



Promoting Adoption of Mechanization Services in Uganda: NARO Experience

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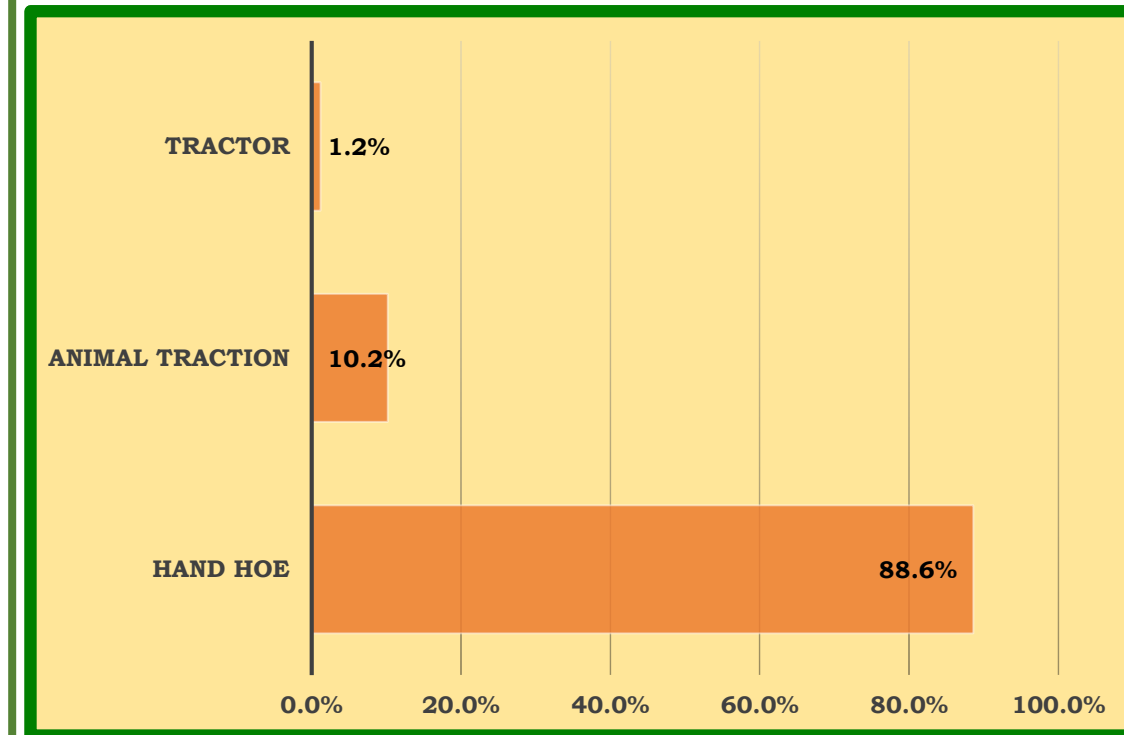


AGRICULTURE-THE LIFELINE FOR HOUSEHOLD WELBEING

- **Agriculture dominant source of livelihood**
 - *(in Uganda > 75% of HH involved for food & income of which ~80% are women and ~65% are youth and are mainly in the rural areas)*
- **Largely subsistence farming**
 - *Landholding: 1-3 acres- low impetus for commercial farming*
- **Low level of mechanization**
- **None-the-less HHs remain one of the sources of raw materials for Agro-industries**
- **And over 90% of transactions (farm production-to-market) are handled through inefficient labour intensive tools**
- **Yet Agric. Mechanization is a catalyst for economic growth & thus needs to be promoted as a business**

Uganda Vision 2040 emphasizes, amongst other lifeline industries, AGRO-BASED industries to drive agriculture

LEVEL OF FARM MECHANIZATION- UGANDA



Odogola, 2011



ADVANCEMENT & PROMOTION OF FARM MECHANIZATION IN UGANDA

(1950' to date)

1. Animal Traction

Ox-Traction

- For ploughing, planting, weeding & transportation
- Introduced in 1950's and still appropriate up-to now with fascinating modifications
 - Working well for smallholder farmers for most agricultural crops under cultivation
 - **Being promoted through NARO's Animal Traction Program & by other stakeholders**
 - Fully adopted in eastern & northern Uganda where cattle keeping is also good economic activity

LEVEL OF ADOPTION ~ 10%

(In Teso region 2 out of 5 HHs own Oxen)



2. First Tractor Hire Service: 1960s' & 1970s'

Model used: Government owned & operated the Tractor Management

- Introduced when double production policy was adopted
- Targeted mainly cash crops production- Cotton, Coffee, Tobacco
- Tractor hired at subsidized service to farmers
- Farmers organized into groups & Block Farms
- Govt' recruited, trained mechanics/technicians & deployed at local level
- Govt' transported equipment to the farm & met costs (personnel & fuel)
- Govt' operated Efficient equipment maintenance workshops & mobile units



3a. Motorized small equipment

From 2014 NARO & Ministry of Agriculture, Animal Industries & Fisheries (MAAIF) of Uganda strategically focused on revamping agric. mechanization to support Agro-industrialization

- **Implementing a dual model: large & small scale equipment & machines**

Power tiller/Two-wheel tractor

- Portable and can be used or taken to the interior farmlands
- Fuel consumption: 0.7-1litre/hr
- Work rate: 3-6hrs/acre (~1.25ha/day)

Success story: Sustainable rice production in central, northern & eastern Uganda (FAO support to Uganda)

- 164 farmer groups (4,690 members)
- Multiplying rice seeds, producing grains & selling



3b. Motorized small equipment Cont'

For processing, threshing, cleaning & transportation

- Food grade Chipper, Grater & press
- Threshers
- Cleaners

NB: Prototypes of most of the small-scale processing equipment are designed & made by NARO Agric. Engineering unit and taken up by private sector for production and sale

- Cassava processing equipment highly adopted by cassava farmers producing HQCF



Groundnut Sheller

- Out put: 600-700kg/hr/lr
- Cleans grains
- Minimal breakage
- Adopted by Business farmer group & individual traders



Cassava Grater



Rice Thresher

Support for mechanization along commodity value chain

4.

Cassava mechanization & agro-processing (CAMAP) project supported by AATF

Aim:

To contribute to sustainable improvement of food security, income & livelihoods of stakeholders in cassava sector

- Injected USD 288,647 on cassava agro-machinery in Uganda
- **Tractors, Planters, Up-rooters, Boom Sprayers, Weeders on hire service by farmers**
- Operating in 7 districts in three regions of Uganda
- Over 1,000 acres of cassava mechanized since 2015 to-date
- Has triggered emergence of 7 medium-to-large scale processors with potential of processing about:
 - ~ 300ton fresh roots/day (eqv. of ~ 32 ha/day!)
- 7 other processors with potential of processing ~630ton fresh roots /day (eqv. ~65ha/day) are in the pipeline

Machinery delivery



Private planter



Planter Demo



Planting



Commercial benefit of large scale cassava production

(Uganda farmers “hit jack-pot” through sales of cassava stems-2015)



Source of material	Destination	Quantity	Rate/bag	Gross Profit
From farmer Groups in Apac & Kirandongo Districts	Rwanda	17,000 bags	20,000 UGX (after taxes)	340 Million UGX (\$ 113,333)
From other farmers	Nation wide	77,006 bag	20,000 UGX (after taxes)	1.5 billion UGX (\$513,373)
Total earnings				USD 626,706

Farmers earned USD 626,706 from sales of stems alone!

Support for mechanization along commodity value chain Cont'

5. Tractors and Implements

Proactive action by Govt' to enhance farm mechanization

- 200 Tractors and implements procured
- Handed to farmer groups or progressive farmers at local level through cost-sharing model
- Access is through hire services to farmers
- Agro-machinery dealers are partners and periodically stage outdoor shows to advertise
- Negotiations on with Financial institutions for favorable credit rates for farmers for expansion





CHALLENGES IN THE PROMOTION OF MECHANIZATION

1. Limited knowledge base of farmers in mechanized farming
2. Weak extension supports on GAP and processing in line with mechanization
3. Over promotion of mechanization for production rather than the complete value chain to market
4. High cost of machinery for smallholders
5. Low level of support services for machinery
6. Limited access to financial services for farmers
7. Inadequate backstopping & knowledge in manufacturing engineering locally



Strategies & Policies to enhance farm mechanization in Africa

National level:

1. Promote mechanization along entire commodity value chain
2. Promote mechanization through viable farmer groups linked to markets
3. Improve access of agric. machinery to smallholder through hire services
4. Popularize small to medium sized motorized technologies for Agro-processing operations
5. Support & promote local fabricators
6. Revamp Govt' managed workshops for technical back-stopping & critical maintenance services
7. Strengthen coordination and extension systems
8. Strengthen and support capacity building across-board and experiential learning visits
9. Integrate IT in agriculture for information and business promotion
10. Quality Standards e.g. Food grade equipment, fabrication specifications, etc
11. Tax incentive to agricultural machinery



Strategies & Policies to enhance farm mechanization in Africa

Regional level:

Policies and Frameworks that are favorable to mechanization in line with:

- Agricultural Financing
- Capacity building for manufacturing of agro-machineries
- Conditions for sales of agro-machineries
- Impact to environment
- Soil fertility conservation
- Regional markets



THANKYOU **AATF** FOR GIVING ME THE OPPORTUNITY TO PARTICIPATE AS A
PANELIST IN THIS DISCUSS

