PHILIPPINES

MA-IRRI INDUSTRIAL EXTENSION PROGRAM

ON SMALL FARM EQUIPMENT

PROGRESS REPORT

September 1, 1980 - August 31, 1981

I. STAFF

IRRI Personnel

Robert E. Stickney, Project Co-Leader
Simeon Gutierrez, Senior Research Assistant
Nemelito Langam, Senior Research Assistant
Herbert Manaligod, Research Assistant

BPI/MA Personnel

Benito C. Gonzalo, Project Co-Leader
Corazon de Vera, Assistant to Project Co-Leader
Regional Engineers (as needed)

II ACTIVITIES

A. Program Development

A statement of the general strategy of the Project was formulated jointly by IRRI and BPI in the latter part of 1980. It defines the principal responsibilities of the two institutions. This strategy statement has been approved by the Director General of IRRI, the Minister of Agriculture, and USAID.

Robert Stickney was recruited by IRRI to serve as the Project Co-Leader, and he began working on June 15, 1981. The first six weeks were devoted to an intensive orientation program at IRRI, including meetings with members of the various divisions and participation in the Agricultural Engineering Training Course (July 6-17) and the Rice Production Training Course (July 20-31). Stickney moved to Manila on August 1st to begin working with BPI.

The first task was to formulate work plan for a 12-month period, September 1981 to September 1982. A copy of this plan is attached, and it presents the basic concepts and specific activities for the initial phase of this Project.

An office for the Project has been prepared by BPI in the Division of Agricultural Engineering. It provides space for Robert Stickney, Corazon de Vera (attending a training course in Yugoslavia until October 1), and a secretary (to be hired). IRRI has provided the Project with a used vehicle and BPI has hired a driver.

B. On-Going Activities.

Training:

The two-week agricultural engineering training course on rice machinery was held in March 1980, June 1981, and July 1981. (See attached table for list of participants). The Project staff provided overall coordination and gave some of the lectures, as well as guiding the trainees on a visit to cooperating manufacturers in the Manila area to observe the production of IRRI-design equipment.

Technical Assistance:

Five cooperating manufacturers were selected for intensive technical consultancy assistance from the Industrial Extension Program. The assistance has been completed for one of these firms, Springfield Industries, Inc. Davao City. The second firm to be offered this assistance, Tryme Agro-Industry in Pagadian City, was visited for preliminary studies of their production set-up. However, the assistance was postponed until the firm attains a greater degree of stability of production of one or more machines. Another firm, Asean Fabricators, Inc. in Metro Manila was assisted, at their request, on a production study of machine and manpower requirements based on an annual production of 300 units each of the portable thresher and the axial flow thresher and several other IRRI designs. This firm temporarily stopped production in 1980 and has resumed fabrication this year.

Regular technical assistance was provided to cooperating manufacturers in various areas of the country. For example, two visits to Bicol cooperators were made to assist them in the fabrication of portable threshers. One company received help with fabrication problems associated with the prototype seedling transplanter.

Another example is in the Metro Manila area. Three companies received assistance with fabrication and quality control problems encountered in the production of axial flow and portable threshers. One company was provided with technical assistance in the production of the mechanical rice seedling transplanter.

A commonly given assistance to cooperators is the improvement of labor-intensive fabrication of some parts which require uniformity. The blades and diffuser vanes of the axial flow pump are usually made manually by a time-consuming process, yet resulting in non-uniform blades. Consequently, a fabrication manual was prepared and distributed on the use of a simple jig and fixture.

Technical assistance was also provided on cost estimating (an up-dated table is attached) and on designing plant layouts for production of threshers and transplanters.

Applied Research

An intensive durability test of the mechanical reaper was initiated as the final phase of the development of this machine. The test of 100 hours operating time will involve a wide range of field conditions. At the same time, data on comparative labor requirements for manual and mechanical reaping are being obtained through the collaboration of the Economics Section.

The production of five prototype reapers by a small cooperating manufacturer provides us with the opportunity to identify the most difficult steps of fabrication and assembly, and to determine methods for simplifying these steps. This experience and resulting information will be used in future training and technical assistance for manufacturers, once the reaper has been released.

Survey of the Manufacturers

The Extension Program collaborated in a research project of the U. S. National Science Foundation on technology change and choice of technology among Philippine agricultural machinery manufacturers. A survey was jointly conducted in March to September, 1981, by the doctoral scholar from Yale University and a member of our staff. Forty-seven firms, composed of 28 IRRI cooperators and 19 non-IRRI firms, were covered in the survey. A research paper on the subject was presented during the Workshop on Economic Consequences of Small Farm Mechanication held at IRRI in September, 1981. Initial results of the study revealed that a wide variety of significant changes have been instituted, showing considerable product differentiation and adaptation to local agricultural conditions. A detailed analysis of the data is now underway at Yale University.

TWO-WEEK ENGINEERING TRAINING COURSE

Period: January 1980 - September 1981

Countries	Number of Participants		
	March 17-28/80	June 1-12/81	July 6-17/81*
Bangladesh	1	1	-
Burma	-	2	-
Egypt	2	-	-
Ghana	-	1	-
India	3	4	-
Indonesia	3	3	-
Malaysia	-	1	-
Nigeria	-	1	-
Pakistan	-	3	-
Peoples Republic of China	1	-	-
Sri Lanka	-	1	-
Thailand	-	2	-
Vietnam	-	2	-
Philippines	-	-	15
Total	11	21	15

*Special engineering training course for the Philippines only, attended by participants from government, industry, and university.

CURRENT ESTIMATED COST OF IRRI-DESIGNED MACHINES

Machine	Direct Labor Cost[1] (1)	Material Cost Fabricated[2] (2)	Material Cost Purchased (3)	Total (4) = (2) + (3)	Prime Cost (5) = (1) + (4)	Mfg. Overhead Cost[3] (6)	Total Mfg. Cost (7) = (5) + (6)	Approximate Selling Price[4]
Portable thresher (TH6)	₱382.16	₱587.49	₱467.20	₱1,054.69	₱1,436.85	₱ 428.35	₱1,865.20	₱3,700.00
Portable thresher w/ osc. screen (TH7)	745.93	1,043.10	826.81	1,869.91	2,615.84	836.07	3,451.91	6,900.00
Compact axial flow thresher (TH9)	1,104.80	2,315.04	2,422.43	4,737.47	5,842.27	1,238.31	7,080.58	14,000.00
Manual rice transplanter	279.54	225.67	141.53	367.20	646.74	313.32	960.06	1,900.00
Multicrop upland seeder	544.04	547.22	166.64	713.86	1,257.90	609.79	1,867.69	3,700.00
6"[illegible] axial flow propeller pump	174.37	318.62	62.68	381.30	555.67	195.44	751.11	1,500.00
Down-the batch dryer (BD3)	421.62	1,569.24	605.17	2,174.41	2,596.03	472.57	3,068.60	6,100.00
Vertical bin batch dryer (BD2)	594.68	1,078.48	550.56	1,629.04	2,223.72	666.55	2,890.27	5,800.00
Rice hull furnace: BD1	91.28	674.95	27.90	702.85	794.13	102.31	896.44	1,800.00
BD2	165.13	993.75	54.69	1,048.44	1,213.57	185.08	1,398.65	2,800.00
Screw liquid injector	169.22	199.37	169.86	369.23	538.45	189.67	728.12	1,500.00
Inclined seedplate planter	169.18	289.49	41.04	330.53	499.71	189.63	689.34	1,400.00
Multihopper row seeder (lowland)	134.45	144.52	36.11	180.63	315.08	150.70	465.78	900.00
Stationary windmill and piston pump	300.68	1,760.16	1,835.79	3,595.95	3,896.63	337.01	4,233.64	8,500.00
Portable grain cleaner	154.58	443.63	224.89	668.52	823.10	173.26	996.36	2,000.00
6-8 HP power tiller with steering clutches	526.19	471.31	1,731.01	2,202.32	2,728.51	589.96	3,318.47	6,600.00
Attachments:								
Corb harrow	29.79	33.08	-	33.08	62.87	33.39	96.26	200.00
Moldboard plow	39.84	90.50	15.02	105.52	145.36	44.65	190.01	400.00
Counterweight	2.91	40.26	180.56	220.82	223.73	3.26	226.99	450.00
Upland cagewheel (1 pair)								
a. cast iron wheel weight	110.27	94.65	309.54	404.19	514.46	123.59	638.05	1,300.00
b. concrete, 10 kg	110.40	94.65	104.64	199.29	309.69	123.74	433.43	900.00
Lowland cagewheel	111.15	193.00	-	193.00	304.15	124.59	428.74	850.00
Grass cutter	123.44	217.63	168.28	385.91	509.35	138.35	647.70	1,300.00
Pump mounting	8.70	45.07	-	45.07	53.77	9.74	63.51	130.00
Trailer	140.56	419.73	517.11	936.84	1,086.84	167.63	1,254.03	2,500.00
Pedometer	252.57	494.70	1,542.05	2,036.75	2,289.32	283.09	2,572.41	5,100.00
10"[illegible] axial flow pump	138.60	439.70	208.07	647.77	786.37	155.33	941.70	1,900.00

[1]₱4.22/man-hr. [2]With 15% allow. for scraps & rejected materials [3]₱4.73/man-hr. [4]Excluding engine cost

HTM:mjc/ecn
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