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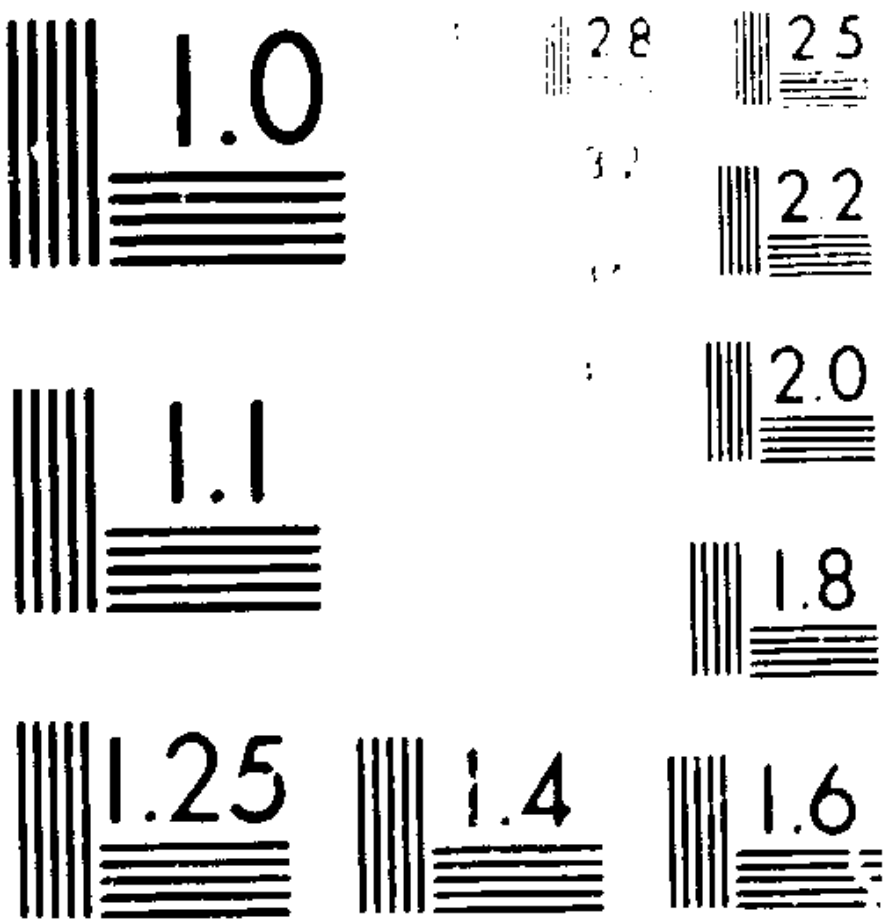
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org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Meeting on Exchange of Experiences and
Co-operation among Developing Countries in the
Development of Agricultural Machinery Industry

Beijing, China, 20 - 27 October 1980

COUNTRY SUMMARY - PHILIPPINES*

by

Elizardo Francisco**

and

Manuel Luis Bernas***

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** Senior Consultant, Ministry of Agriculture, Manila, Philippines.

*** Vice-President and General Manager, Agro Industrial Machinery Trading Corporation, Manila, Philippines.

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Basis of Study and Projection:

a. Total area devoted to agriculture is 12.5 million hectares, 58% of which is planted to four (4) major food crops consisting of rice, corn, fruits and vegetables; and 33% is planted to another four (4) major commercial crops consisting of coconut, sugar cane, abaca and tobacco.

b. Integrated Agricultural Production and Marketing Project as prepared by the Policy Analysis Staff of the Ministry of Agriculture, in particular its projection up to 1985.

c. Compilation of machinery sales statistics during the past 10 years by the Agricultural Machinery Manufacturers and Distributors' Association, and consequent behavioral or graphical patterns.

. . . . .

1. Agricultural machinery and implement needs and demand, in terms of yearly average during 5-year period from 1981 to 1985.

Category I - Implements:

a.	hand tools - bolos, ax, hoe, spade, rake, scythe, sprinkler, pick, etc.	22,000 units/yr.
b.	animal drawn equipment - plow, harrow, weeder, sleigh, ridger	15,080 "
c.	hand operated simple machinery - seeder, sheller, rakes, weeder, broadcaster, foot pedal thresher, etc.	10,720 "

Category II - Intermediate Machinery:

These are plows, harrow, ridger, weeder, cultivators, rotary cultivator, planter, seeder, sprayer, etc.	23,875 "

Category III - Powered Machinery:

a.	power tillers	8,230 "
b.	pumps	5,360 "
c.	gasoline engines (20 HP & below)	49,910 "
d.	diesel engine (20 HP & below)	7,015 "
e.	others	3,000 "

Category IV - Specialized Equipment:

a.	Light 4-wheel tractor (40 HP & below)	760 units/yr.
b.	Heavy 4-wheel tractor (41 HP & above)	570 "
c.	Combine harvesters, reaper, binder	150 "
d.	Grain dryers	350 "
e.	Rice mills	650 "
f.	Threshers (rice, sorghum, monggo, etc.)	3,965 "
g.	Shellers, huskers, sprayers, etc.	8,000 "

2. Estimated demand and present usage:

Category I - Simple Tools and Implements:

There shall be approximately 700,000 has. to be put under additional cultivation in the next 5 years, devoted to 8 major food and commercial crops. This would require about 10,000 new farmers yearly. A farmer needs on the average 5 pieces of hand tools, 3 animal driven implements, and 2 units of simple hand operated machinery.

Category II - Intermediate Machinery:

The yearly incremental 140,000 has. that shall be put up into cultivation needs about 10,000 farmers, 65% of whom is anticipated to be equipped with 23,875 units of intermediate machinery, closely identified with the total of 9,550 units required of power tiller and 4-wheel tractors, which has an average requirement of 2 to 2 1/2 pieces per units of prime mover. There are, of course, machinery under this heading which are not necessarily attachments for tillers and tractors.

Category III - Powered Machinery:

The projected average yearly requirement from 1981 to 1985 does not have a significant variance from the industry figures during the past 10 years. This is attributable to anticipated price increases of fuel and high initial cost of machines, which are constraints to increased purchases or demand. Ordinary farmers simply may not be able to afford the high price of mechanization.

Category IV Specialized Equipment:

Here again, demands for these types of machinery are not projected to differ from the current levels, precisely because of cost constraints in acquisition, use, and maintenance.

3. Manufacture and Imports:

Category I - Simple Tools and Implements:

Annual needs are anequately supplied by local production. Unsophisticated technological requirements encourage producers and fabricators to participate in supplying the market demands. Existing product line can be further supplemented and expanded out of domestic resources. However, costly research for improved tools and implements can be desirably funded by international assistance. The following institutions can participate in the product development.

a. Agricultural Machinery Testing and Evaluation Center
b. Regional Network for Agricultural Machinery
c. Agricultural Engineering Division
   Bureau of Plant Industry, Ministry of Agriculture
d. National Science and Development Board
e. International Rice Research Institute
f. University of the Philippines, College of Agriculture

Category II - Intermediate Equipment:

These are ground engaging implements both for power tillers and 4- wheel tractors. In the past years, expertise and competence of local manufacturers meet with approval even among the discriminating users. There are still few items which need be imported though, example of which are grain drills, rotary cultivators, seed/fertilizer broadcasters, and sprayers. Low volume demand does not create ample motivation to locally manufacture these.

Independent manufacturers normally secure collaboration with government and international institution (IRRI, for example) which share design, test data and prototypes of machines under study.

Category III - Powered Machinery:

&

Category IV - Specialized Equipment:

Of the power tiller requirements, about 70% are locally produced and 30% imported. The 4-wheel tractor are all imported although compact size of 30 HP and below which represents 25% of tractor local demand, but hopefully to grow in the years to come, is expected to be produced here within the next 5 years. For one thing, this is under the ASEAN complementation program.

Initial viability study of power tiller manufacturing dictates minimum market of 360 units annually with capitalization not to exceed ₱500,000. The compact 4-wheel tractor manufacturing breaks even with 600 units per annum, with intial capital requirement of about ₱4,000,000.

When suitable engine, which represents 30 to 40% of cost, becomes locally manufactured the local content can be as high as 95% of the entire assembled power tiller unit. In the case of compact 4-wheel tractor, a 30% local content shall be satisfactory.

But availability of adequate capital payable over a reasonably long period of time at acceptable cost, is a kind of assistance difficult to come by.

Basic facilities and ancillary industries:

a. Facilities and shops do exists dealing on: foundry, forging, gearshop and other supportive activities.

b. Main constraints in expanding such facilities and industries are lack of desired capital, and sometimes low percentage utilization of the plant machineries.

4. Design and development, adaptation, testing and evaluation li[illegible] of national institutes:

   a. Agricultural Machinery Testing and Evaluation Center located within the University of the Philippines, College of Agriculture Compound: to set quality standards for agricultural machinery and conduct performance tests and evaluations against such standards (Philippine-based and RP is active member).

   b. Regional Network for Agricultural Machinery: to formulate guidelines on mechanization and manufacture, to strengthen the national institutes concerned with agricultural machinery, to evaluate prototypes of various kinds of machinery, to promote local manufacture and to exchange information among the member countries.

   c. Agricultural Engineering Division, Bureau of Plant Industry, Ministry of Agriculture: to design and develop simple machine/tools for farmers' use; to test, evaluate and adapt to local conditions machineries of foreign origin.

   d. International Rice Research Institute, Agricultural Engineering Department: to design and develop machines for rice; to farm out machines already tested to local collaborating manufacturers for eventual production and distribution on commercial basis.

   e. University of the Philippines College of Agriculture, Institute of Agricultural Engineering: basically to provide academic preparation for Agricultural Engineering students. However, the faculty and graduate students conduct tests and researches on agricultural machines for scientific values.

5. Engineering and manufacturing technology:

   a. In addition to institutions already mentioned, the Metal Institute of Research and Development Corporation assist in the field of metallurgy and heat treatment of critical machine components requiring special alloys.

b. Power tillers, threshers, dryers, implements.

c. Directing product developments attuned to the market needs. Training of qualified technicians to improve their competence. Exchange data or info with foreign counterparts. Grants both in terms of facilities or funds.

6. Repair, maintenance and spare parts supply:

The industry body, Agricultural Machinery Manufacturers and Distributors' Association, in collaboration with three (3) main government banks financing agricultural machineries as tool of farm production. Set a minimum standard of spare parts level and service facilities for companies handling agricultural machines. Consequently, very high percentage against spare parts replacements is always maintained.

7. Policy, planning, strategy and coordination:

The Ministry of Agriculture initiates shaping of policy and planning in the promotion of farm mechanization. The National Grains Authority directly undertake test, evaluation, accreditation and licensing of post-harvest equipment. General institutions mentioned here earlier are independently pursuing policies and plans. Likewise, government financing institutions observed its own objectives. On the whole, however, the Ministry of Agriculture takes lead in coordinating all efforts towards an ultimate goal of efficient and fruitful farm productions.

8. Inter-regional cooperation:

a. Transfer of technology in the manufacture of simple, cheap power tiller, axial flow thresher and grain dryers with indigenous fuel or petro products.

b. Exchange of technology on compact 4-wheel tractor and other specified machines which development here may be less progressive.

9. Role of UNIDO:

   a. Sponsor relevant workshop seminars. Sponsor study and travels grants to qualified technical personnel. Fund grants for research and development, also facilities.

   b. No assistance of this type has been requested previously.

   c. Aside from receiving the UNIDO publications, it must initiate periodic meetings or workshops among UNIDO project participants where developments of common interest can thoroughly be discussed.

10. Specific proposals and recommendations:

   a. UNIDO must provide an integrated form of assistance that will lead to actual establishment of a new compact 4-wheel tractor manufacturing facilities. The tractor must be locally suitable to the general farming requirements and practices of the ASEAN region.

   b. b. UNIDO must procure, upon request by local interested and prospective manufacturer, sample units from producing countries machines that are developed already, and to assign to competent fabricators for eventual testing, manufacturing and distribution in the Philippines.

   c. UNIDO must initiate the compilation and publication of all types of agricultural machines and implements manufactured in the Philippines and those developed from other countries. These must include illustrations, pictorials, specifications, description showing its application or usage sufficient to arouse the interest of a prospective manufacturer. The prospective manufacturer that may show interest on a particular type of equipment must be provided with full technical assistance. If necessary, UNIDO must explore ways and means of making available necessary personnel who will assist the new manufacturer reach the desired level of production attuned to the market needs.