU, Hisar (Dept. of Animal Nutrition)

Equipment	Date Delivered	FOB Cost (\$)
OXYGEN CALORIMETER	13/11/90	3,975
ANEOROBIC CHAMBER	11/7/90	13,751
ANALYTICAL BALANCE	19/7/91	1,814
AUTO KJELDAHL ANALYSER	16/1/91	26,214
TOTAL FOB COST FOR DEPT. OF ANIMAL NUTRITION		\$45,754

TOX. LAB., HAU, Hisar
(ICAR) - Dr. M.L. Punj, Project Coordinator

Equipment	Date Delivered	FOB Cost (\$)
AA SPECTROPHOTOMETER AND ACCESSORIES	19/7/91	29,843
HPTLC	11/7/90	51,781
POLYGRAPH	13/11/90	2,268
HPLC	16/11/90	52,527
US VIS SPECTROPHOTOMETER	19/7/90	7,394
ANALYTICAL BALANCES	19/7/90	1,181
TOTAL FOB COST OF TOX. LAB.		\$144,994

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KAD - TRICHUR

Equipment	Date Delivered	FOB Cost (\$)
AA SPECTROPHOTOMETER AND ACCESSORIES	15/5/91	29,843
US VIS SPECTROPHOTOMETER	15/5/91	7,394
REFRIG CENTRIFUGE	13/9/90	8,300
ANALYTICAL BALANCE	15/5/91	1,814
TOTAL FOB COST FOR KAD		\$47,351

PAU - LUDHIANA

Equipment	Date Delivered	FOB Cost (\$)
AA SPECTROPHOTOMETER AND ACCESSORIES	22/8/91	29,843
CO2 INCUBATOR	22/8/91	13,000
TOTAL FOB COST FOR PAU		\$42,843

BVC - BOMBAY

Equipment	Date Delivered	FOB Cost (\$)
PULPER FINISHER PRESS	3/11/90	19,468
AUTO KJELDAHL ANALYSER	3/11/91	26,214
AA SPECTROPHOTOMETER AND ACCESSORIES	7/5/91	29,843
ANALYTICAL BALANCE	7/5/91	1,814
CO2 INCUBATOR	13/5/91	13,000
TOTAL FOB COST FOR BVC		\$90,339

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List of Equipment/Supplies

Subproject : ETT

Eqpt. Budget : \$653,000

COORD.CENT, DELHI

Equipment	Date Delivered	FOB COST (\$)
COMPUTER	1/5/91	6,278
VIDEO EQUIPMENT	27/3/91	3,664
SLIDE PROJECTOR	27/3/91	1,198
COPIER	27/3/91	9,571
TOTAL FOB COST FOR COORD. CENTRE		\$20,711

APAU, TIRUPATHI

Equipment	Date Delivered	FOB COST (\$)
ETT BASIC KIT	2/6/90	9,753
LAPARASCOPE	16/11/90	8,300
LAMINAR FLOW HOOD	15/1/92	5,783
CENTRIFUGE, REFRIGERATED	15/1/92	6,850
AUTOCLAVE	15/1/92	6,177
CO2 INCUBATOR	31/3/92	8,658
MICROSCOPE (GBPUAT)	15/1/92	12,400
TOTAL FOB COST FOR APAU		\$57,921

CIRG, MAKHDOOM

Equipment	Date Delivered	FOB COST (\$)
BASIC KIT	19/4/90	9,753
LAPARASCOPE (GBPUAT)	17/11/90	8,300
CO2 INCUBATOR	June 1992	4,569
TOTAL FOB COST FOR CIRG		\$22,622

GBPUAT, PANTNAGAR

Equipment	Date Delivered	FOB COST (\$)
BASIC KIT	6/4/90	9,753
TOTAL FOB COST FOR GBPUAT		\$9,753

CIRB, HISAR

Equipment	Date Delivered	FOB COST (\$)
BASIC KIT	18/4/90	9,753
LAPARASCOPE	13/11/90	8,300
TOTAL FOB COST FOR CIRB		\$18,053

HAU (OBG), HISAR

Equipment	Date Delivered	FOB COST (\$)
BASIC KIT	18/4/90	9,753
LAPARASCOPE	13/11/90	5,000
CO2 INCUBATOR	19/7/91	4,569
MICROSCOPE	Dec. 91	12,400
TOTAL FOB COST FOR HAU(OBG)		\$31,722

HAU (APP), HISAR

Equipment	Date Delivered	FOB COST (\$)
BASIC KIT	18/4/90	9,753
COMPUTER	19/7/90	6,278
LAMINAR FLOW HOOD	19/7/90	5,783
ELISA READER	Dec. 91	12,058
TOTAL FOB COST FOR HAU(APP)		\$33,872

NDRI, KARNAL

Equipment	Date Delivered	FOB COST (\$)
LAPARASCOPE	30/11/90	8,300
CO2 INCUBATOR	14/8/91	8,658
MICROSCOPE	14/8/91	12,400
SCINTILLATION COUNTER	14/8/91	47,232
BALANCE, ELECTRONIC	14/8/91	2,238
TOTAL FOB COST FOR NDRI		\$78,828

List of Equipment/Supplies

Subproject : IBP

Eqpt. Budget : \$825,000

COORD CENT., HISAR

Equipment	Date Delivered	FOB COST (\$)
WORD PROCESSOR - ZENITH LAPTOP COMPUTER	19/7/91	6,278
COPIER	4/3/91	9,571
PHOTOGRAPHIC EQUIPMENT	4/3/91	5,118
SLIDE PROJECTOR	22/8/91	1,198
MICROFILM READER	4/3/91	9,525
VIDEO EQUIPMENT	ABANDONED AT CUSTOMS	3,664
TOTAL FOB COST FOR COORD. CENTRE		\$35,354

IVRI, IZATNAGAR

Equipment	Date Delivered	FOB COST (\$)
ELECTROPHORESIS	3/10/91	29,835
CRYOBIOLOGICAL SYSTEM	12/6/91	11,040
MILLIPORE FILTERS	12/6/91	7,630
PIFETTES, DISPEN/TRANS	12/6/91	2,600
CO2 INCUBATOR	12/6/91	4,569
DNA SEQUENCING SYSTEM	12/6/91	7,399
MICROCENTRIFUGE	12/6/91	4,060
FREEZE DRYER	12/6/91	19,029
SPECTROPHOTOMETER	12/6/91	5,095
FREEZER	12/6/91	9,706
TOTAL FOB COST FOR IVRI		\$100,983

IBP - CENTRAL LAB, HISAR

Equipment	Date Delivered	FOB COST (\$)
UV-VIS SPECTROPHOTO METER	19/7/91	19,159
STEREO MICROSCOPE WITH CAMERA	19/7/91	12,220
Co2 INCUBATOR	18/7/91	8,658
FREEZER	22/8/91	14,982
MILLIPORE FILTERS	4/3/91	8,596
PLASTIC/GLASSWARE - I	19/7/91	9,198
PLASTIC/GLASSWARE - II	22/8/91	6,517
CRYOPRESERVATION UNIT	4/12/91	15,121
FREEZER	4/12/91	7,759
NITROGEN TANK	4/12/91	10,398
NITROGEN CONTAINER - 3 nos.	4/12/91	32,610
ROTARY CULTURE APPARATUS	4/12/91	7,505
ELECTROPHORESIS - PART I	4/12/91	24,917
ELECTROPHORESIS - PART II	25/6/92	24,917
AUTO ANALYSER	20/6/92	42,522
CELL CULTURE SYSTEM	12/6/92	48,026
FERMENTER	12/6/92	29,755
PLASTIC/GLASSWARE - I	25/6/92	4,883
Co2 INCUBATOR	25/6/92	8,658
TOTAL FOB COST FOR CENTRAL LAB.		\$317,242

PAU, LUDHIANA

Equipment	Date Delivered	FOB COST (\$)
CENTRIFUGE (TABLE TOP) WITH ACCESSORIES	22/8/91	10,198
MILLIPORE FILTERS	22/8/91	1,723
CHEMICALS	20/6/92	4,691
CHEMICALS	20/6/92	4,144
CHEMICALS	20/6/92	1,273
CHEMICALS	20/6/92	774
CHEMICALS	20/6/92	3,348
CHEMICALS	20/6/92	1,351
ELECTROPHORESIS - I	13/3/92	15,500
ELECTROPHORESIS - II	20/6/92	15,500
IMMUNO-TRANS BLOT SYSTEM	13/3/92	1,551
CELL DISRUPTER	20/6/92	1,650
TOTAL FOB COST FOR PAU		\$61,703

MVC, MADRAS

Equipment	Date Delivered	FOB COST (\$)
MICROSCOPE, DIASTER	20/2/91	16,367
FREEZER	20/2/91	9,706
COPIER, CANNON	20/2/91	9,571
TOTAL FOB COST FOR MVC		\$35,644

NDDB, ANAND

Equipment	Date Delivered	FOB COST (\$)
MICROSCOPE WITH CAMERA	7/6/91	12,079
MILLIPAK MEDIA FILTRATION UNIT	7/6/91	2,890
Co2 INCUBATOR	2/8/91	9,392
FREEZER	Dec. 91	7,915
TOTAL FOB COST FOR NDDB		\$32,276

NOTE:

ACTUAL FREIGHT COSTS ARE NOT AVAILABLE AT THE TIME OF PREPARING THIS REPORT. IN OUR EXPERIENCE FREIGHT, INSURANCE, TRANSHIPMENT, CUSTOMS CLEARANCE AND INLAND TRANSPORTATION IS APPROXIMATELY 24% OF THE FOB COST.

List of Equipment/Supplies

Subproject : PHT-FV

Eqpt. Budget : \$1,247,887

IARI, NEW DELHI

Equipment	Date Delivered	FOB COST (\$)
X-Y RECORDER	28/2/90	1,815
CUVETTES	28/2/90	1,150
TEXTURE MEASURING DEVICE	30/11/90	25,340
MICROSCOPE, PHASE CONTRAST	26/6/90	7,200
HPLC	17/9/90	54,500
HPLC SPARES	20/9/90	
FRUIT FIRMNESS TESTER	28/2/90	274
CONST. TEMP BATH	16/3/92	3,385
CO2 ANALYSER	28/2/90	7,200
GAS CHROMATOGRAPH	25/6/91	21,010
SYRINGES FOR GPC	17/9/90	480
BALANCE, ELECTRONIC	28/2/90	1,335
TURBIDIMETER	27/11/90	2,073
FREEZE DRYER	28/2/90	16,200
CENTRIFUGE	20/9/90	19,956
THERMOMETER/HYGROMETER - I	28/2/90	354
POUCH FILLER SEALER	29/5/90	5,082
AGAR STERILIZER	28/1/91	5,500
SHRINK WRAP MACHINE	26/3/91	20,000
GAS BLENDING SYSTEM	16/9/90	9,995
REFRACTOMETER	17/9/90	442
CAN OPENER	28/1/91	125
WATER BATH	17/9/90	2,661
DIGITAL ANALYSER - P.N. ANALYSER	11/7/91	370
DIGITAL VACUUM GAUGE	27/11/90	312

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ELECTRONIC THERMOMETER	28/2/90	2,188
STRIP CHART RECORDER	17/9/90	1,845
INSECT TRAP	27/11/90	460
RODENT CONTROL DEVICE	27/11/90	343
ULTRAFILTRATION CELL	27/11/90	3,000
TISSUE DISINTEGRATOR	28/1/91	1,700
PHOTOGRAPHIC SYSTEM	26/6/91	1,059
BATTERY PACKS	28/1/91	95
SPARES FOR VISCOMETER	26/3/91	3,396
SPARES FOR COLOR METER	11/7/91	1,986
POWDER MILL	27/11/90	6,230
ANALYTICAL BALANCE	27/11/90	1,260
MICROWAVE OVEN & RAD TSTR	28/1/91	315
FLOURESCENT SPECTROPHOTOMETER	14/10/87	23,634
COLOR DIFFERENCE METER	1988	12,966
AQUAMETER	14/10/87	9,600
SPARES FOR AQUAMETER	26/3/91	287
VISCOMETER	24/6/87	1,600
SPECTROPHOTOMETER, DUAL BEAM SPECTRONIC 1201	24/6/87	7,576
REFRACTOMETER, DIGITAL	28/1/91	3,400
CAPILLARY INLET FOR GP	16/3/92	2,000
FORMAZIN SOLUTION	16/3/92	300
PRESSUR TESTER	16/3/92	65
THERMOMETER/HYGROMETER - II	16/3/92	353
LAPTOP COMPUTER	26/3/91	6,278
CONSTANT TEMP. BATH	16/3/92	3,385
FILM FOR S.W. MACHINE	16/3/92	NO COST
GPC SPARES	16/3/92	NO COST
TOTAL FOB COST FOR IARI		\$302,380

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ICAR - HQ : DR. G.L. KAUL

LAPTOP COMPUTER	27/3/91	6,278
6 COPIES OF THE BOOK ON PHT DISEASES		NIL
TOTAL FOB COST FOR ICAR		\$6,278

IIHR, BANGALORE

Equipment	Date Delivered	FOB COST (\$)
X-Y RECORDER	5/4/90	1,815
CUVETTES	5/4/90	1,150
TEXTURE MEASURING DEVICE	11/2/91	25,340
MICROSCOPE, PHASE CONTRAST	16/3/91	7,200
HPLC	6/11/90	54,500
SPARES FOR HPLC	6/11/90	0
FRUIT FIRMNESS TESTER	5/4/90	274
CONST. TEMP BATH	16/3/91	3,385
CO2 ANALYSER	5/4/90	7,200
GAS CHROMATOGRAPH	14/4/92	21,010
SYRINGES FOR GPC	6/11/90	480
BALANCE, ELECTRONIC	5/4/90	1,335
TURBIDIMETER	16/3/91	2,073
FREEZE DRYER	5/4/90	16,200
FREEZER	20/8/90	7,536
THERMOMETER/HYGROMETER	5/4/90	354
POUCH FILLER SEALER	20/8/90	5,082
AGAR STERILIZER	16/3/91	5,500
SHRINK WRAP MACHINE	16/5/91	20,000
GAS BLENDING SYSTEM	3/5/90	9,995
REFRACTOMETER	6/11/90	442
CAN OPENER	16/3/91	125
WATER BATH	6/11/90	2,961
DIGITAL ANALYSER	11/4/92	370
DIGITAL VACUUM GAUGE	16/3/91	312

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ELECTRONIC THERMOMETER	5/4/90	2,188
STRIP CHART RECORDER	6/11/90	1,845
INSECT TRAP	16/3/91	460
RODENT CONTROL DEVICE	16/3/91	343
ULTRAFILTRATION CELL	16/3/91	3,000
TISSUE DISINTEGRATOR	16/3/91	1,700
PHOTOGRAPHIC SYSTEM	16/3/91	1,059
LAPTOP COMPUTER	16/3/91	6,278
BATTERY PACKS	16/3/91	95
SPARES FOR VISCOMETER	27/4/91	3,396
SPARES FOR COLOR METER	1/4/92	1,986
POWDER MILL	16/3/91	6,230
MICROWAVE OVEN & RAD TSTR	16/3/91	315
REFRACTOMETER, DIGITAL	16/3/91	3,400
COLOR DIFFERENCE METER	11/1/88	12,966
AQUAMETER	20/8/87	9,600
SPARES FOR AQUAMETER	27/4/91	287
VISCOMETER	29/7/87	1,600
SPECTROPHOTOMETER, DUAL BEAM SPECTRONIC 1201	29/7/87	7,576
CAPILLARY INLET	11/4/92	2,000
FORMAZIN SOLUTION	11/4/92	300
TOTAL FOB COST FOR IIHR		\$261,263

CIHNP, LUCKNOW

Equipment	Date Delivered	FOB COST (\$)
X-Y RECORDER	9/3/90	1,815
COVETTES	9/3/90	1,150
HPLC	14/12/90	25,340
SPARES FOR HPLC	14/12/90	
FRUIT FIRMNESS TESTER	9/3/90	274
CONST. TEMP BATH	30/6/92	3,385
GAS CHROMATOGRAPH	30/6/92	21,010
SYRINGES FOR GPC	14/12/90	480
BALANCE, ELECTRONIC	9/3/90	1,335
TURBIDIMETER - I	14/12/90	2,073
TURBIDIMETER - II	30/6/92	2,073
THERMOMETER/HYGROMETER	14/12/90	354
POUCH FILLER SEALER (VACUUM PACKAGES)	30/5/90	5,082
AGAR STERILIZER	17/7/91	5,500
SHRINK WRAP MACHINE	17/7/91	20,000
GAS BLENDING SYSTEM	30/4/90	9,995
REFRACTOMETER	14/12/90	442
CAN OPENER	30/6/92	125
WATER BATH	14/12/90	2,961
DIGITAL ANALYSER	30/6/92	370
DIGITAL VACUUM GAUGE	14/12/90	312
ELECTRONIC THERMOMETER	9/3/90	2,188
STRIP CHART RECORDER	14/12/90	1,845
INSECT TRAP	14/12/90	460

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RODENT CONTROL DEVICE	14/12/90	343
ULTRAFILTRATION CELL	14/12/90	3,000
TISSUE DISINTEGRATOR	17/7/91	1,700
PHOTOGRAPHIC SYSTEM	17/7/91	1,059
LAPTOP COMPUTER	17/7/91	6,278
BATTERY PACKS	17/7/91	95
SPARES FOR VISCOMETER	17/7/91	3,386
SPARES FOR COLOR METER	30/6/92	1,986
POWDER MILL	14/12/90	6,230
MICROWAVE OVEN & RAD TSTR	17/7/91	315
COLOR DIFFERENCE METER	23/11/87	12,966
AQUAMETER	20/8/87	9,600
SPARES FOR AQUAMETER	17/7/91	267
VISCOMETER	6/7/87	1,600
SPECTROPHOTOMETER, DUAL BEAM	9/3/92	8,242
REFRACTOMETER, DIGITAL	14/12/90	3,400
CAPILLARY INLET	30/6/92	2,000
FORMAZIN SOLUTION	30/6/92	300
VACUUM TEST GAUGE	17/7/91	312
SPARES FOR GPC	30/6/92	NO COST
PH ION METER	30/6/92	370
HPLC SPARES	30/6/92	NO COST
TOTAL FOB COST FOR CIENP		\$172,038

NRCC, NAGPUR

Equipment	Date Delivered	FOB COST (\$)
FRUIT FIRMNESS TESTER	20/3/90	274
CONST. TEMP BATH	12/12/90	3,385
CO2 ANALYSER	20/3/90	7,200
GAS CHROMATOGRAPH	1/8/91	21,010
SYRINGES FOR GPC	15/12/90	480
BALANCE, ELECTRONIC	20/3/90	1,335
TURBIDIMETER	15/12/90	2,073
THERMOMETER/HYGROMETER	20/3/90	354
POUCH FILLER SEALER (VACUUM PACKAGE)	4/6/90	5,082
AGAR STERILIZER	4/3/91	5,500
SHRINK WRAP MACHINE	12/4/91	20,000
GAS BLENDING SYSTEM	2/4/90	9,995
REFRACTOMETER	15/12/90	442
CAN OPENER	15/12/90	125
WATER BATH	15/12/90	2,961
DIGITAL ANALYSER (PH ION ANALYSER)	1/8/91	370
DIGITAL VACUUM GAUGE	15/12/90	312
ELECTRONIC THERMOMETER	20/3/90	2,188
STRIP CHART RECORDER	15/12/90	1,845
INSECT TRAP	15/12/90	460
INSECT TRAP TUBE LIGHTS	12/4/90	
RODENT CONTROL DEVICE	15/12/90	343

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ULTRAFILTRATION CELL	15/12/90	3,000
TISSUE DISINTEGRATOR	4/3/91	1,700
PHOTOGRAPHIC SYSTEM	1/8/91	1,059
COMPUTER (2 UNITS)	4/3/91	6,278
COMPUTER MONITOR - 14"	12/4/91	
BATTERY PACKS	1/8/92	85
SPARES FOR VISCOMETER	12/4/91	3,396
SPARES FOR COLOR METER	1/8/91	1,986
SPECTROPHOTOMETER SINGLE BEAM	20/3/90	4,951
COLOR DIFFERENCE METER	7/1/88	12,966
VISCOMETER	28/7/87	1,600
BALANCE, ANALYTICAL	15/12/90	1,260
FORMAZIN SOLUTION	3/4/92	300
DIGITAL THERMOMETER/ HYGROMETER	1/8/91	353
CAPILLARY INLET FOR GC	1/8/91	2,000
VILLAGE PROCESSING KIT	4/3/91	NO COST
TOTAL FOB COST FOR NRCC		\$126,678

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List of Equipment/Supplies

Preproject : AGRC

Eqpt. Budget : \$55,000

NBAGR/NIAG, KARNAL

Equipment	Date Delivered	FOB COST (\$)
FREEZER	26/6/92	14,558
ICE MAKER	26/6/92	3,247
THERMAL CYCLER	26/6/92	10,022
MICRO-PIPPETS	26/6/92	3,698
TOTAL FOB COST		\$31,525

List of Equipment/Supplies

Preproject : IPM

Eqpt. Budget : \$30,000

NATIONAL CENTRE FOR IPM, BANGALORE

Equipment	Date Delivered	FOB COST(\$)
FERMENTER	26/6/92	14,335
TOTAL FOB COST		\$14,335

GBPUAT, PANTNAGAR

Equipment	Date Delivered	FOB COST(\$)
FERMENTER	26/6/92	14,335
TOTAL FOB COST		\$14,335

List of Equipment/Supplies

Preproject : PCGH

Eqpt. Budget : \$25,000

IARI, NEW DELHI

Equipment	Date Delivered	FOB COST(\$)
GREEN HOUSE	26/6/92	6,358
MICROLOGGER	26/6/92	6,472
TOTAL FOB COST		\$12,830

IIHR, BANGALORE

Equipment	Date Delivered	FOB COST(\$)
GREEN HOUSE	26/6/92	6,358
MICROLOGGER	26/6/92	6,472
TOTAL FOB COST		\$12,830

List of Equipment/Supplies

Preproject : TISSUE CULTURE

Eqpt. Budget: \$20,000

IARI, NEW DELHI

Equipment	Date Delivered	FOB COST (\$)
ULTRAFILTRATION UNIT	26/6/92	1,387
TOTAL FOB COST		\$1,387

IIHR, BANGALORE

Equipment	Date Delivered	FOB COST (\$)
MEDIA DISPENSING UNIT	26/6/92	3,600
ELECTROPHORESIS SYSTEM	26/6/92	6,160
TOTAL FOB COST		\$9,760

YSPUHF, NAUNI, SOLAN

Equipment	Date Delivered	FOB COST (\$)
ULTRAFILTRATION UNIT	26/6/92	1,387
MEDIA DISPENSING UNIT	26/6/92	3,600
TOTAL FOB COST		\$4,987

CPCRI, KASARGOD

Equipment	Date Delivered	FOB COST (\$)
ULTRAFILTRATION UNIT	26/6/92	1,387
BOTTLE TOP DISPENSER	26/6/92	1,491
ROLLERDRUM	26/6/92	1,275
SHAKER BATH	26/6/92	4,864
STERILIZER AND HEATER ELEMENT	26/6/92	263
TOTAL FOB COST		\$9,280

List of Equipment/Supplies

Subproject : SPU

Eqpt. Budget : \$654,468

CIAE, BHOPAL

Equipment	Date Delivered	FOB COST (\$)
FARINOGRAPH	9/1/92	31,865
CATHODE LAMPS	19/3/92	1,555
HELIUM PYCNOMETER	21/5/90	5,915
MICROSCOPE	29/7/81	7,116
FREEZE DRYER	19/3/90	15,954
" " - SPARES	21/12/91	750
FOOD MILL (FITZ)	21/5/90	20,603
BALANCE, TOP LOADING	19/3/90	1,610
HOMOGENIZER	21/5/90	10,724
MICROPULVERIZER	25/8/90	8,960
WEIGH AND FILL MACHINE	19/3/90	3,717
COLLOID MILL	21/5/90	13,898
DRUM DRYER	14/12/90	13,230
MICROFILM READER	19/3/90	868
INFRARED ANALYSER N.I.R.	19/3/90	103,456
DISC MILL	29/7/91	25,535
" " - SPARES	29/7/91	752
TOFU SYSTEM	17/5/90	54,000

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SPECTROPHOTOMETER	25/8/90	5,928
MOISTURE BALANCE	25/8/90	2,070
SOY FILM	9/7/91	235
SHEETER	25/8/90	12,471
" - SPARES	21/12/91	752
HYDRAULIC PRESS	25/8/90	5,925
COLLOID MILL (FOR GBPUAT)	12/6/91	10,065
COLLOID MILL SPARES	29/7/91	288
PLASTIC EXTRUDER (FOR GBPUAT)	12/6/91	8,775
CHEMICALS	18/3/90	6,396
PLOTTER FOR N.I.R.	Dec. 91	REPLACED FREE
EXTRUDER	6/10/87	24,215
" - SPARES	19/3/90	8,938
AA SPECTROPHOTOMETER	19/10/87	23,832
EXTENSOGRAF	19/10/87	19,041
COOKER	19/10/87	46,676
ANALYTICAL BALANCE	19/3/90	2,410
CENTRIFUGAL GRINDING MILL	21/5/90	17,950
TOTAL FOB COST		\$516,473

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