

FINAL REPORT:

EVALUATION OF FOOD SAFETY AND RELATED ASPECTS

(Actual status and possible gap to international standards)

AT ZAMBEEF PRODUCTS PLC

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By

*Dr. Reinhard Kaepfel (Lead Consultant), and
Nancy Malwa Mushota Local Consultant
Lydia M. Chabala (Local Consultant)*

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1 EXECUTIVE SUMMARY

The general objectives of the project were:

- To deliver a reliable evaluation of the actual status regarding food safety and related aspects, in each of the requested production sites and outlets.
- To identify gaps to international food safety standards.

The site visits were done in great cooperation with the company staff. Competent and high level managers accompanied the consultants and ensured open doors and full transparency in each plant.

In the course of visiting the different production sites, a number of strengths and weaknesses were identified which were in common for most of the sites.

Strong points were clearly

- The motivated and skilled management who identify themselves with the vibrant company, and work with full engagement to get things done
- The good relationship to the authorities
- The great potential for growth and a readily available market

Several areas were found which needed improvement, including

- Weak implementation of Good Manufacturing Practices
- Weak controls to minimize environmental impact
- Gaps in product identification and labelling, making traceability difficult or impossible

Enforcing already existing procedures and applying strict controls would fix many of the weak points.

However, as the status is right now, there are considerable risks:

- There is a high risk in food safety, due to microbiological contamination and insufficient foreign material control.
- There are challenges to maintain product quality as perceived by the customers due to the appearance of products at point of sale and quality characteristics of products (PSE pork, taste of chicken).
- There are strong improvement needs in animal handling during transport, unloading and in the slaughter process.
- There are challenges in environmental management due to lack of proper solid waste handling and insufficient effluent treatment.

A number of recommendations for urgent action were given, so that the existing risks can be reduced quickly. Within 3, maximum 6 months, those action steps should be done and the improved procedures have to be in place, followed and enforced. It is ZAMBEEF's responsibility to match this time plan.

Overlapping with the correction of the urgent steps, the recommended mid-term action should begin, starting quality management with systems, covering the whole company. The position of a Systems Manager with the necessary authority should be established.

The target is compliance with international standards.

For agricultural production and animal husbandry the target should be GlobalGap. For overall food safety and quality management in the processing areas ISO 22000 should be the target.

Following this project, a Phase 2 is recommended, which should support establishing a quality management system, and assist in the planning process towards international standards, as well as in its implementation.

It is suggested that the Consultant Team should accompany the required follow up to Phase 1, and in Phase 2 support the planning and execution process towards international standards.

DEG and ZAMBEEF initiated an evaluation of food safety status and related aspects, based on detailed Terms of Reference (TOR) provided by DEG. ZAMBEEF is one of the leading agriculture and food producing and processing companies in Zambia. Its main products are beef, chicken, eggs, pork, milk products, flour and bread, edible oil and feed. It has facilities such as outlets, abattoirs, and farms, spread through out the country. The product range for the company encompasses the entire production chain from raw materials to finished products such as bread, yoghurt, or sausage.

2.1 Objectives and approach

The general objectives of the assignment were:

- To deliver a reliable evaluation of the actual status regarding food safety and related aspects in each of the requested production sites and outlets.
- To identify gaps to international food safety standards.

Depending on the results, DEG and ZAMBEEF consider expanding the project with a phase 2. Its purpose would be to support ZAMBEEF implementing the action plans and establishing a Quality Management System in order to achieve compliance with international standards.

The work began with an initial meeting with management and production/HSE/QA related staff. This was done to get detailed information about the company, their products, markets, their organisation structure and raw materials.

This was followed by a quick review of various documents on food safety including those on environment and occupational health. National documents such as the Food and Drugs Act and the Environmental and Pollution Control Act were reviewed with particular reference to food safety as it related to ZAMBEEF products. Further, documents and procedures on international food safety standards were reviewed. These included documents such as the codex standard of hygienic practice for meat (2005), GMP, HACCP and Global GAP standards. A checklist of food safety standards and environmental and occupational health that apply to the operations was developed as a basis for site inspections.

2.2 Site verification inspections

The site visits were done in great cooperation with the company staff. Competent and high level managers accompanied the consultants and ensured open doors and full transparency in each plant.

Site inspections involved visitations to five Beef abattoirs, five ZamChick Inns, nine Butchery outlets, Edible oil Plant, Feed Processing Plant, one Pork processing plant, Chicken processing plant, Flour Mill and bakery, Milk Processing Plant and four farms. Although the TOR highlighted that all the 8 abattoirs were to be visited, three were not visited. These were Livingstone which was non operational at the time, Senanga and Chipata due to time constraint and limitations in accessibility. Details about all the sites inspected are elaborated in subsequent sections.

During site visits the checklists developed were used to assess food safety and related aspects.

During the visits of processing plants or farms, good agricultural and manufacturing procedures (GAP and GMP) were checked, the relevant Quality Assurance (QA) procedures as well as their functioning and documentation were reviewed, with special emphasis on traceability, occupational health and safety and environmental management. Action points for improvement of the weak points were identified. The reporting including an analysis of what was found, as well as suggested action plans to improve the weak points was presented to respective management at the plant in a short recap meeting.

2.3 Existing Legislation for food safety in Zambia

The operations of ZAMBEEF are governed under the following food safety and environmental laws in Zambia.

The Standards Act (CAP 416)

The standards Act was enacted to control and regulate standards and quality of manufactured goods and products. This is implemented by the Zambia Bureau of Standards (ZABS) through the Standards Council of Zambia. The standards for various products in Zambia are set and regulated by various technical committees including feeds, milk products. Zambia Bureau of Standards has powers to enforce the set standards and this may be implemented through prosecution or withdraw of trading licences. The ZABS also have powers to withdraw sub-standard products from the market or close premises producing such products. In most cases, standards are enforced through Quality Assurance Division.

The Public Health Act (CAP 295)

This act is implemented through the Ministry of Health and is meant to ensure that all commodities meant for sale to the general public are of good quality and in hygienic condition. It also sees to it that the people handling foods and the premises from where food is sold or consumed are according to established health and hygienic standard. The act also has the powers to declare people handling food to be medically fit and issues certificate to that effect. The public Health Act is mandated to ensure and declare that people working on dairy farms or milk processing facilities are healthy and free of communicable diseases. The act makes it mandatory to have all meat products inspected before they can be sold to the public. In addition inspection of premises includes animals, dairy shops and milk transporting vehicles for human consumption. Public health regulations are enforced through health inspectors that may be employees of the Ministry of Health or local government authorities, popularly known as councils.

The Food and Drugs Act (CAP 303)

This act was enacted to ensure that all foods, drugs and medical devices sold in the country are safe to humans. The Act ensures that producers and other businessmen trading in food products do not contaminate them with harmful or poisonous materials. The Act demands that all food products are properly packaged and labelled in terms of ingredients and any preservatives that may have been used in preparing such food products. The food and Drugs Act is more concerned with processed products unlike the public health Act that is more concerned with raw products like meat and milk as it is produced and taken to the market for consumption or processing. Thus, the Food and Drugs Act is applicable to all processed products including bread, processed dairy products; butter, cheese, yoghurt, cooking oil etc. The Act is implemented and enforced through the Food and Drugs Board that advises the Minister responsible on what needs to be done.

Environmental Protection and Pollution Control Act (CAP 204)

The EPPCA of 1990 cap 204 of the laws of Zambia is the supreme environmental regulation that ensures environmental protection and pollution control. It is regulated and enforced by the Environmental Council of Zambia.

3 FINDINGS IN GENERAL

In the course of visiting the different production sites, a number of strengths and weaknesses were identified which were in common for most of the sites; they are systemic for the company.

The following strong points were clearly visible throughout the company:

- The motivated and skilled management who identify themselves with the vibrant company, and work with full engagement to get things done
- The good relationship to the authorities (Public Health, Ministry of Livestock, occupational health and safety, Zambia Bureau of Standards, Environmental Council of Zambia, etc.)
- All equipment is calibrated by the Zambia Bureau of Standards
- The company appreciates the need for company wide quality procedures and training
- The great potential for growth and a readily available market

ZAMBEEF has however, several important areas for improvement, which can be found throughout the company which include the following:

- Weak implementation of Good Manufacturing Practices (like hand washing steps, separation of dirty from clean areas, storage of food products on the floor, foreign material control, workers safety, staff movement between plants, etc.)
- Weak controls to minimize environmental impact (effluent control, solid waste handling)
- Missing or incomplete technical conditions to reduce environmental impact (unlined effluent ponds, poor solid waste disposal methods)
- Gaps in product identification and labelling making traceability difficult or impossible
- Lack of continuity in management development due to frequent staff transfers between different areas
- The available worker canteens are in a poor state therefore the canteens should be improved for the staff social welfare, and a common laundry would help in maintaining clean uniforms

Enforcing already existing procedures and applying strict controls would fix many points listed above as areas for improvement; it is relatively easy to increase the quality rating of the company.

As long as these areas are not corrected, they present some serious shortcomings that require major and immediate interventions. The following are the identified serious shortcomings:

- There is a high risk in food safety, due to microbiological contamination and insufficient foreign material control.
- There are challenges to maintain product quality as perceived by the customers due to the appearance of products at point of sale and quality characteristics of products (PSE pork, taste of chicken).
- There are strong improvement needs in animal handling during transport, unloading and in the slaughter process.
- There are challenges in environmental management due to lack of proper solid waste handling and insufficient effluent treatment.

4.0 FINDINGS ON INDIVIDUAL SITES

4.1 Beef

Zambeef has eight abattoirs strategically located in Mazabuka, Mongu, Sinazongwe, Namwala, Livingstone, Senanga, Huntley and Chipata. The company slaughters about 60,000 cattle per year

4.1.1 Huntley Beef

Huntley Farm was acquired by Zambeef in 1996 from Lender Burton Farms. The farm is the main centre for Zambeef where all the carcasses from the various Zambeef slaughter houses are delivered for further processing and distribution to the outlets. This has the advantage in cases of live animal movement restrictions due to diseases such as Foot and Mouth, CBPP or others since the animals can be slaughtered locally and only transported as carcass.

The beef operations section at Huntley farm consist of

- The feed lot
- The beef abattoir
- The de-boning, processing and packaging unit

Feedlot

Feed lot animals are purchased from farmers and kept in the feed lot for about 6 months. During the time of the field visit it was reported that there were 3.500 animals on feedlot. These animals are delivered from farmers with Zambeef's trucks own trucks. Upon delivery the animals undergo health treatments (vaccinations, de-worming, dipping etc.) and are tagged for identity. The animals are then separated depending on their weight. Those weighing 350kg and above are sent to the feedlot and fed on concentrate feed while those that weigh less are fed on veldt for a longer time before they are fed on concentrate.

The animal feed is produced at Huntley farm with the main ingredients being maize meal, maize bran, wheat bran, cotton seed cake and hulls (from Zamanita) and molasses (from Mazabuka sugar), and pre-formulated fattening mixes as well as the appropriate amount of roughage.

Storage for feed at the feedlot should be improved. There is need for proper stacking of feed bags away from walls and on pallets. The feed storage room also needs to be well ventilated.

Abattoir

People and Organization

Quality awareness is strong with management; however there is lack of enforcement to the line personnel, especially the time period between stunning and bleeding. The company has a number of quality control steps and procedures in place, which need to be enforced by management. Generally no Crisis plan has been put in place. The staff is subjected to regular health checkups every year. The staff knowledge on products is good, but awareness and action for cleanliness and hygiene can be improved. The Monitoring of compliance to rules in some places have to be improved. There are a number of worker safety hazards within the building, which include missing gutters, slippery floors, etc.

Basic GMP

The building and line maintenance is in good shape for both the feed lot and the slaughter house. The cleaning in the feedlot and slaughter house is in good condition. There is however need to tighten hygiene rules in terms of separation of clean and dirty areas such as movement between the areas with same attire, as well as hand washing procedures. Personal hygiene of workers can be rated as good. Pest Management is done by an outside company.

A number of gaps were observed in terms of GMP which include the following

There is no foreign material control in the meat processing plant

The same brush is used to clean carcass after carcass.

2-knife method is not used

Traceability and Documentation

Traceability in the meat production system is weak. There is no relation between animal and carcass inner organs or head therefore a disease found in organs or head cannot be traced to the carcass. The carcass can only be traced based on the batch size and the day of slaughtering. Numbering system starts with carcass ID numbers given (3 labels per side). Currently Zambeef is starting to use the ABASAVE program for traceability. There are documents in place, which have information such as the weight of the carcass, and there is also a formula documentation for sausage production

Slaughter and processing procedures

The majority of animals (60%) slaughtered at Huntley are sourced from commercial farmers and from their own feedlot. Other carcasses processed at Huntley are sourced from the Western Province and Southern Province. The other sources of animals that are slaughtered come from Eastern Province. Approximately 1000 animals are slaughtered per month for choice grade, plus 1,500 for medium grade. The choice grade animals come from the Huntley Farm Feedlot or large commercial farmers.

The same knife is used to slaughter animal after animal with no sterilization. There is therefore need to implement the 2-knife system to avoid cross contamination between carcasses. Carcass is washed using the same brush all day this has to be improved.

Cleaning materials & chemicals

Separate storage for food additives and cleaning materials was being built at the time of inspection. A side room for the cleaning materials is available.

Waste handling & environmental impact

There is no pre-treatment of blood effluent prior to disposal into the open environment. This is against the Water Pollution Control Act of Zambia. There is also no proper separation of solids from the effluent therefore solids are passed into the effluent pond. This has led to a situation where birds that scavenge for meat products are found near the abattoir. The effluent treatment pond cannot cope with the amount of effluent that is being channelled to it. There is need to put up an efficient effluent treatment system that is lined. Other procedures that should be implemented with immediate effect are the putting up of efficient screens to sieve off solids from the effluent and pre-treatment of the blood effluent. There is also need to have an incinerator to burn off solid waste instead of open air burning that is being practiced currently.

Recommendations

There is need to put up an efficient effluent treatment system that is lined. There is also need to separate solid from effluent water and an incinerator to burn off solid waste should be constructed instead of open air burning that is being practiced currently. Slaughter procedures such as 2-knives method should be put in place. Movement of people should be restricted from clean to dirty areas.

Other areas of improvement include the following:

Putting up measures to control foreign materials in the meat processing plant.

Avoid using the same brush to clean different carcass.

Need to improve traceability.

4.1.2 Sinazongwe Beef

The Sinazongwe farm has been in existence since 1986 but Zambeef only started operations at the farm in 2004 from the previous owner Agriflora. The beef operations fall under the cropping operations management.

Feedlot

Animals are purchased from Zambezi ranching at a weight of 200kg. These are kept on feedlot for 3 to six months and slaughtered at a weight of 450kg. The concentrate feed for the animals is from Novatek. Other feed ingredients include molasses from Zambia Sugar, wheat straw and hay from the farm. About 50 to 80 animals are slaughtered per day from outside farmers upon clearance by the police, the veterinary department and the health inspectors.

People and Organization

Generally no Crisis plan has been put in place. The staff is subjected to regular health checkups every year. The staff knowledge on products is good, but awareness and action for cleanliness and hygiene can be improved.

Basic GMP

The building and line maintenance is generally in good shape. There is a straight forward and clear line arrangement, however there is no space between the dirty and clean areas e.g. where the carcass intestines are washed and the clean area. One major weakness that was observed was the washing of the carcass in the chiller room. Personal hygiene for staff is generally good and the plant is clean. A side room for the cleaning materials is available. There is need for regular maintenance of the iron stairs to avoid rusting.

Traceability and documentation

Animals are grouped as they come in the slaughterhouse according to the farmer who supplied them. The connection between the red offal and carcass cannot be well traced. The condemned meat is communicated to the farmer but they are not told why it was condemned. The condemned meat is collected and fed to the crocodiles. Some documents are in place on the animal weights, slaughter date, supplier of animals, vet records and meat inspection records.

Slaughter operations

About 50 to 80 animals are slaughtered per day from outside farmers. The animals are kept for 24 hours prior to slaughter. The carcasses are sent to Huntley Farm for further processing and distribution. The animals are well looked after and not stressed prior to slaughter. The animals are stunned using a stunning gun. Removal of the hides is done properly but the knife-sharpening tool is stuck into the meat while skinning the carcass spoiling the meat quality. The 2-knives method needs to be implemented.

Waste handling & environmental impact

Crocodile farmers to feed the crocodiles collect blood from the slaughterhouse. The remaining blood is channelled to three settling ponds. There is proper separation of solid materials from the effluent. Solid waste is disposed off in a pit and burnt.

Recommendations

Stacking of sharpening tool into the meat carcass should be avoided. Two knife systems should be implemented. Carcass washing, if needed, should be before the cooler.

Sinazongwe maize meal plant

Harvest and milling

All crops are harvested using a combine harvest machine. Grain is stored in seven silos with a total storage capacity of 10,000 tons prior to milling. The milling plant is highly automated with proper guidelines on operations. The milled maize is sold at the outlet. The grain is fumigated in the silos and only processed into mealie meal at least after 2 weeks from fumigation.

4.1.3 Namwala Beef

The Namwala abattoir is located in the southern province of Zambia. The abattoir is one of the abattoirs located in a cattle-raising area, so that animals can be slaughtered closer to the source of origin. This not only saves the transport of live animals, but has the advantage of not being limited in cases live animal movements are restricted following disease outbreaks. The carcasses are sent to Huntley Farm for further processing and distribution. Livestock is sourced from small and larger local farmers. Their herds graze in the area surrounding Namwala, and especially in the rich pastures on both sides of the Kafue River.

Before being brought to the Zambeef abattoir, all animals have to get the ante mortem inspection conducted by district veterinary officers. There is a high (40%) prevalence of Tuberculosis in the area which is transmitted through communal grass feeding in areas with wild ruminants which carry TB, Brucellosis, Fascioliasis and Contagious bovine pleuropneumonia (CBPP)

Slaughter and Processing

There was no slaughtering on the day of the visit, and the cooler storage was completely empty. Therefore, the evaluation is based on the site visit and on discussions with the plant manager and the Health Inspector.

People and Organization

Generally there is no Crisis plan. The staff is subjected to regular health checkups every year. The staff knowledge on products is good, but awareness and action for cleanliness and hygiene can be improved. There is an established good relationship to authorities such as the veterinary department and the Health inspectors.

Slaughter and Processing

After arrival at the plant, the animals are held in the lairage pen and normally slaughtered the following day. About 80-100 animals are slaughtered per week, 25 per day. During peak times between November and April the numbers can go up to 200/week and 60-70/day. Captive bolt is used to stun the animals. The carcasses are transported to Huntley farm for further processing. Owners of animals have to follow process to avoid disagreements in case the carcass must be condemned. A side room for the cleaning materials is available.

Traceability and Documentation

Traceability is weak. Documents are kept on the condemned carcass but the traceability to the carcass origin is weak.

Waste handling & environmental impact

Solid waste is disposed off using the incinerator. Effluent is channelled to the stabilization ponds through the separation tank.

4.1.4 Mazabuka

The Mazabuka abattoir is has relatively small operations compared to the other Zambeef. The Abattoir is owned by the Council and Zambeef is only renting. The main disease problem faced in the area is the corridor disease. There were no slaughter activities at the time of inspection. The plant has basic infrastructure and the animals are stunned outside and the bleeding is also done outside.

Slaughter and Processing

About 50 animals are slaughtered per day. The animals come from local farmers in the area. Storage containers are used to refrigerate the carcass. The meat is sent to Huntley farm for further processing. The carcasses are collected twice weekly. The condemned carcass is send to a separate chiller room.

Waste handling & environmental impact

Effluent is channelled to a well built up and lined effluent ponds system however; effluent from the chilled container for hides is channelled to an unlined pond. There is need to collect or to channel this effluent to the well-designed lined effluent ponds

4.1.5 Mongu

The Mongu abattoir is located in western province of Zambia. This is Zambeef's largest abattoir. The animals are brought to the abattoir from various local farmers within western province. The area has high infestation of animal diseases therefore; the abattoir is controlled by the veterinary department who conduct all the inspections.

People and Organization

Generally there is no Crisis plan. The staff is subjected to regular health checkups every year. The staff knowledge on products is good, but awareness and action for cleanliness and hygiene can be improved. There is an established good relationship to authorities such as the veterinary department and police. The staff at the slaughter house appeared to have no knowledge of how to properly stun and slaughter the animals without stressing them. The staff training seems to be not implemented due to the many staff transfers.

Basic GMP

This is weak in that the knife sharpening tool is stuck in the carcass while skinning which could spoil the meat quality. There is generally poor hygiene, condemned carcass is just thrown on the floor which is a potential for recontamination. The change rooms and the spare parts store room are located on the way of the carcass to the storage room. This is a source of contamination for the carcass.

Traceability and Documentation

Traceability is very weak; the animals cannot be traced back to the owners once they are slaughtered and weighed. Documentation is kept on the daily slaughters, weekly rations and number or weight of condemned meat. This however needs to be improved to provide more details such as sources of animals condemned.

Slaughter and Processing

About 150 animals are slaughtered per day giving a total of up to 750 animals per week. The animals are kept for 24 hours in the holding pens prior to slaughter. The animals are first cleared by the police and veterinary department before for slaughter. The animals are sprinkled with water before being stunned. This is done for easy electrification of the animals using the electron probe. The animals are stunned using a stunning gun. Three stunned animals were observed lying on the floor before being slaughtered. There is also no proper slaughtering sequence as animals brought in earlier are slaughtered later than ones which come in later. The animals are poorly slaughtered in that even the gut contents come out with the blood. The two knife system is used with water sterilization after each animal is bled.

Waste handling & environmental impact

The effluent from the abattoir is channelled to an effluent pond that is lined. Condemned meat is disposed of using the incinerator and also given to crocodile farmers.

Recommendations

Need for workers to undergo Training on proper slaughter. Need to improve traceability. There should be no sticking of the knife sharpening tool in the carcass during skinning.

4.2 Poultry

Poultry operations by ZAMBEEF include raising of broilers, pullets and layers and egg production. Other activities are slaughter, processing and packaging. These activities are done at two separate locations namely Huntley and Masterpork with Huntley being the main hub of all poultry operations. Operations at Masterpork is small scale. It was clearly noted that Staff managing all poultry operations production were knowledgeable and skilled.

4.2.1 Huntley Poultry

Raising Broilers

Basic GMP

There are 4 sites with a bird capacity of either 7000 birds per pen or 12,000birds per pen. Day old chicks are purchased from ROSS. The feed for the birds is procured from the Company's own feed making section. Twenty four (24) hour lighting regime is given to the broilers during their growth period, thus continuous feeding. At the time of the visit all houses were well maintained, clean and well ventilated.

However, the handling of mortalities in the houses needed attention. Some dead birds were collected and heaped outside for long periods of time with one house having mortalities not collected for more than 24 hours. Further disinfection procedures at the entrance to the raising areas were lax.

Raising of Pullets and layers for egg production:

Basic GMP

There are 4 sites out of which 2 are allocated for pullet raising and the other 2 are for layers. The capacity at each site is 17,000 birds per pen. All houses have concrete floors. Day old Layers are Roman Brown procured from Yielding Tree. Feed is procured from the Feed making Section at Huntley. The pullets are de-beaked during the brooding period. The pullets and layers are provided with 5 hours of additional light per day.

At the point of lay, the pullets are transferred to Battery cages where they are kept for 76 weeks which is the entire egg production period. The eggs are collected and packaged for sale in a store room next

to the layer pens. The packaging of fresh eggs is neat and well arranged. All houses are well maintained, clean and properly ventilated. However, handling of mortalities needs attention as dead birds are heaped on the floor.

Slaughter and Processing

A semi-automated system of chicken slaughter and processing is used. The water used during chicken processing is from a borehole at the farm. The building and equipment in the chicken slaughter house is well maintained except for one big hole on the floor. The line flow is very tight and not well organized. Quality inspections are in place on the line before chickens go into packaging, weighing and cooling.

It was however noted that there was no form of foreign material control during packaging and product piling was not orderly. In addition temperature in the processing room need to be better controlled and lowered to international practices of 12 °C. Further, there was no proper system of handling and disposal of condemned animals as these were seen lying on the floor while processing and packaging continued. Even the Freezer in condemn room needed better temperature control.

Cleaning and sanitation in the chicken processing plant was generally fine. Swab testing for microbial contaminants within the plant is done by an external company in a low frequency. A separate storage for food additives and cleaning materials is being built. Some improvements are needed in worker hygiene and house keeping. Two of the major improvements required are in the area of hand washing and separation of solids from effluent. There is very little separation of solids from effluent and no hand washing facilities are in place. Some sanitizing stations were available, but few workers were seen using these. In addition not all workers had full uniforms on in the processing plant.

Traceability and documentation

A coding system is in place where codes are given per chicken according to day of slaughter. The codes are clearly labelled on the packaging material purchased from Nampak. Therefore traceability is possible from retail back to the day of slaughter and batch. It is recommended that a mock test for traceability status should be done to assess the effectiveness of the system being used.

The rules and regulations are well documented and displayed in the plant. It was noted that there was no coordinated feedback mechanism on the implementation of these rules and enforcement on compliance to rules should be strengthened. Various documents such as trading license, food handlers' health reports, training programs, etc are well documented.

Recommendations

It is recommended that dark periods should be incorporated for the broilers in the production pens to reduce stress on the animals. In addition an effective system of separation of solid waste and effluent should be implemented. Hand washing facilities should be put in place in the processing plant and supervisors should check and enforce wearing of uniforms for by all staff working in the plant. The plant should also move quickly and establish HACCP system as planned.

4.3 Pork

Master Pork is the largest pork processor in Zambia processing about 35000 pigs per year. The pigs are supplied from Nkumba farm, Kyundu farm and further commercial farms. Master pork produces cooked, smoked and processed meat products.

Kyundu piggery:

Kyundu piggery is located next to Masterpork and produces about 2.300 pigs per year (mainly landrace and Large white cross breeds). The farm sells about pigs 50-80 per week. The production head consist of 234 sows and 21 boars. The pigs are sold at the age of 24 weeks with 90 kg live weight and 70kg slaughter weight. The feed conversion ratio is 4:1. The feed concentrate is obtained from Novatek.

No growth promoters are used on the animals and no teeth clipping is practiced. Tail docking is however practiced.

Kyundu farm also raises 1500 cattle and has a game ranch in addition to the piggery.

Nkumba piggery

Nkumba piggery is located half an hour East of Masterpork, The facilities are rented and Zambeef has operated the facility for six years. About 4,400 animals are sold per year, 100-150 per week at age of 23 weeks. Zambeef is in the processing of extending the piggery operations to Kalundu farm near the Rye fields.

The production head consist of 480 sows and about 30 boars. No teeth clipping is practiced. The sows have an average production of 8 piglets. The gilts are obtained from Kafue Fisheries, (mainly landrace and large white cross breeds). The Feed conversion is ratio 4.5:1. The feed used is purchased from Novatek. The feed storage facility needs some improvement in terms of storage of feed bags on pallets and away from the walls. FIFO is practiced in the use of the feed.

ZAMBEEF is in the process of planning an own piggery with over 1.000 sows.

Waste handling & environmental

Disposal of dead animals and other litter is by burning in a pit. Effluent from the piggery is channelled to effluent ponds that are not lined. One of the challenges in terms of diseases is to control the parasite that causes milk spots on livers.

Recommendation

Lining of the effluent treatment ponds.

Master Pork Slaughter operations

The main individual supplier of pigs to Master Pork is the Zambeef owned Nkumba farm which supplies about 20%, followed by Kyundu farm 10% and the 70% come from various farmers, which are all known to Masterpork management.

The main products are Hungarian sausages (60 tons/week), Polony (10tons/week), and bacon (10tons/week). In addition, a wide variety of other products, such as smoked ham and chicken are produced. Pork meat is sold as carcass and individual meat cuts. There is also a small-scale chicken slaughter operation on the premises which slaughter only 5000 birds per month, to be used for processing. . These birds are purchased from the nearby farm. Spice mixes are obtained from Freddy Hirsh, which are made to fit certain batch sizes, and carry a label with the formula of the total mixture. Most of the materials such as sausage casings, wooden chips for smoking and packaging materials are imported from South Africa. Fifo is used in all production steps.

People and Organization

There are some quality controls measures in place, but this requires improvement. The relationship with authorities is good but not efficiently controlled such as ensuring that meat inspectors are present at the time of slaughter. Staff knowledge on products and operations seems to be good, but hygiene awareness needs to be improved and general housekeeping needs to be improved. Though training of staff and management in food safety was done, a formal training plan needs to be worked out and implemented. Monitoring compliance to food safety assurance is weak due to inadequate structure and staffing in that area. The staff is subjected to regular medical check-ups every 6 months. Uniforms and headgear are worn but there is need for a better laundry system.

Basic GMP

Unloading of animals is very rough and against any knowledge of animal welfare. Pigs are dragged down high step from transporting vehicle to lairage pen. This can result in highly stressed animals at the time of slaughter which can also affect the meat quality. Several hand washing facilities are available; however these are not sufficient and in some cases located in the wrong places. Pest control is done through fumigation every 2 months. There is no foreign material control measures put in place. The animals are not given enough time to rest prior to slaughter, they only rest for two hours or less.

Traceability and Documentation

Traceability is weak in terms of origin of animals. Vacuum packed sausages were put into bags without expiry dates. Stickers with expiry dates could be substituted by printing of labelled packages to avoid fraud and ensure brand protection. This printing can be done locally.

The carcasses from one supplier could be easily kept separate from others. Health inspection records do not document the sources of condemned material, making it difficult to give feedback to farmers. Documentation is weak and the feedback system to farmers insufficient. The plant staff is not informed about customer complaints. Batch pack formula control is in place.

Slaughter and processing procedures

The animals are stunned with an electrical scanner before being slaughtered. Condemned materials are disposed of through the incinerator or stored in separate chiller for dispatch to crocodile farm and feeding a lion at the Kyundu farm.

Cleaning materials & chemicals

A separate storage room for cleaning materials is available however, order needs to be improved. Chlorine powder is used as the main disinfectant. In addition enzymatic active sanitizer are used to break down fat, proteins and starch the effluent.

Lab testing and Calibration

There is no system for laboratory testing although sporadic sampling is done and tested using outside laboratory services. Water quality is tested only twice per year. Raw meat control needs to be upgraded (e.g. pH of slaughtered pigs for PSE meat). The scales have only been calibrated once by ZABS, these needs to be done in a systematic order.

Preventative maintenance and line design

The processes overlap due to lack of space. Potential for cross contamination is high, as clean and dirty areas are not kept clearly apart. Especially waste water from floor and scalding enter cool room for carcasses. There is limited stocking of spare parts as most of the repair works are done at Huntley farm.

Waste handling & environmental impact

All effluent is channelled to a waste water separation tank that leads to a stabilization pond. Solid waste is burn in the incinerator that is incomplete (no vent).

Recommendations

- There is need to unload live pigs in a proper manner to reduce on stress on the animal.
- Take PH measurements for meat quality
- Keeping carcasses separate according to farmer
- Hand washing basins to be properly positioned
- Proper Housekeeping in storage room
- Printing expiry date instead of stickers there is need to print the packaging material locally
- Feed back system to farmers on condemned carcass
- Proper positioning of hand washing facilities
- Establishment of a laundry
- Line lay-out of plant should be improved
- Lab in plant and micro testing should be established
- The incinerator should be completed

4.4 Dairy

The dairy operations comprise of a farm and a milk processing plant. The dairy farm is located at Kalundu farm about 10km from Huntley while the milk processing plant is at Huntley.

4.4.1 Dairy Farm

The Dairy farm is called Kalundu Dairy farm. It was a former tobacco farm owned by Galaunia Farms. It was acquired in 1999 by Zambeef and converted into a dairy farm. The first milk production activities by Zambeef was in 2000.

At the time of reporting, Kalundu Dairy had 664 milking cows with an average milk yield of 21 liters per cow per day. The total animals on the farm were 1900 (including heifers, young bulls, dry cows, etc.)

of Friesian-Holstein breed. The farm had good record keeping and identification system for all the animals. Artificial insemination is used for breeding of calves and semen is purchased from SEMEX (Canada). There is an active breeding for desired traits by selection of bulls.

Feed for the animals are mixed at the farm. However, feed storage facilities at the farm were sub-standard. A lot of materials were lying on the floor and heaps of various products from damaged bags were noted. This can be improved by putting in a concrete floor in the storage room, stacking the bags on pallets and regular cleaning.

Milking of animals was done twice a day, morning and afternoon. A mastitis test on all milking animals was done daily. The milk collection room can be improved with regard to cleanliness and storage of chemicals.

4.4.2 Milk plant

The milk plant is within the Huntley complex. The plant processes milk from Kalundu Dairy and about 20% from small scale farmers. The small scale farmers are organized to bring their milk to a collection point, where quality is tested before sending to the milk plant. When the milk arrives at the plant, tests are done for adulteration, micro-counts, and antibiotic residues.

Sixty percent (60%) of the milk is processed into pasteurized fresh milk, 20 % into drinking yogurt, and 20% into fermented milk. Excess milk is processed into Cheddar cheese (300-350l/batch). The raw materials for Juice are imported as concentrate from South Africa for the three flavours of Juice (cocoa pine, peach pine and orange). Other materials for juice are sugar and stabilizer. Culture for yoghurt making imported from South Africa through DANISCO a Danish firm.

Building and line maintenance was in good order and floors were not slippery. The line is however quite tight making it difficult for proper control of foreign materials. Water quality is tested in an in-house lab once a month. The location of the laboratory in the milk plant needs to be re-located as there is little room and it is also used for other quality test for Huntley farm. It was noted that space was limiting and there was need to separate product testing room from production areas. All waste water from the plant goes untreated into the main drainage, and no testing is done on concentration.

Recommendation

Good house keeping in the storage room.

Re-location of the lab outside the milk processing plant.

4.5 Feed

Feed making is done at the Feed making section located within the Huntley Complex. However, this section will shift to a newly constructed plant in Lusaka called Novatek.

The plant at Huntley produces 1500tons/month of feed. The main raw materials are maize bran, wheat bran and soya which are procured from the cropping operations at Huntley and Sinazongwe. Others are premixes such as amino acids and Di-calcium phosphate which are purchased from South Africa or from registered local agents.

There was a poor order in storage of raw materials with stacking heights being too high and poor ventilation in the room. There were uncontrolled spillages of various materials which are swept and taken to feedlot.

The line equipment is clear but the soya extruder equipment in a deplorable state. Large quantities of oils were seen on the floor and on part of the machine. It was recommended that regular maintenance and cleaning should be in place for all machinery in the production line.

Documentation and traceability

The formula control was well documented and various nutritional formulations on livestock feed were all clearly written and easy to follow. An external Nutritionist is mandated to do checks of the formulations. A Veterinary doctor comes to check on production and health of all poultry receiving feed from the plant every six weeks.

However, no traceability is possible at the moment although a tagging system is being planned.

Novatek

The processing plant at Novatek was still in the process of being installed at the time of the visit, but seems to be state of the art. It will be equipped with proper dust traps to take care of dust common in feed making operations. An in house lab has also been included in this plant to allow for checking the quality of raw materials before they are taken for processing.

4.6 Flourmill and Bakery

4.6.1 Flour milling

The flour mill commenced operations in 2007. There are six silos each with a storage capacity of 1500 tones. The flour is processed into 3 grades that are cake flour, brown flour and bread flour. All wheat is exclusively from Zambeef farms. One third of flour goes to bakery and the rest is sold in outlets and supermarkets. The flour Mill processes 96 tones of flour per day. This gives about 98 % flour, 1% chaff and 1% dust. Water is used for steam conditioning of the wheat and packaging materials are supplied within the country

People and Organization

There are quality systems that have been put in place and apparently there is good relationship with authorities. There is no crisis plan in place for the mill plant and no marking for emergence exist. Staff knowledge on products is good, but awareness and action for proper head gear needs improvement (no head gear for all staff). Monitoring of compliance to rules is in place but needs to be enforced. Occupational health checks are done every six months. The levels of noise are not monitored and workers are not provided with noise protective equipment. The bread premix room is disorderly and needs attention.

Basic GMP

The cleaning is done daily and an overall cleaning and maintenance is done every fortnight. There is need for improvement in storage room in terms of stocking. Products are stocked on the floor and near the wall with no space in between. There is need to store bags on pallets. Pest Management is not done in mill plant but in the wheat storage facility outside. There are no strict rules or control of visitors entering the plant in terms of sanitation control. The personal hygiene seems to be good. There is a separate storage room for cleaning equipment. The machines are in good working order indicating good maintenance

Traceability Documentation

There is no traceability in that there are no production or expiry dates on local products. It was indicated that expiry dates are only put on export products. There is no documentation on the processes. There is no control of metallic foreign material.

Lab testing and calibration

There is routine testing for moisture content in wheat at the Milk plant. Calibration of scales is done by Zambia Bureau of standards

Waste handling & environmental impact

There is minimal waste (chaff) production at the plant. The chaff is taken to the feed lot to feed animals.

Recommendations

Head gear and mouth masks for all workers in mill
Cleaning of packaging area for pre-mixes

4.6.2 Bread making

The bakery started operating in 2007 and produces about 30,000 loaves per day of bread each weighing 700grams. The flour is obtained from the flour mill at Huntley complex, cooking oil is from Zamanita, yeast is sourced from LEE Yeast Company, baking fat from South Africa, Salt and Emulsifier-SSM sourced locally.

People and Organization

There is no crisis plan in place for the in the bakery. Staff knowledge on products good, Protective gear such as mouth mask, head gear should be enforced

Hand washing facilities should be worked to avoid splashing all over. Occupational health checks are done every six months. The levels of noise are not known and no noise protective equipment is provided to the workers.

Basic GMP

There is need for improvement in quality systems such as foreign material control. The building is in good shape but the bread Pre-mix room needs attention.

Maintenance of equipment was being done while baking was in progress, this should be discouraged. There are no strict rules or control for visitors entering the plant (no washing hands, no head gear etc). There is need to improve storage of damaged oil containers which are not properly stored within the bakery plant. Containers in the bakery are returned to Zamanita. Separate storage for cleaning equipment such as brooms is available

Traceability and Documentation

There is currently no traceability procedures put in place. There is a formula control in the records that are kept.

Waste handling & environmental impact

Minimal waste is produced at the plant.

Recommendations

Wearing of Head gear and mouth masks for all workers in Bakery should be enforced.

Foreign material control, especially at the point of emptying the flour bags. A vibrating sieve is recommended.

7 Edible oil and water

Zamanita is the Zambeef subsidiary that process edible oil and water. It was noted that quality systems for the whole plant were well documented by the Safety, Health and Environmental Quality Office. The staff knowledge on products and processes was good although awareness and action for cleanliness and hygiene needed a lot of improvement. A clinic with a resident nurse is located within the premises. However, the occupational health plan was available for a selected group of workers(food handlers).

4.7.1 Edible oil

Raw materials and crushing

The main raw materials used in the edible oil plant are soy beans, cotton seeds, sunflower seeds.

These are used in the four processing plants at Zamanita: crude oil, refinery, margarine & fats, water.

Soy beans: 80% own growing, 20 % small scale growers.

Sunflower is procured from small-scale growers, who combine their harvest and send as combined batches to Zamanita. Cotton seeds are purchased from Cargill and Dunavant, who do contract

growing with small scale farmers. About 80% of all soy beans processed is grown by various farms under Zambeef and 20 % is procured from small scale growers.

All the raw materials are screened to ensure that they meet the required standard before they are accepted into the silos at the plant. These are then sent to the crusher room where they are cleaned and crushed. It was noted that cleanliness in crushing plant needs to be strongly improved and proper control of emissions should be put in place to avoid the large volumes of dust and debris that had accumulated in the crushing plant at the time of the visit.

Crude oil

Hexane is used in the processing of crushed seed cake into oil. It was noted that while the line for crude oil processing was well understood and documented by staff, its handling was poor. Some of it was seen in open drums. It was therefore recommended that proper handling procedures for hexane should be enforced as this was clearly marked as a high risk area.

Refinery and margarine

The extracted crude oil is then sent to the refinery where cooking oil is harnessed and edible fats separated for processing into margarine. A lab on the facilities tests the refined oil to ensure that it fits the required standards for oil in Zambia. However the building and line maintenance needs improvement. The floors and ceilings were in a bad shape with some parts of the ceiling peeling off in the margarine plant.

The equipment in the refinery is old yet robust. The major drawback was that the equipment was insufficiently maintained and as thus some of it was not working. In some cases quick fix solutions such as sacks were used as make shift solutions to mending some leaking parts. This may compromise product hygiene. It was also noted that the refinery was poorly ventilated making it very uncomfortable for staff working in this area.

In the margarine plant, there was no form of foreign material control as it was packaged. The machine for packaging and processing at the end of the production line was leaking and needed maintenance.

The cooking oil is packaged into plastic bottles and containers manufactured within the plant. However the appearance of packaging material often dirty (20l container for oil, cartons for fat, etc.) despite the short distance between plants. The storage of products was in containers and boxes placed on the floor.

Some oil traps in place and the waste water is sent to the municipal sewage network for treatment. Solid waste is collected by external company contracted by Zamanita. An Environmental Management Plan has been drawn although strong adherence is needed.

Documentation and traceability

A number of reports are generated in all the plants although systematic order is missing, making feedback of results between departments is difficult. Hazardous areas are clearly labelled although emergency exit routes are not clearly marked.

Traceability of products is possible only to a limited extent because systematic filing and carry over of codes is missing. Therefore product recalls cannot be made efficiently.

Recommendations

It is recommended that efficient dust abatement equipment be installed in the crushing plant. In addition cleaning should be done more regularly to avoid accumulation of layers of dust. Further, enforcement of health and safety standards should be stepped up, particularly in adherence to protective clothing. All packaged food should be stored on pallets and never on the floor. It is further recommended that measurement of noise level be conducted regularly in the refinery and where these exceed the standard, employees should be provided with ear muffs.

4.7.2 Water

The water that is processed and bottled at Zamanita is abstracted from their own borehole located outside the plant. Water processing is still new and most of the equipment and the line are well controlled. Tests for quality are done at the lab located within the plant.

Staff knowledge on products and awareness and action for cleanliness and hygiene seem to be fine. However there was need for two separate changing rooms for male and female as only one was in place at the time of the visit.

Documentation and traceability

The procedures and processes are well documented and traceability of product possible up to day of production.

4.8 Cropping

4.8.1 Huntley

Cropping operations at Huntley farm involve growing of maize, soybeans, rye grass on pilot basis, wheat (700 hectares winter wheat). There are 12 center pivots on the farm. Water is supplied from boreholes and irrigation water quality tests are done every two years. Fertilizers and organic manures are used to fertilize the fields. Compost making is being done on a pilot phase.

Some of the common diseases problems affecting crop production include yellow rust which is controlled by fungicides. The soils in the area are 80% sandy loam, 15% deep clay and 5% sand. Rye is grown for rotational grazing regimes at 6 grazing per hectare

Recommendations

Maintenance workers welding were observed with no protective gear there is need to enforce rules. Pesticide storage is in order and there is access control to the chemicals but ventilation should be improved

4.8.2 Sinazongwe

The Sinazongwe cropping section comprise of crops growing, storage of grain in silos and milling of maize meal. Approximately 2000 hectares of land is under production with 25 centre pivots. Maize is grown twice a year due to the favourable climate. The farm is surveyed and has soil maps to allow for precision farming. Modern conservation agricultural methods like minimum tillage and reaping are practiced on farm. Water for irrigation is sourced from the Lake Kariba through a large pumping station with a capacity of 100 liters per second.

There are also reserve pumps in case the water level goes down. These are placed at a relatively longer distance from the shore line where the water level depth is deeper. Water is pumped into three canals and channelled to the centre pivots.

Pest control

The main pests include aphids and stalk borers. All the plant pest protection methods used at the farm are prophylactic. Phostoxin is one of the chemicals that are used. The grain is fumigated in the silos and only processed into mealie meal at least after 2 weeks from fumigation.

Harvest and milling

All crops are harvested using a combine harvest machine. The milling plant is highly automated with proper guidelines on operations. The milled maize is sold at the outlet.

Storage

Grain is stored in seven silos with a total storage capacity of 10,000 tons. The chemical, pesticide and spare parts storage facilities are maintained in an orderly manner.

Documentation and traceability

There is proper record keeping of all the activities from field operations to storage rooms.

Waste handling & environmental

Empty chemical containers are reused in the spare parts storage Solid waste is burn in the pits.

4.9 Butchery outlets

General remarks

Outlets are classified according to customer base, from high-income area (classification A) via B to C (low income area).

Most of locations are rented; and any changes in construction have to be discussed with the owner, and therefore need to be agreed on before opening the shops.

Basic GMP

Hand washing facilities are a weak point in all visited outlets. There should be a corner in the butchery equipped with a sink, hot and cold water, dispensers for soap and disinfectant. The staff should use it frequently, and this could be visible to the customers.

No common uniform policy in place; head coverage must be made mandatory (hairnet and hat).

People

Managers are getting basic training in a course; they should have more training and go through a formalized practical training course in various levels (basic, intermediate, advanced)

Recommendation to create an 'Operations Manual' for butcheries, containing the exact procedures to follow in the different areas of the shop (receiving of goods, storage, controls, hygiene of staff, cleaning procedures, handling goods including expired products, etc.)

Process

Nothing must be stored directly on the floors, rather on plastic pallets or grids.

Shelves recommended for all cold rooms.

Products going into the freezer boxes (top opening) should be taken out of the outer package (sacks, boxes) to avoid contamination

Minced meat is delivered in sacks, without inner lining or outside protection. As a sensible product, needs to be packed with stronger outer package (plastic container)

Procedure for expired product handling is missing.

Foreign material risk high in all butcheries, especially those with further processing

Facilities

Some of the outlets are looking worn out after short time. Recommendation to create a maintenance team to go from butchery to butchery and do preventative maintenance (refrigeration equipment) and to take care of appearance of outlets (including painting)

Comments to individual outlets

Chunga - C

Opened in Sep 09

Very capable Manager, Mrs. Audrey

General appearance of staff and operations good

2 separate stores next to each other, retail and bulk

Display looked OK, except meat and fish should be separated

Walk-in cooler too warm, need curtains

Back door needs insect netting

Garden - C

Behind the counter some needs for cleaning (saw, floor)

No clear separation between different products in the sales area

Changing area should be demarcated (e.g. curtain)

Temperature indicator on walk-in freezer missing

New Kamwala - B

General appearance very congested, ventilation poor

Improper storage in freezer boxes, open bags, fish and meat open

One toilet and hand washing have to be shared between own staff and that of nearby Zamchick Inn (12 people)

Cold room over 20° plus, door open all the time

Chilenje - B

Well-arranged display

Hand washing only 1 spot plus bucket

Similar issues on storage (directly on the floor) like others

Arcades shopping center - A+

Customer area shows very good appearance, products well arranged and clearly separated in the displays

Butchery small for the size of the outlet

Working with chicken, fish, pork and beef; product separation should be adhered to during processing, with appropriate cleaning steps in between.

Overfilled cool room, difficult to clean

Kabulonga - A

Display area should be improved for an A outlet

Butchery area very large, slippery floor (greasy),

Producing sausages locally, without proper blender

2 coolers, 1 for raw meat racks (hanging), and 1 for processed products (on shelves)

Have the luxury of sufficient space (including large and separate toilets for male and female), though better housekeeping is recommended

Namwala – C (visited on Nov 9th)

Milk and water are displayed next to the meat. This could be solved by placing an extra refrigerator with glass front behind the counter, as seen in the other butcheries

Only the larger of the 2 walk-in refrigerators is working (-2°)

Temperature gauge installed at the back of the building – a second instrument needs to be placed over the door of the cool rooms.

Sinazongwe – C (visited on Nov 11th)

The outlet is very clean and orderly. There is good display of products and the cold room is orderly. However milk products and water is displayed together with meat with no separation.

The Hungarian sausage is packed with no labelling and no expiry dates. Some loaves of bread had also no expiry dates.

There is a toilet and washroom

Mongu – C (visited on Nov 16)

Clean appearance, staff of 6

Get deliveries 2x/week from Huntley, beef directly from Mongu abattoir

Changing area behind bulk oil tank, toilet outside shared with others. Hand wash sink there, no soap.

4.10 ZamChick inns

Basic GMP

Hand washing areas for crew and for customers must be improved

Cooler storage: products put directly on floor, should be on pallets

People

Training programme needs to include procedures on food handling and preparation

Recommendation to create an 'Operations Manual' for the restaurants, containing the exact station operating procedures to follow in the different areas of the restaurants (receiving of goods, storage, controls, hygiene of staff, cleaning procedures, food preparation, cooking, holding times, etc.)

Process

Restaurant crew does not follow the same procedure. Need single and safe procedure for chicken preparation: thawing – cleaning – staging for usage – coating – frying – holding time.
Should use trays for thawed chicken, trays on rack, thawing in cool room.
Need also procedure for frying oil handling (fryer cleaning, exchange of used oil)
Temperatures of storage facilities and of cooking temperatures need to be checked regularly and documented. Every restaurant needs a handheld thermometer

Facilities

Eating table for customers wear out quickly, look old and unattractive

Customer Service

Very limited menu, no overhead translates

Menu card shows picture of food with salad, servings are without

Comments to individual Inns

Town Centre

Frying oil changed regularly every 5 days, should rather be by degree of degradation (not by fixed time)

Fumigation every 3 months

Cairo

Customer side acceptable hand washing

2 cash registers, closed on Sundays

Toilet and changing area (office) 1 for both male and female

Down Town

Outside sitting area should be more attractive

Kamwala

No hand washing possibility at all, have to use bucket; toilet to be shared with outlet staff

Cold room temperature was +20°

Arcades

No hand washing station for staff, only in public toilet nearby

Change area for male and female together

5 RECOMMENDED ACTION PLAN

5.1 Urgent next steps for all plants – ‘ENFORCE THE BASICS’

When summarizing the Status Quo after the evaluation visits (see also chapter 3, Findings in general), several serious shortcomings were identified in most of the production sites. Those should be dealt with immediately, in order to reduce the vulnerability of the company deriving from

- Food safety risks (endangers the health of customers),
- Environmental incompliance (presents an actual conflict with legislation), and
- Negative influences on product quality (destroys ZAMBEEF's quality image)

Consequently, here are the action steps to be tackled urgently in all plants:

1. Ensure the Basics in GMP are in place and followed to reduce the food safety risk
Hand washing first (install stations in right places)
No food on floor (use plastic pallets)
Respect border between clean and dirty areas
Practice good housekeeping

2. Comply with environmental legal requirements
Establish controls for effluents and solid waste
3. Handle live animals correctly Reduce the stress of the animals (transport, unloading, rest time in lairage)
Follow basic rules of animal welfare for live animals and slaughter procedures
4. Provide training of the procedures to staff and supervisors
Follow up with control of compliance and enforcement

Within a time period of 3, maximum 6 months, the above urgent action steps should be implemented. It is the company's responsibility to carry out the necessary changes on its own. The required work is not difficult; most of the operations procedures exist and only need to be enforced.

5.2 Mid term action plan for all plants – 'PATHWAY TO QUALITY'

Company-wide Systems Manager:

In order to start a more quality oriented process management, changes need to be defined and implemented over the whole company, not only in individual plants. Therefore it makes sense to also adapt the management organisation and to create a new position responsible for company wide quality systems. The purpose of this position will be to create and implement systems to ensure and improve product quality, food safety, animal welfare, occupational health and safety, and environmental measures. The position must have the necessary authority and place in the hierarchy to stand up against established managers, so that changes can be implemented for the better long-term future.

From quality control to quality management

Quality needs to be measured and documented on all steps of the production chain. Preventative systems can ensure food safety of the finished product by doing the right things with the raw materials. To follow the HACCP concept (Hazard Analysis Critical Control Points), and develop line-specific programs is the right way to assure food safety. The concept has proven its functioning and is by now a legal requirement for food handlers in most countries.

Education and training

Systematic training programmes for all managers should be developed, with basic, intermediate and advanced content about food safety, quality management, OHS, and environmental management. Systematic training will not only create the necessary background knowledge, but also motivate the managers, as it will be helpful for their careers. Besides to company managers, training should be also given to the raw material suppliers, like dairy or cattle farmers.

Protecting the quality

Traceability is important for internal controls, for product recalls, and to achieve a transparent supply chain. It starts with correct documentation and labelling along the chain. Software can be helpful (like the started ABASERVE for abattoirs). The necessary organisational steps have to be put in place to enable the company to trace back all products from the finished products to the raw materials. 'Mock tests' (taking one random package of finished product and finding all available information about its history in a short time) should be made to see the actual status.

Microbiological control programmes need to be implemented or upgraded, so that the actual threats of microbiological contamination are known and risks can be reduced.

Knowing the status

Self audits on the status of compliance with operations procedures, GMP, etc. need to be done regularly and give a good feedback about the enforcement level. The self-audits should be carried out

as formal audits by trained staff, with formal checklists, on a regular schedule (in the beginning every 2 months).

The self-audits should be supplemented by audits through neutral auditors to confirm or correct the internal findings (2nd party audits for reality check)

Demonstrate quality

All ZAMBEEF products in their own outlets and in ShopRites Supermarkets must be displayed in a way to demonstrate high quality – orderly staged, intact packaging, clean surrounding, etc. Regular controls have to ensure that customers are getting this quality message.

Proper appearance of butcheries (clean, in good order, good ventilation, freshly painted) supports the quality image.

The same rules need to apply for all the plants and processing sites.

5.3 Specific action plans for individual sites

Please see Annex 1

6 GAP TO INTERNATIONAL STANDARDS

Provided the necessary corrections and enforcements will be done quickly in order to solidify the foundation for food safety, the company can start quickly putting quality management in place. The mid term quality action plan as described under 5.2 gives the direction.

The target is compliance with international standards.

For agricultural production and animal husbandry the target should be GlobalGap.

For overall food safety and quality management in the processing areas ISO 22000 should be the target.

Even if it is a long way to go, there are areas where the present practices fulfil the basic requirements of the standards. However, at this early stage of quality management in the company, it would not make sense to list the gaps. Instead, it is advised that the Systems Manager (to be appointed) should use the systematic of the standards as the structure when developing the ZAMBEEF Quality Management.

7.0 PROPOSED PHASE 2

7.1 Required Follow-up to Phase 1

As a prerequisite for a potential phase 2, a number of urgent steps need to be carried out (as listed under 5.1 in this report, as well as in the individual action plans - annex 1).

Also considering that some of the production sites could not be visited during the November visit, it is recommended to have the local consultants of the team (Nancy Mushota and Lydia Chabala) do the following:

1. Evaluate sites, which could not be visited during the project work (these are the abattoirs in Livingstone and Chipata, eventually also the small scale operation in Senanga)

The evaluation results plus an action plan for each of the sites would be added to this report.

Recommended time line: as soon as possible (January)

Estimated time required: 3 - 4 days x 2 consultants = 6 - 8 man-days for Livingstone & Chipata

2. Conduct audit visits to Huntley, Masterpork and Zamanita, as well as to some butchery outlets and Zamchick Inns.

Purpose would be to evaluate the implementation status of the urgent next steps as listed in part 5.1 and in annex 1 (as priority A) of this report.

The company should be very well capable - and also has the clear responsibility - to implement and evaluate the required changes on their own; nevertheless an audit by an outside second party always proves to be helpful and complimentary to company activities and provides objective results.

Recommended time line: end of second quarter 2010.

Estimated time required: 5 - 6 days x 2 consultants = 10 - 12 man-days

7.2 Proposed Phase 2

DEG and ZAMBEEF consider expanding the project with a phase 2. Its purpose should be to support ZAMBEEF implementing the mid term action plans and establishing a Quality Management System in order to achieve compliance with international standards.

There are two main areas, which could be covered by the Consultant team in a phase 2 of the project:

1. Support implementing the mid-term action plan (see points in 5.2 and priority B actions in annex 1), which leads into establishing a quality management system, and
2. Assist in setting up the planning process for the way forward towards international standards.

The first area would include

- Establish and integrate the position of the Systems Manager (job description, place in hierarchy, training)
- Assist in developing and launching a HACCP programme
- Plan a systematic training programme - from basic food safety requirements up to total quality management (TQM) approach
- Support to establish traceability for all product lines, including an online data management system
- Advise in setting up microbiological control programmes
- Assist in establishing a plan to manage rating and correcting/improving the quality image of products and the company

The second area would include

- To tailor company specifics to achieve compatibility with international standards
- To divide the long way to reach the standards into manageable smaller steps
- To set a time plan
- To implement self audits for measuring progress

For both areas, the Consultant Team should be involved in the planning phase of the company, and give input to their goals and objectives, strategies and activities. Also, assistance can be provided when measurement systems are defined and put in place.

In the early stages, when defining the 'Road Map' to achieving international standards, the Consultant Team can ensure a realistic and practical approach and avoid unproductive and bureaucratic ways.

From the perspective of timing and budget, the Consultant Team would work in different combinations as required: either as the local team (NM and LC; individually or together), working in the country, or as the full team for input into planning sessions (here RK would give support from Germany).

The local consultants would accompany the implementation of the mid term action plans, and measure the progress in regular time periods (every 3-6 months).

The full team would work with the company in the planning phase, and be present for a physical meeting and site checks once per year (next in 4th quarter 2010).

7.3 Proposed activities and time plan

Activities	Consultancy days (Est. min/max)		Suggested time frame
	NMM/LC*	RK**	
Required Follow-up to Phase 1			
Evaluation of abattoirs in Livingstone and Chipata	8		Jan
Compliance audits after implementation of required urgent steps	10		April - June
Proposed Phase 2			
Assist in establishing position of Systems Manager		2	Feb – March Nov
Evaluate newly developed HACCP plans; suggest adaptations, if needed	5		April - June
Consultation to training programmes	2	2	April - June
Support establishing a functioning traceability system	5	3	April - June
Give advice in online data management system for traceability and quality systems		3	3 rd quarter
Give advise in establishing microbiological control programmes		2	2 nd quarter
Evaluate Outlets and Inns as 'Secret Shopper'	8		Ongoing
Define 'Road Map to Int'l Standards'	2	2	July - Oct
Physical meetings and site visits to support achieving goals set in the 'Road Map'	20	10	Nov
TOTAL	60	24	2010

* Nancy Mushota and Lydia Chapala individually or as team

** Reinhard Kaepfel supporting from Germany and activities in Zambia in November