

G. EFFICIENT USE OF IRRIGATION IN INDONESIA			
G-1. Modeling food crop response to irrigation and simulation for increasing production	88<----->89	measuring water requirement for 4 crops in interval irrigation system	to simulate water requirement for various water condition, and to utilize Model infra for measuring evapo-transpiration
G-2. Microcomputer controlled open channel flow monitoring system	88<----->91	to establish hydraulics experiment systems and to use it in lecture and in training	finish nothing
G-3. Hydrological evaluations of water resources and its utilization to irrigation	89<----->91 changed to 91<----->92	to establish water distributing system for irrigation	to analyze and to establish water management system for irrigation * It is necessary to extend research period after 1992 because data accumulation needs a long term
H. EVALUATION OF OPTIMUM PHYSICAL CONDITION ON FARM FOR CROP PRODUCTION			
H-1. Evaluation of various methods predicting reference crop-soil physical problems for production-SPAC	88<----->90 changed to 90<----->92	to measure the soil physical properties in paddy fields and to compare it with one in upland field	to measure the changes of soil physical properties with time in paddy and upland field * It is necessary to extend research period after 1992 because data accumulation needs a long term * Some instrument for measuring should be supplemented
I. POST HARVEST TECHNOLOGY			
I-1. Thermophysical properties of tropical agricultural product	88<----->91 extended to----->92	thermophysical properties of tropical agric. products	establishment of testing method and accumulation of measured data-base * Functioning of data-acquisition system is expected
I-2. Development of post harvest technology of tropical fruits and vegetables for exportation	88<----->91 extended to----->92	post harvest technology of fruit and vegetables for export	modelling of transportation of packed fruits * collaboration with I-1 and other groups are desired
I-3. Development of optimum handling, processing and storage system for secondary crops in Indonesia	90<----->91 extended to----->92	processing of secondary crops: soybean cake processing	continuation of research and extension to research on sweet potato and sweet potatoes * Justification to conduct research on sweet potato is not clear.
I-4. Assessment and prediction of post harvest loss of grains	90<----->91	grain losses: survey on the distribution of corn	

<p>J. FOOD ENGINEERING</p>	<p>J-1. Fundamental study on transport phenomena and quality design in bread baking process</p>	<p>88<----->90 extended to --->92</p>	<p>Thermal properties of bread and improvement of baking process</p>	<p>continuation of research with various starch</p>
	<p>J-2. Studies on thermodynamic properties of water in food materials with special reference to freeze drying process</p>	<p>88<----->90 extended to --->92</p>	<p>freeze drying of shrimps</p>	<p>continuation of research * and expansion to other equipments * Waiting for some test items</p>

SEMINAR/WORKSHOP RECORD (1988 - 1992)

1. The First IPB-JICA Joint Seminar
Duration : July 13-14, 1988
Participants: 100 person
2. The Second IPB-JICA Joint Seminar
Duration : Aug. 7-8, 1989
Participants: 110 person
3. The Third IPB-JICA Joint Seminar
Duration : Oct. 8-9, 1990
Participants: 150 person
4. The Fourth IPB-JICA Joint Seminar (*)
Duration : Feb. 17-18, 1991
Participants: 80 person
5. The Fifth IPB-JICA Joint Seminar (*)
(International Seminar)
Duration : Oct. 12-15, 1992
Participants: 200 person

TRAINING RECORD (1988 - 1992)

1. Training in FY 1988
 - 1) Short course
Duration : June 27-29, 1988
Participants: 32 person
 - 2) short course
Duration : Aug. 8-13, 1988
Participants: 40 person
2. Training in FY 1989
 - 1) Refreshing course
Duration : July 17-29, 1989
Participants: 40 person
 - 2) Curriculum Development Course
Duration : Nov. 13-18, 1989
Participants: 50 person
 - 3) Agricultural Engineering Advanced Course
Duration : Feb. 12-24, 1990
Participants: 48 person
3. Training in FY 1990
 - 1) Refreshing Course
Duration : July 30 - Sep. 1, 1990
Participants: 20 person
 - 2) Technician course
Duration : Dec. 10 - Dec. 22, 1990
Participants: 30 person
 - 3) Curriculum Development Course
Duration : Jan. 5 - Jan. 8, 1991
Participants: 57 person
 - 4) Agricultural Engineering Advanced course
Duration : Feb. 18 - March 2, 1991
Participants: 30 person

4. Training in FY 1991

- 1) Refreshing Course
Duration : July 30 - Sep. 1, 1991
Participants: 20 person
- 2) Agricultural Engineering Advanced Course
Duration : Aug. 18 - Aug. 31, 1991
Participants: 30 person
- 3) Curriculum Development Course (*)
Duration : Jan. 1992
Participants: 60 person
- 4) Short Course (*)
Duration : 5 days x 3 times
Participants: 15 person each

Remarks: (*) future plan

Research Papers and its Classification

NOV. 91

RESEARCH PAPERS ARE CLASSIFIED INTO 3 (THREE) CATEGORIES:

1. Presented / published on International Seminar/Symposium/Academic Society
2. Presented / published on Seminar/Symposium/Academic society in Indonesia
3. Presented / published on the IPB-JICA Joint Seminar

Abbreviations of the fields are below :

(A: Agric. Machinery, B: System, C: Labor Science, D: Energy, E: Material,
 FGH: Soil & Water, I: Postharvest Technology, J: Food Science)

TITLE OF RESEARCH PAPER	FIELD	CLASS
1. Optimum utilization of agricultural tractor and tillage machinery in Indonesia	A	3
2. Optimum control of head feeding combine-application of ultrasonic sensor to steering sensor	A	3
3. Study on the relationship between soil moisture contents and tractor capacity in dryland farming	A	3
4. Three point hitch dynamometer, draft measurement and its calibration	A	3
5. Effect of dynamic load and the intensity of tractor traffic on soil compaction	A	1
6. Studying the influence of the driving wheel weight on wheel slippage in plowing using disk plow	A	3
7. Soil compaction as influenced by mechanical tillage in sugarcane plantation	A	1
8. System analysis and information system development in agricultural mechanization	B	3
9. System modeling in mechanization planning of cane harvesting activities for sugar industry	B	3
10. Evaluation of agricultural labor and energy supply in low land rice tillage	B	3
11. Development of expert system program to diagnosis on bulldozer engine troubles	B	3
12. A study of transformation from manpower to mechanical power through bicycle transmission system	C	3
13. Yam harvesting method in Japan	C	3
14. Computer aided for estimated drying rate by solar collector	D	3
15. Designing, modification and technical testing of jet cooling	D	3
16. Parabolic cylindrical solar collector for primemove of jet cooling type	D	3
17. Jet cooling using solar energy	D	3
18. Design and performance testing of a jet cooling system using parabolic cylindrical solar collector	D	2
19. Optimization of solar dryer	D	3
20. Biomass modelling for West Java	D	2
21. The effect of fuel wood geometry on the stove efficiency	D	3
22. Model of biomass energy consumption in the rural household, case study on 4 villages	D	3
23. Overview on energy balance in rice production technology in Indonesia	D	1
24. Tea drying with solar energy	D	3
25. Energy balance of rice production in Indonesia	D	3

TITLE OF RESEARCH PAPER	FIELD	CLASS
26. Rural energy development in indonesia	D	1
27. Energy flow for rice production in Lampung, south sumatera in Indonesia	D	2
28. Present and future research on farm structure and environment in Indonesia	E	3
29. Simulation model for priction rice storage losess at farm level due to insect infestation	E	3
30. Study on the effect of the panil thickness and the fiber orientation of the surface layer on the physical and mechanical properties of plywood type I	E	3
31. Appropriate technology in production of construction panel productions as building material made of agriculture fibrous products as reinforcement with mortar	E	3
32. Concreting in tropical countries, - case study in a semi-arid region	E	3
33. Grid method as a tool to minimize error of using USLE methods for large watershed erosion assessment	F	3
34. Watershed model development	F	3
35. Analysis of sediments transport relation to the physical condition in upper Cimanuk watershed	F	3
36. Analysis of hydrology characteristic and terrace planning using map from interpretation remote sensing in upper Ciliwung watershed	F	3
37. Estimation potential soil erosion with USLE method and interpretation remote sensing map in upper Cisadane watershed	F	3
38. Relation between transpiration rate for sugarcane plantation and water regime	G	3
39. Irrigation water requirements and yield response factor for corn	G	3
40. Study on water productivity in the crop production of soybean	G	3
41. The effect of depth of flooding and method of water application on water requirements and yield of wetland paddy	G	1
42. Irrigation water losses on some potential irrigation shcemes in Indonesia	G	3
43. The computer program for calculating the design water level canal cross section in tertiary unit design	G	3
44. Evaluation of the effects of compaction on the optimum soil physical condition for crop production	H	3
45. Relation between bulk-density and moisture content in compaction test of several wet-paddy-field soils	H	3
46. Studies on the compaction properties of several wet paddy field in Indonesia	H	3
47. Study on the physical properties of several tropical wet-paddy field soil in Indonesia	H	1
48. Study on the soil strength of several wet-paddy and upland soils and thier relation to the agricultural mechnery operation	H	3
49. Study & physical properties of two soil types of wet-paddy field in West Java, Indonesia	H	1

TITLE OF RESEARCH PAPER	FIELD	CLASS
50. Penentuan nilai difusitas panas buah-buah dalam rangka pengembangan alat pendingin energi surya	I	3
51. Studies on mechanical impact on packed oranges during simulated truck transportation	I	3
52. Drying characteristics of agricultural products	I	3
53. Studies on rheological properties of jackfruit juice under heating temperature	I	3
54. The effect of storage temperature of green vanilla beans on the yield and quality of cured beans	I	3
55. Development of pepper-peeler equipment	I	3
56. Studies on mechanical impact on packed oranges during simulated truck transportation	I	3
57. Physico-chemical characteristic studies of tahu made from different varieties of soybean	I	3
58. Kinetics of the formation of crust on white bread during baking	J	3
59. Karakteristik transfer panas dan massa serta kinetika pembentukan warna kerak selama pemanggangan roti	J	3
60. Studi sifat termodinamikan air dari hasil pertanian dalam hubungannya proses pengeringan	J	1

Annex VII. Publication ListPUBLICATION LIST (1988 - 1991)

TITLE	AUTHOR	YEAR	NOV. 91 REMARKS
1. TEXTBOOK			
* Konservasi Tanah dan Air	Sitanala	1989	
* Ilmu Ukur Wilayah (Surveying)	Soedodo H.	1990/91	
* Tractor trafficability in paddy field	Nishimura I.	1991	
* Energy transfer in agricultural system	Nishimura I.	1990	
* Evaluation of tractor performance	Nishimura I.	1990	
* Invitation to the machinery	Nishimura I.	1991	
* Farm Machinery vol. I & II	Koga Y.	1990	
* Ergonomika	Herodian	1990/91	
* Introduction to husk utilization as an energy source	Koga Y.	1991	
* Energy and Electrics in Indonesia	Iruwanto	1989/90	
* Study on energy flow and its analysis	Iruwanto		
* Energy transfer in agricultural systems	Nishimura I.		
* Introduction to concrete and basic testing	Kato K.	1991	
* Keteknikan pertanian tingkat lanjut		1990	
* Exercises on designing of hydraulic structures vol. I	Kato K.	1990	
* Approach to an original paper by test- ing equipment	Kato K.	1990	
* Mekanika fluida	A. Priyanto	1989/90	
* Matematika Terapan	Kamaruddin	1991	on process
* Soil Mechanics	Sudo S.	1990	
* Pengantar mekanika tanah	Sudo S.	1990/91	
* Termodinamika Teknik	Hadi K.	1989/90	
* Termodinamika dan Pindah panas	Hadi K.	1990/91	
* Energi dan Listrik Pertanian	Kamaduddin	1991	on process
* Alat dan Mesin Budidaya Pertanian	Sitompul	1990/91	
* Sumber tenaga Tarik di Bidang Pertanian	Namaken S.	1990/91	
* Drying of Process Materials and Agricultural Products	Sagara Y.	1990	
* Pengeringan Bahan Olahan dan Hasil Pertanian	Sagara Y.	1990	
* Pengantar pembuatan Program Komputer Dalam Basic dan Fortran IV	Moeljarno	1991	on process
* Reference Materials	Kito K.	1990	
* Teknik Pengolahan Pangan	Hadi K.	1989/90	
* Pengantar Analisis Sistem Untuk Pertanian	Moeljarno	1990/91	
* Matematika Teknik	Azron D.	1990/91	
* On-farm development of paddy field comprehensive methodology	Kato K.	1991	
* Training on advanced agricultural engineering -- On-farm water management technology --	Mizutani S.	1991	
* Properties of food materials	M. Aman	1990	
* Implikasi social dari operasi pasca panen di tingkat petani	Koga Y.	1991	
* Teknologi pengolahan pasca panen dan kemungkinan peningkatannya	Koga Y.	1991	

TITLE	AUTHOR	YEAR	REMARKS
<u>2. TECHNICAL REPORT (SHORT-TERM EXPERTS)</u>			
* Report on control and data acquisition with experiment	Sato K.	1991	
* Report on system techniques for agricultural problems	Ishizuka N.	1991	
* Report on hydraulic experiments	Iida T.	1991	
* Basics of thermodynamics and its application to the study of water retained in foods	Oshita S.	1991	
* Role of land improvement districts in Japan	Mizutani S.	1991	
* Note on future development of hydrology and irrigation engineering studies	Nakamura R.	1991	
<u>3. TRAINING REPORTS</u>			
* Refreshing Course for Graduate Student in Agricultural Engineering and Technology	ADAET	1990	
* Technician Training on Agric. Engineering	ADAET	1990	
* Curriculum Development of the study program on agricultural engineering and technology	ADAET	1990	
* Advanced training on agric. engineering	ADAET	1990	
* Proceedings of 1st Joint seminar	ADAET	1988	
* Curriculum development of the study programs	ADAET	1989	
* Proceedings of 2nd Joint seminar	ADAET	1989	
* Report on 3rd Joint seminar	ADAET	1990	
* Proceedings of 3rd Joint seminar	ADAET	1990	on process
* Refreshing course for graduate student in Agricultural Engineering and Technology	ADAET	1991	on process
* Advanced training on agric. engineering	ADAET	1991	on process
* 6th International Drying Simposium	Sagara Y.	1988	
<u>4. MANNUAL & GUIDBOOK</u>			
* Internal Combution Engine	Hermawan	1989/90	
* Measurement of draw-per pull	Sembiring	1990/91	
* Internal Combution engine and hosepower	Daywin	1990/91	
* Instruction manual for Nenken type adiabatic bomb calorimeter			
* Testing manual series Cement, Aggregate and Concrete	Kato K.	1991	
* Manual on hydraulic experiments	Iida T.	1991	
* Technical manual of A/D converter built in computer (NEC:AP. 3000) and its program	Oshita S.	1991	
* Operation and maintenance manual for model infrastructure facilities of FATETA, IPB	Takahashi S.	1991	
<u>5. PROJECT LEAFLET</u>			
* Project Leaflet	[ADAET]	1991	
<u>6. OTHERS</u>			
* Testing Equipment for Concrete Engineers	kato K.	1990	
* Basic Testing Equipment for Hydraulic	Kato K.	1990	

Record of Long term Japanese Experts
and Short Term Japanese Experts

Long term Experts, JICA-ADAET (1988-1991)

No.	Name	Specialization	Assignment Period
1.	M. Sato	Team leader	1988/04/12-1990/04/11
2.	K. Yamashita	Project Coordinator	1988/04/12-1990/04/11
3.	S. Sudo	Soil & Water Engineering	1988/04/12-1990/04/11
4.	Y. Sagara	Post Harvest & Food Engineering	1988/04/12-1990/04/11
5.	K. Kito	Agricultural Machinery	1988/10/23-1990/03/31
6.	K. Fujii	Soil & Water Management	1989/01/10-1990/03/31
1.	T. Nakamura	Team leader, Soil & Physics Mechanics	1990/06/11-1992/06/10
2.	Y. Shozaki	Project Coordinator	1990/04/05-1992/04/04
3.	I. Nishimura	Agricultural Machinery	1990/05/25-1992/05/24
4.	Y. Koga	Post Harvest Technology	1990/06/06-1992/06/05
5.	K. Kato	Water Management & Material Eng.	1990/04/18-1992/04/17
6.	T. Naito	Agricultural Machinery	1991/05/13-1993/03/31

Short term Experts, JICA-ADAET (1988-1991)

No.	Name	Specialization	Assignment Period
FY 1988			
1.	T. Okamoto	Farm Power & Machinery	1988/06/11-1988/07/03
2.	S. Miyauchi	Soil Mechanics & Physics	1988/06/11-1988/08/27
3.	H. Shimura	Soil & Water Management	1988/07/11-1988/07/17
4.	T. Watabe	Post Harvest Technology	1988/07/11-1988/07/17
5.	M. Nakano	Soil Physics	1988/07/11-1988/07/17
FY 1989			
1.	N. Hayashi	Farm Work and Labor science	1989/07/01-1989/08/31
2.	K. Kato	Strength of Materials, Soil & Water Eg.	1989/05/09-1990/02/28
3.	Y. Koga	Post Harvest Technology & Food Eng.	1989/11/21-1990/02/20
4.	T. Okamoto	Farm Power & Machinery	1989/11/11-1989/11/24
5.	A. Hosokawa	Farm Power & Machinery	1989/02/06-1989/02/19
FY 1990			
1.	T. Naito	Farm Power & Machinery	1990/08/01-1990/10/03
2.	Y. Sagara	Post Harvest Tech. & Food Eng.	1990/10/01-1990/10/31
3.	Y. Seo	Post Harvest Tech. & Food Eng.	1990/08/16-1990/09/18
4.	S. Yonekawa	Soil Bin System	1991/03/31-1991/04/06
5.	Y. Sugawara	Soil Bin System	1991/03/25-1991/04/12
6.	A. Koyama	Soil Bin System	1991/03/25-1991/04/12
7.	T. Iida	Soil & Water Eng.	1991/03/31-1991/06/27
FY 1991			
1.	S. Takahashi	Model Infrastructure	1991/04/25-1991/11/13
2.	K. Sato	Farm Power & Electronics Eng.	1991/07/01-1991/08/30
3.	N. Ishizuka	Agric. System Eng.	1991/07/06-1991/08/30
4.	M. Mizutani	Soil & Water eng.	1991/07/15-1991/08/24
5.	Y. Oshita	Energy & Agric. Electrification	1991/08/06-1991/09/09
6.	Y. Sagara	Post Harvest Tech. & Food Eng.	1991/08/15-1991/09/14
7.	H. Miwa	Soil & Water Eng.	1991/10/01-1992/01/30
8.	R. Nakamura	Soil & Water Eng.	1991/09/23-1991/10/22

Annex IX. Record of Overseas Training Participants

Overseas Training Participants, JICA-ADABT (1988-1991)

No.	Name	Field of Study	Duration	Present Status/Activities
FY 1988				
1.	Sitanala A.	Observation Trip	88/10/15-88/10/23	Rector of IPB
2.	Suastawa N.	Farm Power & Mach.	89/02/12-90/02/04	S-2 program, Monbusho
3.	Herodian S.	Agric. Ergonomic	89/02/12-90/02/04	S-2 program, IPB
4.	Yamin M.	Energy & Electrification	89/02/12-90/02/04	Teaching & Research, IPB
5.	Sukandi S.	Soil & Water Eng.	89/02/12-90/02/04	Teaching & Research, IPB
FY 1989				
1.	Nirwan S.	Energy & Electrification	90/03/19-91/03/19	Teaching & Research, IPB
2.	Susilo S.	Agric. Ergonomic	90/03/19-91/03/19	Teaching & Research, IPB
3.	Imam H.	Farm Power Machin.	90/03/19-91/03/19	Teaching & Research, IPB
4.	Emmy D.	Agric. Mach. System	90/03/19-91/03/19	S-2 program, IPB
5.	Aris P.	Soil & Water Eng.	90/03/26-91/07/03	S-3 Ronpaku program
6.	Asep S.	Soil & Water Eng.	89/07/22-89/11/15	S-3 Ronpaku program
FY 1990				
1.	Wawan H.	Farm Power & Mach.	91/03/25-92/03/24	in Japan
2.	I Wayan A.	Agric. Mech. System	91/03/25-92/03/24	in Japan
3.	Subarna	Food Technology	91/03/25-92/03/24	in Japan
4.	Atjeng S.	Post Harvest Tech.	91/03/25-91/05/24	Head of Agric. Eng., IPB
5.	Kardjio	Workshop	91/03/25-92/03/24	in Japan

Annex X. Financing of Budget for Project (Japanese side)

Project Running Cost from JICA (1988 - up to now)

(Unit:1000 Yen)					
LOCAL COST	:	1988FY	1989FY	1990FY	1991FY
1. Overhead	:	5,640	4,968	4,320	5,640
2. Mid-level Training	:	-	15,000	11,000	process
3. Emergency Budget	:	-	2,500	1,432	process
4. Tech. Exchange Program	:	-	-	1,000	-
5. Local Language Text	:	1,000	730	-	2,290
6. Joint-seminar	:	-	500	1,265	process
7. Model Infra.	:	-	-	-	25,000
8. Project Leaf-let	:	-	-	500	-
9.					
TOTAL	:	6,640	23,698	19,517	32,930(*)

(*) excluding on-process budget

Procurement of Equipment from JICA (1988 - 1990)

(Unit:1000Yen)					
FIELD	:	1988FY	1989FY	1990FY	1991FY
1. Agric. Machinery	:	22,866	-	8,699	
2. Soil & Water	:	6,938	5,081	5,835	
3. Materials	:	6,130	2,690	1,573	
4. Post-harvest Technology	:	12,823	7,459	6,904	
5. Food Science	:	5,240	5,513	-	ON PROCESS
6. Environment	:	-	-	4,137	
7. Labor Science	:	-	-	2,749	
8. Energy	:	-	-	4,505	
9. Others	:	10,730	12,258	2,900	
TOTAL	:	64,727	33,001	37,302	

Annex XI. Financing of Budget for Project (Indonesia side)

PLAN AND REALIZATION OF FINANCING OF BUDGET
PROJECT JICA-OGHE/IPB (ADAET) JTA (9A) :132

x 1000 Rp.

ACTIVITIES	1990				1991	
	GOJ		GOI		GOJ	GOI
	Plan	Realization	Plan	Realization	Plan	Plan
I. SEMINAR						
1. In Country	17 500	17 500	17 000	20 050	11 200	17 000
2. Foreign Country	16 800	16 800				
II. TRAINING						
1. In Country	182 000	154 000		8 220	140 000	15 000
2. Foreign Country						
III. SHORT COURSE/ COURSE DEVELOPMENT			5 000	1 000		5 000
IV. INSTRUCTIONAL MATERIAL DEVELOPMENT	33 600		3 000	42 500	33 600	45 000
V. MODEL INFRASTRUCTURE	350 000		6 000	17 000	350 000	10 000
VI. PROJECT MANAGEMENT	7 000	7 000	50 000	42 823		51 500
VII. COOPERATIVE RESEARCH			79 000	46 730		120 000
VIII. DEVELOPMENT OF PROGRAM OF STUDY			0	11 500		7 500
IX. EQUIPMENT & HANDLING	812 000	560 000	40 000	64 959	700 000	40 000
X. EMERGENCY BUDGET	35 000	35 000			35 000	
TOTAL	1 453 900	790 300	200 000	254 982	1 269 800	311 000

Annex XII. Number of Students and Years Needed for study in the Graduate School

Table 1. Number of New Student and Graduate (S3)

Sub - Program	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	Total
FM	11-	-1-	31-	-11	-1-	-1-	-1-	-1-	-1-	1:1	-11	-11	5:4:11
SWE	-1-	-1-	11-	-1-	-1-	1:-	-1-	-1-	11-	-11	-11	11-	4:2:11
FAPPE	11-	-1-	-1-	-1-	-1-	1:-	1:1	-1-	-1-	1:-	11-	11-	6:1:14
AE	21-	-1-	41-	-11	-1-	21-	1:1	-1-	11-	2:2	1:2	2:1	15:7:18

Table 2. Number of Student and Graduate (S2)

Sub - Program	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	Total
FM	41-	11-	2:2	-1-	-1-	1:4	2:1	2:-	3:1	11-	4:2	1:3	2:2	-13	23:18: 5
SWE	11-	11-	41-	3:1	-11	2:2	-12	11-	1:4	2:-	-12	3:1	2:-	-12	20:15: 5
FAPPE	-1-	11-	21-	21-	2:1	2:1	2:1	2:-	1:2	3:4	3:2	6:2	2:3	3:1	6:17:14
AE	51-	31-	8:2	5:1	2:2	5:7	4:4	5:-	5:7	6:4	7:6	10:6	6:5	-11	74:50:24

Table 3. Number of Years Needed for Study

Program	Number of Years												
	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
S2	4	9	9	1	7	6	3	2	2	1	-	-	-
S3	-	-	1	-	-	-	1	-	1	-	2	-	1

Annex XIII. Universities Which Have Received Publications from IPB

(JICA - DGHE / IPB Project / ADAET : JTA-9a (132))

Universities	City	Province
1. Syiah Kuala	Darussalam Banda Aceh	Aceh
2. Sumatera Utara (USU)	Medan	North Sumatera
3. Andalas	Padang	West Sumatera
4. Jambi	Telanaipura	Jambi
5. Riau	Pakan Baru	Riau
6. Bengkulu	Bengkulu	South Sumatera
7. Lampung	Bandar Lampung	South Sumatera
8. Padjajaran	Bandung	West Java
9. Diponegoro	Semarang	Middle of Java
10. Gadjah Mada	Yogyakarta	Yogyakarta
11. Sebelas Maret	Solo	Middle of Java
12. Brawijaya	Malang	East Java
13. Bangkalan	Kamal-Bangkalan	Madura
14. Palangka Raya	Palangka Raya	Middle of Kalimantan
15. Lambung Mangkurat	Banjar Baru	South Kalimantan
16. Nusa Cendana	Kupang	NTT
17. Tanjung Pura	Pontianak	West Kalimantan
18. Mulawarman	Samarinda	East Kalimantan
19. Hasanudin	Ujung Pandang	Sulawesi
20. Udayana	Den Pasar	Bali
21. Patimura	Ambon	Maluku
22. Cendrawasih	Manokwari	Irian jaya
23. Sam Ratulangi	Manado	North Sulawesi
34. Kendari	Kendari	Sulawesi

A PROPOSAL
FOR
PROJECT ADAET JTA-9A(132) EXTENSION

A. Introduction

Project ADAET JTA-9a(132) was initiated in April 1988 and according to the R/D signed on December 24, 1987, it would be terminated in April 1993. During the past four years of the implementation stage the project has been carried out in orderly manner to meet the target as stated in the Tentative Schedule of Implementation and the R/D.

As the major equipment and instruments for research are now already being installed and cooperative research activities are gaining momentum the project is now entering its final stage of completion next year. All research results has been presented not only in the annual joint seminar of the project but also in other occasions such as in the national and international seminars.

The project as a whole had brought benefit to the Indonesian side not only for IPB staff / researchers but also staff / researchers from other universities and institutions in the country through various project activities such as the degree and nondegree training in country as well as overseas, transfer of knowledge and technology through cooperative researches, seminars, instructional material developments and other related activities.

B. Remaining Problems

As the Japanese government assistance through ADAET Project had layed a very strong basis for IPB graduate program in the field of agricultural engineering and technology, IPB has the obligation to disseminate the asisisstance to a wider range of University staff all over the country and to researchers of other research institutions. Through these efforts the Project could help in further improvement of the higher education system as well to accelerate economic development of the country.

To achieve these aims in the future if the following issues could be resolved:

- 1). Research funding scheme which could enable more graduate students and staff to participate in the research activities and to built better prototypes for research.
- 2). The absence of scholarship scheme in the project and the slow growth of agricultural engineering education in other universities and related research institute had hampered the growth of enrollment in the IPB graduate program.
- 3). Many good cooperative research results could not be presented in international seminars due to unavailable funding support for such activity.

- 4). As Indonesia is now facing another 25 years of economic development the role of the project in providing good development concepts and program is highly expected. More time is needed to answer this problem.
- 5). Combination of efforts in implementing project activities with other Japanese institutions such as with the OECF loan and JSPS grants.

Therefore, after the termination of the Phase I of the Project in 1993, it should be continued either through the following alternatives, to be executed in another 5 years:

1). The current Project may be developed further to establish an Inter university Center (IUC) in the field of Agricultural Engineering. In doing this IPB will work together with the University of Gadjahmada (UGM) in Jogjakarta to develop "smaller" universities within and outside Java. The major activities of the IUC will be:

- a). Joint researches
- b). Seminar/workshops in-country and overseas
- c). Non degree training in-country and overseas
- d). Degree training (MS, Dr) in-country and overseas
- e). Book writing
- f). Procurement of equipment and instrument
- g). Providing scholarships
- h). Institutional development of "smaller universities" (outreach program).

The justification lies from the fact that Indonesia still need more capable staff with MS and Dr degree holders to improve undergraduate program quality as well to produce capable researchers for the country which still undergoing economic development and transformation into an industrial society.

As the theme of research the following theme is proposed:

" The application of engineering principle with the consideration of environmental aspects in developing and utilization of natural resources for agricultural development."

2). New Technical Cooperation type project on "Engineering Application for Sustainable Rural Development". The project will make use of the available hardwares and softwares provided by JICA to work collaboratively with Gadjah Mada University the Ministry of Agriculture, the Agency for the Assesement and Application of Technology (BPPT), Ministry of Industry and the Ministry of Mines and Energy to develop a carefully chosen rural areas as a model for development. The major project activities will be in:

- a). Degree and Nondegree Training in-country and overseas
- b). Joint Researches
- c). Seminar/Workshops

d). Procurement of equipment and instruments

The activity could also be enhanced by the establishment of workshops and their facilities in a carefully selected rural areas to help the acceleration of appropriate mechanization and industrial development.

3). Additional grant aid to complete the Infrastructure Model. This project then could be used to construct the Total Energy System Component including the training facilities.

4). A grant aid to built buildings for other graduate programe in other faculty e.g., faculty of Agriculture, Faculty of Sciences, Faculty of Veterinary Medicine Faculty of Forestry.

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