ZIMBABWE

REPORT

of the

Auditor-General

on

LAND UTILISATION AND MANAGEMENT OF ESTATES

By the

AGRICULTURAL RURAL DEVELOPMENT AUTHORITY

VFM 2013:02

ZIMBABWE

Office of the Comptroller and
Auditor-General of Zimbabwe
48 George Silundika Avenue
Cnr. Fourth Street,
Harare, Zimbabwe

The Hon. Dr. J. M.Made
Minister of Agriculture, Mechanisation
and Irrigation Development
Ngungunyana Building
1 Borrowdale Road
Causeway
Harare

Dear Sir

I hereby submit my Value for Money Report on Land Utilisation and Management of Estates by the Agricultural Rural Development Authority in terms of Section 11of the Audit Office Act (Chapter 22:18).

Yours Faithfully

M. Chiri (Mrs)
AUDITOR-GENERAL

Harare
June 20th, 2013

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TABLE OF CONTENTS

Page

GLOSSARY OF TERMS……i-ii

EXECUTIVE SUMMARY…….iii-vi

1. INTRODUCTION

1.1 Background**…….....1**

1.2 Motivation**……..…….....**1

1.3 Mission Statement……..**……...**2

1.4 Objectives**……..……**2

1.5 Organisational Structure**…….....**3

1.6 Funding**.....**3

1.7 Scope of Audit**……...**3

1.8 Methodology Of Audit**.....**4-5

2. SYSTEMS DESCRIPTION…….……..……..6-12

3. FINDINGS……..……...**13-37**
3.1 Failure to fully utilise arable land……..…….....13-28
3.2 Poor livestock management …….....28-36
3.3 Power Back Up…….....36
3.4 Non Payment of Salaries and Wages…….…….....37

4. RECOMMENDATIONS……..38-39

ANNEXURES……40

GLOSSARY

Anaemia A condition where there is a shortage of red blood cells or haemoglobin in the blood.

Artificial insemination The insertion of semen through a syringe into the womb.

Branding Marking livestock with a hot metal for identification purposes.

Bull-to-cow ratio The number of cows per bull in a herd.

Calving interval The space of time taken by a cow to have another calf after giving birth.

Contract farming An arrangement whereby a farmer enters into an agreement with a supplier of inputs for the production of a crop undertaking to sell the produce thereof to the same.

Cull Cow a cow past its reproductive age.

Fertility The biological ability to conceive or produce.

Foliar spray Leaf spray applied on seedlings.

Fungicide A chemical that is used to destroy fungus.

Herbicide A substance that destroys weeds.

Inoculation Vaccination or treatment of seeds before planting.

Livestock unit a portion of a paddock or grazing area which accommodates a specific number of livestock whose stocking rate and area is determined by the available pastures based on the estate's geographical location.

Mastistis a bacterial infection that affects the udder.

Pen-fattening Zero grazing or feeding of livestock in small enclosures.

Pesticide A substance for destroying insects or other pests.

Progeny Offspring

Scouting Examining a sample of the plant population.

Stocking rate Number of hectares per livestock unit.

Tasseling A stage whereby a cereal starts to produce pollen grains.

Tillering A stage prior to maturity of wheat.

Weaning Making a young mammal to eat foods other than its mother's milk.

EXECUTIVE SUMMARY

Agricultural Rural Development Authority (ARDA) is a parastatal under the Ministry of Agriculture, Mechanisation and Irrigation Development. It came about following the merger of three pre-independence era organisations namely:

- The Sabi - Limpopo Authority (SLA) set up in 1965 to exploit, conserve and utilise water resources for social and economic development through farming and settlement operations.
- The Tribal Trust Lands Development Cooperation (TILCOR) established in 1968 to promote development of agriculture in rural areas, mining, agro-industries, forestry, growth points and commercial undertakings like banking.

- The Agricultural Development Authority (ADA) which was established through the ARDA Act (Chapter 18:01) of 1971 section 18 (i), (ii) and (iii) with the main objective of developing agriculture in the country.

TILCOR and ADA amalgamated in 1978 to form the present ARDA. Total integration of the three development Agencies was achieved in 1982 with the inclusion of agricultural components of the SLA. ARDA is currently managing 21 estates distributed through-out the country.

ARDA is mandated to ensure food security and assisting in rural development through managing land on behalf of the state.

My Audit was motivated by vast tracts of arable land lying idle on ARDA estates for the period 2006-2010.

The purpose of my Audit was to report on challenges affecting the efficient and effective utilisation of land by ARDA and suggesting ways of improving its operations.

Summary of Findings

My audit revealed failure to fully utilise arable land by ARDA, failure to effectively monitor contract farming , poor livestock management practices, failure to recruit and retain skilled staff, shortage of workshop tools and farming implements and irregular payments of wages resulting in de-motivated staff. The findings of my audit which are covered in chapter 3 of this report are summarised below:

1. The authority failed to meet its targeted cropping programme for the three planting seasons 2007/08, 2008/9 and 2009/10 by 53%, 88% and 77% respectively. There was also evidence of failure to fully utilise arable land at ARDA Estates. At Doreen's Pride one of the estates had arable land of 270 hectares. However an analysis of the 2005-10 planting season showed that the arable land was not being fully utilised. During the 2005-6 season 219 hectares were planted while in 2006-7 145.5 hectares were planted. The winter wheat which had an irrigation capacity of 150 hectares saw only 45 hectares being utilised during the 2006-7 season. Sisi Estate with an arable land measuring 940 hectares had failed to effectively utilise its arable land. In 2006-7 only 443 hectares were planted, 2007-8 saw 334 hectares being utilized, in 2008-9 farming was done on 210 hectares only and during the 2009-10 season the Estate only managed to utilise 192 hectares for summer planting which constituted 20% of arable land.

1.1 The Authority did not achieve good yields due to late preparation of land and planting, poor crop management and inadequate and obsolete irrigation equipment. On all the estates visited there was inadequate and obsolete irrigation infrastructure which had outlived its life span. All the estates were not able to irrigate more than 50% of the arable land. Farming operations were not timeously undertaken as there were frequent breakdowns of plant and equipment such as tractors, combine harvesters and

implements. This was further worsened by the shortage of workshop tools as some repairs had to be subcontracted thereby increasing down time.

1.2 ARDA was failing to repair farming equipment and vehicles timeously due to inadequate and unskilled staff and shortage of workshop tools. At all the estates visited the workshops were not fully equipped. Some estates depended on tools personally owned by staff. Most of the staff were not formally qualified for the jobs they were designated.

1.3 ARDA was failing to effectively monitor contract farming as management was failing to ensure acquisition of inputs in time which led to reduced acreage and lower yields than budgeted for. For instance during the 2009-10 season, at Doreen's Pride, inputs for the contract maize seed were received on the 9th of December, 2009 and the other batch on the 20th of January, 2010. At Jotsholo Ammonium Nitrate for 2009/2010 was received on 3 February 2010, this delivery was way too late for the summer cropping as fertilizer is supposed to be administered in December.

2. The authority failed to meet its set targets for the livestock programme of growing the beef herd and producing higher milk yields for the years 2007-2010. The authority failed to meet target by an average of 90% meaning on average ARDA only managed to achieve 10% of their targeted herd size. On milk production it achieved 45% leaving a variance of 55%. This was due to poor livestock management resulting in persistent decline in the herd. At Doreen's Pride 172 animals were missing as at 24th June 2010. There was irregular dipping, insufficient stock feeds, and lack of security for the animals and poor state of paddocks which led to poor birth rates, an increase in missing animals and high death rates.

3. ARDA was failing to pay employees' salaries and wages for the period under review. I noted that three ARDA estates owed their employees' wages and salaries amounting to $65 016.30 with some dating back to February 2009. The following estates were in arrears at the time of audit; Doreen's Pride ($33 787.82), Balu ($22 386.00) and Jotsholo ($8 842.48). The unpaid wages included back pay awarded by the National Employment Council in September 2009 and overtime for February 2010.

4. There was poor record keeping at all estates, some registers were not timeously updated and some monthly and weekly reports were not availed for audit. At Balu, I failed to get monthly reports for the period of the study. Whilst at the other estates incomplete records were submitted such as the asset registers at Doreen's Pride and Sisi estates which were not timeously updated for transfers- in, acquisitions, disposals and transfers-out.

RECOMMENDATIONS

My recommendations to enable ARDA to effectively and efficiently manage and utilise the land at its disposal are summarised below:

1. ARDA should have estates that specialize in seed production and they should deal directly with suppliers for the supply of seeds. They should also resort to ensuring acquisition of inputs in time rather than waiting for a delivery to come. The onus rest on the board and management of the authority to ensure that suppliers meet their obligations in order to avoid perpetual indebtedness. There should be optimum supply of inputs to ensure maximum utilisation of arable land on all estates thereby guaranteeing viability. Where the contractors supply the inputs late, there would be need for the authority to liaise with the contractor so that they relook at the terms of the contract.

1.1 There is need for the authority to draw up and effectively implement a recapitalisation plan for irrigation infrastructure since the infrastructure on all the six estates visited had outlived its lifespan. ARDA should

however prioritise the installation of more powerful generators which can sustain both the estate premises and irrigation pumping capacity.

1.2 To avoid the frequent breakdowns of equipment, ARDA should adhere to manufacturer`s specifications on maintenance and servicing of plant and equipment rather than waiting for the equipment to breakdown. ARDA should fully capacitate the workshops infrastructure available in order to avoid delays in repairs and maintenance of equipment as well as unnecessary outflow of cash through payments for subcontracted jobs.

1.3 There is need to establish a transport and logistics system which will efficiently and effectively cater for the transportation needs of all the estates. The system should ensure equitable distribution of the Authority`s fleet among its 21 strategic business units. The same system should also take care of the distribution of tractors and combine harvesters to ensure that all the estates are adequately equipped.

2. There is need for ARDA to instill animal husbandry best practices in its staff and management in order to reduce unnecessary and avoidable loss of livestock. Paddocks and Plunge dip system should be urgently resuscitated. A sound record keeping system should be put in place to ensure accuracy of weekly, monthly and annual livestock returns. Good record keeping would facilitate monitoring and effective decision making on livestock management.

3. ARDA should come up with means of attracting and retaining skilled personnel. Further to this there is need for continuous skills development and on the job training in order to keep in touch with the fast moving technological trends in farm mechanisation.

4. Registers should be timeously and properly updated. ARDA should also adopt a computerised wide area network record keeping system supported by reliable back up servers and portable storage devices as this is more efficient and cost effective. It also ensures that data is not easily lost as a backup will be available.

CHAPTER 1

1. INTRODUCTION

In this audit I examined the effectiveness with which ARDA is utilising state land. The objective of the audit was to evaluate how well ARDA was utilising land and managing its estates.

1.1 Background

Agricultural Rural Development Authority (ARDA) is a parastatal under the Ministry of Agriculture, Mechanisation and Irrigation Development and was a result of the merger of three pre-independence era organisations namely:

- The Sabi - Limpopo Authority (SLA) set up in Acts that established in 1965 to exploit, conserve and utilise water resources for social and economic development through farming and settlement operations.
- The Tribal Trust Lands Development Cooperation (TILCOR) established in 1968 to promote development of agriculture in rural areas, mining, agro-industries, forestry, growth points and commercial undertakings like banking.
- The Agricultural Development Authority (ADA) which was established through the ADA Act (Chapter 18:01) of 1971 with the main objective of developing agriculture in the country.

TILCOR and ADA amalgamated in 1978 to form the present ARDA. Total integration of the three development Agencies was achieved in 1982 with the inclusion of agricultural components of the SLA.

ARDA is currently managing 21 estates distributed through-out the country (Refer to Annexure A attached).

1.2 Motivation

The audit was motivated by issues of mismanagement at ARDA resulting in low yields which were highlighted in media reports as follows:

- 428 tractors reported to be missing at the Authority's estates. These were part of an agricultural programme sourced from the Republic of Iran (Herald 28/10/2006).
- More than 500 hectares of wheat failed to germinate at Middle Sabi in 2007 (Financial Gazette 8/6/07).
- Out of the 21 operational estates countrywide, only 6000 tonnes of wheat were produced in 2009 (Sunday Mail 3/01/10).

1.2.1 Statutory Mandate

ARDA's mandate as stated in the ARDA Act (Chapter 18:01) of 1971 section 18 (i), (ii) and (iii) is as follows:

- To plan, coordinate, implement, promote and assist agricultural and rural development in Zimbabwe.
- To prepare, and with the agreement of the Minister, to implement schemes for the betterment of agriculture in any part of Zimbabwe.
- To plan, coordinate and carry out schemes for the development, exploitation, utilisation, settlement or disposition of state land.

1.2.2 Vision

"To have a prosperous, food secure Zimbabwe and Southern African"

1.3 Mission Statements

To spearhead the advancement of agriculture and rural development so as to facilitate the production of sufficiently high quality food for the nation, and generate employment and income on a sustainable basis through:

- Commercial farming operations on state farms,
- Provision of technical support to farmers (A1, A2, Communal and small scale) and
- Aggressive marketing of agricultural produce from ARDA and smallholder farms.

1.4 Objectives

The objectives of ARDA are:

To create a productive work environment by putting in place and systematically implementing comprehensive and strategic supportive corporate governance, human resources, financial and administrative systems and processes,

- to be a viable and profitable entity through increased production,
- to promote and uphold at all times the government policies on Agricultural and Rural Development,
- to contribute to growth in the nation's economy through sustainable agricultural development,
- to become a well informed and well researched institution on such issues as market trends and new technologies in agricultural development,
- to maintain environmental integrity in all its operations and accountability to stakeholders.

1.5 Organisational Structure

ARDA is a parastatal under the Ministry of Agriculture, Mechanisation and Irrigation Development. The Authority is run by an executive management led by the General Manager. The General Manager reports to the Board of Directors which in turn reports to the Minister. The authority has twenty one (21) estates which are financially independent units directly supervised by Head Office through Deputy General Manager Livestock, Deputy General Manager Crops, Deputy General Manager Corporate Affairs and Technical Services Manager. The Estates have a varied organisational structure depending on the nature and extent of operations. However, accountability for estate operations lay in the hands of estate managers. Refer to the Organogram on Annexure B.

1.6 Funding

The Authority finances its operations through borrowings from the money market. It is also funded through its operations. Each estate is an independent strategic business unit. ARDA also finances its operations through contract farming whereby they enter into contracts with financial institutions and seed houses and are provided with inputs which they pay for after harvesting. The funding for the years ended January1, 2009 to December 31, 2010 is as detailed in table 1 below.

Table 1.1: ARDA budget for the period Jan 2009- Dec 2010

Financial Year	Income from operations (US $)	Loans	Total US $
2009	5 721 763	4 078 000	9 799 763
2010	19 700 000	12 226 000	31 926 000

ARDA Revenue budgets 2009-2010

1.7 Scope of Audit

I carried out the audit in terms of Section 6.1 (b) of the Audit Office Act (Chapter 22:18). My audit covered the period from January 2006 to November 2010. The focus area was land utilisation and management of estates by ARDA. Audit inspections were carried out at six out of twenty one estates namely Nijo, Sisi, Doreen's Pride, Jotsholo, Balu and Fair Acres.

The team visited Nijo Estate in Domboshava as it had been mentioned as one of the well managed estates according to a site visit report by the Acting General Manager on the sixth of April 2010. Sisi was selected on the basis of poor performance which led to the dismissal of the estate manager. Doreen's pride was visited because it gave the team

an overview of livestock production operations. Jotsholo merited the team's visit due to its geographical location in natural region five which is a predominantly cattle ranching area though the estate is also involved in crop production, whilst Balu offered the team a more comprehensive picture of dairy production. Fair Acres estate provided statistics for comparison purposes and had been mentioned as one of the worst performing estates in the previous seasons.

1.8 Methodology of Audit

I conducted the audit in accordance with International Organisation of Supreme Audit Institutions' guidelines. The audit was also conducted in line with the Generally Accepted Government Auditing Standards, as well as the internal guidelines for planning, execution, reporting and follow up procedures of the Value for Money audits.

I carried out interviews, farm inspections, reviewed and analysed documents as methods of data collection.

I reviewed documents and carried out interviews with key personnel at ARDA. Documentary review was done to gather background information on the functions, procedures and policies related to the Authority and its operations. The interviews mainly centered on crop and livestock production and general operations of the Authority. Below are the documents reviewed and key personnel interviewed:

Documentary Review

- Corporate Turnaround Strategy 2007 - 2010,
- Corporate Turnaround Strategy Review 2007-2010
- ARDA Act (Chapter 18:01) of 1971,
- Financial reports 2006 to March 2010,
- General Manager's monthly reports,
- Organogram,
- Annual, monthly, and weekly estate reports 2006-2010,
- Internal audit reports,
- Board of Directors minutes and
- Monitoring & Evaluation reports 2006-2010.
- Windmill Guide to Cropping and Animal Health
- Cattle Producers Association Beef Production Manual

Interviews

- General Manager
- Deputy General Manager (Livestock)
- Deputy General Manager (Crops)
- Head of Business Development,
- Deputy General Manager (Corporate Affairs)
- Technical services Manager
- Head Internal Audit
- Estate Managers (Nijo, Sisi, Doreen's pride, Jotsholo, Balu and Fair Acres)
- Senior Loss Control Officer
- Head Finance
- Head Human Resources
- Head Administration
- Workshop Managers/Foreman (Nijo, Sisi, Doreen's pride, Jotsholo, Balu and Fair Acres)
- 10 Section Managers (crops and livestock - Nijo, Sisi, Doreen's Pride, Jotsholo, Balu and Fair Acres)
- 1 x Livestock clerk (Nijo, Doreen's pride, Balu and Fair Acres)
- 1 x Security Supervisor (Nijo, Sisi, Doreen's pride, Jotsholo, Balu and Fair Acres)

- 1 x Security Operative (Nijo, Sisi, Doreen's pride, Jotsholo, Balu and Fair Acres)
- 1 x Herd men(Nijo, Doreen's Pride, Balu and Fair Acres)
- 1 x livestock supervisor(Nijo, Doreen's Pride, Balu and Fair Acres)

CHAPTER 2

2 SYSTEM DESCRIPTION

2.1 FUNCTIONS AND ROLES

ARDA estates are involved in commercial agricultural activities including crop production and animal husbandry as outlined below.

Livestock and Crop Production Divisions

The divisions are headed by the Deputy General Manager Livestock and Deputy General Manager Crops respectively whose responsibilities are as follows:

- Monitor the implementation of the authority's business strategies.
- Oversee implementation of livestock programmes through dissemination of technical information and good animal health practices.
- Receive and analyse technical monthly reports for incorporation into the general manager's reports.
- Ensure timely preparation of capital and viable revenue budgets.
- Lead and control livestock using best practices.
- Provide breeding stock to surrounding communities as rural development service.
- Ensure timeous supply of inputs and other resources.
- Oversee the implementation of maintenance and repairs on estate equipment.
- Assist in the recruitment of adequately qualified estate Managers and divisional staff.

Corporate Affairs Division

The division is responsible for the following:

- Assisting in the initiation and implementation of the authority's business and financing strategies.
- Monitor meeting of deadlines and procedures for the preparations of capital expenditure and revenue budgets.
- Supervises accounting functions to meet deadlines and compliance with the Public Finance Management Act (Chapter 22:19).
- Advice on formulation of Accounting policies, systems and procedures.
- Review all financial reports to enable provision of advice and directions to all divisions.

2.2 Livestock Management

ARDA adopted Cattle Producers Association, Zimbabwe's Livestock Management Manual to guide their livestock operations. The processes followed are as below:

2.2.1 Breeding

The Authority has the responsibility to ensure that its livestock is secure through preventing cross breeding with rural communities livestock where the estate borders communal areas. The breeding process involves artificial insemination which is supposed to be done when female cows are on reproductive heat. The major advantage of artificial insemination is that better quality breeds can be obtained. The estates have the option of acquiring high quality semen form exotic breeds although it is a costly breeding method as semen is usually imported from other countries.

The other breeding method is through natural mating of cows with a bull. This method is less costly compared to artificial insemination since the bulls will be readily available on site. It requires that the bulls be adequately fed and in good health. Low quality breeds can be produced when the bulls are old. Each cow calves down once a year.

Bulls are supposed to be isolated when they are not with the breeding herds. Breeding heifers are supposed to be kept separately from the cows to allow for an earlier, shorter breeding season. After 3 years heifers are supposed to be exposed to bulls and pregnancy diagnosis is done after 3-4 months. Steers are sold after 3-4 years.

2.2.2 Livestock Rearing

Livestock must either be penned or paddocked depending on the size of the Estate and availability of grazing pastures and feeds but in both instances the authority provides security personnel to secure the animals. Paddocking is also used as a pasture management tool. The security personnel patrol the paddocks during the day and at night to curb stock theft. Livestock is supposed to be counted during dipping once a week in summer and fortnightly in winter.

According to the Cattle Producers Association of Zimbabwe manual which was adopted by ARDA, livestock handling operations such as dipping, hand dressing, castration, vaccination, branding, weighing, dehorning, earmarking, pregnancy testing, drafting, loading and treatment result in cattle being handled about fifty times per annum. To facilitate this, a well-designed cattle handling facility (cattle race) must be constructed at each estate.

2.2.3 Animal Health

Dipping is supposed to be done once every week in summer when ticks are prevalent and once fortnightly in winter when the prevalence rate of ticks is lower. Animals are vaccinated for disease prevention and control on a seasonal basis as well as to curb the spread of diseases such as Anthrax, Heart water, Red water and Foot and Mouth as and when they occur. Each estate with livestock production is supposed to have a vet technician.

According to the manual, herds are supposed to consist of a single age group, of the same sex, and of similar size for ease of identification. Castration and dehorning is supposed to be done two to three weeks after birth, while dosing and weighing are done immediately after birth.

2.2.4 Milk Production / Dairy

On average each dairy cow must produce between 9.9 to 17 litres of milk per day. Milking must be done three times daily at 0400 hours, 1430 hours and 1800hrs. Milk from each cow must be tested for mastitis, a breast infection that causes inflammation of the breast and contaminate the milk. This must be done at each milking session to ensure consumer health is not compromised. Each cow is supposed to be given 20 kg per day of dairy meal to sustain milk production.

Weaning must be done after one week and calves are supposed to be bottle fed with one litre of milk per day until three months. Male calves are sold between the ages of 1-$1^1/_2$ years. A cow is supposed to give birth once annually.

2.2.5 Recording

All births must be recorded in the livestock register and a birth certificate is issued by the livestock clerk. For purchases and transfers inwards the livestock clerk is supposed to issue goods received note (GRN) and record the incoming livestock in the estate livestock register and the animal is instantly branded. In the case of transfer of livestock from each estate, the transferee estate's livestock clerk issues a goods out note (GON) and a dispatch note that are counter signed by the section manager and checked by security. The transfer out figures of the livestock is deducted in the register. In the event of death, a death certificate must be issued by the livestock clerk stating the animal's class, cause and date of death. The death certificate is signed by the section manager. The cause of every death is supposed to be determined by the vet specialist. The estate manager certifies the death of livestock.

2.2.6 Slaughtering of Beasts

The estate may slaughter livestock for consumption by workers and for sale to surrounding communities as and when the need arises. The authority to slaughter animals is granted by Head Office upon request by the estate. The estate must have an abattoir and butchery to facilitate clean slaughtering, handling, storage and sale of the meat.

2.3 Crop Production

ARDA adopted Windmill guidelines for crop production. ARDA is involved in planting of a wide range of crops some of whose production is discussed below:

2.3.1 Maize

2.3.1.1 Land preparation

Land preparation (ploughing, discing and harrowing) must be done soon after harvesting the previous season's crop and should be completed well before the commencement of the season which starts in October. When the land is being prepared for the first time, the land preparation should be complete well before the planting season normally starting in mid-October.

2.3.1.2 Planting

According to the manual; the earlier the planting the better the yield and maize must be planted by mid- November. Long season varieties benefit from early planting. However if rains are late it affects the yield as the crop cannot be planted early.

In cases where rains are late, short season varieties are supposed to be planted. The crop must be established (germinated) before mid-December. Short-seasoned varieties are not supposed to be planted during the early days of the season to avoid cob rots which occur as a result of continuous rain water soaking.

The number of plants per hectare varies enormously depending on variety and seed grades, from large flats to small rounds, and the desired population aimed for. As a guide, the ideal seeding rate is 12kg per hectare for small rounds and up to 20kg per hectare for large flats. Population varies according to soil types and rainfall expected. Long seasoned varieties grown in fertile soils with reliable rains can go up to 40 000 plants per hectare. In marginal areas with unreliable rainfall and sandy infertile soils, the population can be as little as 20 000 plants per hectare.

2.3.1.3 Chemical and Fertiliser application

Soil type determines fertilizer application rates. Generally an application of 300-350kgs per hectare of compound D is supposed to be done at planting. Ammonium nitrate must be applied at the rate of 400kg per hectare before the crop starts to tassels. The pre-emergence herbicides are applied at planting to reduce the effects of weeds on the planted crop. Thereafter appropriate insecticides and herbicides are applied to eradicate pests such as stalkborer, armyworm, chafer beetles, snout beetles, leafhoppers and cutworm to ensure a quality harvest.

Post emergence herbicides are applied after seven and twenty one days of germination to eradicate weeds. Knapsack and boom sprays are used in the application of pesticides and insecticides whilst fertilisers are applied using a vicon (fertiliser spreader).

2.3.1.4 Harvesting

An average standard yield of 4t/ha is expected to be realised for the maize crop in region 4 and 5. In region 2 and 3, 6 tonnes per hectare are achievable. Harvesting is done using combine harvesters.

2.3.2 Winter Wheat & Barley Production

2.3.2.1 Land Preparation

Land should be prepared so that the surface is free of clods and weeds. This should be done soon after harvesting the summer crops. The crops are adapted to a wide range of soils, but the heavier clay type soils generally give better yields.

2.3.2.2 Planting

According to the Windmill guide to crop and animal health, best planting time is mid-May and the latest planting date is 15 June. Wheat takes 110-150 days to maturity. Broadcasting the seed by hand uses 120kgs per hectare. When using a planter or seed drill 100kgs/ha of seed are required. Wheat and barley are best grown in winter under irrigation. The seed should be dressed with a fungicide. The seed should be planted not more than 25mm deep and should be lightly covered using either a spike harrow or a roller to allow ease of germination.

2.3.2.3 Chemical and Fertiliser application

Wheat and barley require an application of 450kg/ha of compound 'D' which is disced into the soil before planting. Top dressing of Ammonium Nitrate is applied at 350kg/ha (175kg/ha at 4 weeks and 175kg/ha at 7 weeks after planting) for wheat whilst barley requires 250kg/ha (125kg/ha at 4 weeks and 125kg/ha at 7 weeks after planting). Too much nitrogen is harmful to barley. Sulphur is also very important for the production of quality wheat. 5.0 tonnes of sulphur is supposed to be applied per hectare to improve the protein content, test density and prevent falling plant population.

Herbicides are supposed to be applied at 3-5 leaf stage of the wheat. This is normally about 3-4 weeks after planting. Appropriate insecticides are supposed to be applied to ensure a quality harvest. Constant observation of the crop is absolutely necessary to monitor diseases.

2.3.2.4 Harvesting

Wheat is harvested using a combine harvester before the onset of the rains
Yields on the Highveld range between 7-10t/ha) and on the Lowveld (3t-4t/ha). .

2.3.3 Soya bean Production

2.3.3.1 Land preparation

Land preparation (ploughing, discing and harrowing) must be done soon after harvesting and should be completed well before the commencement of the season.

2.3.3.2 Planting

Seed inoculation must be done at the rate of 100g inoculums mixed with 50g sugar with one litre water mixed for 100kg seed. Inoculated seed must not be exposed to hot, dry soil as these conditions will destroy the bacteria. Seeds should not be planted in wet, poorly drained soils. Optimum planting dates are considered to be as follows:-

Highveld	-	mid to late November
Middleveld	-	late November
Lowveld	-	late November to early December

2.3.3.3 Chemical and Fertiliser application

About 200-300kg Compound 'C' type boronated compound fertilisers or 'L' type compound fertilizer is supposed to be applied during planting. Extra Nitrogen 100kg/ha of Ammonium Nitrate may also be applied at planting if the crop is grown under infertile or zero tillage situations. Regular and careful scouting must be carried out. Appropriate insecticides and herbicides are applied to ensure a quality harvest.

2.3.3.4 Harvesting

Soya beans should be reaped early to avoid loss caused by the pods shattering. Under ideal conditions, soya beans can yield as much as four tonnes per hectare. Mechanical harvesting is more cost effective and efficient as compared to hand harvesting where soya beans is grown on a commercial basis.

2.4 Contract Farming

Contract farming is when a famer enters into an agreement with a supplier for the supply of inputs on credit. In this type of farming, agreement is signed where the contractor provides all the inputs and working capital requirements

to the farmer (ARDA). The farmer is obliged to sell the harvest or produce to the contractor. ARDA uses contract farming to produce cotton, wheat and tobacco, commercial and seed maize. The supply of inputs must be timeous. The contractor must monitor the production process and ensure adherence to best practices. They are supposed to make regular visits to the farm to assess progress.

2.5 Farm Equipment

Estates require tractors, ploughs, disc harrows, planters, vicons (fertiliser spreaders), boom sprays and combine harvesters. These are required in varying proportions depending on the nature of operations, size of the estate and terrain. Land preparation requires disc harrows and ploughs. Planters and seed drills are used in seed application, vicons for fertiliser application whilst boom and knapsack sprays are used for pesticide and herbicide application. When an estate does not have adequate machinery or implements, it can borrow from other estates for a fee and it is billed according to the duration of use. Harvesting is supposed to be done by combine harvesters. The ITMCO and ICMCO tractor and combine harvester user's manual states that all tractors and combine harvesters must undergo a major service after every 400 hours of operation. This is done to ensure engine economy and efficiency.

Tabulated below is a maintenance schedule for farming equipment:

Table 2.1: Farm Equipment Repairs Schedule

Description	**Time Schedule for service**
Tractors	600hrs
Combine harvesters	700hrs
Vehicles	6000kms
Planters	Each Season
Vicons	Each Season
Boom sprays	Each Season
Ridgers	Each Season
Ploughs	Each Season
Ripper	Each Season
Disc harrow	Each Season
Rollers	Each Season

Source: ARDA Technical Services Department

CHAPTER 3

2. FINDINGS

This chapter details my findings relating to land utilisation by ARDA. The Estates failed to optimally utilise arable land at their disposal and there were generally poor management practices.

3.1 Failure to fully utilise arable land

Within ARDA, each Estate has a portion of arable land for crop farming which has to be fully utilised in order to realise a high yield and ensure viability. Before the start of each planting season Estate managers' come up with a plan of the hectarage for each crop that will be planted. The authority failed to meet its targeted cropping programme for the three planting seasons 2007/08, 2008/9 and 2009/10 by 53%, 88% and 77% respectively. Refer to table 3.1 for details.

Table 3.1: Consolidated Cropping Programme 2007-2010

		Targeted and actual hectarage							
Crop	**2007/08**			**2008/09**			**2009/10**		
	Budgeted hectrage	**Actual hectrage**	**Variance**	**Budgeted hectrage**	**Actual hectrage**	**Variance**	**Budgeted hectrage**	**Actual hectrage**	**Variance**
Comm. maize	2 099	1 525	(574)	1 400	1 088	(312)	2 100	1098	(1 002)
Seed maize	532	433	(99)	1 750	340	(1 410)	2100	353	(1747)
Cotton	1 480	992	(488)	7 000	92	(6 908)	10 000	0	(10 000)
Sorghum	4 275	773	(3 502)	5 000	207	(4 793)	5 000	387	(4 613)
Soyabeans	2130	821	(1309)	3000	378	(2622)	5000	651	(4349)
Sugarbeans	471	64	(407)	900	54	(846)	1200	51	(1 149)
Tea	563	235	(328)	650	235	(415)	700	572	(128)
Coffee	95	40	(55)	200	86	(114)	300	30	(270)
Sugarcane	1 130	1 130	0	2 100	250	(1 850)	3 600	3 822	222
Tobacco	80	31	(49)	150	12	(138)	300	0	(300)
Total	12 855	6 044	(6 811)	22 150	2 742	(19 408)	30 300	6 964	(23 336)
Actual total as a %age of budget		47%	**53%**		12%	**88%**		23%	**77%**

Source: ARDA Corporate turnaround plan 2007-2010 review document (Commercial operations)

There was evidence of failure to fully utilise arable land at ARDA Estates and in some cases there was failure to increase potential arable land. At Doreen's Pride estate there was arable land of 270 hectares but an analysis of the 2005-10 planting seasons showed that the estate failed to meet its budget. In the 2005-6 season only 219 hectares were planted, 145.5 hectares for 2006-7 and for the same season winter wheat which has an irrigation capacity of 150 hectares, only 45 hectares were utilised. The estate planned for 120 hectares of commercial maize in 2007-8 seasons, but only managed to plant 107 hectares. In 2009-10 only 124 hectares were planted.

ARDA management cited lack of inputs, equipment and shortage of skilled labour as causes for underutilisation. The Board attributed failure to utilise land to delays in payment by Grain Marketing Board and lack of shareholder support.

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Sisi an estate with arable land measuring 940 hectares was also failing to fully utilise the arable land. In 2006-7 only 443 hectares were planted, 2007-8 saw 334 hectares being utilised and in 2008-9 farming was done on 210 hectares.

During the 2009-10 seasons the Estate only managed to utilise 192 hectares for summer planting which constituted 20% of arable land.

At Jotsholo, the budgeted acreage was not achieved, in some cases crops budgeted for were not planted at all. (Refer to table 3.2 for details). Against this background it was virtually impossible for ARDA to fulfill its mandate of feeding the nation as only 23% hectarage was planted (table 3.1).

Table 3.2: Jotsholo Estate Land utilisation analysis

Season	Crop	Budgeted Area(ha)	Actual Area(ha)	Variance	Percentage Variance%
2006/7	Commercial maize	100	112	12	12
	Cotton	250	93	(157)	(62.8)
	Wheat	200	-	(200)	(100)
	Sorghum	100	-	(100)	(100)
	Butternut	10	1.5	(8.5)	(85)
	Green mealies	10	2.5	(7.5)	(75)
	Rice	20	13	(7)	(35)
2007/8	Commercial maize	150	97	(53)	(35.3)
	Cotton	250	60	(190)	(76)
	Sorghum	200	57	(143)	(71.5)

Source: Estate Manager's Monthly Reports

Details for the 2008/9 and 2009/2010 seasons were not readily available at the time of audit in October 2010.

Failure to receive inputs on time, obsolete irrigation infrastructure and shortage of manpower were cited as the main reasons for failing to fully utilise land.

ARDA agreed that there was failure to fully utilise arable land due to late procurement of inputs as a result of funding constraints. ARDA further suggested that Private Public Partnerships (PPP) could assist in the recapitalisation of estates.

3.1.1 Late planting

According to Windmill crop production guidelines which have been adopted by ARDA, there are standard planting dates for all crops in order to suit the general climate required for each crop so that a good yield can be realised. Standard planting dates for the main crops are:

Maize - 01 October to mid- November
Soya beans - mid- November to early December
Wheat - mid-May to 15 June (Refer to paragraph 2.3.2.2)

Maize planting can spill into mid- November and wheat can be planted any time in May. I observed that ARDA estates were failing to adhere to standard planting dates.

Review of 2009-2010 season reports of Sisi, Balu, Jotsholo, Fair Acres and Doreen Pride Estates showed that there was late planting of commercial maize. Initial planting was taking place around mid November and December up to mid January. Soya beans planting began mid December up to end of January. There was also late planting of winter wheat which should be on the ground by end of May to mid June. At Doreen's Pride and Sisi Estate they failed to meet the 15 June deadline and went on to extend to 25 June and at the same time failed to utilise the budgeted area.

ARDA failed to acquire inputs on time. However timeous acquisition of inputs is a management responsibility and management need to be strategic to ensure that there are contingent measures for input acquisition. At Doreen's Pride the 2009-10 season, maize seed was received on the 9th of December, and another batch on 20 January 2010 well after the planting season had taken off. However this can also be linked to poor planning and management practices by the authority. Despite the mid season drought usually expected around mid-February and knowing fully well that it was not possible to get a good yield as there were no prospects of a back up in terms of reliable irrigation equipment, management went ahead and sanctioned planting of the crop. This in turn resulted in poor yields of 700kgs per hectare from a standard yield of 4 tonnes per hectare. For the 2007-8 season the yield was 640kgs per hectare and in 2008-9 two tonnes per hectare was realised. It was the same scenario at Sisi where in the 2009/10 season, a yield of 1 tonne per hectare was realised. The low yields resulted in financial loss and thereby indebting the authority as it was failing to pay its debt which stood at $11 314 377 as at time of audit

ARDA conceded that there was late planting and they attributed this to late availability of inputs to estates, staff constraints and inadequate farm machinery and equipment. The authority also highlighted the general shortage of inputs on the market during the period 2005-2008.The Board attributed late planting to lack of treasury support since 1994.

3.1.2 Late Application of Fertilisers and Chemicals

Fertilisers

According to best farming practice there are standard fertiliser application rates that should be adhered to in order to realise a good yield. There is compound D fertilizer and Top dressing fertiliser with the former being applied on planting and the latter before the maize crop tassels. ARDA estates must acquire inputs before the start of the season. During my visit to Sisi, Fair Acres, Balu and Doreen's Pride Estates I observed that fertilizer application was not being done on time. ARDA failed to receive fertilizers on time due to the failure by management to administer and follow up on the inputs they acquired through a contract farming system. Late application of inputs in the 2009/10 season was also attributed to late acquisition of inputs through the voucher system administered by CBZ Bank on behalf of the Authority (Refer to Annexure C table 1 for details pertaining to the date of signing of the facility and subsequent delivery of inputs under this facility).

Sisi estate only acquired Ammonium Nitrate fertiliser on the 9th of March 2010, and hence it was too late to use it for the summer crop as it was supposed to be applied around January. Fair Acres received Ammonium Nitrate fertilisers on time only in 2007-8 season (22 September), whilst in 2008-9 there was no delivery, for the 2006-7 season (17 February 2007), for the 2009-10 season (21 January 2010) and for 2010 summer season no deliveries had been made as at 5 November. Jotsholo estate also failed to receive Ammonium Nitrate on time, for the 2006-7 (07 February 2007), for the 2007-8 (14 February 2008), for the 2009-10 (30 December 2010).

The late acquisition of inputs resulted in the estates failing to meet optimum production standards. Table 3.3 shows the budgeted and actual yields and the variances for the Authority as a whole for the period 2007-2010. Jotsholo estate only achieved the production target of five tonnes per hectare for maize in 2006 with the subsequent years failing to achieve even one tonne per hectare as follows: 0.28 tonnes (2007-8), 2008-9 (0.33tonnes), 2009-9 (0.89tonnes) and 2010-11 (0.5tonnes per hectare). The acquisition of winter wheat inputs for 2009 and 2010 was timeous but production target for these years was not achieved due to the constant breakdown of the irrigation system.

Table 3.3: Budgeted and Actual Yields 2007-2010

	YIELDS		
Crop	**Budgeted (tonnes per ha)**	**Actual (tonnes per ha)**	**Variance (tonnes per ha)**
Commercial Maize	4	2.3	(1.7)

Seed Maize	4	1.4	(2.6)
Cotton	2	0.5	(1.5)
Sorghum	4	0.67	(3.33)
Soya Beans	2	1.7	(0.3)
Sugar Beans	2	0.36	(1.64)
Tea	2mt	1.3mt	0.7mt
Coffee	2	0.5	(1.5)
Sugarcane	110	107	(3)
Tobacco	0	0	0

Source: ARDA Corporate Turnaround Strategy Review 2007-2010

Chemicals

Herbicides are administered as pre-emergence and post-emergence. Pre-emergence chemicals are applied on planting as a guard against any weeds that might grow in the fields and the post emergence is applied to eradicate weeds that would have grown in the fields after the crop germinates. Visits to Sisi Estate, Jotsholo, Balu and Fair Acres showed that chemicals were not being applied on time. This resulted in weeds outgrowing the crop and hence compromising the yield.

At Sisi post-emergence herbicides for soya beans was only administered in March 2009 instead of earlier in January and this resulted in the yield for soya beans being heavily compromised because the crop succumbed to weeds and by the time chemicals were administered the damage had already been done. At Fair Acres during 2009/10 farming season the harvest for Soya beans was affected by weeds and the estate failed to secure herbicide thereby reducing production targets per hectare. Late application of chemicals was due to failure by management to administer the acquisition of the post emergence herbicides on time.

3.1.3 Inadequate and Obsolete Irrigation Infrastructure

The authority was under utilising its potential irrigation land at all the six estates visited. At Balu and Jotsholo the operational capacity was 25% and 57% respectively whilst Nijo and Doreen's Pride were operating at 50% and 40.47% respectively. The under utilisation of the potential irrigatable land was due to obsolete irrigation infrastructure. ARDA did not have asset replacement policy given that equipment had been in operation for more than 30years when it could have been replaced in the twentieth year of operation. The Auditee lacked maintenance strategies, plans, policies and guidelines which could act as guiding instruments for maintenance works on its equipment.

Nijo

The workshop records at ARDA Nijo revealed that the estate had seven booster pumps, five electric pumps and two diesel pumps which were installed on the estate's fields namely Windridge, Eureka, Ballomona and Glenhope. The estate was failing to effectively utilise the land at its disposal due to inadequate sprinklers and irrigation pipes. The total number of hectares which could be put under irrigation at Nijo estate as at 1 June 2010 was 30 hectares but only 15 hectares were under irrigation. This was attributed to obsolete irrigation infrastructure which was well beyond its 20 year lifespan. Out of a total of 35 boreholes, 23 were operational. The authority was therefore only utilising 50% of the land suitable for irrigation.

Doreen's Pride

Doreen's Pride estate had old irrigation pipes, pumps and sprinklers which led to disruption of the irrigation cycles (Picture 1 below shows a leaking irrigation mainline). Furthermore management failed to source alternative sources of energy such as generators to alleviate constant power cuts that were also impacting negatively on the estate's operations. With the irrigation infrastructure in place at the time of audit in June 2010, the estate had an irrigation capacity of 110 hectares but only 35 hectares where utilised.

Picture 1: Old leaking irrigation mainlines at Doreen's Pride estate

ARDA management accepted findings and noted that corrective measures are being taken to ensure a fully functional irrigation system. Repairs have been carried out on two standby pumps, whilst repairs to the mainline are in progress. The ARDA Board noted lack of recapitalisation grant from Treasury.

Sisi

At Sisi estate, pump houses at the phase 1 area of the estate faced challenges of frequent breakdowns of electric motors and there was also need for overhauls on some pumps. As at 30th April 2010, the estate's pumping capacity at phase 1 was 66.7% and 100% at phase 2. Delayed repairs were attributed to financial constraints on the part of the estate.

The estate was relying on a portable pump for pumping water into the night reservoir for onward transmission to the booster pumps and the mainline. This therefore reduced the irrigation capacity as it took longer to pump to feed the mainline with the portable pump unlike if a bigger pump was used and this was worsened by frequent power cuts.

Jotsholo

Jotsholo estate was only utilising 57% of its irrigation capacity and 33% of the estate's arable land. This was due to breakdown of irrigation pumps at the main reservoir. These were mainly attributed to the aged irrigation infrastructure which was installed more than 30 years ago when the estate was under the management of Tilcor. The breakdowns and leakages on the main lines were resulting in prolonged irrigation cycles of up to 24 hours instead of the normal 8-16 hours.

However, the estate had a quotation amounting to USD$14 688 dated November 2005 which it had obtained from a Cyprus based company with the assistance of its head office. This was for the two pumps required to power the irrigation at full capacity. Financial constraints were cited as the reason for failure to acquire the pumps by the estate manager.

Because of siltation resulting from stream bank cultivation by people in surrounding communities the weir at Jotsholo was capable of holding only three percent of its capacity thereby reducing the amount of water for irrigation during the winter wheat season. Since there was no excavator to clear the water path to the pump house, estate employees were clearing the sand manually. Refer to picture 2 below.

Picture 2: The heavily silted weir at Jotsholo estate

Management accepted that siltation was a major challenge, however an inland dam was constructed to store water during summer for use in winter but effectiveness is hampered by frequent breakdown of pumps. Management has also mooted plans to construct another weir downstream but availability of funds is delaying implementation.

Balu

Balu estate was relying on a single pump which was being used to irrigate 30 hectares out of a possible of 120 hectares which could be effectively irrigated all year round. As a result, the estate was operating with only 25% of its irrigation capacity which was only 12% of the total arable land. The estate was using flood irrigation because there was shortage of pipes and sprinklers as well as the old irrigation infrastructure on the estate.

There has been delay by the estate electrician to repair a faulty starter box at the pumps during the 2010 winter wheat season resulted in the estate losing two weeks of irrigation. This resulted in late ripening of the wheat which was still in the fields by the 31st of October 2010. The crop should have been harvested by September 2010 before the rains because if rains fall before the wheat is harvested, it may result in total loss of the crop. The starter box repairs were later outsourced to a Bulawayo based electrical company.

Management stated that normal pumping has since been restored at the main dam but still using one pump instead of two at the booster station. ARDA was also failing to secure infield irrigation equipment.

Fair Acres

Out of a total arable area of 465 hectares which could be irrigated at Fair acres, the estate was capable of irrigating only 25% of the land or 250 hectares due to the combined adverse effects of shortages of sprinklers and an old irrigation system which had outlived its useful life of twenty years. It was alleged that the shortage of irrigation pipes was due to vandalism and thefts. The irrigation system was over thirty years old hence the frequent breakdowns and leakages.

Fair acres estate was losing some of its irrigation infrastructure due to thefts and vandalism. On the second of May 2009, a water pump used to drain water from the pump house was stolen despite there being 24 hour security personnel. The case was reported to Mkobogwe police reference number RRB 355893. However there had not been any recoveries up to the time of the audit in November 2010. On 18 September 2007, 2x4 inch x 9 metres of aluminum piping was also stolen from block 6B and was recovered after one of the suspects had been arrested in a

joint operation between Zimbabwe National Army staff on Operation Maguta and estate security guards, 10x3 inch x 9 metres of irrigation pipes were also recovered from a gang of thieves on the 8th of November 2007.

ARDA management and Board accepted that inadequate and obsolete irrigation infrastructure was seriously affecting operations and cited none funding from Treasury and financial institutions and referred to 2009 to 2010 Public Sector Investment Programme budget where no funds were allocated to ARDA. The Authority indicated that they were looking at the option of joint ventures as a solution for recapitalisation of the Authority and as a result a crop contract partner would provide the funds for infield irrigation equipment for the 2011-2012 season.

3.1.4 Breakdowns of Plant and Equipment

There was a lot of breakdown of plant and equipment in ARDA estates. An analysis of five estates visited revealed that out of 108 tractors 69 of them were non runners representing 64%and 50%(1) of combine harvester was non runners. This shows that over half of the equipment is grounded.

Nijo

At Nijo estate in Domboshava there were thirty three tractors, comprising of sixteen non-runners (48.48%) and seventeen runners (51.52%), and these were more than adequate for the estate's draught power needs taking into account its size of 400 arable hectares which can be effectively serviced by only five tractors as per ARDA standards. However, the other tractors were also being utilised in fulfilling the authority's rural development mandate whereby the authority assist surrounding communities with tillage. Table 3.4 below shows the state of Nijo estate's tractor fleet as at May 31, 2010:

Table 3.4: Nijo's tractor fleet as at 31 May 2010

Tractor model	Runners	Non runners	Total	Percentage of non-runners
ITMCO 399	7	5	12	41.7
ITMCO 285	2	3	5	60
FIAT-NEW HOLLAND	5	2	7	28.6
LANDINI 8860	Nil	4	4	100
MASSEY FERGUSON	1	1	2	50
JOHN DEERE	1	-	1	-
TYM	1	1	2	50
TOTAL	**17**	**16**	**33**	**48.5**

Source: Nijo estate Workshop records

During interviews with staff it was confirmed that the estate had more than the required number of tractors. However it was pointed out that there were financial constraints in the acquisition of spare parts and recruitment of personnel such as auto-electricians to repair some of the defects on the non runners.

Of the two combines at Nijo one was working whilst the other one was not as it had no knife guides on its cutting head as well as sieves which separate the chuff and the grains during harvesting. This delayed the harvesting process and subsequent land preparation for other crops.

Sisi

Sisi estate had thirty nine tractors in total and of these only nine were operational while thirty were limited runners and non-runners. Sisi estate required eight tractors for optimum operations at the estate. Twenty six of the thirty

tractors were ITMCO 399 and 285 tractors with varying levels of defects ranging from tyre punctures, high levels of oil consumption; radiator defects whilst some were in scrap condition.

The estate was experiencing great problems with the ITMCO tractors as they were constantly being repaired and oiled due to their high levels of oil consumption. In their sixth year of operation the tractors were proving too costly to maintain. Most of the ITMCO tractors were kept outside the workshop as they could not be safely accommodated in the estate's parking area in the workshop due to shortage of space.

The susceptibility of the tractors to cannibalisation was high and was shown by the removal of tyres from the non runners to the runners without proper records of these transfers. Refer to picture 3 showing a cannibalised tractor.

Picture 3: A Cannibalised tractor at Sisi estate in Raffingora

The estate was not adhering to manufacturer's recommendations on tractor and combine harvester maintenance hence all the tractors and combine harvesters were long overdue for service as at April 2010.The combine harvester which was operational had not yet been fitted with new warble boxes to enable the timeous harvesting of Soya beans which was still in the fields yet the crop should have been harvested by April. All the ITMCO tractors at the estates had as at 18 June 2010 not undergone a major service since 2008 and on average each tractor had operated for more than 3000 hours. This was against operator's manual that a major service be done after every 400 hours of operation. (Provided by Hino Zimbabwe an accredited ITMCO dealer)

The estate had excess capacity in terms of tractors and combine harvesters. The optimal tractor requirements stood at eight as compared to the thirty nine that were at the estate's disposal. Sisi estate had a total of five combine harvesters on site these were comprised of one runner, one limited runner and three non runners. The excess number of tractors on the estate resulted in some tractors which required minor maintenance work such as replacement of clutch plates lying idle for long periods instead of being serviced on time. This could lead to deterioration of machinery and vandalism.

Doreen's Pride

There was only one functional battery which was being used to start the tractors and the generator in the workshop. The tractors would consume more fuel as they were left running even during change of implements.

The monthly report for the month of May 2010 revealed that all the tractors had been attached by the messenger of court earlier on in the month of April. As a result some operations on the estate were delayed or totally stopped due to the unavailability of the tractors. The tractors were attached because the estate owed the local authority Mamina Rural District council $1900 for land tax. However the tractors were later returned to the estate after ARDA head office chipped in with financial assistance to settle the debt.

Doreen's Pride estate had two combine harvesters which it used for its own operations as well as hiring out to neighboring farmers. These were the Holland TC54 and the ICMCO 955 combine which was out on hire in Chakari at the time of the visit to the estate.

The estate had hired in a jactor boom spray at a rate of US$25 per day from Muzvezve farm because it was failing to fund the repairs of its own jactor boom spray which required nozzles and frames. The no availability of the equipment of equipment resulted in delayed herbicide and pesticide application. This would have the obvious effect of compromising the yield of the crops as they will be overwhelmed by weeds and insects.

Jotsholo

Jotsholo estate had a tractor fleet of eight comprising one MF 8220(runner), two ITMCO 399(runners), and one ITMCO 285G (runner). Two ITMCO 399 and two 285G respectively were non-runners due to various problems ranging from faulty cylinder heads, clutch plates and high oil consumption and this drastically reduced the draught power of the estate given that the operational tractors had frequent breakdowns.

Out of the four combine harvesters available on the estate, three were non runners with defective combine heads and knife guides. The only functional combine (CASE 4230) was however prone to breakdowns which resulted in delayed winter wheat harvesting. This exposed the crop to rains which affected the quality of the wheat crop and the price it would fetch on the market.

Fair Acres

The major challenge faced by the estate was high repair and maintenance costs. In August 2010 the estate paid USD$10 000 to repair one of its combine harvesters in preparation for winter wheat harvesting. Three tractors needed a complete engine overhaul. Only two out of six reliable tractors were operating with the ideal engine efficiency. Table 3.5 below shows the operational status of tractors, vehicles, combine harvesters, supporting implements and irrigation pumps at Fair acres estate:

Item	Runners	Non-runners	Total	Percentage of Non-runners
Tractors	6	10	16	62.5
Mazda B1800 trucks	1	1	2	50
Case 2166 combine harvester	1	1	2	50
Ploughs-IMCO	1	1	2	50
Seed drills	1	1	2	50
Planters	1	0	1	-
Trailers	2	3	5	60
Irrigation pumps	3	2	5	40
Borehole and domestic pumps	2	0	2	-
Monosem planters	1	0	1	-
Bain ploughs	1	3	4	75
Rippers	3	2	5	40

Source: Estate manager's report September 2010

Balu

Out of a total tractor fleet of 12 at Balu estate, only three were limited runners and the rest were non-runners. Due to the breakdowns, the three tractors were struggling to service the estate. Owing to lack of proper service, the tractors did not have adequate lighting and batteries required for night operations such as ploughing and irrigation.

Due to a shortage of tractor drawn implements, in 2009 summer cropping season, the estate had to hire: one Rhome disc and one Plough from the Maguta programme and one Planter from Antelope Estate. The implements from the Maguta programme were provided to the authority at no cost. However as at the date of audit in October 2010, the estate had adequate implements for the 2010 season.

The auditee did not have, in accordance with best practice, a prescribed time frame for different maintenance activities as outlined in the user's manuals for the different classes of equipment. This would help to ensure that plant and equipment is timeously serviced to ensure high levels of productivity.

ARDA agreed to the finding and stated that the breakdown was mainly as a result of failure to properly and timeously service and repair equipment. ARDA cited inadequate funding and unqualified staff to effect repairs and properly maintain plant and equipment.

The breakdown of plant and equipment was attributed to:

- Inadequate and unskilled staff,
- Shortage of workshop tools.

3.1.4.1 Inadequate and unskilled staff

The authority was failing to attract and retain skilled personnel due to lower remuneration compared to its counterparts in the agricultural sector such as Hippo Valley Estates, Triangle Estates and Green Fuel (Pvt) limited at Chisumbanje and Middle Sabi Estates.

Sisi

The estate's workshop was understaffed and there was also a skills deficiency in terms of personnel required to run, maintain and repair the estate's plant, machinery and equipment

At the time of audit, Sisi estate was in the process of recruiting a driver, a motor mechanic (class two). The skills deficiencies highlighted above resulted in the estate having to sub-contract repairs of electric motors and pumps to workshops in Harare and Banket. Due to the estate's cash flow problems pumps and electric motors were being withheld until part payments had been made to the service providers such as Tautes engineering as outlined in the estate manager's monthly report for the month of April 2010. This affected the irrigation cycle leading to reduction in crop yields.

Doreen's Pride

Doreen's Pride estate workshop did not have a plumber and an auto-electrician who could attend to complex mechanical breakdowns which required professional plumbing and auto-electrics expertise. The estate in some instances had to resort to sub-contracting some repair and maintenance jobs to qualified artisans in Kadoma as well as engaging the services of personnel from other estates such as a plumber from Nijo Estate. This was due to the skills levels of workshop personnel at the estate. Although some personnel had as much as 30 years in service, most of them were not formally qualified. Tabulated below were the skills levels of workshop personnel at Doreen's Pride estate as at 25th June 2010:

Table 3.6: Skills levels of Doreen's Pride workshop staff

Job Title	Qualification	Number of years served with ARDA
Electrician	ZJC	18
Clerk	O'Level	4
Mechanic	Diploma in mechanics	14
Mechanic (Foreman)	O' Level	30
Pump attendant	-	22
Combine operator	-	14
Tractor driver	-	13
Tractor driver	-	12
Tractor driver	-	6
Pump attendant	-	28
Pump attendant	-	6
Pump attendant	-	2
Pump attendant	-	21

Source: Workshop records and staff interviews

Jotsholo

There were skills deficiencies in terms of workshop staff. Out of the three mechanics at Jotsholo estate, only one had formal qualifications required for the job. The other two were experienced mechanics without formal qualifications. The same personnel were also mandated to attend to pump breakdowns as there was no plumber, electrician and auto-electrician.

Complex plumbing and auto-electrical faults were attended to by staff assigned from head office. This however was a cause for delays as the estate had to wait for periods as long as two weeks without functional pumps thereby affecting irrigation cycles and crop yields.

Balu

Most of the major maintenance work and repairs were being sub-contracted to workshops in Bulawayo city centre. An engine for one of the Mazda B2200 trucks had been sent to Bulawayo for repairs after failure by the workshop personnel to repair it. This was because the workshop at Balu did not have adequately skilled personnel.

Fair Acres
Out of the staff complement of nine at Fair acres estate for the workshop, only the electrician with a class three trade test certification had formal training for the job. The other members of staff were experienced personnel without any formal training in their areas of work. This resulted in the estate outsourcing some of the repair and maintenance jobs to garages and workshops in Kwekwe and Harare which could cheaply be done at the estate. At one point the estate contracted Alstom engineering in Harare to repair one of its irrigation pumps after workshop staff had failed to attend to the problem and this had an impact of reducing pumping capacity during the week when the pump was being repaired.

Management failed to ensure continuous staff development and recruitment of staff with requisite skills so as to guarantee quality labour output.

Management agreed to the finding and they indicated that internal workshops were conducted to equip staff with the requisite skills. Staff was also given deadlines to register with colleges to acquire the requisite qualifications and recruitment of qualified personnel is also underway.

3.1.4.2 Shortage of Workshop Tools
The authority's workshops had inadequate tools to effectively and efficiently execute their mandate as service departments to the estates to ensure smooth operations. Because there were insufficient tools to use in carrying out repairs and maintenance on estate machinery, there were delays in job completion. Furthermore sub-contractors with well-equipped workshops withheld ARDA's equipment demanding payment thus delaying farm operations. The impact would be increased down-time for plant and machinery which is crucial to the overall objective of efficient, effective and economic land utilisation.

Doreen's Pride
There were lots of trees in paddocks at the estate which is not conducive for pasture growth. The estate had forwarded a request to head office for a chain saw to be used in clearing the paddocks in order to expand the grazing area for the estate's livestock and improve the quality and quantity of grazing pastures. At the time of audit head office had not approved purchase of the chainsaw.

Jotsholo
Inadequacy of workshop tools such as angle grinders, bench grinders, hand drills and mobile welding machines was also a contributory factor to delays in repair of estate vehicles, plant and equipment at Jotsholo estate.

Fair Acres
Fair acres estate's workshop also faced a critical shortage of essential tools required in daily operations. The table below illustrates the tool capacitation levels of the estate in relation to some basic or essential tools:

Table 3.7: Fair Acres estate tool capacitation level

Item of tools	Optimum requirements	Tools available	Shortfall
Grinders	1	1	0
Heavy duty tool box	1	0	1
Light duty tool box	3	0	3
Compressor	1	1	0
Battery charger	1	0	1
Welding machines	2	2	0
Drill	1	1	0
Battery tester	1	0	1
Pressure guage	1	1	0

Source: Workshop records and monthly reports

Balu

Balu estate's workshop also lacked basic tools such as 10"-25"combination spanners and sockets (10"-24"), hand grinders, drill bits and drill machines. The workshop also did not have a reliable compressor and both the light duty and heavy duty tool boxes were unavailable. The staff did not have proper protective clothing such as safety shoes and work suits. The workshop personnel had no tool boxes as required by management.

Management stated that it was the authority's policy that workshop personnel should have their own tools.

3.1.5 Failure to effectively monitor contract farming and voucher system

The ARDA Estates partly finance their operations through contract farming. The 2010-11 contract for seed maize production at Fair Acres estate did not explicitly outline the time frame for the supply of inputs by PANNAR SEED (PVT) LIMITED yet it explicitly stated that the grower (ARDA) was obliged to timeously deliver the seed maize.

ARDA also received inputs and working capital from CBZ and GMB late for the 2009/10 summer season. The estates were obliged to pay for the inputs after selling the produce despite the late delivery of inputs.

The estates failed to get inputs on time in 2009 as the CBZ voucher system resulted in late delivery of inputs. Under the voucher system, CBZ Bank would pay for inputs directly to the supplier such as ZFC and Windmill on behalf of ARDA without depositing cash into the Authority's account. The major limitation of this arrangement was that the Authority did not have the option of sourcing for inputs on its own on the open market. Ammonium Nitrate was delivered on 6 March 2010 at Sisi estate a date which was well after the AN fertiliser application date. In the contract there was no financial obligation on the part of CBZ to compensate for the loss due to late delivery of fertilizer.

The management of the ARDA had not highlighted to the Contractors that late delivery of inputs was affecting yields and hence profitability and subsequent failure to meet financial obligations that arose from the contracts with the exception of Jotsholo estate which wrote a letter of enquiry to CBZ. At the time of my Audit, CBZ had not replied. All the estates visited had no clear programme of action to repay loans acquired to finance summer production.

Jotsholo

CBZ wrote to GMB Lupane depot on 22 October, 2009 informing them to disburse inputs as tabulated below:

Table 3.8: Jotsholo Estate 2009/10 Summer Season Inputs

Type	Quantity	Value ($)
Maize seed	4t	8 800
Sorghum seed	2.55t	3 315
Compound D	139t	78 535
Ammonium Nitrate	114t	64 410

Source: Estate Manager's Monthly Report October2009 and Correspondence with CBZ Bank

However, the inputs were only received at Jotsholo estate on February 03, 2010 except for 84 tonnes of Ammonium Nitrate which had not been received by this date. The inputs delivery was way late for the summer cropping season. Eleven hectares of maize had poor germination rate because weevilled seed was planted, the remaining stock was later returned to Pioneer seed. Failure to effectively monitor contract farming led to poor yields and subsequent failure to honour the terms agreed with the contractors' as there was insufficient produce supplied to the contractors.'

The authority accepted that inputs were delivered late as manufacturers were finding it difficult to meet demand hence late delivery of inputs.

3.2 Poor livestock management

The authority failed to meet its set targets for the livestock programme of growing the beef herd and producing higher milk yields for the years 2007-2010 The variances averaged 90% meaning that ARDA only managed to achieve 10% of their targeted herd size. On milk production it achieved 45% leaving a variance of 55%. (Refer to table 3.9 below).

Table 3.9: Consolidated ARDA Livestock Programme 2007-2010

Beef herd	**Targeted herd size 2007-2010**	**Actual herd size & milk yields as at 31/12/10**	**Variance**	**Percentage variance**
Cows	5000	485	(4515)	90%
Bulls	250	33	(217)	87%
Steers	5000	209	(4791)	96%
Heifers	2500	554	(1946)	78%
Total beef herd	**12750**	**1281**	**(11469)**	**90%**
Dairy herd				
Cows	1500	80	(1420)	95%
Milk yield(kgs/cow/day)	20	9	(11)	55%

Source: ARDA Corporate Turnaround Plan Review and report 2007-10

Doreen`s Pride

Doreen's Pride has 9 000 hectares of which only 270 hectares are arable and the remaining 8 730 hectares are for ranching with a carrying capacity of 1 200 cattle. The major activities at the estate are cattle ranching and crop farming. They also carried out horticulture farming on a low profile to ensure there is some extra income

There was poor management of the herd at Doreen's Pride. According to records, Doreen's Pride was supposed to have 527 animals. However, at the time of audit I carried out a physical count and found only 355, 172 were missing. The cumulative number of animals which went missing between January 2006 and 24 June 2010 was 257. (Refer to table 3.10 below).

Table 3.10: Cumulative number of missing livestock since 2006 to June 2010

Year	**Missing Opening Stock**	**Recovery**	**Closing Missing Stock**	**Cumulative**
2006	-	-	6	6
2007	6	0	47	53
2008	53	43	105	115
2009	115	39	9	85
2010	85	6	172	257

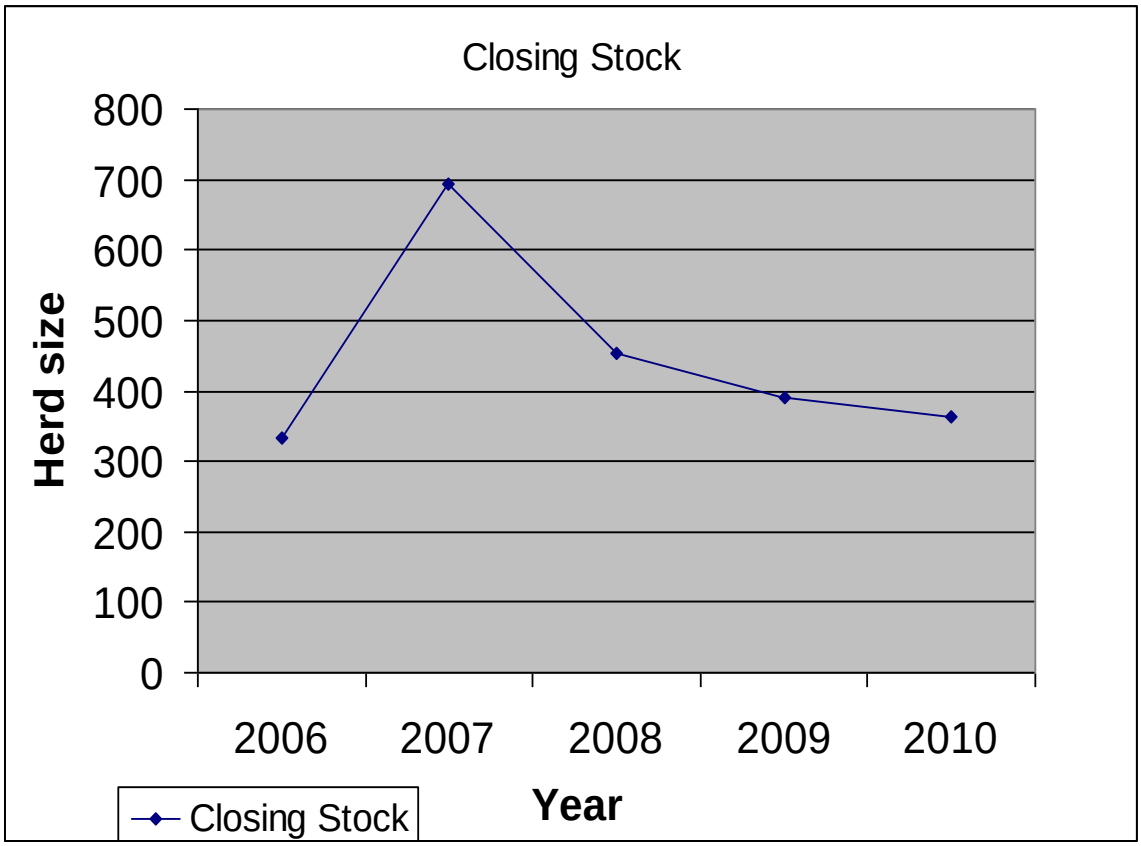
Source: Doreen's pride livestock returns

The highest number of missing animals was recorded in June 2010, where 178 animals went missing in a period of six months beginning January 2010. The biggest herd record was in February 2007 when it stood at 694 animals but it dropped drastically to 362 in June 2010. Refer to table 3.11 and graph below.

Table 3.11: Livestock summary for Doreen's Pride from January 2006 to June 2010

Year	Opening Balance (January)	birth	Purchases	recoveries	Sales	Death	Missing	Closing Balance (Dec)
2006	351	78	1	-	68	5	6	334
2007	334	129	25	-	259	40	47	694
2008	694	106	4	43	127	92	114	514
2009	514	50	-	39	97	42	123	341
2010	341	7	-	6	13	22	178	362
Total		**370**	**30**	**88**	**564**	**201**	**178**	**362**

Source: ARDA weekly livestock returns



During the whole period under review subtractions to the herd (through death, sales and missing/theft) surpassed additions through (births, purchases and recoveries). For example cumulative missing animals stood at 345 against recoveries of 88. The major reasons for missing cattle were the inadequate security whereby the estate had eight guards out of a requirement forty five, poorly secured paddocks and cattle pens.

Every estate should have a dipping record showing date, number and class of animals dipped and not dipped (identified by their tag numbers), dip chemical used and any other relevant comments. The record must then be signed by the livestock clerk and estate manager.

For the period 2006-10, 201 animals died and 564 were sold. The highest number of deaths occurred in 2008 (92 deaths). This was attributed to the fact that plunge dipping ceased in September 2007 hence animals died of tick borne diseases. According to documentary review the estate only managed to have postmortems for two cases. The cause of death on the death certificate was determined by the estate. This failure to consult veterinary officers

compromised animal health and treatment. The calf management was poor as the calf mortality rate was high due to starvation mainly caused by inadequate calf meal and milk to bottle-feed the calves, stumbling, and poor body condition. Death due to stumbling was a result of failure to group animals according to their age groups as recommended by the Cattle Producers Association of Zimbabwe Beef Production Manual adopted by ARDA.

At the time of the audit the plunge dip was still not repaired and animals were being sprayed by knap sacks. This dipping method was said not to be effective and was laborious. The workers who were spraying were not adequately clothed as they were inhaling the chemical. Some animals could not be controlled so much that they were not sprayed since they did not want people near them. The last written dipping record availed to the audit team was on 08 February 2006.Without any documented evidence it was difficult to ascertain whether dipping was taking place and if so how often.

During the counting process, the following observations were made:

- Some animals had no tags or brand hence anyone can claim ownership if he/she can brand or tag it before ARDA. Failure to tag makes it difficult to track missing animals.
- No record was taken as to which animals were missing so that appropriate decisions on those which have been missing for long could be taken.
- During field visits some paddock fences were broken hence animals could easily go astray.
- A third party heifer was among the herd at the expense of Doreen's Pride estate.

The following observations were also made from documentary review:

- Only animals physically counted at year end were deemed to be the opening stock for the following year excluding missing animals. This was misleading and it led to understatement of the herd as quite a large number usually went missing at year end. For example on 30 December 2008, a total of 105 animals were missing but only 39 were recovered in the following year. There is a risk that recovered animals may not be recorded back into the system but could be externalised.
- A lot of weekly returns were missing. For example in August 2008 only 2 returns were filed instead of 4 and this was the trend. This was making it difficult to verify and reconcile the closing and opening balances of livestock.
- A poor calving rate of 28% was noted. This is attributed to low bull to cow ratio 1:33 as opposed to the ideal ratio of 1:25 and failure to artificially inseminate the cows.
- Poor grazing pastures as there was paddock encroachment by wild animals leading to overgrazing.

The ARDA management conceded that they had resorted to knapsacks as the plunge dip was leaking and that the method was effective as seen by low levels of tick infestation on animals. They highlighted that management is in the process of ensuring that all animals are branded.

Nijo

Nijo has 1 020 hectares of which 460 hectares were arable. 40 hectares were given to ARDA's subsidiary- ARDA Seed House which majors in seed production. Nijo was involved in crop, horticulture and dairy production as major activities.

Nijo had a dairy herd of 84 cows as at 1 June 2010. Milk was being sold daily and prices were determined by market forces. Weekly average income from dairy was $698 in May 2010 and at the time of audit a litre was going for US$0.50.

The standard milk production for each cow ranges from 9.9-17 litres per day. Milking was done manually twice daily at 04:00 hours and 14:30 hours. However when milking was done at 0400 hours, when there was no electricity, mastitis could not be tested properly. Milk was tested on average once per week for mastitis as opposed to testing all

cows at each milking session. The milk men would either use torches from their cell phones or milk the cows in darkness. This had the effect of reducing milk yields. In summer animals were free rangers as the pastures were readily available but in winter they were given silage. Although each cow was supposed to be given 20 kg of silage per day they were given only 15 kg per cow. This also had the effect of reducing milk production hence loss of potential income.

Nijo had the capacity to carry 150 cows and this figure could go up as the dairy animals are supposed to be penned and not be free rangers. According to animal husbandry best practices, fertilisation is supposed to be done by artificial insemination and the breeds needed are Holstein and Guensy. A cow is on heat for 2 days per seven day cycle and therefore special attention was needed not to miss this period to avoid loss of valuable semen (by inseminating a cow which is not on heat). Each cow is supposed to calve down 9 times before it is culled.

Documentary review and interviews revealed the following observations;

Animal Health

- Due to poor control of diseases some cows were having abortions. Failure to treat animals led to 2 cows becoming blind.
- Milk production was declining due to diseases and shortage of Soya meal.
- There were no bulls to service cows (supplementing artificial insemination)
- Cull cows were still being kept and not disposed off; this was costly as they were constantly ill and would require treatment.

Poor dairy facilities

Dairy production best practices requires that milkmen should be properly dressed in clean dust coats and gumboots, shower rooms with hot water for milk men to take a bath before and after every milking section. The milking parlour should be disinfected before and after every milking session. However the following observations were made:

- No gloves for artificial insemination hence bare hands were used. This increased chances of infection to the cows.
- Milk men were inadequately clothed in terms of white gumboots and dust coats.
- No contingent electrification in times of power cuts.
- No disinfectants for the milking parlour
- No electric milking machines i.e. (relying on inefficient manual milking)

The death rate of livestock at Nijo was worrisome. 1n 2009, a total of 61 deaths were recorded against 47 births. In 2010, by 30 April four births and 16 deaths were recorded. The majority (80%) of the causes of deaths were avoidable if proper commercial livestock management practices were to be observed. The causes were reported as:

- Consumption of poisonous substance- i.e. mushroom found in weaner pen
- Foreign metal objects found in stomach e.g. one cow was found with metal in the stomach
- Snake bites on calves in pens
- Trapped by door trying to go out
- Cull cow (old age)
- Scouring (diarrhea in calves). In 2009 all samples of calves' death certificates analysed had this cause. This could be attributed to feeding them with contaminated milk or food. The cause of death was determined by the section manager and veterinary surgeon was rarely called to ascertain cause of death.

The authority concurred that there was need to acquire protective clothing specific to dairy operations for its staff and management also agreed that there was need for lighting the estate's milking parlour.

Balu

Balu has a holding capacity of 1000 dairy cows but at the time of audit it had 137 cows. The dairy herd has been dwindling from 2006 due to inadequate stock feeds. In 2008 a total of 69 births were recorded for dairy cows and this dropped to 30 in 2009. The Brahman/beef births for 2009 stood at 24.

In 2009 a total of 88 deaths were recorded for the dairy herd. Most deaths were caused by nutritional stress ailments (23) cases and tick borne related disease (14) cases. On the other hand 29 deaths were recorded for the Brahman beef herd in 2009 and 50% of the causes of death were nutritional stress. In 2010 between January and September 2010, 30 deaths were recorded. A lot of animals were dying due to lack of food and poor dipping system. Veterinary officers were not being called to diagonise and treat complicated cases.

The mechanised milking parlour at Balu was in a state of dilapidation with leaks in its roof and a collapsing ceiling. Roof leaks could corrode milking machines and this would affect the functionality of the machines and quality of milk (Refer to picture 4 and 5 below). Only eight (8) out of twenty four (24) milking slots or points were operational giving an operational capacity of 33.3%.

Picture 4: The collapsing roof of the milking parlour at Balu Estate

Picture 5: The dilapidated ceiling of the milking parlour at Balu Estate

Out of the total milk holding capacity of 27 000 litres which can be contained by the 3 tanks available on the estate, it was only producing 110 litres of milk per day. This represented only 0.41% of the estate's holding capacity. Each cow was averaging 2.5 litres per cow as compared to the standard of 9 litres per cow. The poor production can be traced back to the poor livestock management practices. Refer to picture 6 below.

Picture 6: One of the 3 x 9 000 litre milk tanks being underutilised

The Authority attributed some deaths of calves due to nutritional stress caused by lack of working capital and complete crop failure for the period 2009-2010. The Authority also stated that they require long term finance to stock Balu to optimum level. They highlighted that management is currently repairing the ceiling.

Fair Acres

There was generally good animal husbandry at this estate as compared to all other estates audited. During the time of audit in October 2010, the estate had 149 beef herd against a holding capacity of 200. Cattle ranching started in January 2009 with 11 animals. 80 animals were later bought in May to bring the total number to 91. During the year 2010 three deaths were recorded.

Fair Acres had an annual increase of herd compared to other estates that recorded massive reductions annually. Refer to the table below. There was a veterinary doctor who was resident at the estate. However, it was sad to note that there was no plunge dip at the estate hence they were spraying animals using knapsacks which are ineffective in the long run.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Herd	98	101	101	106	109	133	145	147	147	148	149	-

3.3 Power Back Up

On all the six estates audited there were no generators with the capacity to power the irrigation infrastructure. This meant the estates were entirely dependant on Zesa for their irrigation. Irrigation cycles were severely disrupted by Zesa power outages.

3.4 Non Payment of Salaries and Wages

Although the employees were entitled to monthly wages and salaries, I noted that three ARDA estates owed their employees' wages and salaries amounting to $65 016.30 with some dating back to February 2009. The following estates were in arrears at the time of audit; Doreen's Pride ($33 787.82), Balu ($22 386.00) and Jotsholo ($8 842.48). The unpaid wages included back pay awarded by NEC in September 2009 and overtime for February 2010.

The employees were disgruntled over the continued non-payment of wages. Morale was low amongst the employees interviewed. There is a risk that the non-payment of wages might lead to increase in thefts of horticultural products and other equipment. Such thefts were confirmed by the Estate Managers and security personnel at the above mentioned estates though most incidents were not supported by police and internal security reports. One such incident occurred and was reported to ZRP Saursetown (CR 21/04/10) where there was unlawful entry which resulted in the theft of a welding machine from the workshop at Balu Estate. The nonpayment of wages may cause unexplained absenteeism from work thereby compromising production at the fields. Of major concern was the unavailability of any plans to pay the workers their outstanding wages.

In order for the Estates to pay wages and salaries on time there should be increased productivity which increases liquidity for working capital.

The ARDA board points to failure by government to recapitalise the Authority.

3.5 Record keeping

There was poor record keeping at the estates audited. At Balu, I failed to get monthly reports for the period of the study. Whilst at the other estates incomplete records were submitted such as the asset registers at Doreen's Pride and Sisi estates which did not contain information on transfers- in, acquisitions, disposals and transfers-out . There were no records to support cannibalisation of parts from tractors, combine harvesters and vehicles at Sisi Estate. At Nijo there were no annual returns for livestock for the years 2005-2008.There were some weekly livestock reports at Doreen's Pride estate. This made it difficult to do a trend analysis to establish whether the herd was increasing or decreasing.

CHAPTER 4

4. RECOMMENDATIONS

The following chapter presents recommendations that are aimed at addressing challenges that are being experienced by ARDA in effective land utilisation. It is hoped that these recommendations will result in improving national food security.

4.1 Failure to fully utilise arable land

4.1.1 Late application of inputs

ARDA should have estates that specialize in seed production and they should deal directly with suppliers for the supply of seeds. They should also resort to ensuring acquisition of inputs in time rather than waiting for a delivery to come. There should be optimum supply of inputs to ensure maximum utilisation of arable land on all estates thereby guaranteeing viability.

4.1.2 Inadequate and obsolete irrigation infrastructure

There is need for the authority to draw up and effectively implement a recapitalisation plan for irrigation infrastructure since the infrastructure on all the estates had outlived its lifespan. The authority should prioritise acquisition of pumps and irrigation pipes to replace the obsolete ones. In the long term, it can also consider installing computerised irrigation software which centrally controls and monitors pumping levels and irrigation cycles. ARDA should however prioritise the installation of more powerful generators which can sustain both the estate premises and irrigation pumping capacity.

4.1.3 Frequent breakdowns of plant and equipment

To avoid the frequent breakdowns ARDA should adhere to manufacturer`s specifications on maintenance and servicing of plant and equipment rather than waiting for the equipment to breakdown. For instance, the ITMCO tractors and ICMCO combine harvesters required major service after every 400 hours as set out in the users manual which instructions the authority did not adhere to.

There is also need to timeously coordinate transfers from estates with excess equipment to those in need of such equipment.

4.2 Poor livestock Management

There is need for ARDA to instill animal husbandry best practices in its staff and management in order to reduce unnecessary and avoidable loss of livestock. The following recommendations are suggested:

- Paddocks should be repaired timeously.
- Plunge dip system should be urgently resuscitated.
- Birth rate should be improved by having efficient bulls or artificial insemination.
- Animals sold (third party) should be removed from herd soon after transaction.
- All animals to be tagged or branded so that they can be easily identified should they go missing.
- Missing animals should be identified by tag numbers and colour so that a proper record of missing animals is kept.
- There should be a dipping record showing date, number and class of animals dipped and not dipped and dip chemical used.
- The authority must conduct thorough investigations for missing animals to ascertain their whereabouts before they are immediately written off. All recovered animals must also be properly accounted for according to their class in the herd. A threshold for write off may be set e.g. number of months animal missing and the write off should be done only after thorough investigations have been conducted.

- Care and effort must be put in preparing livestock returns. All records must be thoroughly done and checked by an independent person.

4.3 Failure to repair equipment and vehicles

4.3.1 Inadequate and Unskilled Staff

There should be an increased production at ARDA estates to increase revenue flow which would in turn help ARDA offer market related salaries to attract and retain skilled personnel. Furthermore there is need for continuous skills development and on the job training in order to keep in touch with the fast moving technological trends in farm mechanisation.

4.3.2 Shortage of Workshop Tools

ARDA should fully capacitate its workshops through acquisition of tools and equipment in order to avoid unnecessary outflow of cash through payments for sub-contracted jobs and delays in repair and maintenance work arising from shortage and non-availability of essential tools. In the event that ARDA want personnel with their own kit, this should be a pre-requisite at recruitment.

4.4 Non Payment of Wages and Salaries

The authority should put in place sound cash flow management systems to avoid liquidity challenges. This will also help to plan when to get lines of credit to finance operations from financial institutions.

4.5 Record Keeping

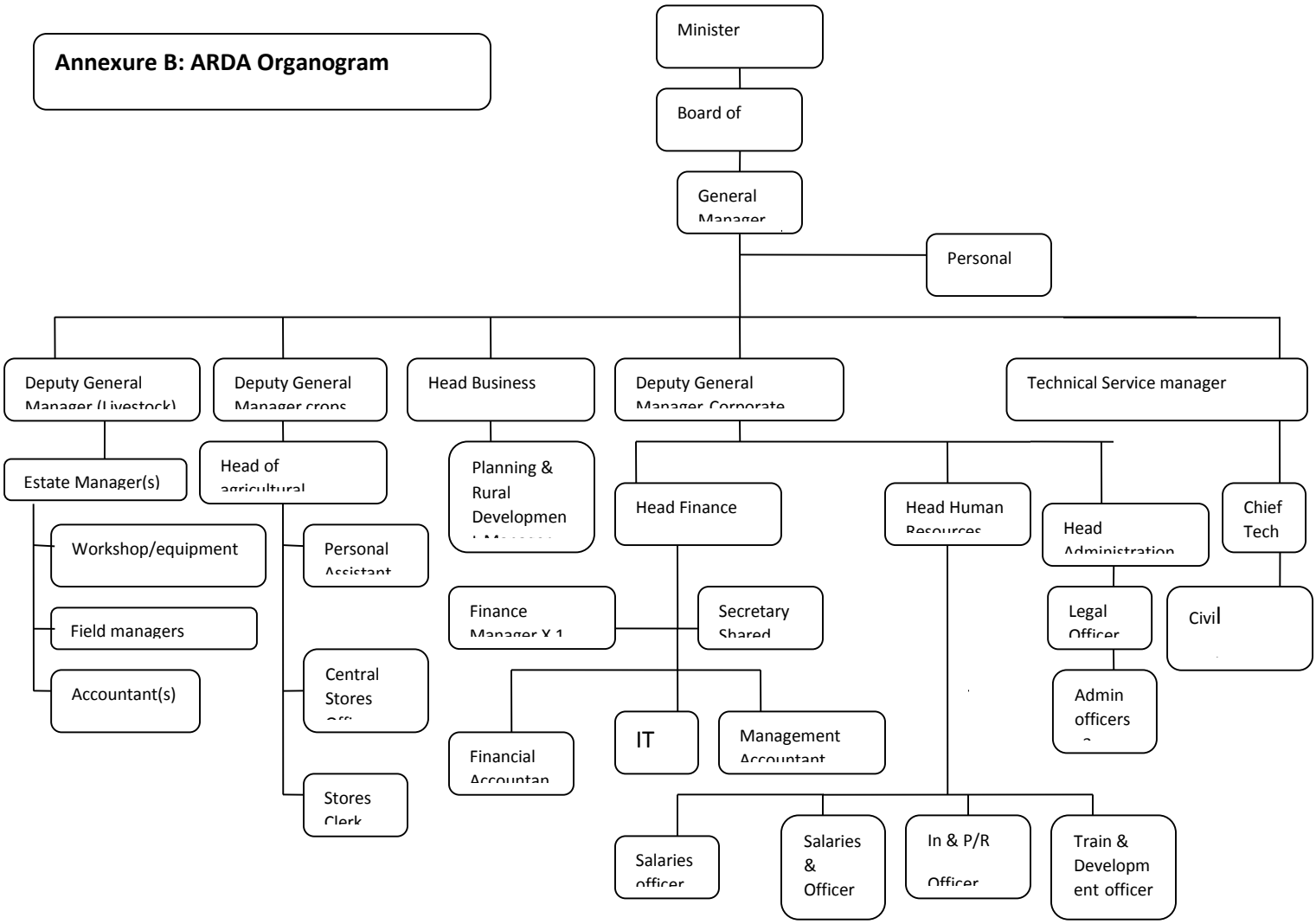
Registers should be timeously and properly updated. ARDA should also adopt a computerised record keeping system supported by reliable back up servers and portable storage devices. This is more efficient and cost effective.

Annexure A

ARDA's estates as at December 31, 2010

ESTATE	PROVINCE	GROSS AREA (HA)	WINTER CROPS	SUMMER CROPS
1. Antelope	Matabeleland	3 000	Wheat	Cotton, Sorghum
2. Balu	Matabeleland	4 556	Dairy	Dairy
3. Ngwezi	Matabeleland	1 129	Wheat	Cotton , Sorghum
4. Sedgwick	Matabeleland	10 000	Beef	Beef
5. Jotsholo	Matabeleland	769	Wheat	Rice, Cotton, Sorghum
6. Fair Acres	Midlands	3 000	Wheat, Barley	Soya beans, Maize
7. Sanyati	Mashonaland	1 650	Sugar beans, Cowpeas, Horticulture	Soya Beans, Maize, Cotton
8. Doreen's Pride	Mashonaland	9 591	Beef, Wheat	Beef, Cotton, Sorghum
9. Sisi	Mashonaland	1 875	Wheat, Horticulture	Soya Beans, Maize, Cotton
10. Mushumbi	Mashonaland	760	Sugar beans, Sorghum, Cowpeas	Cotton, Sorghum
11. Muzarabani	Mashonaland	800	Seed Maize, Cow Peas, Sugar Beans	Cotton, Sorghum
12. Nijo	Mashonaland	1 024	Horticulture	
13. Grazely	Mashonaland	700	Beef, Goats	Beef, Goats, Maize, Soya Beans
14. Kairezi	Manicaland	3 000	Timber, Potatoes	Timber, Potatoes
15. Katiyo	Manicaland	2 055	Tea, Coffee	Tea, Coffee
16. Rusitu	Manicaland	3 000	Timber, Horticulture, Coffee	Timber, Horticulture, Coffee
17. Chisumbanje	Manicaland	40 000	Sugar Cane	Sugar Cane
18. Middle Sabi	Manicaland	13 768	Wheat, Soya beans, Sugar Cane	Sugar Cane
19. Nandi	Masvingo	400	Horticulture, Cowpeas, Sugar beans	Sugar Cane, Beef, Game
20. Magudu	Masvingo	4 500	Beef	Beef
21. Mkwasine	Masvingo	11 327	Game	Game

Annexure B: ARDA Organogram



Annexure C: LOAN FUNDING FROM CBZ BANK

TABLE 1: CONSOLIDATED SCHEDULE OF LOANS ACCESSED FROM CBZ FOR ARDA ESTATES OPERATIONS FROM 2009-2010 (in US$)

Application date	Date facility signed	Purpose	Last date of inputs delivery	Amount applied for	Amount approved	Variance	ARDA'S Remarks
31/03/2009	27/05/2009	Winter 2009 cropping programme	-	250 000	285 000	35 000	Bridging finance for planted crops.
02/09/2-+m009	14/10/2009	Summer 2009/10 cropping programme	15/12/2009	1 861 000	2 106 000	245 000	Approved on time but challenge was collection of inputs from GMB depots.
30/03/2010	04/05/2010	Winter 2010 cropping programme	15/05/2010	1 808 000	1 896 423	88 423	All inputs were delivered by mid-May.
05/10/2010	17/11/2010	Summer 2010/11 cropping programme	30/11/2010	3 766 400	3 574 000	(192 400)	Facility approved late and inputs accessed very late.
TOTAL	-	-	-	**$7 685 400**	**$7 861 423**	**$176 023**	-

Source: ARDA Finance Department Fin/10/2 Document

Annexure C (*continued)*

TABLE 2: ARDA ESTATE BY ESTATE OPERATIONAL LOANS FOR THE PERIOD 2009-2010 (in US$)

Estate	2009	2009/10	2010	2010/11	Total loans accessed	Amount repaid as at 24/08/11	Balance as at 24/08/11
	Winter	**Summer**	**Winter**	**Summer**	**-**	**-**	**-**
Balu	75 000	190 000	148 000	269 492	749 992	582 297	167 695
Doreen's Pride	-	-	125 000	235 901	444 901	271 905	172 996
Fair Acres	-	250 000	401 000	456 429	1 292 429	370 407	922 022
Jotsholo	-	250 000	136 000	417 523	912 023	357 289	554 734
Nijo	-	200 000	-	392 852	592 852	283 929	308 923
Sisi	-	300 000	315 000	592 504	1 207 504	828 180	379 324
TOTAL	**$75 000**	**$1 190 000**	**$1 125 000**	**$2 364 701**	**$5 199 701**	**$2 694 007**	**$2 505 694**

Source: ARDA Finance Department Fin/10/2