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Pre-Extension Demonstration and Evaluation of Donkey Drawn Multi-Purpose Cart in Gola Oda District of East Hararghe Zone

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Abstract
Pre-extension demonstration of donkey drawn cart with the objectives of promoting and popularize donkey drawn cart technology and to create awareness, improving farmers knowledge and skills through giving training. Two FREGs having 40 farmers per kebele were established at Jiddo Misra and Dima Misra. Training on which a total of 81 participants part were organized at Jiddo Misra and Dima Misra of Gola Oda district. 81.5% of the participants were farmers out of which 18.1% female farmers participated on the training. The use of donkeys for pulling carts enables larger quantities of goods to be transported and also helps farmers to earn income by hiring it out. The participants in the technology demonstration activities preferred this technology than the traditional one as single donkey can draw up to five quintals at once.
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Introduction

Around the world, in much of development work, transport above everything is the ultimate enabler since it unlocks growth potentials, creates jobs, and brings wealth to local communities. Transport in the rural areas relates principally to basic needs and is carried out mostly on foot or with the aid of intermediate means of transport (World Bank, 2010; Tamene and Megento, 2017). Rural transport-related issues such as access to markets, health care, fuel wood, water, grinding mill and other basic facilities play an important.

Sustainable development in agriculture can be achieved by use of mechanization in agriculture. Mechanization can help in increasing the production by timely farm operation, reducing losses, reducing the cost of operations. It also ensures better management of costly inputs and enhances the productivity of natural resources. It also reduces drudgery in farm operations. Mechanization of different farm operations can increase the agricultural productivity by more work in less time, efficient use of inputs, by producing quality product, improving the safety of the farmers, reducing the loss of produce and drudgery of farmers and improving comforts of farmers(Waghmare Ajay Annasaheb .B.2017)

Women smallholder farmers living in remote areas have to spend longer hours collecting water or processing food than women living in areas better endowed with infrastructure and this appears to be a significant constraint on their meaningful participation in productive economic sectors like agriculture (FAO, 2010; Gebre-Selassie and Bekele, 2010; porter, 2008).

In much of rural Ethiopia, travel and transport takes place along footpaths, walking and back loading, shoulder loading or head loading are the major means of travel and transport. Animal drawn carts are available only in very few rural communities. The introductions of animal drawn carts are important because the farmers in the study area use donkey and human back to transport agricultural products and to fetch water.

Objectives

- ✓ To create awareness among farmers on the use of donkey drawn multi-purpose cart technology.
- ✓ To build farmers' knowledge and skill of production and management of the enterprise

Materials and Methods

Description of the Study Area

Gola Oda is one of the woredas in the Oromia Region of Ethiopia. It was part of former Gola Odana Meyumuluke woreda what was divided for Gola Oda and Meyu muluke woredas. Part of the Misraq (East) Hararghe Zone, Gola Odana Meyumuluke is bordered on the south by the Shebelle River which separates it from the Bale Zone, on the southwest by the Galetti River which separates it from the Mirab (West) Hararghe Zone, on the northwest by Malka Balo, on the north by Bedeno, on the northeast by Girawa, on the east by Fedis, and on the southeast by the Erer River which separates it from the Somali Region. Latitude: 8° 24' 59.99" N Longitude: 41° 29' 59.99" E

The altitude of this woreda ranges from 500 to 1930 meters above sea level; Mountain Sebero is the highest point. Rivers include the Ramis and Deneba. A survey of the land in this woreda shows that 3.5% is arable or

cultivable, 7.6% pasture, 22.1%forest, and the remaining 66.8% is considered degraded, built-up or otherwise unusable. There are no identified important cash crops.

Site and Farmers Selection

Farmers were selected based on their interest, innovation and interest he/she has in cost-sharing, willingness to share experiences for other farmers. Farmers' selection were under taken in collaboration with DA's, Woreda experts (SME) and multidisciplinary Researchers. Forty Farmers were selected for pre-extension demonstration of Animal drawn multi-purpose cart purposively.

One district and a total of two PAs from a district were selected purposively in collaboration with experts and DAs from the respective offices of agriculture and rural development. The site were selected based on the slope, appropriateness of land for the technology and access to the road for day to day monitoring and farmer's interest/tendency on the technology. The target farmers were selected based on their interest on technology, willingness to share the experience for the members as well as non-members and activeness/innovative. Therefore, according to the above criteria, One FREG per kebele with farmers consisting of 40 members were established that should be based on gender focus at least 30% of the composition members were women. In establishing FRG members in each one district a total of 2 FREGs that is total of 80 farmers were grouped in two FREGs.

Table 1: Summary of selected site and farmers with area coverage of the experiment

District	PAs	No. of trial farmers
Gola Oda	Jiddo Misra	**40**
	Dima Misra	40
	Total	80

Method of data collection

Observation: It is the gathering of primary data by investigator's own direct field observation/measurements. Individual interview: Collecting individual's ideas towards the technology. Focus Group Discussion (FGD): for the way forwarding and the desirable change before and after implementation of this project for analyzing the performances of all responsibility shared among participants. Check list- for feedback of farmers and stake-holders collection on specific information .Data sheet- performance and the efficiency of donkey drawn cart.A total number of both female and male farmers participated in training, number of farmers that get access to these technology and cost of production of the cart were recorded.

Data analysis

Quantitative data were summarized using descriptive statistics (percent, mean and standard deviation), while the qualitative data collected using group discussion and field observation and oral histories were analyze using narrative explanation and argument. Finally data from different sources were triangulate to get reliable information.

Technology evaluation and demonstration methods/technique

The evaluation and demonstration of the trials were followed a process demonstration approach by involving FREGs, development agents and experts at different growth stage of the crop. The activity was jointly monitored by FRGs, researchers, experts and development agents.

Results and Discussion

Training of farmers and other stalk holders

Multidisciplinary research team; crop, extension and socio-economic research team and other stakeholders (Offices of Agriculture and Natural Resource) actively participated by sharing their experience and knowledge and journalists for the sake of publicity of the work done Development agents, experts and farmers were participated on the training given on the use of donkey drawn cart.

Table 2: number of participants during the training at research site

		Gola Oda		
No.	Participants	Male	Female	Total
1	Farmers	54	12	66
2	DAs	7	1	8
3	District experts	6	1	7
	Total	**67**	**14**	**81**

Among the training participant stakeholders, 81.5% were farmers. From those farmers, 18.1 % were female farmers' participant.

Table.3 Multipurpose donkey-drawn cart

Parameter	Multipurpose
Donkey-drawn cart Capacity	4–5 quintal
Overall size–width x height x length (m)	1.3 x 0.9 x 1.3
Beam length (m)	1.3
Total cost (purchasing)	Birr 15,000
Strength of parts	Stronger
Complexity of manufacturing	more complex
Comfort for donkey	comfortable
Comfort for loading and unloading	comfortable

Farmers' Opinion/Perception

Farmers' in the study area selected the best performance donkey drawn cart by using their own criteria. Farmers set these criteria after having know-how about the technology. The opinion of those farmers on varietal preference was collected from participants during the technology donkey drawn cart can carry five quintal at time, efficient use of time ,efficient use of energy, reduce work load, reduce frequency of going and turning, concentrate effort.

Table 4: Ranks of the technology based on farmers' selection criteria**.**

Crop varieties	Farmers rank	Reasons
Donkey Drawn Cart	1st	Can carry five quintal at time, efficient use of time ,efficient use of energy, reduce work load, reduce frequency of going and turning, concentrate effort
Donkey	2nd	Can carry one quintal at a time, not efficient in usin of time ,not efficient in using of energy, increase work load the same activities, maximize frequency of going and turning, dilute effort in doing the same activities

Conclusion and Recommendation

Donkey drawn cart play significant socio-economic roles in terms of income generation, employment opportunities and improvement of livelihoods of many smallholder farmers and their families The was conducted in two purposively selected Kebele of Gola Oda district because of their appropriateness for the technology being demonstrated in terms of the slope of the land they have. FREGs having 40 members on average with around 30% female and 70% male was established. Farmers of Gola Oda district living on good roads are not using donkey-drawn carts for transporting construction materials such as sand, gravel and stone and for transporting their produce from the field to their homes and to the market. Straw and firewood are also not transported from the fields to their homes by cart. In Gola Oda district there is plenty of animal power which is not yet properly utilized. Donkey drawn Multi-purpose Carts carry five quintals and donkey carry on one quintal

at a time. Demonstrating the multipurpose donkey drawn-cart more fully is a part of the solution to transport problems of agricultural produce in the Gola Oda district.

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