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IMPACT OF GOVERNMENT LIVESTOCK INTERVENTION PROGRAMMEMES IN GHANA: A PERSPECTIVE

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This Long Essay is submitted to the University of Ghana, Legon, in Partial Fulfilment of the Requirement for the award of a Master of Agriculture Degree (Animal Science Option)

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DEDICATION

To my sweethearts:

Rose Elorm Nyameke and Joseph Delali Etse, whose unflinching support and encouragement, gave me the zeal to complete my studies

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DECLARATION

I Margaret Mary Adzoa Sumah author of this long essay do hereby declare that, except for the references of other people's work, which are duly cited, this work is the result of my own original research. This dissertation has neither in whole nor in part, been presented for the award of a degree elsewhere.

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ABSTRACT

Livestock development projects are aimed at increasing livestock productivity and increasing household incomes of participating livestock farmers and processors and traders in Ghana.

Ghana has implemented two of such projects within the last two decades: The "National Livestock Services Project" and "Livestock Development Project". The components of these projects were development of animal production, development of animal health, credit provision, and capacity building. The credit facility which was short to medium term loan to enable beneficiaries to access feed, drugs and veterinary services, construct storage facility or purchase milk processing equipment was converted to animals for a "credit in kind" due to bottlenecks encountered with the disbursement.

The study was conducted to assess the impact of these projects on livestock development and livelihoods of farmers and processors who were the primary beneficiaries of these projects. Data was collected from five participating regions namely Ashanti, Greater Accra, Northern, Upper West and Volta Regions. Information was primarily obtained from semi-structured interviews with 129 livestock farmers and processors as respondents. In terms of the impact of the projects indicated, capacity building was the most dominant. In fact a little over forty-five percent (45.31%) of respondents testified that acquisition of knowledge and skills have helped improved livestock production with a few adopting a more business approach to livestock. Improved knowledge and credit facility assisted some of the farmers to expand their farm enterprises (thirteen percent [13.28%]), while over a third of the respondent (thirty-four percent [33.59%]) increased their incomes either through processing or farming.

Among the livestock development activities, breed improvement had the least attention. A change in policy to foster closer collaboration among all stakeholder institutions, farmer

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involvement in planning, capacity development of project staff, development and implementation of sustainable animal breeding programmes were recommended.

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CHAPTER ONE

1.0 Introduction

Livestock production is an important feature of Ghana's agriculture (Ahunu *et al.* 1995), contributing largely towards meeting food needs of farmers, as well as national food supply directly in the form of meat, milk and eggs (FAO, 2010). Livestock converts forages (grasses and legumes) and crop residues into edible products of animal origin and is a source of income and employment to most farming communities. Traditionally livestock is a source of prestige to farmers, fulfils cultural roles and serves as insurance against adverse weather conditions. It contributes to crop farming as a source of manure and draught power in livestock farming communities (Aboagye *et al.*, 2014).

Among the main breeds of animals kept are the West African Shorthorn Cattle (WASH), the West African Dwarf Goat (WAD), the Sahelian goat, the Djallonke sheep, the Sahelian sheep, the Large White pig, the Ashanti Black Forest pig and the indigenous poultry (NCC, 2014).

1.0.1 Historical background of livestock development in Ghana

Livestock development in Ghana can be traced back to the early 1930s when the Veterinary Services Department of the then Gold Coast (now Ghana) imported White Fulani (WF; Zebu) bulls from northern Nigeria to cross with the indigenous WASH (taurine) to improve on its body size and milk production. The stabilized WF x WASH is the Sanga cattle. There was also a growing trend among farmers to use larger and heavier imported strains of livestock from the sub-region (Zebu cattle, Sahelian sheep and goat) as well as overseas stock particularly in pig production (Large White and Landrace) to cross the indigenous breeds in order to improve upon weight gains, milk yields and other important commercial traits (Ahunu *et al.* 1995). In order to

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serve the needs of farmers, the Animal Husbandry Department (AHD) set up forty-two (42) livestock breeding farms to produce and make available genetically improved livestock to farmers. To push this agenda, various exotic breeds of cattle were introduced into the country through live imports as well as imports of semen for artificial insemination. From the late 1950 through to the 1990s semen of different breeds of cattle were imported for the improvement in dairy and beef production. Some of the breeds imported were the Brown Swiss, Holstein Friesian, Jersey, Santa Gertrudis, the Sahiwal, and Droughtmaster (APD, 1996). There were also live imports of 100 Friesian cattle for the Amrahia Dairy Farm in 1965 (APD, 1990). Much as these were intended for good, it did not go on without some challenges. Unlike the introduction of exotic breeds that led to the development of the dairy industry in Kenya and Uganda (MLD Kenya, 2008) there have been many militating factors against exotic livestock introductions in Ghana either in crossbreeding programmes or direct importation. Thus their impact has largely been station bound. Financial constraint, health hazards as well as political turmoil have all militated against the initiatives and most of the imported animals could not survive the prevailing climate (Ahunu *et al*. 1995).

1.0.2 Institutional transformation

The first President of Ghana by a press release in 1965, established the Ministry of Animal Husbandry (MoAH) for the development of the livestock industry in the country. The MoAH after one year was restructured into two separate departments: Animal Husbandry Department and Veterinary Services Department, under Ministry of Agriculture. There was a merger of the two departments in 1987 into Animal Health and Production Department (AHPD) under a ministerial directive which had a negative impact on human resource management of the AHPD. As a result in 1993, the AHPD was split into Animal Production Department (APD) and

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Veterinary Services Department (VSD). In the same year the National Livestock Services Project (NLSP) was launched to address challenges pertaining to livestock development in the country. The forty-two breeding farms which became dismal due to lack of funds and were reduced to 28 in 1987 were further reduced to 6 in 1993 by the NLSP in order to make them run more efficiently. Financed by the World Bank, the project ran for six years, and was aimed at improving the productivity of livestock in the country. Aside the investment component of the project, major institutional and policy reforms included full cost recovery for government on services provided to farmers in terms of health delivery, closing down of non-productive government farms, restructuring MoFA's animal production and services and community participation in livestock development (APD, 1992; MoFA, 2004).

The next project was the Livestock Development Project (LDP) implemented from 2003 to 2009. Under the LDP, livestock development was pursued within the frame-work of Poverty Reduction strategy and accelerated agricultural growth and development strategy of government which aimed at poverty reduction, employment creation and food security. The NLSP and the LDP were the interventions by government to the livestock sector to for livestock development.

1.1 Problem statement

Livestock development is the primary goal of the Animal Production Directorate (APD) of Ministry of Food and Agriculture, and was enshrined in the Livestock policies and strategies of 2004, and Food and Agriculture Sector Development Policy of 2009. Livestock development was pursued by the National Livestock Services Project of 1993 and the Livestock Development Project of 2003-2009. Although livestock development constitutes the main focus of APD and these major projects have contributed to achieving this goal, there has not been any evaluation of their impact on livestock farmers. In order to capitalize on the strengths of these projects and

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hedge against their challenges in future programmes, there is the need for an assessment of the impact of these programmes on livestock and livelihood of the farmers.

1.2 Research questions

This research seeks to answer the following questions

a. What is the perception of the farmers on the impact of the projects on their livestock farming?
b. What is the farmers' perception on the impact of the project on their livelihoods?

1.3 Objectives of the study

The objectives of the study therefore are to document

a. The impact of the projects on livestock farming in general,
b. The perception of farmers of the impact of the projects on their livelihoods.

1.4 Justification

All the interventions by government and development partners are meant to improve livestock production and productivity and to reduce poverty of small holder farmers. This work seeks to evaluate the impact of these interventions on the long term goals of past livestock projects on livestock development and livelihoods of farmers. Successful completion of this project will provide valuable information to guide the APD of MoFA to improve on future livestock development projects.

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CHAPTER TWO

2.0 Literature Review

The status of Ghana's Livestock industry

Livestock contributes 8.7% to the Agricultural GDP (MoFA, 2013) and makes a significant contribution to overall agricultural development. Livestock population in 2013 was estimated as follows: cattle 1,590,000, sheep 4,156,000, goats 5,751,000, pigs 638,000 poultry 3,732,000 (Table 2.1).

Table 2.1 Estimated Livestock Population (2011-2013)

Livestock population (x1000)			
Species	2011	2012	2013
cattle	1,498	1,543	1,590
sheep	3,887	4,019	4,156
goats	5,137	5,435	5,751
Pigs	568	602	638
poultry	52,575	57,885	63,732

Source: MoFA 2013

Livestock production offers rapid growth opportunities as the necessary internal markets exists, but unexploited locally, huge imports are made to augment the shortfall in supply. While local meat production stands at 135,412 metric tons, import of livestock products is at 126,445 metric tons (MoFA, 2013).

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2.1 Livestock Production systems

Animal production systems in Ghana are broadly categorized into three - high, medium and low input systems with most of them being low input systems (APD, 2003)

The high input production system includes all the various forms of intensive management of livestock. It relies substantially upon external inputs such as purchased feeds, veterinary care, breeding stock, skilled labour and credit. High performing species and breeds which require high capital investment, are generally utilized for quicker rates of return. The system is based on imported exotic breeds usually pigs, poultry and rabbits. Grasscutter farming is also part of this system although the stocks used are local. They are commercially produced, either on small scale or large scale.

Medium input System comprises all semi-intensive management practices with varying degrees of confinement and feed supplementation. Most cattle and small ruminant breeds are kept this way during the cropping season. There appears to be no breed preference under this production system except for poultry where cockerels from layer lines are raised (APD 2003). Range broilers are the latest introduction in to the farming system (APD, 2010). Turkeys, ducks and ostriches are also found in this system. The farm sizes are smallholder and small scale commercial types.

Low input livestock production systems are the commonest in the country. Farmers typically keep more than one species under this system. Animals scavenge with little supplementation. The system is self-sustaining with occasional use of drugs. Drought affects all species and breeds since scavenging becomes less effective for lack of forage. Diseases limit productivity of this

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system. Worm infestation is an important cause of mortality especially among young animals. Newcastle disease inflicts heavy losses to the poultry industry annually (MoFA, 2004).

2.2 Livestock Development Projects

Livestock development projects have been implemented to address issues of low genetic material of livestock species, inadequate availability of quality feed, poor access to livestock service (production and health) and high cost of drugs, limited sources of smallholder credit, low application of good agricultural practices in the production leading to low efficiency of production systems, handling and transportation of livestock/livestock products, poor quality of data and monitoring system, weak livestock associations and other farmer based organizations (APD, 1992; 2001; MoFA 2004; 2009).

2.2.1 The National Livestock Services Project (NLSP)

The Ministry of Food and Agriculture realizing the importance of livestock production to the attainment of food and nutrition security in the country, by improving the productivity of livestock, contracted a loan from the World Bank to implement the National Livestock Services Project which ran between 1992 and 1999. To consolidate the gains of the NLSP another loan was sought from the Africa Development Bank in 2001 to finance the Livestock Development Project between 2003 and 2010. The overall objectives of these projects were to increase agricultural production and improve the nutrition and incomes of smallholder livestock farmers through improved productivity of livestock and integration of crop and animal production.

Some of the strategies to address this goal were to: develop and promote improved livestock management strategies, improved animal health control, and improved infrastructure for the

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production and marketing of livestock. The main components of the NLSP included Breed improvement; Peri-urban dairy development, Forage development and over-sowing of range lands; Stock water development; Livestock Market Infrastructure improvement; Animal health control improvement; Training and technical Assistance. The NLSP was targeted at smallholder producer groups and it emphasized and discouraged government involvement in direct production activities. It encouraged active participation of out-grower livestock producers and concentrated on small holder private sector development. The NLSP was also in support of the Medium Term Agricultural Development Plan which led to institutional and relevant policy reforms (APD, 1992).

Aside the investment component of the project the institutional and policy reforms included: full cost recoveries for government of its services rendered to farmers particularly in the area of health, closing down non-productive government farms, restructuring MoFA's animal production and health services and community participation in livestock development (APD, 1992; MoFA, 2004).

The primary objective of the NLSP was to increase meat, eggs and milk production, to raise producer income, particularly those of smallholders, to reduce the country's increasing dependence on imports of livestock and livestock products and to reduce the financial burden on government of services it provides to the livestock sector (APD, 1992).

These were expected to be achieved through a combination of institutional reforms and investment that would lead to improved access by producers to improved breeding stock, livestock health services, improved animal production technology and markets, improve range

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utilization and management (APD, 1992). The NLSP was implemented throughout the whole country.

2.2.2 Livestock Development Project (LDP)

The NLSP was followed by the Livestock Development Project (LDP) which was implemented from 2003 to 2009. Two major components of the LDP which were identified as shortfall of the NLSP were credit provision to enable livestock farmers, processors and traders to access short to medium term loans (6month – 3years) for feed, drugs, storage facility, processing equipment, livestock housing and purchase of livestock, or marketing activities; and capacity building for staff, livestock farmers, processors, and traders.

The LDP, though focused on livestock development had an overarching objective of poverty reduction. Livestock interventions offered much potential to reduce poverty when targeted towards improving the contribution livestock make to the livelihoods of the poor households (LIP, 1999). The LDP covered seven regions that were considered most important for livestock production in Ghana, namely the Ashanti, Brong Ahafo, Greater Accra, Northern, Upper East, Upper West, and Volta Regions.

2.3. Livestock Development

2.3.1 Breed Improvement

Livestock Breed Improvement carried out at the six nucleus breeding stations was to ensure sustainable access to and utilization of locally available genetic resources for livestock development. This would ensure that breeds used are appropriate to local environments and meet the needs of livestock farmers, in particular smallholders (FAO, 2007; Phillipson *et al.*, 2011).

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These livestock centres also serve as technology transfer centres for training livestock farmers and students in the livestock sector. The breed improvement also employed private participation in the livestock development in an open nucleus breeding scheme. Four main locally adapted species of livestock were selected for development and conservation. These are the Ashanti black forest pig, Djallonké sheep, the West African dwarf goat and the West African Shorthorn Cattle. A crossbreeding programme involving the Sanga cows and Friesian semen was employed for dairy development. Both the AI service and crossbred animals were extended to farms of participating breeders. The projects also imported large white grandparent pigs for multiplication and distribution to farmers (APD, 1992; APD, 1995).

The distribution of the animals to the breeding centres is as shown in Table 2.2

Table 2.2. Livestock breeding and conservation centres of APD,

Livestock breeding and conservation centre	***Species kept***
Amrahia	Dairy cattle (Friesian crossbred)
Babile	Ashanti Black Pig
Ejura	Djalonke Sheep
Kintampo	West African Dwarf Goat
Nungua	Large White Pig
Pong Tamale	West African Shorthorn Cattle

A pilot dairy development scheme in the peri-urban areas was introduced. This involved the collection of milk from farmers and processing at the Amrahia Dairy Farm, as well as encouraging the participation of stakeholders. The programme developed during the NLSP was continued during the LDP with technical assistance to produce and market good quality milk. Dairy markets offer good opportunities for non-farm rural and urban employment (FAO, 2004). The milk collection scheme has empowered few people who diversified into milk collection and

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processing (APD, 1996; 2006). Today locally processed milk can be found on the shelves of supermarkets.

Rangeland improvement and forage development were carried out through the introduction of pasture legumes (*Stylosantes spp*) into grazing areas, herbaceous and tree legumes (*Cajanus cajan, Luceana spp*) into mixed livestock/crop systems, and intensive plots of tree legumes adjacent to dwellings and kraals to improve feed quality and availability (APD, 1999; 2008).

The projects established and maintained a feed quality control laboratory at the Animal Research Institute and developed standards for control of commercial feed for poultry and pigs.

The projects also provided stock water in the form of dams, dugouts and boreholes. This was community based initiatives with full participation from beneficiaries. They were made responsible for controlling water use and protecting the environment around the water sources and catchment areas. Technical assistance was provided to the communities to maintain and manage the watering facilities (APD, 1999; 2009).

2.3.2 Development of Animal Health

The projects assisted in the control of major livestock diseases including CBPP, brucellosis and PPR through vaccination by the VSD. Poultry were vaccinated against Newcastle and Gumboro diseases. Private veterinary practice was encouraged and community livestock workers were trained to complement the activities of the veterinary staff on the field. This was to improve access by producers to livestock health services. Rehabilitation of laboratories and four quarantine stations were carried out in order to build the capacity for disease control and surveillance (LDP, 2005, 2006, 2007).

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2.3.3 Credit provision

The LDP made provision for credit facility to enable livestock farmers, traders and processors to access short to medium term loans (6 months -3 years) for the purchase of animal feed, drugs veterinary services, animal housing, purchase of livestock, milk processing equipment and marketing activities. The loan was administered by the Agricultural Development Bank and the loan repayment kept in a revolving fund for sustainability (LDP, 2005; 2006). The implementation of this component suffered a serious setback with the disbursement process which was very slow with a low recovery rate. When it became apparent that not much of the credit facility would be utilized before the end of the project, management decided to convert the cash into livestock in a credit in kind scheme which was approved after a mid-term review of the project (AfDB, 2010). The credit in kind animals (small ruminants) were to be passed on to new beneficiaries after 2 years. The first batch of the animals was received in December of 2009 (LDP, 2009). Through a ministerial intervention part of the small ruminants were substituted by pigs.

2.3.4 Capacity Building

Another major component of the LDP was institutional capacity building which included rehabilitation of buildings belonging to both APD and VSD, provision of equipment, motorcycles to Agricultural extension agents and livestock officers. Strengthening the capacity of staff of MoFA to effectively support extension delivery and improve the control of major animal diseases. The project sought to strengthen the public sector by increasing its capacity to render services to the private sector and privatizing activities in which it did not have comparative advantage. Extensive training activities were carried out to deepen the knowledge and sharpen the skills of stakeholders in ensuring the availability of the requisite competences at various

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levels (AfDB, 2001; AfDB, 2010). Farmers received training on various subjects such as: range management; forage production and storage; forage seed production; urea treatment of straw; improved housing; breed and environmental improvement, identification and records keeping; hygienic milk collection and processing; savings mobilization and loan management and recovery. Forums were organised on hygienic meat processing and handling, vaccination of rural poultry against Newcastle disease, disease recognition and prevention (LDP, 2005, 2006).

Other Livestock Development projects in the East African region that were implemented around the same period were Livestock projects of Uganda, Kenya, and Eritrea. These projects also focused on poverty reduction. They all have in their strategies livestock genetic improvement, capacity building, feed and water resources development and animal health improvement. Unlike the Ghanaian projects that bought animals and distributed, the Ugandan Project distributed improved sires: bulls and bucks for livestock improvement. The Kenyan project was fashioned to develop the pig industry. It suffered a lot of implementation problems and had a disbursement of 42% at project completion, but was focused and able to revitalise the pig industry. (Kenya, 2002 AfDB, 2008, Uganda, 2012).

According to FAO (FAO, 2010a) livestock development strategies target breeding, feeding, health care, husbandry and marketing, which were strategies implemented by these projects.

2.4 Livestock Development in the context of the Global Plan of Action on Animal Genetic Resources

The Global Plan of action developed under the guidance of Food and Agriculture Organization of the United Nation (FAO) has become the instrument for the development and sustainable utilization of animal genetic resources for food and agriculture.

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Country reports on AnGR submitted to FAO showed significant and irreplaceable contribution that the diversity of farm animals makes to the food security and development of nations. They showed that the full potential of animal genetic resources is far from being realized and confirmed the serious erosion of genetic diversity in both developed and developing countries. The reports therefore called for an urgent global action in order to achieve improved use and development of animal genetic resources and to address their erosion. The synthesis of country reports and thematic studies led to the development of strategic priorities for action contained within a Global Plan of Action for Animal Genetic Resources (GPA-AnGR) which was adopted by the Interlaken Declaration (FAO, 2007a). The GPA-AnGR aims at sustainable use, development and conservation of animal genetic resources (AnGR); provides internationally agreed framework; supports and increases overall effectiveness of national, regional and global efforts (FAO, 2007a).

The GPA, since its adoption has created a global awareness of the importance of the animal genetic resources' contribution to food security and therefore its sustainable utilization and development. The GPA has become a key instrument for the conservation and sustainable use of animal genetic resources at global, regional and national levels. It has inspired regional strategies on animal genetic resources. An example of such inspiration is drawn from the Africa Union Inter-African Bureau for Animal Resources' Strategic Plan of Action 2010-2014 which contains a programme on "Enhancing Africa's capacity to conserve and sustainably use its animal resources and their natural resource base" (AU-IBAR, 2014). Similarly, the Economic Community of West African States (ECOWAS) in its Strategic Action for the Development and Transformation of the Livestock Sector in the ECOWAS Region (2011-2020), includes programmes on evaluation and harmonization of the management of genetic resources and

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facilitation of the development of regional centres of excellence and genetic value addition to local breeds, as well as on capacity building (ECOWAS, 2010).

Ghana's choice of animal genetic resources and the breeding programme developed for conservation and development is in consonance with the strategic priority areas 2 and 3 of the GPA. According to Osei-Amponsah (2010), the most rational and sustainable way to conserve animal genetic resources is to ensure that indigenous breeds remain functional parts of production system that is conservation through use. In 2001, the Animal Production Directorate had the Shorthorn cattle characterized (Ahunu and Boa Amponsem, 2001). Other characterization studies have been carried out (Osei-Amponsah *et al*., 2010, 2011; Osei-Amponsah, 2013) in order to identify distinct breed populations important for improvement, conservation or breed differentiation. Since the declaration of the GPA many countries have reported on the characterization (Melesse and Negesse, 2011; Cabarles *et al*., 2012; Ravimurugan *et al*., 2012;) of their local animal genetic resources and plans for conservation. Ethiopia for instance initiated phenotypic and genetic characterization of its sheep population in order to provide a nationwide framework for their management, (Gizaw *et al*., 2008). Similarly, the desired attributes, breeding practices and productive performance of the Fipa cattle population of Tanzania were characterized to facilitate the design of an appropriate breeding programme (Mwambene, 2012). This is important in understanding farmers' perception of the characteristics deemed desirable as most of the farmers preferred pure breeding to cross-breeding.

Sustainable conservation and improvement of AnGR are important for food security and for adaptation to possible future challenges in production environments such as climate, market and disease challenges (Zonabend *et al*., 2013). To achieve sustainable genetic improvement of livestock, identification of breeding objectives and implementation of long term breeding

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programmes are required. For animal breeding strategies to be successful certain activities such as livestock recording, evaluation of data and supporting farmers with selection tools are essential. Although breeds have been developed on traditional knowledge and through human interventions and natural selection, structured and systematic breeding programmes have resulted in the impressive genetic improvements of the 20th century. Essential to the livestock breeding programmes were identification, performance recording, those enable use of information for selection of superior breeding stock of appropriate breeds.

The GPA spelt out the need for improved productivity and drawing of long-term and sustainable breeding programmes which are currently mostly non- existent for the indigenous livestock breeds. In addition, establishment of national species and their development strategies and efforts to improve under-utilized breeds are also recommended (FAO, 2007a).

Sustainable breeding programmes need to be long term with simple strategies to efficiently exploit the potential of indigenous breeds (Phillipson *et al*., 2011).

Efficient exploitation of the genetic diversity among and within breeds of different species is expected to lead to increased food production without necessarily increasing the number of animals. In temperate climates, many breeding programmes for different species have shown the opportunities to increase the output per animal after a few decades.

Breeding programmes are systematic and structured programmes aimed at changing the genetic composition of a population based on objective performance criteria (FAO, 2007b). Many attempts to improve livestock in the tropics have been made by upgrading with temperate breeds in crossbreeding or establishing them as strait bred but with serious limitations. Such interventions have only been effective where the production systems provide the introduced breed with the level of inputs similar to those of the country of origin without which the animal is faced with stressors (such as periodic feed and shortage, diseases, climatic extremes, etc.). Such

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lessons from previous genetic improvement programmes are therefore important for the success of new ones. The development objective intended to create genetic change should be developed in line with the national policy for sustainability and the strategy to implement them must be identified and consistent with other trends affecting the production system, the infrastructure, the role of farmers and markets. In addition, the most productive and adapted animals for each environment must be identified for breeding purposes and to develop sustainable breeding schemes under tropical conditions where resources are limited (FAO, 2006).

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CHAPTER THREE

3.0 Materials and Methods

3.1The research design

This chapter gives a brief outline of how the data was collected, what instruments were employed, how the instruments were used and the means for analysing the data collected.

3.1.1 Study area

The LDP, the later of the two projects was implemented in seven regions of the country, namely; Ashanti Region, Brong Ahafo Region, Greater Accra Region, Northern Region, Upper East, Upper West and Volta Regions. For the purposes of the involvement of the breeding centres, the areas surrounding the following Nucleus centres were considered for this study: Amrahia Dairy Farm, Nungua Livestock Breeding Station, both in the Greater Accra Region and Ejura Sheep Breeding Station in the Ashanti Region, Babile Pig breeding Station in the Upper West Region and Pong Tamale in the Northern Region (Appendix 1). Part of Volta Region in the proximity of the Greater Accra Region is also included.

Amrahia Dairy Farm

The Amrahia Dairy Farm was established in 1965 as a pilot dairy project with the objective of testing the liveability and maintenance of fertility of the exotic Friesian for adoption for dairy improvement in the country. It is located 27 kilometres from Accra off the Accra – Dodowa road at Amrahia. During the implementation of the NLSP, a cross breeding programme was adopted by artificially inseminating the local Sanga cattle with Friesian semen to produce a cross bred that would be more adaptable for dairy improvement in the country. As a focal point for dairy development it produced and sold cross bred heifers to farmers and served as a collection point

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for milk collected from farmers in the Accra Plains. It also has a milk processing unit (APD, 2014a).

Babile Pig Breeding Station

The Babile Pig Breeding Station is located in the Upper West Region of the country in the Lawra District. It is 72 kilometres from Wa the Regional capital. It was formerly a general agriculture station, but was transformed into the pig breeding station in 1995 to carry out the breed improvement programme for the Ashanti Black Forest Pig (APD, 2014b).

Nungua Livestock Breeding Station

The Nungua Livestock Breeding Station was established in 1938 for livestock breeding and dissemination. It is a multi-specie non ruminant station and is located off the Accra-Tema motorway. It is the nucleus centre for Large White pig multiplication for the production of parents from grandparent stock usually imported into the country. Various categories of pigs – weaners to growers were sold to farmers for upgrading of their stock (APD, 2009).

Ejura Sheep Breeding Station

Ejura Sheep Breeding Station is located in the transitional zone at Bonyon, 105km from Kumasi on the main Ejura- Atebubu road. It was established in 1965 as a sheep and goat project with the aim of increasing the production of small ruminants to meet national demands. In 1976, the UNDP/FAO/GOG funded the programme and provided the necessary infrastructure for the smooth running of the farm. The farm became a nucleus breeding station for the Djalonké sheep in the open nucleus breeding scheme from the time of the NLSP in 1993 to date. It was also an implementing agent for the LDP from 2003 to 2009 (APD, 2014).

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Pong Tamale Livestock Breeding Station

Pong Tamale Livestock Breeding Station, one of the six nucleus breeding stations is located in the Northern Region. It is a multi-species station responsible for the genetic improvement of the West African Shorthorn cattle. Sahelian and Djallonke sheep, Sahelian goats and Large White pigs are also bred at this station for easy accessibility to farmers in the Northern sector of the country (APD, 2014).

3.1.2 Sampling method

The sampling technique used for this study was purposive sampling. Respondents were livestock farmers who benefited from government livestock interventions to improve livestock production. These were farmers living around the breeding stations, and areas where project interventions were implemented, as well as those who depended on the breeding stations. In all 129 of such farmers were interviewed.

3.1.3 Data collection

The main data collection instrument for the study was a semi structured questionnaire (Appendix 2). The questionnaire sought to encourage respondents to share their views as well as answer simple questions in multi possible answers. The questionnaire sought to collect information on benefits from the previous government interventions and also the impact of the breeding stations on livestock production and livelihoods of the beneficiaries in their catchment areas.

3.1.4 Data collection procedure

Data from primary and secondary sources were collected. Primary data was obtained by use of semi structured questionnaires (Appendix 2) administered on one-on-one face-to-face interviews. Secondary data was used in the selection of the respondents for the data collection and also

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through stakeholder consultations and the outcomes incorporated into discussion. The interviews focused on a number of thematic issues that relate to the activities carried out during the implementation process of the two projects. The areas covered training of farmers on good agricultural practices, credit provided to farmers and access to breeding stock and artificial insemination services.

3.1.5 Data analysis

The data collected was coded and analysed using SPSS version 21 (IBM, 2012). SPSS was chosen because it is amenable to large data set and is appropriate for quantitative data analysis. Descriptive statistics such as frequency tables, percentages, histograms and pie charts were generated, interpreted and discussed in the results.

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CHAPTER FOUR

4.0 Results

This chapter presents the results of the data collected from the field. It includes the background characteristics of respondents, the type of benefits received from the projects and the analysis of the impact of the projects on the livestock and livelihoods of the respondents.

4.1 Regional distribution of respondents

Ashanti region recorded the highest percentage of respondent about thirty percent (29.5%) as evident in the fact that aside the catchment area of the farm, the region was involved in peri-urban dairy development and extensive pig farming. Greater Accra region which followed Ashanti Region with a percentage of twenty-five (24.8%), have two farms whose catchment areas were considered. Volta region, Northern Region recorded the lowest percentage of respondent of seventeen percent (17.1%) and eleven percent (10.8%) respectively (Table 4.1).

Table 4.1 Percentage distribution of respondents per Region

Regional Distribution	Frequency	percentage
Ashanti	38	29.5
Greater Accra	32	24.8
Northern	14	10.8
Upper West	23	17.8
Volta	22	17.1
Total	129	100.0

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4.2 Age distribution of respondents

Majority of the respondents fall within the age group of 31 through to 70 years, with farmers aged between51 and 60 years being the most often encountered thirty-two percent (31.8%). The second most frequent age cohort was the 41-50 year group (25.6%) followed by 61 to 70 year group with twenty two percent (21.7%) and then 31-40 with a percentage of sixteen, (16.3%). The age cohort of 21-30 and 71-80 years recorded the lowest percentage of two (2.3%) each.

Table 4.2 Age distribution of Respondents

Age cohort	Frequency	Percentage
20-30	3	2.3
31-40	21	16.3
41-50	33	25.6
51-60	41	31.8
61-70	28	21.7
71-80	3	2.3
Total	129	100

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4.3 **Gender Structure**

Among the respondents, about twenty-one percent (20.9%) were females while seventy-nine percent (79.1%) were males.

Table 4.3 Gender structure of respondents

Gender	Frequency	Percentage
Female	27	20.9
Male	102	79.1
Total	129	100.0

4.4 **Education background**

Twenty percent (20.2%) of respondents were illiterate while thirty-nine percent (38.8%) had primary education. About twenty-three percent (23.3%) received secondary education and about two percent (1.8%) had tertiary education (Table 4.4).

Table 4.4 Educational background

Level of education	frequency	percentage
Illiterate	26	20.2
Primary	50	38.8
Secondary	30	23.3
Tertiary	23	17.8
Total	129	100.0

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4.5 **Dependency on Respondents**

The data revealed that large proportion of respondents which represent eighty-five percent (85%), (that is 42.5% 0-5; 42.5% 6-10) have dependents from 0 to10. This is followed by those between 11 and 15 dependents with a percentage of eight (7.9%). Those who have 16-20 were found to be four percent (4.0%). Dependency of 21 to 25 recorded two percent (2.3%). From 26-30 dependents recorded the least percentage that is close to one percent (0.8%) as shown in table 4.5.

Table: 4.5 Number of farmers' dependants.

Number range	Frequency	Percentage
0 - 5	54	42.5
6 - 10	54	42.5
11 - 15	10	7.9
16 - 20	5	4.0
21-25	3	2.3
26-30	1	0.8

4.6 Interventions

Interventions rolled out by the projects included training, provision of credit, supply of breeding stock and artificial insemination services. Twenty (20.2%) percent of respondents who benefited from training did not access any other interventions.

Patronage of breeding stock is rather low six percent (6.2%) although breed improvement is a major activity of the two projects and core function of the APD**.**

AI recorded the lowest percentage of two (2.3%) (Figure 1).

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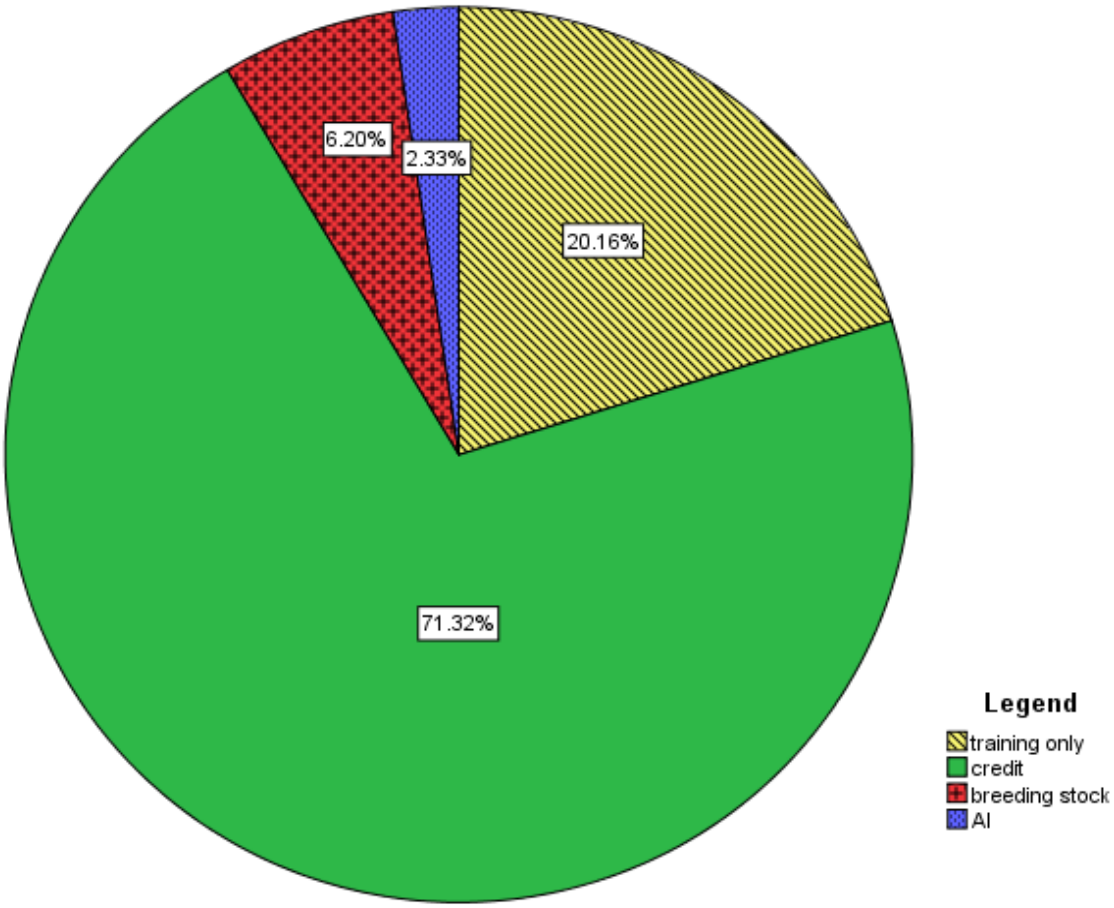


Figure 1 A pie chart showing type of intervention introduced by livestock project

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4.6.1Training

Ninety two percent (92%) of respondents who benefited from the project indicated that they were trained in various technologies. Respondents who indicated that they were trained in provision of good housing, feeding, breeding management, farm sanitation, biosecurity, parasite control were classified as good agricultural practices and these accounted for eighty-two (82.35%) percent. Nine percent (9.24%) indicated hygienic milk handling and processing while those who indicated that they received training in feeding/dry season feeding alone constituted eight percent (8.4%) shown in (Figure 2). One hundred percent (100%) of those who received training indicated that the training they received has been helpful (Appendix 3).

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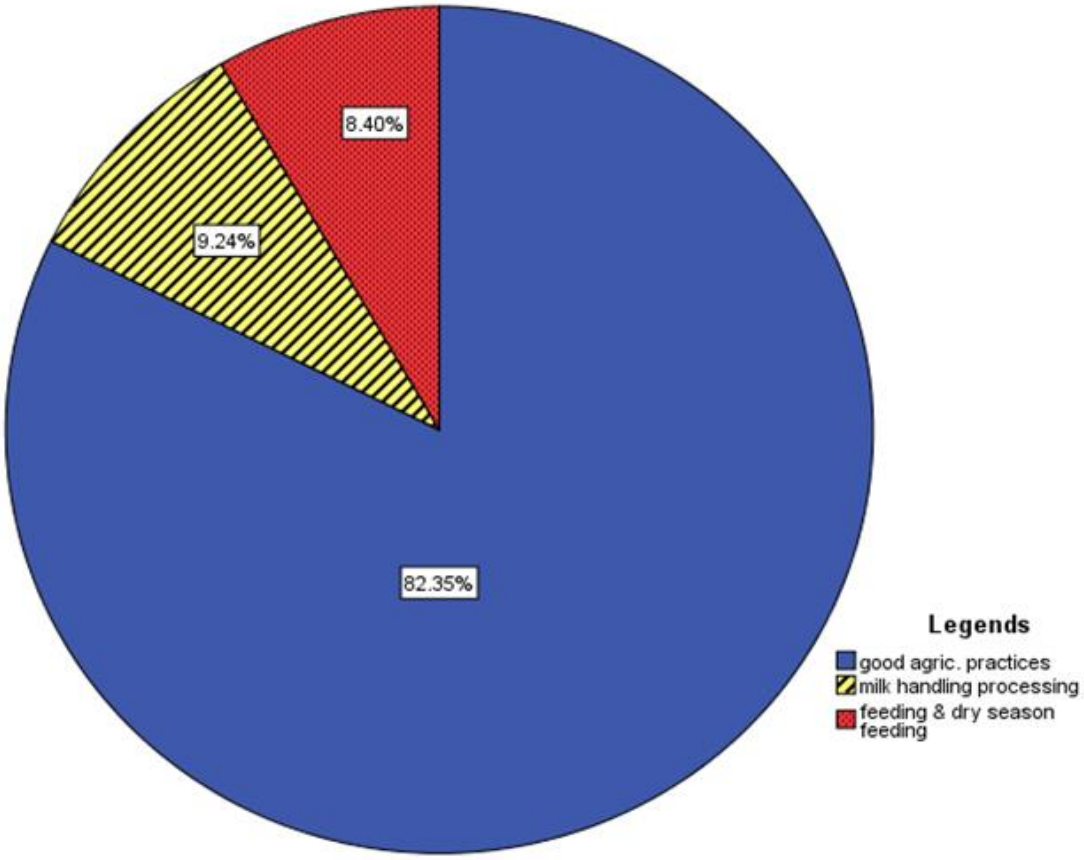


Figure 2 A pie chart showing benifits of training programmes of livestock projects

4.6.2 Credit

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Those who benefited from the credit facility are as shown in Appendix 3. Out of 126 respondents, seventy-six percent (76.2%) benefited from the credit while twenty-four percent (23.8%) did not. Cash credit recorded five percent (5.4%), while the remaining was taken by credit in kind with sheep recording the highest percentage of fifty-six (55.8%) (Figure 3).

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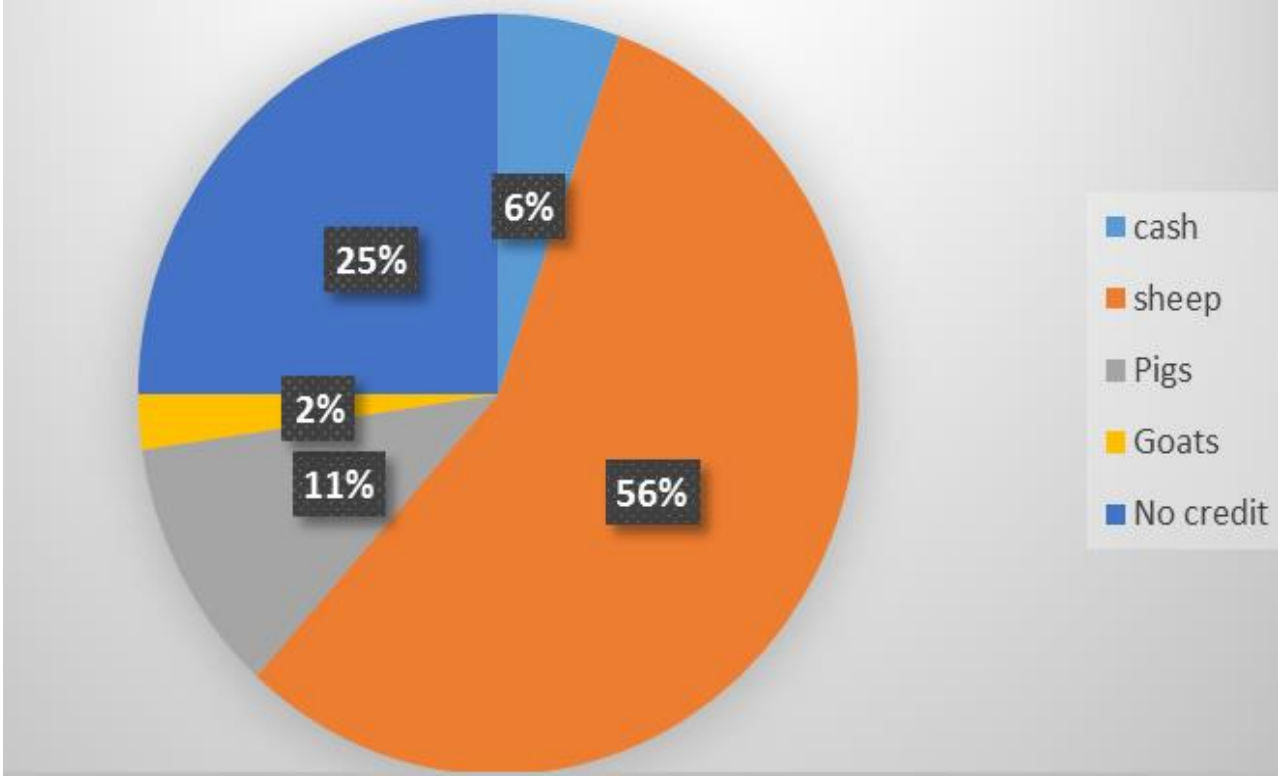


Figure 3, Type of credit received from the project

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Results from the study indicate how farmers used the credit received from the interventions (Figure 4). Eighty-eight percent (88%) used the animals for rearing. Six percent of those who received cash credit invested it in processing equipment while one percent (1%) invested the credit obtained in animal housing. The amount of cash credit received is shown in table 4.6. No record was obtained for investment into animal feeding and medication. Seventy-two percent of respondents have since paid back.

Table 4.6 Amount of cash credit received

Amount in cedis	Frequency	Percentage
¢500	5	71.4
¢700	2	28.6
total	7	100.0

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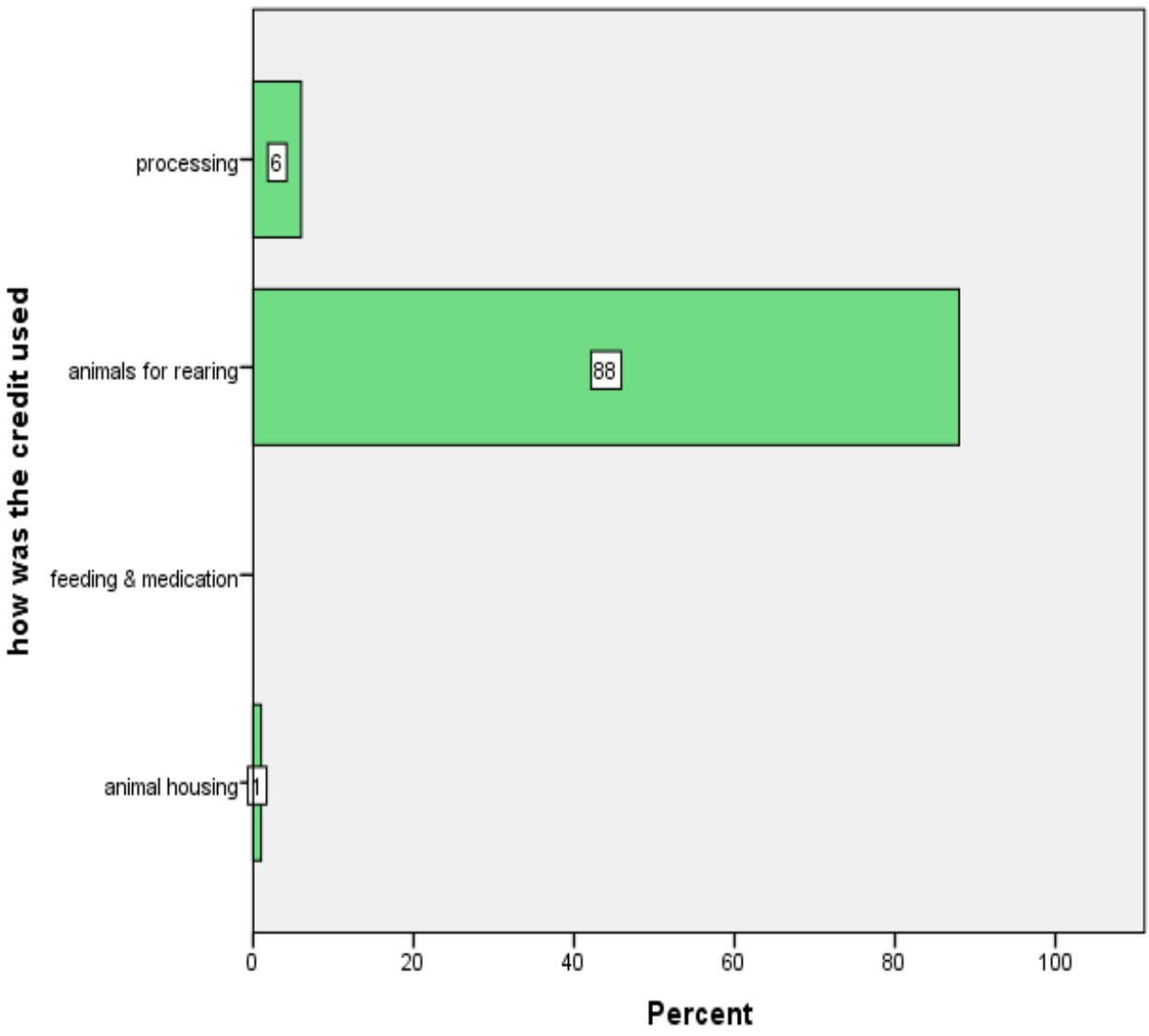


Figure 4 A bar chart showing how farmers used credit from livestock projects

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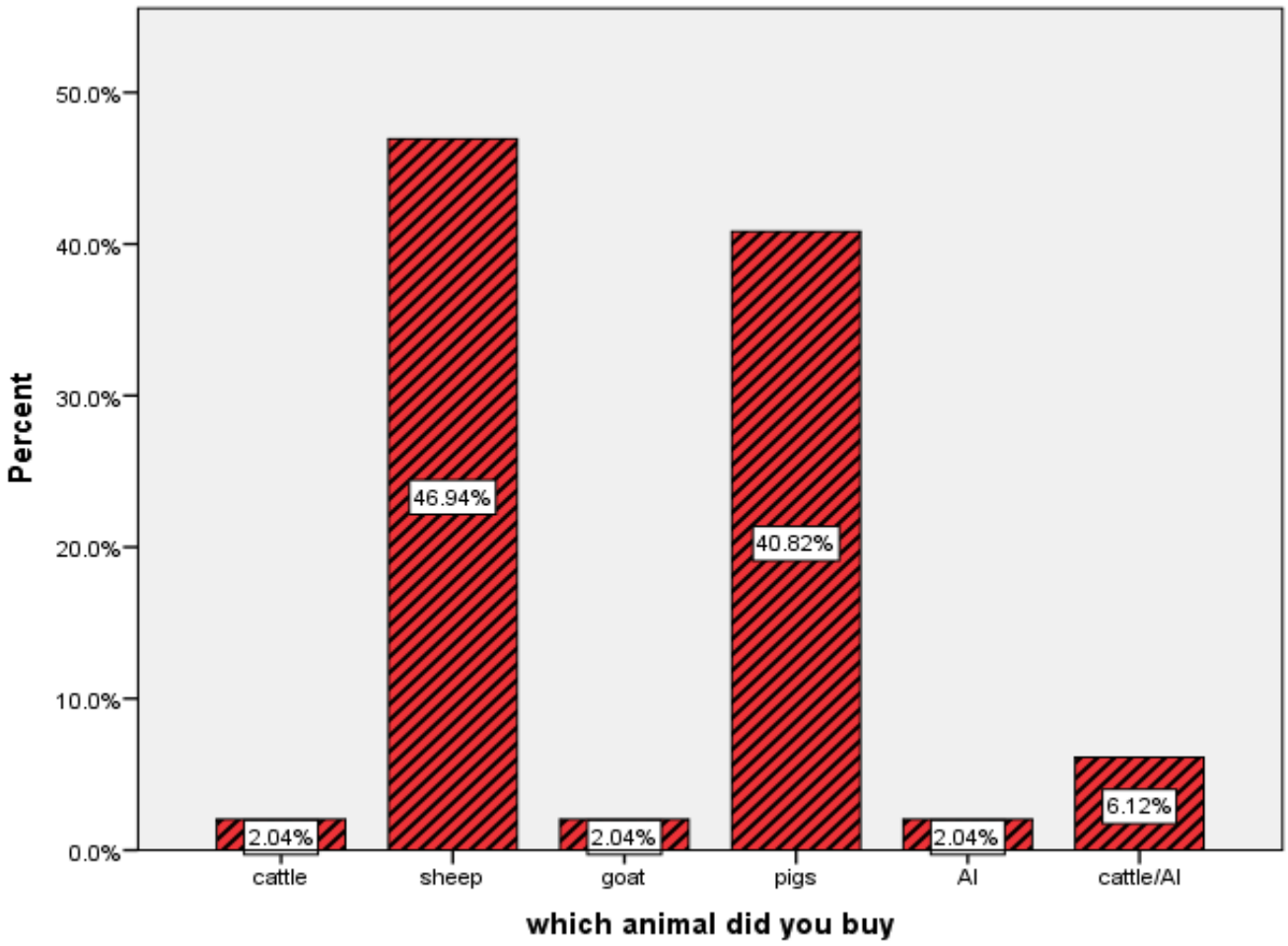


Figure 5 A bar graph showing type of animals bought by farmers through livestock project

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4.6.3 Access of breeding stock from Breeding Station

Appendix 3 shows those who indicated they bought breeding stock from the breeding stations, constituting forty-eight percent (47.5%). Out of these, sheep and pigs recorded the highest patronage with forty-seven percent (46.9) and forty-one percent (40.8%) respectively as shown in Figure 5. Almost all the respondents bought the animals for breeding except four percent who bought for slaughter (Figure 6).

Percentage of respondents who belong to associations are also found in appendix 3. Forty-eight (47.6%) percent of the respondents said they belong to association while those who do not belong to any association are in the majority representing fifty-two percent (52.4%).

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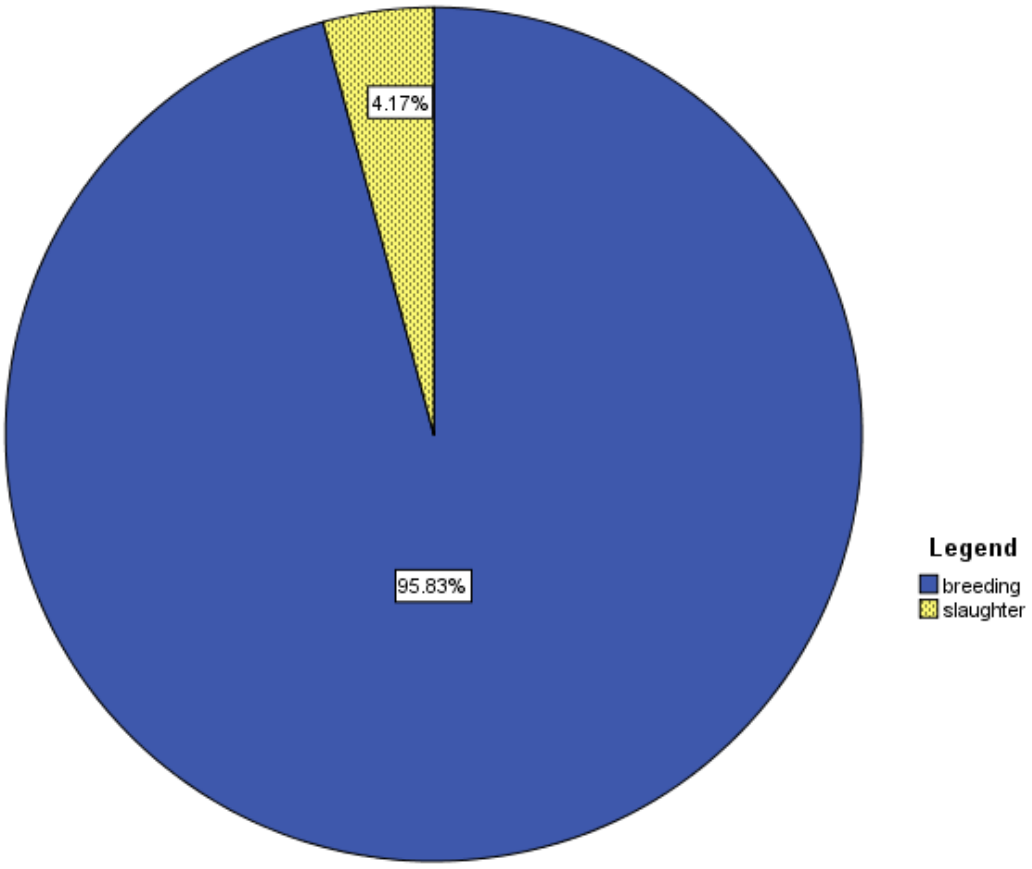


Figure 6 Pie chart showing reason for which farmers bought animals through a livestock project

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4.7 Impact of Interventions on Farmers

The analysis shows that the interventions have significant impact on beneficiaries. From figure 7, thirty-three percent (33%) said their income levels increased. This they attributed to the intervention as they were able to apply lessons learnt and had better animals for sale. Another 13.3 percent of the respondents said they have had their farms expanded as a result of the interventions. Approximately five percent (5.5%) indicated that the intervention has introduced them to adopt a business approach to farming. Only two percent (2%) of the respondents did not have any positive impact from the project.

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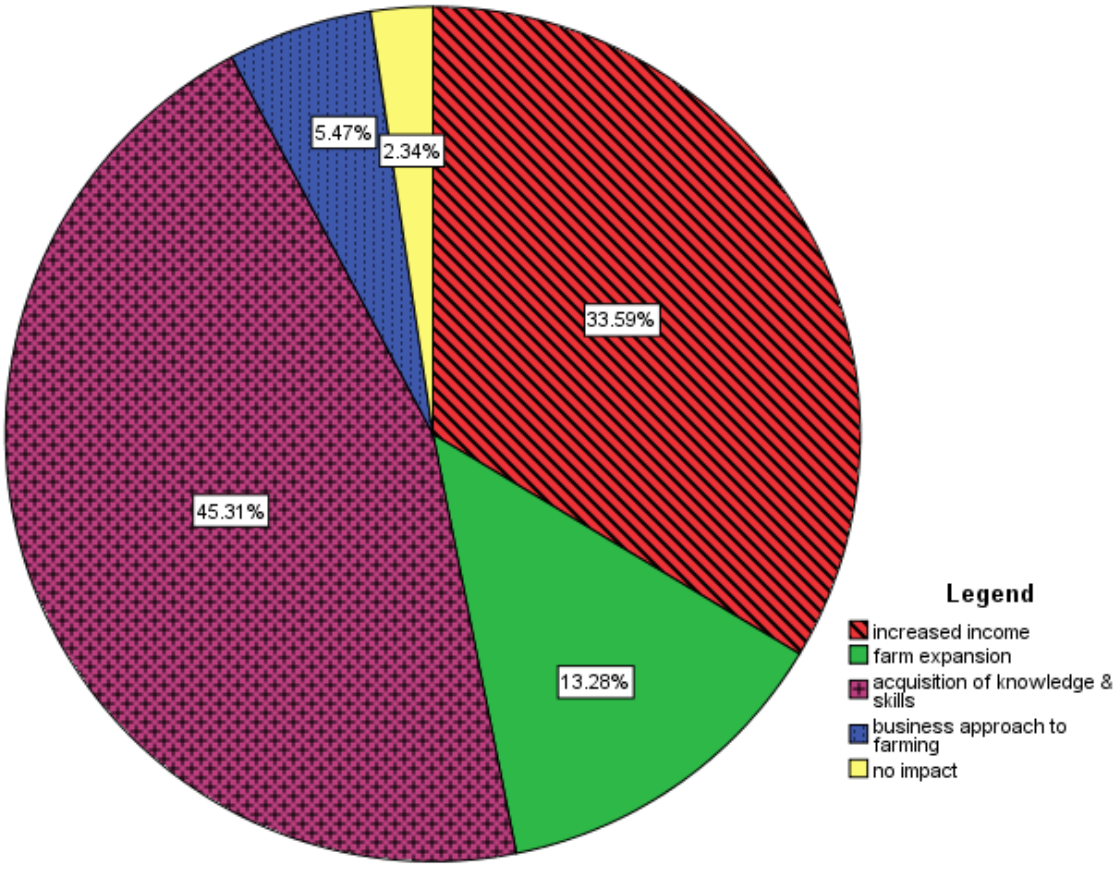


Figure 7 Pie chart showing the perception of farmers on the impact of livestock projects

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All the respondents worked with Agricultural extension Agents (AEA) during the life span of the project, but a few of them, three percent (3%) currently do not have any AEAs working with them.

Farmers associations were prerequisites for credit disbursement but fifty-two percent of respondents said they did not belong to any associations.

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CHAPTER FIVE

5.0 Discussion

The results from the study showed that farmers benefited from the projects as designed.

5.1 Regional Distribution of Respondents

Results from the regional distribution of respondents recorded a lower percentage of respondents for some of the catchment areas. Northern, Volta and Upper West regions recorded percentages below the average of twenty percent. These were about eleven percent (10.8%), seventeen one (17.1%) and eighteen percent (17.8%) respectively. This was attributed to loss of institutional memory because the livestock officers involved in the data collection were new and could not trace some of the beneficiaries. As indicated in the following section, (age distribution) respondents within the age cohort of 20-40 were not likely to experience the NLSP as it was implemented 23 years ago.

5.2 Age distribution

The results of the study placed majority of the farmers within the age group of 31 and 70, with over seventy percent (70%) in the active age group. That is the age cohorts of 31 to 40 and 41 to 50, with 51 to 60 recording the highest percentage of thirty-two (31.8%). This is good for the livestock industry as different age groups are employed in it. People going on retirement also turn to the livestock sector for possible investment and is a positive sign for the growth of the sector.

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5.3 Gender structure

A few of the project reports reviewed revealed twenty-two eight percent (21.8%) as women beneficiaries (LDP, 2006; 2007). Although the projects gave equal chances to both men and women and encouraged women participation by allotting a thirty percent (30%) of total involvement as reserves for them, this was not seen in the field. This study found the gender structure to be skewed in favour of males seventy-nine percent (79.1%). This to a greater extent could defeat the objective of poverty reduction because women constitute a greater proportion of the poor and vulnerable. As observed by (LIP, 1999; Hefferman, 2004), livestock interventions are seen as directly benefiting the poor since one-third of the poor rear livestock. According to Kristyanson *et al.,* 2010, there is evidence that poor women own livestock (chicken, and small ruminants) but when resources are available to them, some of them invest in larger animals. Therefore any intervention in the livestock sector when, target well will improve the livelihoods of the poor.

5.4 Education background

Basic education is necessary for livestock farmers as activities such as performance recording, deworming, feed preparation, recording of financial operations and analysis of operations need to be carried out for the development of the sector. Since eighty percent (80%) of beneficiaries had basic education and above, (Table 4.4), it holds good promise for the livestock industry because technology adoption may be easy. Those who had tertiary education account for seventeen percent (17%) of respondents and are mainly into dairy processing as an additional income generation activity.

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5.5 Dependency on respondents

Large dependency on respondents about forty-three percent (42.5 %) and fourteen percent (14.4%) could be indicative of the wealth status of the families as their productions increased. These large families could also serve as labour for livestock production and other economic activities (Makeham and Malcolm, 1986).

5.6 Interventions

Interventions rolled out by the project included training of stakeholders, credit provision in the form of cash and livestock and artificial insemination. Breeding stations were revamped for farmers to be able to access breeding stock when necessary, as well as facilitate the implementation of the open nucleus breeding schemes.

5.6.1 Training

Training was a significant aspect of the project as almost all farmers benefited from it. Nchor, (2010) observed that farmers who were trained, and were practicing improved housing, supplementary feeding and improved healthcare had a significant increase in their livestock production. In another study, higher levels of technology adoption was found to be associated with better milk yield regardless of the breed of cattle owned by farmers (Vargas *et al*. 1995; Mekonen *et al*, 2010; EADDP, 2011). Almost all beneficiaries of the project received some form of training in order to build their capacity for the development of the sector. As evident in Figure 2, eighty-two (82.4%) percent of the respondents indicated good agricultural practice as their benefit from training. Good agricultural practice for example for dairy farmers is about implementing sound practices on dairy farms to ensure that the milk produced are safe and suitable for the intended use, and also that the dairy farm enterprise is viable into the future, from

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the economic, social and environmental perspective (FAO, 2011). Out of the total number of respondents only eight percent (7.8%), (Appendix 3) of the respondents indicated that they did not receive training. These were found to be new beneficiaries of the credit in kind programme, whom animals from first beneficiaries were passed on to after the end of the project. The livestock officers explained that resources were not made available to them to conduct training before distributing the animals to the new beneficiaries. However they are supporting them with extension visits. Forty-five percent (45%) of the respondents testified that they acquired new knowledge which hither-to would not have been available for the new technology being used in production. As a result they have seen transformation in their production.

5.6.2 Credit disbursement

Credit disbursement to farmers began in 2005 with cash credit which lasted till 2008. The cash credit was converted into credit in kind in 2009. The International Fund for Agricultural Development (IFAD) defined credit in kind as a non-monetized credit system in which credit is granted through the direct provision of inputs such as livestock and animal feed, while repayment is often in the form of outputs such as offspring and seed. The first batch of animals was delivered in December of 2009. This caught on well with the farmers except a few of them (18%) who indicated that the facility was not helpful to them. Some of the reasons they gave were that animals received were very weak and consequently were lost. Other farmers lost theirs as a result of theft and were unable to pay back. New beneficiaries whose grace period has not elapsed are yet to pay back. Some farmers indicated that, their animals were ready but MoFA staff has not come to demand for the repayment. Monitoring of the farmers could be weak as some farmers indicated that there are no AEAs in their area while others claim the AEAs were not effective. This was not possible during the project implementation period as no farmer got selected without

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the involvement of an AEA. This can affect the revolving nature of the credit (pass-on) to new beneficiaries.

Conditions for accessing credit were: membership of association formed as social collateral for credit disbursement (membership between 5-15), where group members are tasked should a member default; provision of animal housing; ability to feed and provide healthcare; ability of group to open and maintain a bank account; ability to repay back loan; willingness of beneficiary to comply with conditions set for the loan disbursement. These conditions were set to ensure that the programme was sustained.

The IFAD recognizes that improving access of the rural poor to relevant financial services is a vital tool in poverty alleviation and sustainable rural development. This is relevant to the loan portfolio of the project. Unfortunately since the loan was a shot term one (between 6 months and 3 years), the recovery of some of them started in the following year and was very slow. This caused a delay in the disbursement and could account for the low percentage (7.3%) of beneficiaries encountered by this survey. As observed by IFAD, local circumstances may affect the delivery strategy and success of financial service interventions (IFAD, 2001). Although, the beneficiaries put the money to good use, the cash disbursement had to be converted to credit in kind due to bottle necks in the implementation. Nevertheless, most of the cash credit beneficiaries encountered, took advantage of the milk collection and processing scheme and are now small scale dairy processors. According to Holman *et al*., (1995) dairy development with small producers was possible with the investment of subsidized credit. The credit facility towards the dairy development has to date placed the Ghanaian dairy products on the shelves of supermarkets. The results show that the credit was put to good use and it will serve as a basis for improving the livestock sector as well as having positive impact on the future household economy.

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5.6.3 Access of breeding stock/AI services from the breeding stations

Access of breeding stock from the breeding stations was rather very low six percent (6.2%) and this could be attributed to the state of popularity of these farms to farmers as some of them indicated that they did not know of their existence. However both Ejura and Nungua Livestock Breeding stations recorded a better patronage. No one reported buying the indigenous pig from the Babile station. This could be as a result of the fact that commercial farmers saw the large white pig as better for productivity than the Ashanti Black Forest Dwarf pig. Although the projects were to implement the open nucleus breeding scheme, the NLSP which put structures in place, selected the participating breeders, instituted a recording scheme, and distributed the first set of rams could not continue as the project term expired. The LDP placed less emphasis on the roll out of the breeding programme as the APD lacked the requisite personnel to be responsible for its implementation. After the selection of the participation breeders and training, no other programme was rolled out for them. Therefore animals did not move from or into the nucleus centres and the participation breeders' farms. The infrastructure required for the success of a breeding programme such as trained staff, facilities for breeding animals and logistics for dissemination of germplasm (Phillipson *et al.*, 2011) were not put in place apart from structures at the nucleus centres by the LDP.

Artificial insemination (AI) services to farmers were the least popular among respondents (2.0 %). AI is used instead of natural mating for reproduction in order to disseminate genetic materials for improvement (InTech, 2011) and was employed by the projects to cross breed cows for dairy development. Cross-breeding is an alternative method for genetically improving a breed (FAO, 2010) and this was adopted for dairy development in Ghana. Cross-breeding of the locally adapted Sanga breed of cattle has been going on at the Amrahia Dairy Farm since the period of

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the NLSP. After the NLSP introduced the milk collection scheme, it also extended the AI services to farmers in a bid to improve upon milk yield of farmers' animals. Even though AI technicians were trained by the LDP, this took place at the end of the project (LDP, 2010), and the technicians have not been resourced to go to the field, unlike in Uganda where private practitioners exist for a developed dairy system (Eklundh, 2013). With the difficulties faced by earlier introduction of exotic breeds into Ghana, only farmers with the ability to cater for these animals were considered and this could account for the low patronage of the service. After the selection of participating breeders, no programme was rolled out to ensure that the open nucleus breeding scheme as designed by the breeding consultants (Ahunu *et al.*, 1995) was followed. Animals distributed to farmers as credit were not purchased from the breeding stations.

AI was limited to the peri-urban area for dairy development, and only farmers capable of zero grazing their animals were considered. Furthermore, farms of some beneficiaries were closed down as urbanization caught up with them.

The formation of associations was a condition for the credit disbursement as that was to serve as social collateral for the loan disbursement. This clearly shows that the groups were not sustained once the credit was no longer forthcoming.

From the foregoing one can say that in general, the project has had positive impact on the beneficiaries. Compared to a similar project implemented by Eritrea in 2008 farmers increased their household incomes. Furthermore, provision of credit and upgrading of skills and experiences of farmers through training and farm visits impacted positively in sustainable livestock production (AfDB**,** 2008).

All the farmers interviewed remembered the LDP but not the NLSP. The NLSP's community involvement was limited to farmer training, mostly participating breeders and stock water users.

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It is possible that the selection of respondents were skewed towards LDP which was recent, while the NLSP was about twenty years ago.

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CHAPTER SIX

6.0 Conclusions and Recommendations

6.1 Conclusions

Judging from the analysis of the results, it can be concluded that the projects had a positive impact on livestock farming in the catchment area. Training received during the projects had been of enormous benefit as beneficiaries were able to implement good agricultural practices in their production. These made them have more and better animals for sale, reduced animal mortality and disease problems. Credit received during the intervention were invested in livestock production and processing equipment. These resulted in increased livestock production and dairy processing. These beneficiaries were able to process raw milk into products of higher value some of which are found on the shelves of supermarkets, for example Emadom processed dairy products.

Furthermore, household income of the respondents increased as indicated by some of them, while others said they expanded their farms due to the benefits they received from the projects. These results only show that the economic life of the respondents had improved. From the above it can be concluded that the interventions have had a positive impact on both livestock production in general and the livelihoods of the beneficiaries in the catchment area.

This emphasizes the fact that, livestock projects when executed well could impact positively on livestock production and livelihoods of farmers.

6.2 Recommendations

Based on the findings made by this study, the following recommendations are made for consideration by the Ministry of Food and Agriculture.

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Training and monitoring of farmers were weak after the project period. These need to be strengthened as they promote performance, ensure efficiency and effectiveness leading to sustainability of gains.

Future programmes should have a sustainable breeding component and make use of expertise of stakeholder institutions and the National Consultative Committee on Animal Genetic Resources in programme formulation, procurement of breeding stock, running of breeding programme, selection of participating farmers, and monitoring of germplasm.

The capacity of livestock farmers and their associations, AEAs and all other stakeholders should be upgraded from time to time. This should help livestock development projects impact more on the farmers and their livelihoods and enable them contribute to ensuring protein-food security in Ghana.

It is also recommended that for a more focused approached to the development of the livestock species, projects are developed around species as was the case of the Kenyan Livestock Development Projects which focused only on pigs and dairy cattle.

Finally, the Animal Production Directorate (APD) should embark upon public sensitization activities to popularise its breeding stations and the programmes run by them in order to promote the local Animal Genetic Resources.

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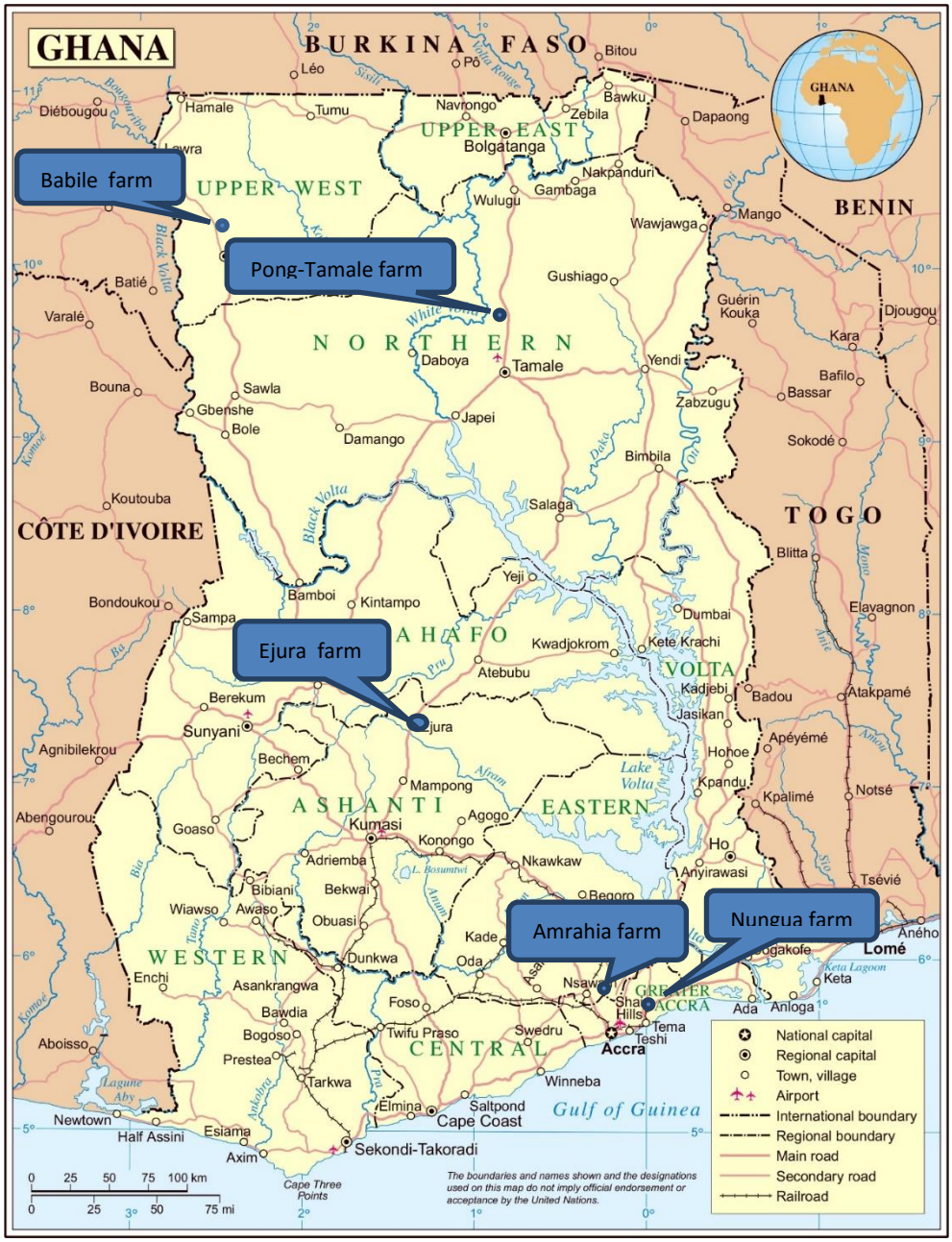
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Appendices

Appendix 1



Map of Ghana showing national breeding stations

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Appendix 2 – Questionnaire used for data collection

HAVE FARMERS IN GHANA BENEFITED FROM GOVERNMENT LIVESTOCK INTERVENTION PROGRAMMES? A PERSPECTIVE VIEW OF SOME SELECTED PARTICIPATING FARMERS.

QUESTIONAIRE FOR COLLECTION OF DATA ON BENEFITS FROM LIVESTOCK PROGRAMMES

1.0 GEOGRAPHICAL LOCATION

Name of Region……..

Name of District ……..

Name of Town ……..

2.0 Household

Name of farmer……..

Date of birth……..... Age……..

Educational background / literacy

How many children or dependants do you have?

Are your children in school / or completed school?

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At what level?

Do you have any other job apart from farming? Yes/No

Do you have any other farm enterprise? Yes/No

3.0 Social amenities

What is your source of water supply?

Do you have electricity? Yes/No

Do you have access to a health facility? Yes/No

4.0 Farming activities

What type of livestock do you have?

Name of livestock	Year started	Number as at 2015
Cattle		
Sheep		
Goat		
Pigs		
Poultry		

Herd structure

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cattle

Male		Female	
Breeding herd			
Weaners			
Young stock			

sheep

	Male	Female
Breeding herd		
Weaners		
Young stock		
Breeding herd		
Weaners		
Young stock		
Total		

Pigs

How long have you been rearing these animals?

How many animals did you start with?

5.0 Association with Ministry of Food and Agriculture

5.1 EXTENSION DELIVERY

Do you work with Agric. Extension Agents? Yes/No

What is the name of the extension officer who visits you?

What do you talk about/discuss with the AEA?

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How helpful has he/she been?

Have you received any training from MOFA? Yes/No

What was the training about?

Have you attended any workshop? Yes/No

What were some of the things discussed?

What have you learnt from the training?

Where were these trainings held?

How helpful were these trainings?

Are you aware of any of MOFA's livestock projects or any form of assistance to livestock farmers? Yes/No

If yes which one?

5.2 CREDIT FACILITY

Have you ever received loan from any of MoFA Livestock Project? Yes/No

What was the loan for?

Was it helpful? Yes/No

Have you ever received animals from MOFA? Yes / No

When was this?

A. Within the last 5 yearsB. 6-10 years ago C. over 10 years ago

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If yes, fill in the table below.

Year	Sheep	Goats	Pigs	Poultry

Were you made aware of the terms involved in giving you the animals? Yes/No

If yes can you explain?

Were you supposed to pay back? Yes/No

If yes, have you been able to pay back?

5.3 ARTIFICIAL INSEMINATION SERVICES

Have you received Artificial Insemination services from MoFA? Yes/No

How many animals were inseminated?

Were they all pregnant?

How did the AI help your production?

How did the project benefit you?

What have you been able to do for your family after the receipt of the animals?

5.4 PURCHASE OF ANIMALS FROM BREEDING STATIONS

MOFA has 7 livestock breeding stations. Are you aware of any of them?

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Have you ever bought animals from any of them?

How many did you buy?

From which of the farms?

Amrahia Nungua Babile Ejura

Pong Tamale Kintampo Nkwanta

How much did you pay for them?

Was this lower or higher than the prevailing market price?

How many times have you bought animals from any of these farms?

What was your reason for buying the animals? ----breeding / slaughter

Did you find them useful? Yes/No

If yes how

6.0 Do you belong to any livestock farmers association?

7.0 How has Government Livestock projects in general impacted on your livestock farming?

8.0 Please do you have any suggestions for improving the delivery of future government livestock projects?

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Appendix 3 -Results of responses to questions with yes/no

Activity	Frequency	Percentage
Received training		
No	10	7.8
Yes	119	92.2
Total	129	100.0
Received credit		
No	30	23.8
Yes	96	76.2
Total	126	100.0
Obtained breeding stock from nucleus station		
No	82	63.6
Yes	47	36.4
Total	129	100.0
Usefulness of animal received		
No	1	2.0
Yes	48	98.0
Total	49	100.0
Assess to AEA		

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No	4	3.1
Yes	124	96.9
Total	128	100.0
Helpfulness of AEA		
No	3	2.4
Yes	124	97.6
Total	127	100.0
Membership of farmers association		
No	66	52.4
Yes	60	47.6
Total	126	100.0
Helpfulness of credit		
No	17	12.1
Yes	77	81.9
Total	94	100.0
Payback of credit		
No	25	27.5
Yes	66	72.5
Total	91	100.0
Helpfulness of training		
No	0	

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Yes	119	100.0
Total	119	100.0