ASSESSMENT OF SMALL-HOLDER MECHANIZATION IN NIGERIA: AVAILABILITY, ACCESSIBILITY, UTILIZATION AND FINANCING

By Dr. Pham Van Tan
CONTENT

Current status on rice production in Nigeria
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PART I

CURRENT STATUS ON RICE PRODUCTION IN NIGERIA
• Due to lack of water supply & farming equipment:
• - Weed in the rice fields could not be suppressed in dry seasons;
• - Farmers could not exploit more land for crop production.
There are about 1,300 hectares of land in down stream of Niger river basin in Wushishi for irrigated rice production with 1-3 rice crops/year.
CURRENT STATUS OF RICE PRODUCTION IN NIGERIA

• More than 12 million hectares of land potential for rice production, but only less than 5 million hectares are under rice farming;

• Nigeria is the second largest importer of rice in the world;

• Total annual demand of milled rice in Nigeria is 6.8 mil metric tons in which 4.2-4.6mil. metric tons of milled rice are produced locally;

• Small farm size of 0.2-3 hectares with fragmented land or uneven terrain;

• Small holder farmers produce 80% of food for Nigeria;

• Average rice yield is about 3 tons/hectare; particularly 3.5 tons/hectare during wet season;

• Average income from rice production: US$ 879/hectare.
PART II

AVAILABILITY OF AGRICULTURAL MACHINERY
MACHINERY STUDIED AND DEVELOPED BY NATIONAL CEREAL RESEARCH INSTITUTE IN BADDEGI, BIDA, NIGER STATE

- National Cereal Research Institute, in Baddegi, Bida, Niger state
AGRICULTURAL MACHINERY MANUFACTURED BY LOCAL FABRICATORS

- Mechanical factory of Hanigha Nigeria Ltd., in Kaduna state, Nigeria
LOCAL MASS PRODUCTION OF AGRICULTURAL MACHINERY FOR SUPPLY

By National Cereal Research Institute, in Baddegi, Bida, Niger state

By mechanical factory of Hanigha Nigeria Ltd., in Kaduna state, Nigeria
Summary:

- Local mechanical workshops are not well equipped and rare;
- Inadequate equipment for good fabrication;
- Lack of skilled mechanics.
AGRICULTURAL MACHINERY IMPORTED FROM FOREIGN COUNTRIES

By Mass International Equipment Ltd (Turkey)
AGRICULTURAL MACHINERY IMPORTED FROM FOREIGN COUNTRIES

• By Kafarm Agro-Allied Nigeria Ltd (Turkey) on Jebba road, Oyun, Ilorin, Kwara state.
AGRICULTURAL MACHINERY IMPORTED FROM FOREIGN COUNTRIES

By Dae Sung
Machinery &
Construction
Co. Ltd (Korea)
in Crescent,
Maitama,
Abuja
PART III
ACCESSIBILITY OF AGRICULTURAL MACHINERY

• Inadequate information and awareness on benefits from agricultural mechanisation, on agricultural machinery supply and mechanisation services;
• Low income of the rice farmers resulted in low capacity for investment in agricultural machinery;
• Limited operation scopes of existing mechanisation service groups;
• A weak system of agricultural mechanisation extension;
• Very few training courses and field demonstrations of agricultural machinery for rice farmers by public sectors.

THESE LEADING TO:
• Only 7% of farming activities mechanized, 15% by draft animal and other 78% carried out manually;
• Very low utilization of mechanization services, 0.27HP/hectare compared with South Korea (10HP/hectare), China (8HP/hectare), Thailand (4 HP/hectare) and Vietnam (2.2HP/hectare of rice).
PART IV

UTILIZATION OF AGRICULTURAL MACHINERY IN RICE PRODUCTION OF NIGERIA
LAND LEVELLING & PREPARATION
FOR WET & DRIED LAND IN NIGERIA

- Intensive labour requirement
  Minimum land preparation
  Manual wet land levelling

Manual wet land levelling

Minimum land preparation
MANUAL POST-HARVEST HANDLING OF RICE IN NIGERIA

Manual rice threshing & winnowing

Intensive labour requirement

Sun-drying of paddy rice
APPLICATION OF RICE THRESHER IN NIGERIA

A movable rice thresher
Provision of service on land preparation, water pumping and rural transportation by Mr. Ndatsu Fari in Sheshi village, Bikun area, Bida
MEDIUM MECHANICAL SERVICE PROVIDERS

By Niger State Rice Investment Consortium (NSRIC) project, Bida, Niger state
LOCAL TRANSPORTATION OF AGRICULTURAL COMMODITIES
MECHANICAL SERVICES OF LOCAL FACTORIES IN NIGERIA

- A small mechanical factory in Wushishi of Niger State
WASTE OF AGRICULTURAL MACHINERY

At Niger State Agricultural & Mechanization Development Authority Headquarter in Minna
CURRENT LEVEL OF AGRICULTURAL MECHANISATION IN NIGERIA
• Development stages of agricultural mechanisation in the world
  • (Source: Japan International Cooperation Agency – JICA)
PART V

FINANCING SUPPORTS FOR APPLICATION OF AGRICULTURAL MECHANISATION IN NIGERIA
POSSIBLE CREDIT INSTITUTIONS FOR GETTING LOANS TO INVEST FARM MACHINERY

1. Bank of Agriculture
   - Bank interest rate of loans is only 5%/year; for commercial program, it is 9%/year;
   - Micro loans are 6 or 12-month term loans and not for owning tractors or machines but for hiring the machinery. Maximum amount of loans is not higher than NGN 250,000;
   - To buy power tillers or agricultural machinery, legally registered farmer groups (5-10 persons) can apply for Micro loans with a total loan can be up to NGN1.2-1.5 million (US$6,000-7,500); or Macro loans with bigger loan amounts at the same interest rate but longer term repayment, up to 3 years.

2. Bank of Industry
   - Groups of farmers or service providers must sign a common agreement with the bank to guarantee their repayment to the bank. The providers can get loans to buy power tillers or rice threshers;
   - The groups of farmers must have legal registration. It could be certified by farmer associations. The groups must have deposit to ensure repayment to the bank;
   - Maximum amount of loans is up to NGN1-5 million (US$5,000-25,000);
   - Bank interest rate of loans is 9%/year;
   - Maximum period of repayment can last up to 3-5 years, but only beginning to repay in the second year.
VI. CONCLUSION

There are many challenges and constraints for development in agricultural mechanisation in Nigeria:

- Insufficient level of information of agricultural mechanisation;
- Availability of many medium size machinery but few small size ones;
- Locally made machinery with low quality and creditability;
- Several mechanisation service groups formed but still weak & limited operation;
- Un-skilled machinery operators and mechanics;
- Low investment capacity of rice farmers of service groups;
- A weak system of agricultural mechanisation extension;
- Lacks of field demonstrations and training on agri.machinery;
- Lack of national strategies and policies for agricultural mechanisation.

These were resulted in:

- Only 7% of farming activities mechanized, 15% by draft animal and other 78% carried out manually;
- Very low utilization of agri. mechanization, just only 0.27HP/hectare.
PART VII

RECOMMENDATIONS
RECOMMENDATIONS which led to this workshop

- Advise farmers and service providers to invest right machinery and set up appropriate business models for provision of agricultural mechanisation services;

- Advise farmers and service providers to get soft loans from right credit institutions;

- Carry out testing and demonstrations of the invested machinery for comparisons of economic and financial efficiencies between the mechanised farming models and the traditionally manual farming models;

- Advise mechanised service groups to organise them as shared holding companies.
RECOMMENDATIONS TO THE NIGERIAN GOVERNMENT

• Issue national strategies and policies for development in agricultural mechanisation;

• Establish and support mechanisms for co-operations between the stakeholders in the rice value chain in Nigeria;

• Provide financial supports to farmers and service providers for investments in farm machinery;

• Strengthen locally mechanical factories for better services on maintenance and repair of agricultural machinery;

• Provide supports to R&D projects to study and apply machinery into agricultural production;

• Organise training courses on design, modification and manufacture of agricultural machinery to locally technical workers and mechanical factories.
Mechanism of Cooperation between Stake-holders for Development in Agri. Mechanisation of Nigeria

GOVERNMENT ORGANISATIONS

Supporting policies

Suggestion/Application

FARM MACHINERY DISTRIBUTORS

Provisions of budget or loans

Payment for farmers’ buying machinery

Design & testing of machinery

ACADEMIC INSTITUTES

Policy proposals

Interest rates

Credit INSTITUTIONS

Provision of loans

Down payment or repayment for taking machines

FARM MACHINERY SERVICE PROVIDERS

Mechanisation training

 Provision of machinery & repair services

Investment/payment of service fees

Provision of machine service

Requirement & feedback of farm machinery

Mechanism of Cooperation between Stake-holders for Development in Agri. Mechanisation of Nigeria
CO-OPERATIONS BETWEEN 4 MAIN PARTNERS IN RICE PRODUCTION

- Farmers
- Business
- Government
- Private sector
- Rice Production
- Profit
- Market

Diagram: Venn diagram showing the interactions between farmers, business, government, and private sector in rice production.
RECOMMENDATIONS TO RICE STAKE-HOLDERS

1. Farmers:
   - Participate training courses on rice production, crop management, rice quality and agricultural mechanisation for rice production.

2. Machine operators:
   - Participate training courses on mechanical techniques, operation skills; maintenance and small repair of agricultural machinery.

3. Service providers:
   - Participate training courses on mechanical techniques, maintenance and small repair of agricultural machinery, and business management;
   - Expand their service to not only both up-land and wet land; but also inter-village and inter-states via local middlemen to increase annual working days of the machinery.

4. Agricultural extension agencies:
   - Improve and strengthen their extension services;
   - Disseminate widely information of agricultural machinery and mechanisation to farmers and other stakeholders in the rice value chain;
   - Conduct training courses for farmers, operators and service providers;
   - Organize frequently field demonstrations on agricultural machinery.
THANK YOU VERY MUCH
FOR YOUR ATTENTION