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SEMI-ANNUAL SUBSTANTIVE REPORT NO. 2

Contract No. AID/csd-834

**For Research on Farm and Equipment Power Requirements
for Production of Rice and Associated Food Crops
in the Far East and South Asia.**

(For the period ending June 30, 1966)

by

Loyd Johnson

SEP 12 1966

Copies of this report have been filed with:

- 1. U. S. Agency for International Development,
Washington, D. C., John R. Wilson, Office of
Technical Cooperation and Research. (25 copies)**
- 2. U. S. Agency for International Development,
Manila, Philippines, Mr. Harold B. Koone.
(3 copies)**
- 3. The International Rice Research Institute
Library, Los Baños, Laguna, Philippines.
(2 copies)**

This report covers the period January 1 to June 30, 1966. Efforts to secure staff for the project continued during this period. Mr. Thomas Weaver was to graduate in September, 1965 and accept the position of Agricultural Economist. After many delays he was dropped from consideration and an active search initiated to fill both positions. A letter was sent to AID/Washington March 11, 1966 requesting clarification on international travel to permit interviewing of candidates. No clarification was provided. However, Dr. Sterling Wortman approved travel funds for the Agricultural Engineer, Loyd Johnson, to visit major centers in Europe and the U.S.A. The trip was planned for early April but a request by USAID for Mr. Johnson to visit Laos forced a change in plans. A Tractor Survey Team consisting of Roy Bainer, José D. Drilon, Jr., Loyd Johnson, and Nathaniel Tablante spent the period March 29 to April 15, 1966 visiting Laos and Thailand and writing up their recommendations on the feasibility of using tractors and other mechanical aids in Laos.

The recruiting trip was re-scheduled for June and July, 1966 and arrangements made to attend the annual meeting of the American Society of Agricultural Engineers June 26 to 29 at Amherst, Mass. and to visit Washington, D.C. July 5 and 6, 1966.

In order to initiate at least some work on the contract a series of letters were sent on May 5, 1966. Copies of the letters are attached. (1) A purchase order for a power tiller and accessories was placed with Iseki Noki K.K. in Japan, and (2) a deposit was made with Auburn University to hire Mr. Chang Cheu-Shang to conduct preliminary studies necessary for the initiation of a cooperative agreement with the USDA National Tillage Machinery Laboratory.

During the trip to Laos, Loyd Johnson had ample opportunity to view and photograph rice land from the air. The results were not encouraging, thus the paragraph I-B-1 of the work plan September 15 to December 31, 1965 had to be revised before implemented. The rice fields of Central Luzon were still idle in May but field operations were sure to start with the first rains. In May, the rainy season was approaching and still no Agricultural Economist was available.

Emilio O. Casem, Eliseo L. Ruiz, and Juan P. Reyno were assigned to the project to initiate a field survey to collect data on the farm operations sequence, water, soil, and crop conditions by sampling sites along the major highways of Central Luzon.

Procedure

A preliminary observation trip was made in six Central Luzon provinces, namely: Laguna, Bulacan, Nueva Ecija, Pangasinan, Tarlac, and Pampanga in early May, 1966. Kilometer posts were used as reference points, making observations on both sides of the road some 25 meters from the edge. Notations as to the existing condition of the areas in question -- whether rice-land or planted to other crops, or with houses or trees -- were made. A final list of 145 survey sites was made of ricelands located on either side

of the road. Where practicable sites were selected on alternate sides of the road of even and odd numbered kilometer posts. A map of about 1:500,000 scale was drawn (see attached map). This map includes the six provinces mentioned above and shows the approximate locations of the 145 survey sites. A sampling site guide was made (copy attached).

On succeeding trips, observations and measurements of the items of interest are recorded. These items and a brief description of each appear on a form for IBM Punch Cards (see attached form).

Every week during the first several weeks some pictures (colored, for slide projection, and black and white) were taken of two representative survey sites in each of the six provinces for purposes of illustration. Black-and-white pictures of these 12 sites shall continue to be taken from time to time until the termination of the survey.

Four square meters of mature standing rice shall be sampled from each of the 145 sites. Grain and dry matter production will be analyzed and correlated with recorded observations and measurements taken before and during the crop season.

The survey trip requires two men traveling 5 days per week to complete a 500-mile circular route in rural areas. Motels and hotels are few and far between and generally of poor quality and high price. To prevent excessive costs and lost time in searching for lodging it was decided to use a four-wheel-drive vehicle with a body suitable for sleeping two men. An IRRI vehicle will be assigned to the AID project on a basis of a rental rate of \$80 per month to cover insurance, depreciation and repairs. Gasoline and other charges will be at cost. Since IRRI has a pool of cars and trucks, this arrangement permits the survey to continue with a minimum of lost time; when one vehicle is under repair, another vehicle is used.

In order to implement paragraph I-B-2, a part-time arrangement was made with Mr. Roberto C. Bautista of the Agricultural Engineering Department, University of the Philippines College of Agriculture. Mr. Bautista was interested in conducting a "Study of Farm Mechanization Practices in Lowland Ricefields in Laguna." The college administration was agreeable to permit his undertaking the study on a part-time basis. Mr. Miguel Fabellar, an IRRI employee, was assigned to work with Mr. Bautista and adequate travel and support funds provided by IRRI to secure economic-engineering data on small power tillers. Preliminary results are not yet in final form as the survey was just started.

In preparation for adding two additional staff on the AID project, modifications of existing office space and work area was carried out to provide an airconditioned office; reduce the entry of dust; and reduce the congestion around the entry to the office and work area. These modifications are estimated to cost approximately \$6000 and provide 1600 square feet of additional floor area by adding a mezzanine floor. Office space of 400 square feet was airconditioned and 1200 square feet was left as a storage and work area. In order to reduce dust and noise levels from the shop, approximately 1600 square feet of glass and wood curtain walls were erected, using largely

[Page 3]

salvaged materials from another IRRI building. These modifications have been made at IRRI expense but recovery of cost will be requested under Special Costs, paragraph XVIII item C. These costs would then be deducted from the total amount in paragraph XIX Overhead. Details of expenses and others will be submitted later after clarification of the details with "AID/W".

May 5, 1966

Dear Sterling:

The attached letters and travel plans are self-explanatory. I am taking your advice and starting out to beat the bush. The side trip to Laos upset previous travel plans so that these plans include the ASAE Annual Meeting in Amherst, Mass.

Please contact Dr. Wilson and others in A.I.D. Washington to verify how to best implement the contract. So far I have no reply from my letter of March 11 to Dr. Wilson. Unless there are prompt letters of disapproval offering alternate proposals on how to implement the project, I will proceed as per these letters and let the mess be straightened out later. The first Annual Report is due in June and still no staff or funds are committed even though much of my time has been taken up by the red tape or uncertainty on how to proceed. What seems like standard operating procedures to career A.I.D. employees reads about like an insurance policy to me.

Sincerely yours,

Loyd Johnson

Dr. Sterling Wortman
Director for Agricultural Sciences
Rockefeller Foundation
111 West 50th Street
New York 20, N. Y., U. S. A.

Encls.

- ID file

May 5, 1966

Dear Dr. Wilson:

I realize that you and other USAID officials wish to initiate the project on "Research on Farm and Equipment Power Requirements For Production of Rice and Associated Food Crops in the Far East and South Asia." In my letter to you on March 11, 1966 I inquired into the formalities of how to request travel expenses incurred in employing a staff member. In our Substantive Report No. 1 and cover letter of February 14, 1966, I requested permission to commence work on adaptation, design, and development of equipment.

Enclosed are copies of a letter to ISEKI NOKI K.K. on the purchase of a power tiller and to Dr. A. W. Cooper on the hiring of Mr. Chang Cheu-Shang to conduct tests on the tiller blades and wheels. Mr. Chang is a graduate student at Auburn University and former professor at National Taiwan University. He will be available June to September for testing equipment. In July, I hope to be able to initiate a contract with the USDA National Tillage Machinery Laboratory for the testing of rotor tines and lug wheels. This letter and the attached letters are a means to initiate work under the responsibility of the International Rice Research Institute until more formal arrangements can be made. Your suggestions on how to best make these arrangements will be welcome.

The expenses incurred under the attached travel plans to attend the ASAE Annual Meeting are for the account of The Rockefeller Foundation even though the main purpose of the trip is to implement the USAID contract. As part of the travel plans, I will be able to visit Washington June 30 to July 6 to discuss the hiring of a Machinery Development Engineer, initiate a contract with the USDA National Tillage Laboratory for tillage tests, and to discuss the points brought out in my letter of March 11, 1966. Please advise if the date July 1 to 5 will be satisfactory.

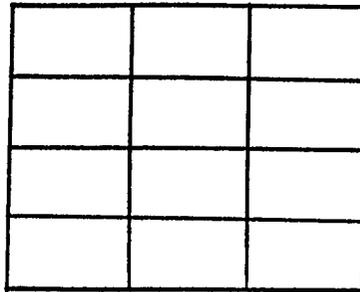
Sincerely yours,

Loyd Johnson
Agricultural Engineer

Mr. John R. Wilson
Rural and Community Development Service
Office of Tech. Cooperation and Research
Agency for International Aid, Dept. of State
Wash. D.C., 20523, U. S. A.

Encls.

cc: Dr. S. Wortman
Dr. R. F. Chandler, Jr.
Dr. A. W. Cooper



May 3, 1966

Dear Mr. Iseki:

We enjoyed the opportunity to discuss our program with you and Mr. H. Utsumiya during your recent visit here. We now wish to secure your assistance in implementing one of our projects. This project will consist of tests of rotor tines and steel wheels by the United States Department of Agriculture National Tillage Machinery Laboratory. We will supply a wide range of rotor tines and wheels; the Tillage Machinery Laboratory will conduct a series of tests to obtain technical data similar to the data reported by Prof. H. Tsuchiya of Yamagata University in his STUDIES ON POWER TILLER IN JAPAN. By using the testing facilities and staff of the USDA Tillage Machinery Laboratory, it will be possible to secure detailed data on many types of soil and soil conditions. These data should aid you and other manufacturers in the design and production of more effective tillage machinery.

Attached is a purchase order for a selection of your wheels and rotor blades. You may wish to add additional blades and wheels to the list if you and your technical staff know of other types that should be considered in a testing program. An ISEKI Model KF-850 Hand Tractor is included in the purchase order as we believe that the use of standard mounts and transmissions will simplify and speed up the tests. An electric motor will probably be used for most tests instead of the engine. Would it be possible to use the same wheels and rotor tines on the Model KFG-A frame without engine? If possible then this substitution should be made. I would appreciate your assistance in securing a prompt processing of this order for shipment to:

The Rockefeller Foundation
111 West 50th Street
New York, N. Y., U. S. A.

Please send copies of all correspondence to that address as well as to me.

Yours very truly,

Lloyd Johnson
Agricultural Engineer

Mr. Masataka Iseki, Managing Director
Iseki Noki K.K.
No. 10, 2-chome, Ohte-machi, Matsuyama-shi
Ehime-ken, Japan

Encl.

cc: Purchasing Dept., Rockefeller Foundation, New York
Dr. A. W. Cooper, USDA Nat'l Tillage Machinery Lab.
Dr. John R. Wilson, USAID, Washington, D.C.

REQUISITION SLIP

page 2 of 3

May 3, 1966

Date

To: The Executive Officer
Please order the following items:

Qty.	Description	Price
	(continuation)	
	ROTARY BLADES (each set for 60-cm. rotary width)	
1 set (18 pcs.)	Hatchet blade R1102, size K1	
1 set (9 pcs. left & 9 pcs. right)	Trenching blade R1104, size K3	
1 set (9 pcs. left & 9 pcs. right)	Standard R1101, size K7	
1 set (9 pcs. left & 9 pcs. right)	Large type Mata blade, size K7	
1 set (9 pcs. left & 9 pcs. right)	K7 light and good blade	
1 set (9 pcs. left & 9 pcs. right)	Blade for rough cultivation R1105, size K8	
1 set (9 pcs. left & 9 pcs. right)	Blade for reclaiming R1103, size K9	
1 set (9 pcs. left & 9 pcs. right)	Special K7 blade, size K15	

Supplier: _____
When Needed: _____
For: _____
Charge to: _____

Date: _____
Budget balance - \$ _____
This order - _____
BALANCE - \$ _____

Lloyd Johnson
Dept. Head or Authorized Representative

FMS	
ZQP	
JS	

REQUISITION SLIP

page 1 of 3

May 3, 1966

Date

To: The Executive Officer
Please order the following items:

Qty.	Description	Price
One only	ISEKI Model KF-850 - RR mounting air-cooled diesel engine 8-10 HP, with side plate, tilling rotary with standard set of 18 pieces of K-7 blades, standard tools, standard engine parts, standard wheels with rubber tires 6.00 - 12, and standard tail wheel	
	PLUS attachments for above unit:	
	WHEELS	
1 set	Swamp wheel R0201, size 2-80	
1 set	Wet field wheel R0161, size 3-65B	
1 "	" " " " " " " 3-75B	
1 "	" " " " " " " 3-85B	
1 "	" " " " " R0141, " V-lug 75	
1 "	" " " " " R0142 " V-lug 80	
1 "	" " " " " " " 4-68	
1 "	" " " " " " " 4-75	
1 "	" " " " " " " 4-85	
	(continued on next sheet)	

Iseki Maki K.K., No. 10, 2-chome
Supplier: Gita-machi, Matsuyama-shi,
Matsuyama-shi, Japan
Please ship by OCEAN
For: _____
Charge to: "A.I.D.-Ag. Eng."

Date: _____
Budget balance - \$ _____
This order - _____
BALANCE - \$ _____

Lloyd Johnson
Dept. Head or Authorized Representative

FMS	
ZQP	
JS	

THE INTERNATIONAL RICE RESEARCH INSTITUTE
Los Baños, Laguna

REQUISITION SLIP page 3 of 3

May 5, 1966

Date

To: The Executive Officer
Please order the following items:

Qty.	Description	Price
	(continuation)	
	1 sheet for Midguard	
	2 boards front and rear for rotary	
	1 only Rear skid R2101 size K1-005	
	1 only Ridger R0901 Type 3	
	1 only Mold Plough R1001 M type	
1	" " " R1002 S type	
1	" " " R1003 K type	
1	" " " R1004 D type	
1	" " " R1011 size #205	
1	" " " R1021 size #201	
	PLUS: One operating manual, one service manual, and an illustrated spare parts catalog.	
/	/ / / / / / / /	
<u>To be shipped to:</u> The Rockefeller Foundation		
(BY OCEAN FREIGHT) 111 West 50th Street		
New York, N.Y., U.S.A.		

Supplier: (see page 1) _____

When Needed: _____

For: _____

Charge to: A.I.D.-Ag. Eng.

Date: _____

Budget balance - \$ _____

This order - _____

BALANCE - \$ _____


Lloyd Johnson
Dept. Head or Authorized Representative

FMS	
ZQP	
JS	

THE INTERNATIONAL RICE RESEARCH INSTITUTE

LOS BAÑOS, LAGUNA
THE PHILIPPINES

CABLE ADDRESS:
RICEFOUND, MANILA

MAIL ADDRESS
AND CITY OFFICE:
MANILA HOTEL, MANILA
TELEPHONE:
4-81-67

May 5, 1966

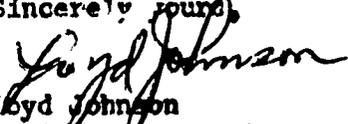
Dear Dr. Cooper:

I am placing an order for a Japanese power tiller complete with a selection of wheels and blades. These will be shipped to The Rockefeller Foundation in New York and forwarded on to you. In the absence of a contract and to prevent undue delay, we are also forwarding you a check for ONE THOUSAND DOLLARS (\$1,000.00) to serve as a revolving fund to cover wages of Chang Cheu-Shang and other persons and miscellaneous expenses necessary to conduct the tests. Wage rates may be those that Auburn University or USDA would normally pay for a person of Mr. Chang's training and experience and other wage payments may be made on an hourly basis to machinists, mechanics, laborers, etc. needed in the tests. As expenditures are made you may pay them out of the deposit and forward the paid bills. An additional deposit will then be made to the revolving fund. In this manner, Mr. Chang Cheu-Shang can be considered an employee working directly for IRRJ on the A.I.D. contract until we can process the formal agreement with the USDA Tillage Laboratory. This should be possible in early July.

My travel plans for June and July are enclosed. Will it be possible for you to meet me in Washington to arrange the contract between the dates June 30 to July 6?

I'll keep you informed on any changes in plans.

Sincerely yours,


Lloyd Johnson
Agricultural Engineer

Dr. A. W. Cooper
Director, National Tillage Machinery Laboratory
Box 792, Auburn, Alabama, U. S. A.

Encls.

cc: Dr. S. Wortman
Dr. R. F. Chandler, Jr.
Dr. John R. Wilson, USAID, Wash., D.C.

TRAVEL PLAN OF LOYD JOHNSON JUNE 4 - JULY 16, 1966

Lv. Manila	1800	Sat.	4	June	CX 8
Ar. Hongkong	1940	"	"	"	
Lv. "	2300	"	"	"	PA 1
Ar. Frankfurt (Germany)	1615	Sun.	5	"	
Lv. Frankfurt	0950	Wed.	8	"	LH 40
Ar. Hannover	1100	"	"	"	
Lv. Hannover	1335	Sat.	11	"	LH 006
Ar. Hamburg	1410	"	"	"	
Lv. Hamburg	1650	"	"	"	SK 644
Ar. Stockholm (Sweden)	1950	"	"	"	
Lv. Stockholm	0940	Wed.	15	"	Sk 551
Ar. Amsterdam (Holland)	1250	"	"	"	
Lv. Amsterdam	0900	Sun.	19	"	KL 401
Ar. Paris	1000B	"	"	"	
Lv. Paris	2200B	Tues.	21	"	BE 363
Ar. London	2150	"	"	"	
Lv. London	1830	Sat.	25	"	PA 1
Ar. New York City	2105	"	"	"	
Lv. New York City	1745	Thur.	30	"	AA 787
Ar. Washington, D.C.	1855	"	"	"	
Lv. Washington, D.C.	2005	Wed.	6	July	AA 755
Ar. Chicago	2129	"	"	"	
Lv. Chicago	1930	Fri.	8	"	AA 205
Ar. San Francisco	2140	"	"	"	
Lv. San Francisco	0900	Wed.	13	July	PA 1
Ar. Honolulu	1205	"	"	"	
Lv. Honolulu	0100	Fri.	15	"	PA 841
Ar. Manila	0750	Sat.	16	"	

**Survey of Farm Operations Sequence and Test Trafficability of
Fields for Large Tractors**

SAMPLING SITE GUIDE

Sample No.	Province	Manila Km	Town Km	Road Side	Remarks
1	Laguna	88	P-1	R	
2	"	74	B-5	L	
3	"	73	B-4	R	
4	"	70	B-1	R	*
5	"	68	LB-5	R	
6	"	67	LB-4	R	
7	"	42	B-7	L	Km post missing, marker wilted tree at right
8	"	40	B-5	R	
9	"	39	B-4	L	
10	"	37	B-2	L	Km post missing, marker "Caballero" tree at right
11	"	35	SP-4	R	
12	"	34	SP-3	L	
13	"	33	SP-2	L	*
14	"	32	SP-1	R	
15	Bulacan	31	G-3	R	
16	"	32	G-2	L	
17	"	33	G-1	L	
18	"	35	M-7	L	
19	"	41	P-1	R	
20	"	54	S1-13	L	
21	"	56	S1-11	R	
22	"	57	S1-10	L	
23	"	58	S1-9	R	
24	"	59	S1-8	L	
25	"	61	S1-6	R	* Km post fallen

*For picture taking.

Sample No.	Province	Manila Km	Town Km	Road Side	Remarks
26	Bulacan	64	SI-3	L	
27	"	73	SM-3	R	
28	"	74	G-20	L	
29	"	75	G-19	R	
30	"	76	G-18	L	
31	"	77	G-17	R	
32	"	79	G-15	L	Km post fallen
33	"	81	G-13	R	
34	"	83	G-11	L	
35	Nueva Ecija	85	G-9	L	
36	"	87	G-7	L	
37	"	90	G-4	R	
38	"	92	G-2	R	
39	"	93	G-1	R	
40	"	96	SR-12	L	Km post missing
41	"	97	SR-11	R	
42	"	98	SR-10	L	
43	"	99	SR-9	R	*
44	"	100	SR-8	L	
45	"	101	SR-7	R	
46	"	102	SR-6	L	Km post missing, marker 30033 N Tel. post
47	"	103	SR-5	R	
48	"	106	SR-2	L	
49	"	108	SR-0	R	
50	"	110	G-6	L	

*For picture taking.

Sample No.	Province	Manila Km	Town Km	Road Side	Remarks
51	Nueva Ecija	111	C-5	R	
52	"	118	B-26	L	
53	"	120	B-24	R	
54	"	121	B-23	R	
55	"	122	B-22	L	
56	"	126	B-18	L	
57	"	127	B-17	R	
58	"	132	B-12	R	
59	"	141	B-3	R	
60	"	142	B-2	L	Km post missing, marker "Camachile" tree
61	"	121	T-9	R	
62	"	122	T-8	L	
63	"	123	T-7	R	
64	"	124	T-6	L	
65	"	129	T-2	R	
66	"	134	M-13	R	
67	"	135	M-12	L	
68	"	136	M-11	R	*
69	"	139	M-8	L	
70	"	140	M-7	R	
71	"	141	M-6	L	
72	"	144	M-3	R	
73	"	145	M-2	L	
74	"	147	M-0	L	
75	"	148	SJ-12	L	

*For picture taking.

Sample No.	Province	Manila Km	Town Km	Road Side	Remarks
76	Nueva Ecija	149	SJ-11	R	
77	"	151	SJ-9	R	
78	"	152	SJ-8	L	Km post missing, marker 4th tel. post before irrigation canal.
79	"	154	SJ-6	R	
80	"	155	SJ-5	L	
81	"	156	SJ-4	L	
82	"	158	SJ-2	L	
83	"	161	L-13	R	Km post missing, marker tel. post at right and big mango tree at far left
84	"	162	L-12	L	
85	"	163	L-11	R	
86	"	164	L-10	L	
87	"	169	L-5	R	Km post fallen
88	"	170	L-4	L	
89	"	171	L-3	R	
90	"	172	L-2	R	Km post fallen
91	"	173	L-1	L	Km post missing, marker tel. post at left and sch. bldg. at right
92	"	176	U-8	R	
93	Pangasinan	180	U-5	L	
94	"	181	* U-4	R	
95	"	182	U-3	L	
96	"	184	U-1	R	
97	"	187	SQ-5	R	
98	"	199	T-2	R	
99	"	200	T-1	L	
100	"	194	StM-5	R	

Sample No.	Province	Manila Km	Town Km	Road Side	Remarks
101	Pangasinan	193	* StM-4	L	
102	"	192	StM-3	R	
103	"	187	R-11	L	
104	"	186	* R-10	R	
105	"	185	R-9	L	
106	"	180	R-4	R	*
107	"	179	R-3	R	Km post missing, marker earth mound at left and big "Camachile" tree along tel. line
108	"	178	R-2	R	
109	"	175	V-5	L	
110	La Union	214	S-7	R	
111	Pangasinan	209	S-2	L	
112	"	208	P-8	R	
113	"	206	P-6	L	
114	"	205	P-5	R	
115	"	202	P-1	L	
116	"	183	U-1	R	*
117	"	179	V-5	L	
118	"	176	V-2	R	Km post missing, marker elect. post 109 at right
119	"	170	SM-8	L	
120	Tarlac	169	SM-7	R	
121	"	165	SM-3	L	
122	"	160	M-6	L	*
123	"	153	P-7	L	
124	"	152	P-6	R	
125	"	120	CS-13	R	

*For picture taking

Sample No.	Province	Manila Km	Town Km	Road Side	Remarks
126	Tarlac	115	CS-8	L	
127	"	112	CS-5	R	*
128	"	110	CS-3	R	1.5 Km post fallen
129	"	99	M-6	L	
130	Pampanga	77	SF-11	L	*
131	"	66	ST-3	R	
132	"	60	A-6	L	
133	"	59	A-5	L	
134	"	58	A-4	L	
135	"	57	A-3	R	*
136	"	56	A-2	L	
137	"	55	A-1	R	
138	"	53	C-3	L	
139	Bulacan	46	M-5	L	
140	"	44	M-3	L	*
141	"	43	M-2	L	
142	"	42	M-1	R	
143	"	40	G-7	L	
144	"	38	G-5	R	
145	"	37	G-4	L	

*For picture taking

7-8-66