

PHILIPPINE COUNTRY REPORT ON AGRICULTURAL ENGINEERING AND MECHANIZATION RESEACH, DEVELOPMENT AND EXTENSION

VICTOR B. ELLA, Ph.D.

***Dean, College of Engineering and Agro-Industrial
Technology***

University of the Philippines Los Banos

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Agricultural Engineering and Mechanization RDE in the Philippines

- ❑ Implemented by the Agricultural Mechanization Development Program (AMDP) under the Institute of Agricultural Engineering (IAE), which is under the College of Engineering and Agro-industrial Technology (CEAT), University of the Philippines Los Banos
- ❑ Started implementation in 1979 and annual activities have been reported to the then RNAM and now APCAEM

AMDP Mission

To contribute towards the modernization of agriculture and fisheries through the generation of suitable agricultural engineering and mechanization technologies

AMDP Vision

The quality of life of Filipino farmers and fisherfolks can be elevated through agricultural engineering and mechanization research and development

AMDP Organizational Structure



Agricultural Engineering Research and Development for 2006

- Core Projects
- Faculty-based projects

AMDP Core Projects



Multi-crop pneumatic Seeder
with Fertilizer Applicator



Fabricated parts of the proposed S-rotor Bach-type windmill for pumping purposes.

AMDP Core Projects



Local recirculating aquaculture system (RAS)

AMDP Core Projects

- Mechanization Technology for Local Vegetable Production



- Conducted suitability testing of the mini-hand tractor in a pilot vegetable production area



- Modified plow to suit the local condition in the pilot area



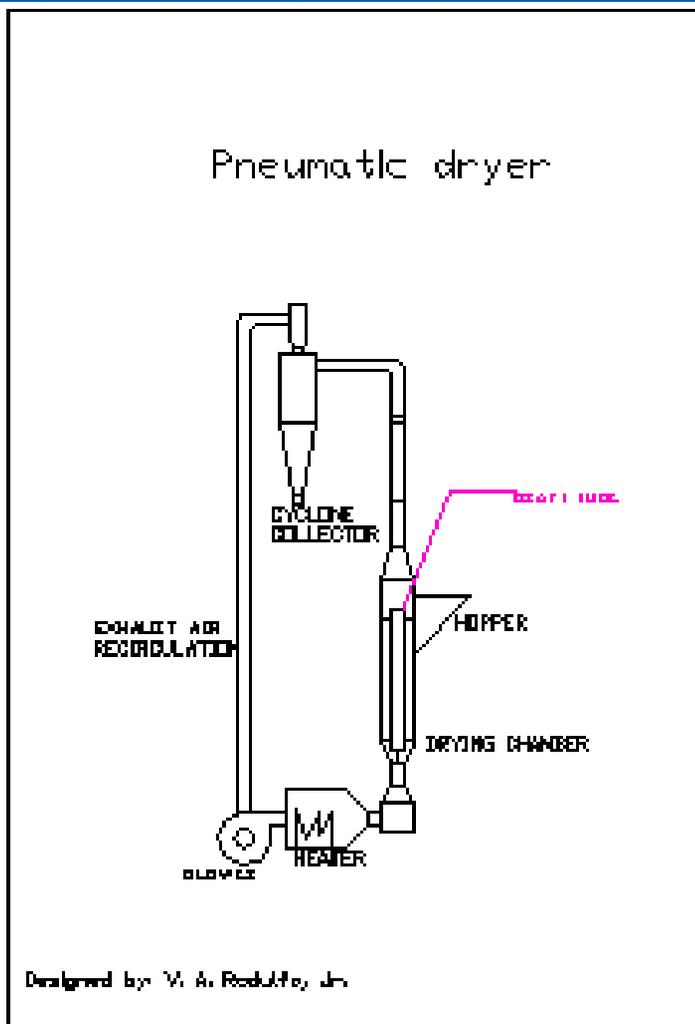
- Modified axle component of the mini-hand tractor



- Garden tiller/rotavator was designed to help farmers prepare land faster.

AMDP Core Projects

■ Design and Development of Pneumatic Dryer for Coconut Meat



- Designed a pneumatic dryer to address poor quality of copra produced from the traditional drying systems such as poor temperature control and distribution; very low heat utilization; and high incidence of contaminations.

- Conducted thin-layer drying experiment to determine the drying constants of the coconut meat particulates.
- Fabrication of the dryer is on-going.

Faculty-Based Projects

- Design and Development of Forage Harvester for Small Scale Livestock Production

- Development of a Small-Scale Processing System for the Production of Semi-refined Carrageenan
 1. Developed an on-farm moisture content determination method seaweeds;
 2. Optimized chopping of seaweeds;
 3. Optimized drying of seaweeds; and
 4. Conducted feasibility study which can be used by farmers/NGO/GO in the development of a seaweed processing center.

Faculty-Based Projects

- Performance Evaluation of Controlled Environment Structure for the Production of High Value Crops
 - Completed the design of the NFT Hydroponics system
- Design and Development of an Environmentally Controlled Small Scale Poultry Housing Structure.
 - Designed a detachable working frame of poultry housing for scaling-up and dimensional analysis.

Faculty-Based Projects

- Generation of Baseline Data for the Evaluation and Improvement of the Pumping Plant Efficiencies of Shallow Tubewell and Low lift Pump Irrigation Systems
 - Evaluated the performance test results of three pumps and two primemovers.
- Saccharification and Fermentation of Mixed Corn and Corn Wastes for Ethanol Production.
 - Corn residues consisting of corn husks and corn cobs were prepared to produce powdered samples , which were subjected to pretreatment using dilute acid (0.5% H₂SO₄) and hot water; enzymatic saccharification using cellulose loading of 10% (w/w) and 20% (w/w);
 - The hydrolyzates (saccharified samples) were used as substrates for ethanol fermentation.

Faculty-Based Projects

- Modeling of the Philippines' Corn Supply Chain

- Determinacy of Different Maturity Levels of Coconut and Watermelon Based on their Sound Signal Characteristics
 - Conducted sound response analysis using the DaDISP Signal Processing Software.

Agricultural Engineering Extension Activities for 2006

Extension Activities

Agricultural Mechanization For Integrated Crop And Livestock Production for City Government of Alaminos, Pangasinan

- Conducted initial assessment of the area in Alaminos, Pangasinan.
- Prepared program of activities for the collaboration between AMDP-IAE-CEAT, UPLB and the City Government of Alaminos, Pangasinan.
- Drafted training proposals for the Training Module on the Operation, Simple Repair and Maintenance of Small Power Units for Farmers and Fisherman, and for the Training course on Corn Mechanization Technology for Technicians were prepared.
- Conducted actual field demonstration of the upland hand tractor to demonstrate its performance and suitability in the area.

Extension Activities

Corn Production and Processing Mechanization Program

- Coordinated with the Department of Agriculture and two of its project sites in corn producing areas in Maragondon, Cavite and Laguerta, Calamba.
- Gathered data pertaining to equipment needs, custom hiring and farm situation in the two sites
- Performed cost analysis and recommendations pertaining to machinery usage in client areas
- Conducted lecture and demonstration of some corn machinery in a training on corn production in Laguerta, Calamba.

Extension Activities

Publication of printed materials for information dissemination of agricultural mechanization

PJABE 2005

- Final print copy came out in March and were distributed to subscribers.

PJABE 2006

- Three articles are in the final review phase of referees.
- Journal will be published by early 2007.

PAMB July to December 2005

- Final layout was submitted to the printing press.
- Bulletin will be printed and distributed in December 2006.

PAMB January-June 2006 and PAMB July-December 2006

- Articles for the two issues were collected.
- Initial layouts will be done in December 2006.
- The two (2) bulletins will be published by early 2007.

About 5,771 copies of publication materials were distributed to clients.

Extension Activities

Promotion of AMDP developed agricultural mechanization technologies

Maintenance of Machinery

Display Area

- 47 agricultural machineries are on display to showcase mechanization technologies to clients and walk—in visitors.



Extension Activities

Promotion of **AMDP** developed agricultural mechanization technologies

Participation in Exhibitions/ Fairs/Demonstrations

- **AMDP** participated in two exhibits to demonstrate its various mechanization technologies.

SUBJECT MATTER	PLACE	EVENT	DATE
Corn Mechanization Technologies Corn Mechanization Technologies	Alaminos City, PangasinanLaguerta, Calamba, Laguna	March 12-17, 2006May 23, 2006	March 12-17, 2006May 23, 2006
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Extension Activities

Promotion of AMDP developed agricultural mechanization technologies

Dissemination of Machinery Designs/Blue Prints

- Nine (9) technical drawings were given to local agricultural machinery fabricators.

No. of Machine Drawings
•Village Ethanol Production System - 2
•Improved Mechanical Rice Transplanter - 2
•Wind Mill -1
• UPLB Two Drum Corn Sheller -2
•UPLB Pedal Thresher -1
•UPLB Pedal Peanut Sheller -1

Expert Services

- 221 visitors and 20 agencies which made inquiries to AMDP were assisted and given technical assistance.
- Technical expert services were provided to various AMDP clients.

INFORMATION MANAGEMENT

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- **Design and Development of Database and Website for Agricultural Mechanization**

Future Projects

- **Biofuel technology development**
- **Precision agriculture**
- **Machine vision**
- **Livestock waste management technology development**

End of presentation.

Thanks