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FACTORS THAT IMPEDES DRAUGHT ANIMAL TECHNOLOGY IN KASENNA NANKANA MUNICIPALITY IN THE UPPER EAST REGION, GHANA

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ABSTRACT
The research was conducted in Kassena Nankana East Municipality in the Upper East Region to determine factors that impedes draught animal technology with reference to the current status and potentials of animal management, power utilization and the roles played by various stakeholders: extension officers, scientist, blacksmiths and farmers. Sixty three households (63) were randomly sampled from three communities within the study area where draught animal power is highly utilize. The data collected was based on family background of farmers, production parameters, and ownership and hiring of draught animals, uses, benefits, how famers acquire their animals, constraints and the way forward for draught animal technology among others. During the survey, farmer's main constraints were associated with poor quality implements, lack of spare parts, unskilled labour in maintenance, lack of credit facilities, insufficient and high cost of veterinary services, feed and water during dry season as most important constraints. Despite these constraints faced by the farmers 77.78% of them owned and use draught animals and about 38.33% acquire these animals through individual efforts, and also the draught animals used for traction in the study were basically donkey and bullocks. The study however showed that farmers in these communities have much desire for draught animal technology and efforts should be made by stake holders to encourage and motivate them to boost draught animal technology to improve the living condition of farmers.
Keywords: Animal, traction, factors, impede, farmers, technology, power.

INTRODUCTION
Global food supply is currently not enough to meet the food needs of the world's population (Islam, 1995; Johnson et al., 1999) leading to undernourished with, nearly three quarters of them living in rural farming communities in underdeveloped countries (Smith et al., 2000). Furthermore food security would be worsened in developing countries, where soil, water, and farm power resources are already under stress (Fischer & Heilig, 1997 and Cohen, 2003). Food security is partly achievable through improvements in farm power availability to the resource poor farmers.

Threats from scarce food supply will reduce if agricultural production technologies in use ensure ample local food supply. Scientists, especially those in developing countries can effectively address these issues through development and improvement of soil-specific and farmer-friendly technologies for predominant global agro eco-regions. Farmers harnessed the muscle power of large domestic animals to augment their physical efforts in food production and leisure. Recently humans, draught animals and engines or motors

provide the motive power in various proportions for crop production, harvesting, transport and processing (Rijk, 1989; FAO, 2003; Pearson, 2005).

Studies have shown that farmers with access to their own farm power and machinery achieve better timeliness and intensity of farming operations (Sutton, 1989). Pearson (2005) estimated that draught animals and humans provide 80% of the power input on farms in developing countries, but lamented welfare and comfort of work animals are often neglected, because they belong to members of the poorest sections of society. High levels of tractorization are generally associated with relatively well developed economies (Rijk, 1989). Due to rising global fuel cost and the past failures of tractor mechanization projects in many developing countries, there is renewed interest in research and extension activities on efficient use of animal traction especially, for ploughing and carting.

Large domestic animals (cattle, buffaloes, horses, donkeys, camels, etc) when properly trained, fed and harnessed, are renewable source of energy (Wilson (2003). In Ghana draught animal traction contributes 25% to cotton production, and nationally its share of farm power has increased from 1-6% (Starkey, 1988; Bobobee, 1999). Although there will continue to be contributions from tractor power to land preparation, much of the region will continue to be cultivated using hand and animal power (FAO, 2003).

This paper focuses on the factors that impede draught animal traction, welfare programs that can increase food production and security among resource-poor farmers in the Kassena Nankana municipal. The durable locally produced ploughshare will accelerate the rate of gain in food production capacity and crop yields at local and national levels due to reduction in timeliness, costs and savings in crop production.

RESEARCH METHODOLOGY

Description of the Study Area

The District is in the Upper East Region and shares boundaries to the North with Kassena-Nankana-West and Burkina Faso, to the East with Kassena-Nankana West and Bolgatanga Districts, West with the Builsa District and South with West Mamprusi District in the Northern Region (Fig 1).

The District recorded a population density of 91 persons per sq. km. This is higher than the national density of 79.7 persons per sq km but below the regional density of 104.1 persons per sq. km. This District's current population density has a high growth potential.

The climate conditions of the District are characterized by the dry and wet seasons, which are influenced mainly by two (2) air masses – The Harmattan air mass (North-East Trade winds) and the Tropical Maritime (South-West). The Harmattan air mass (North-East Trade Winds) is usually dry and dusty as it originates from the Sahara Desert. During such periods, rainfall is virtually absent due to low relative humidity, which rarely exceeds 20 per cent and low vapor pressure less than 10mb. Day temperatures are high recording 42° Celsius (especially February and March) and night temperatures are as low as 18° Celsius. The District experiences the tropical maritime air mass between May and October. This brings rainfall averaging 950mm per annum. This makes most of the youth in the district idle during the dry seasons (November to April). Two main types of soil are present within the District namely the Savannah ochrosols and groundwater laterite. The northern and eastern parts of the district are covered by the Savannah ochrosols, while the rest of the District has groundwater laterite. The Savannah ochrosols soil type is suitable for cultivation and hence accounts for the arable land sites including most parts of the Tono Irrigation Project sites where both wet and dry season farming activities are concentrated.

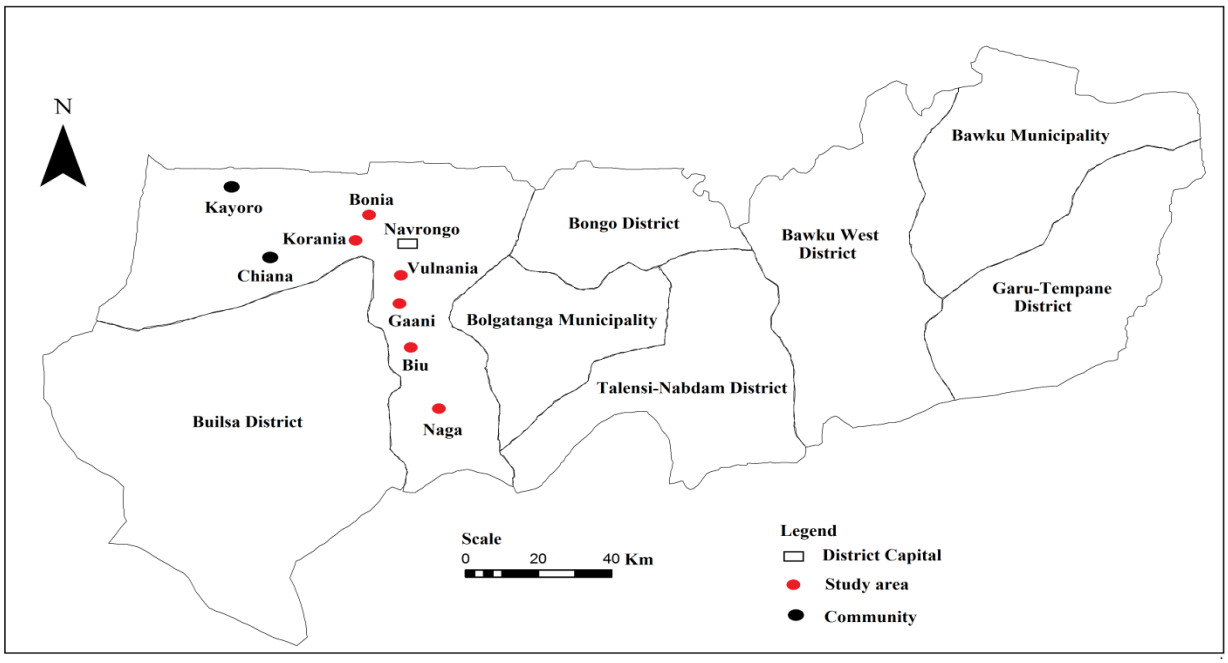

Fig 1: Map of Kasena-Nankana East Municipality Showing Study Communities in Red.

The total number of females in Kassena Nankana East Municipality was 9,554,697 in 2010 with an adult woman population (18+) of about 52%. The population density of 92 people per square kilometers showing how dispersed the population is. The District consists of 216 communities – majority of which are rural, only 13 per cent of the population live in towns. At least three out of four people living in the District reside in the rural areas.

Methods of Data Collection

Both primary and secondary data sources were used to gather relevant information for analysis and discussions. Purposive sampling was used to select six communities in the Kasena-Nankana East Municipality. Considering the nature of the communities in which the study was carried out, a hybrid sampling method was used to arrive at the sample population. Closed and opened questionnaire were used to collect data from the interviewees. In addition to the questionnaire, empirical verification was done via observation on attitudes and behaviors of female farmers. Women farmers of all ages were interviewed from dry season farmers, livestock producers and those engaged in the rain fed agriculture were also interviewed. Focus group discussions were held with various groups. It involved opinion leaders, households' farmer-group organizations, agricultural extension officers, the 31st December Women's Movement (DWM) chiefs from the study areas etc.

Data Analysis

The data obtained was analyzed using Statistical Package for Social Scientist (SPSS) and Microsoft Excel.

RESULTS AND DISCUSSION

Ownership of Draught Animals

From the study, 77.78%of the farmers owned draught animal representing 49 respondents while 20.63% of the respondent hired draught animals for ploughing. Meanwhile 1.59% of the respondents fail to answer this item. From the analysis you realize that many farmers are aware of the significance of draught

animal technology and they also indicated that by the year 2015, 90% of farmers will have their own animals and poverty be reduced drastically.

The field survey indicates that, 57.38% of respondents used draught animals to plough between 3 to 5 acres of their land; between 6 to 8 acres 29.51% of them were able to afford draught animals. It was also observed that between eight acres and above 8.20% used draught animals to cultivate while 4.92% still used their hoe to cultivate their farms. From the survey it is evident that most farmers are able to cultivate their lands using draught animals to improve their living conditions. The analysis showed that in using animals to plough 87.30% men, 3.17% children and 9.52% of hired labor are involved. This indicated that children are used in farm labour (Table 1).

Table 1: Category of persons and their role in ploughing

	CATEGORY OF PERSONS				
ACTIVITY	Men	Women	Children	Communally handled	Hired labour
Training oxen	57 (90.48)	-	3 (4.76)	-	3 (4.76)
Yoking the animals	56 (88.89)	-	3 (4.76)	1 (1.59)	3 (4.76)
Controlling plough	55 (87.30)	-	2 (3.17)	-	6 (9.52)
Controlling oxen	57 (90.48)	-	3 (4.76)	-	3 (4.76)
Maintaining plough	60 (95.24)	-	-	-	3 (4.76)

Mode of acquiring animals for traction

Survey indicated that 30% of respondents acquired their animals from inheritance, 38.33% through individual efforts, 8.33% acquire theirs from re-stocking agents, while 15.00% and 8.33% acquire their draught animals from relatives/friends and dowry respectively. This means that when stalk holders assist farmers to own animals, production will increase and rural urban migration will reduce.

Access to Veterinary Services

From the analysis, it was observed that 74.60% (47 respondents) get access to veterinary services, 22.22% (14 respondents) have no access to these services, while 2 farmers who represent 3.17% indicated that these services does not exist. Veterinary officials should organize community forum to educate them on the importance of keeping their animals healthy.

Extension Officers

From the frequency table, 66.1% elites indicated extension officers visit them as and when needed, 13.56% do not have access to these services while 13.56% and 6.78% represents not regular and regular visits of extension officials to their communities respectively. Extension officers should always avail themselves to help farmers improve draught animal technology in the municipality.

Presence of credit services in the community

The analysis showed that 10 of the respondents constituting 15.87% were aware of the existence of credit facilities, while 52 of these respondents representing 82.54% clearly stated that credit services are not available in their communities. There was also an item with no –response that rated 1.59%. Stakeholders and Extension officers will have to introduce credit agents to the greater percentage of the elites that are not aware of the credit facilities. More so respondents indicated that 6.56% of the elites got access to credit services and 90.48% (57 respondents) do not have access to credit services while 3.17% failed to respond to this item. It is observed that there should be a mass introduction of the farmer base organization to credit unions.

Animal breed used for traction

It was revealed from the study, that, 52 of the respondents use bulls which represent 82.57%, 7 farmers which also represent 11.11% of the elites also use Donkeys for traction, while zero (0%) of the elite' uses camels and horses respectively. It was also observed that 4 respondents failed to respond to the item that is rated 6.35%. From the analysis it was obvious that bulls and donkeys are the traditional animals used in draught animal traction Kassena Nankana Municipality.

Type of farm implement used

From the study ten responses represents 15.87% use mould board plough, and 22 respondents that represents 34.92% use ridges to cultivate their land. It was also observed that 22 respondents which sum up to 3.17%, 26 of the farmers also use other means (tractor services) to cultivate their lands which rated 41.27% while 3 respondents which represent 4.76% to the item. From the respondents it was observed that the ridger was the much preferred and reliable implement used and must be encourage because it reduces drudgery the animals.

Type of Yoking

From the analysis, it was observed that eight respondents representing 12.70% use horn/head yoking, 49 respondents representing 77.78% uses withers/shoulder yoking, with 9.52% respondents failing to respond to this item .This means that most farmers in these communities prefer the shoulder yoking to head yoking.

CONCLUSION AND RECOMMENDATION

The findings of the study showed that draught animal technology in Kassena Nankana East Municipality is basically an old male activity. Most of the farmers depend on draught animals for their livelihood. The study revealed that uses these animals to plough their lands and hire to people who do not own any draught animal to also cultivate their fields for them. Draught animals enabled farmers to cultivate enough land to produce good yield to feed their families and sell the surplus to support themselves in other ways. Money that is made from the hiring of draught animals helps to treat and feed the animals and also enable them maintain and replace farm implements. Majority of farmers get their draught animals through individual effort which is the way forward for draught animal technology.

The findings revealed that veterinary services and extension services are inadequate. Credit facilities were also inadequate to farmers. The most preferred implement used by draught animal farmers is the ridges.

To successfully promote draught animal power utilization in the Kassena Nankana East Municipality, Extension services officials should be well motivated to deliver their best in promoting draught animal technology and delivering of information to farmers at appropriate time and according to their needs. Also credit facilities should be made available to farmers to purchase draught animals and their implements which definitely improve the livelihood of the people. More so training local artisan in the manufacture and repair of simple animal drawn implements in the municipality will boost food security.

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