Study on the Kenyan Animal Feed and Fodder Sub-sectors

Interviews and HACCP Audits of Kenyan Feed Manufacturers

(Sub-report IV)

AgriQ Quest Ltd.
&
BLGG Kenya Ltd.

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Part of the "Kenya Market-led Dairy Programme" (KMDP) of

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INTRODUCTION

The BLGG consortium was contracted by SNV Kenya to carry out an Animal Feed and Fodder study in the context of the Kenya Market-led Dairy Program (KMDP). The goal of this study was to identify the gaps/bottlenecks that hamper the development and growth of the Kenyan feed and fodder sub-sectors, and as a result the Kenyan dairy industry (for further details on the consortium and objectives of this study see sub-report I: "Summary Report").

This comprehensive assignment was divided in a number of sub-studies which resulted in the sub-reports as listed in Table 1 below.

Table 1. Study on the Kenyan animal feed and fodder sub-sectors: Overview of the sub-reports

No	Title	Author
I	Summary report	BLGG Consortium
II	Dairy sector structure	BLGG Research bv
III	Kenya feed industry policy and regulatory issues	ABS TCM Ltd.
IV	**Interviews and HACCP audits of Kenyan feed manufacturers**	**BLGG Kenya Ltd/ AgriQ Quest Ltd**
V	Quality analysis of animal feedstuffs and fodders in Kenya	BLGG Research bv
VI	Trends in the Kenyan fodder sub-sector	Perfometer Solutions
VII	Trends in the Dutch fodder sub-sector	BLGG Research bv

This document is sub-report IV of the study and consists of two parts: sub-report IV.1 and sub-report IV.2

- Sub-report IV.1 covers interviews with Kenyan feed manufacturers which were held by BLGG Kenya as part of this study.

- Sub-report IV.2 describes the HACCP audits of 3 Kenyan feed manufacturers that were performed as part of this study. This sub-study was carried out by AgriQ Quest Ltd.

SUB-REPORT IV.1 INTERVIEWS

In December 2012 and January 2013 BLGG Kenya visited 18 feed manufacturers at site, who were interviewed using a structured questionnaire. The objective of this was to get their views of the main issues and constraints in the animal feed sector. In the pages below a summary of the main findings and issues raised by the feed manufacturers is presented.

The issues raised by the feed manufacture evolved around the following themes:

- Seasonality in supply, inconsistent and often sub-standard quality, and price of raw materials, which mainly consist of by-products from the domestic market and neighbouring countries. Especially with reference to protein rich raw materials and maize. This is a recurring bottleneck that was mentioned by almost all interviewed. This situation is likely to deteriorate with the growing demand for animal feed and raw materials in neighbouring countries due to growing local poultry and dairy sectors. Proposed solutions were to allow duty free imports of soy and other – alternative protein rich raw material, and the importation of yellow maize for the feed industry. It was also suggested to lift the ban on import of GMO soy and others raw materials. Next to reforms in the regulatory framework for raw material importation, feed manufacturers urge government to stimulate development of local supply chains of crops for animal feed sector, such as yellow maize and sorghum. Government is also requested to set up a quality controlled “national reserve” of raw materials for the feed industry to enhance quality and reduce seasonal fluctuations in availability and price.
- The absence of credible laboratory facilities with fast turn-around time for sampling, analysis and results. This was another area of high concern and requires immediate action to support the industry.
- Lack of effective institutional environment for training of staff of all calibre - across the feed industry.
- Farmers’ general lack of knowledge and low skill level regarding their ability to differentiate between high and poor quality feeds and feed rationing – and thus to make informed decisions that would maximize dairy farming profitability.
- Lastly reference was made to the weak governance of the sector, general absence of surveillance and enforcement and low entry levels, all leading to crowding-in of unskilled unprofessional businesses that supply low quality sub-standard feeds. In addition to this there was a general consensus that the feed industry (AKEFEMA) was not timely and properly consulted in regard to policy formulation in the livestock sector. AKEFEMA’s role was marginalized and the organisation was under-funded.

Field Discussions / Interviews output

THIKA REGION			
Date/day	**Visited company**	**Issues of concerns pertinent to the visited company**	**Suggested way forward/ brainstorming questions**
13/12/12	Treasure Feeds Industries Ltd	▪ Seasonality of raw materials poses a major challenges to feed manufacturing sub-sector (this is linked to the changing patterns of pricing the finish products)	▪ There should be planned reserves purposely meant for the feedstuff industry similar to the other counterpart; the human food reserves - (how will this be achieved? should AKEFEMA lobby the government to actualize on this?)
		▪ Unavailability of some of the main raw materials often affects the operations in the industry (at times this forces the dealers in the industry to resort to 'alternative raw materials' which might compromise the quality of the fished product)	▪ Updates regarding the nutritional specifications of the 'new raw materials' used as alternative during raw materials low supply season. (consider the nutritional specs of all locally available raw materials project)
		▪ Demand fluctuations of the finished products in the market at times is attributed to the market forces i.e. economic infatuations (- this negatively affects the raw material supply chain)	
14/12/12	Wakulima Feeds Ltd (Thika)	▪ Raw material challenges (unavailability, inconsistent supply, high pricing, sub-standard quality)	▪ Lobbying to solve raw materials challenges as a corporate body through AKEFEMA

Date/day	Visited company	Issues of concerns pertinent to the visited company	Suggested way forward/ brainstorming questions
17/12/12	Jakaranda Feeds Ltd	▪ Inconsistent/ inaccurate laboratory analyses results (-always varied as the number of the samples - even if it be one sample sub-divided and given to one laboratory)	▪ AKEFEMA should fast-track the initial plan for accrediting credible labs for use during sample analysis (how far did this plan for accreditation of credible labs went and what remains to actualize it?)
		▪ No systematic institution locally available which offers short occasional refresher courses for professional in feedstuff industry	
NAKURU REGION			
Date/day	**Visited company**	**Issues of concerns pertinent to the visited company**	**Suggested way forward/ brainstorming questions**
18/12/12	Wonder Feeds Ltd	▪ The dictates of feeds formulation (weather, pricing of the farm produce - milk & eggs)	▪ Feed formulation should take into consideration specific region's requirements (i.e. some regions are endowed with lots of dairy fodder thereby requiring minimal concentrate supplementation).
		▪ There are variances in farmers' capacity to manage dairy breeds depending on regions (e.g. farmers in Nyahururu have got higher management skills compared to their counterparts in Olenguruone)	▪ Train famers on proper dairy management (there has been evidence linking famers training to increased uptake of quality feeds –also resulting in better dairy performances).
		▪ Low quality feeds flooding the market which unfortunately commands a significant market share because farmers' concerns are primarily is to minimize the input cost.	▪ Train famers on the potential benefits associated with use of quality feeds (those framers especially with high yielding pedigree dairy breeds whose feeds-to-milk conversion efficiency is high) ▪ Build the capacity of dairy farmers to lobby for cost effective returns and / or add value to their produce (in order for them to reap the worth of their efforts which for ages have remained low).

Date/day	Visited company	Issues of concerns pertinent to the visited company	Suggested way forward/ brainstorming questions
19/12/12	Formula Feeds Ltd	Unfair predators in the market who supply farmers with low quality animal feeds	Farmers' education on the need to insist on quality feeds
		There is loophole for the emergence of "**Back-door feed manufactures**" which has "forces" genuinely registered feeds manufactures to compromise on feeds quality to capture the otherwise back-doors' market in order to survive in the business.	KEBS should device better strategy to check on feeds quality and better ways to handle back-door feed operators (is delegation of regulatory role possible…?)
	Lens Agricultural Agencies Ltd	▪ Laboratory analysis for the samples should be within proximity of feedstuff dealers (this will allow the production of finished products be based on actual raw material specification)	

MOUNT KENYA REGION			
Date/day	**Visited company**	**Issues of concerns pertinent to the visited company**	**Suggested way forward/ brainstorming questions**
20/12/12	Maisha Millers Ltd	▪ Transport of raw materials influences pricing of the final product (raw materials sourcing distance & fuel costs)	▪ AKEFEMA to organize a collective sourcing of raw material for member companies who show serious commitment to such arrangements. ▪ AKEFEMA to venture into contracting farms (more especially with large farms such as ADC) to grow on behalf of member companies the highly demanded raw materials such as yellow maize and sunflower
		▪ The turnaround time to receive results of the analysis of the raw materials from KEBS is unsatisfactory	▪ KEBS should contract quality analysis to credible labs
		▪ Scrupulous feed manufactures sell sub-standard animal feeds to unsuspecting farmers leading to compromised production at the farm level.	▪ AKEFEMA in partnership with members companies organize regional farmer training schedules to highlight famers on feeds quality issues.
20/12/12	Bora Feeds Ltd	▪ Raw material seasonality (during such season the large operators have got a upper hand compared to small & medium size operators to seize the little available raw materials)	
		▪ Outcry at the farm level due to sub-stand feeds (attributed to mushrooming of back-yard feed formulation)	▪ Train farmers at the farm level on quality feed issues to save them on back-yard dealers.
		▪ Farmers have got very little say as regards the pricing of their milk produce-(the cause for the persistent wide margin which exist between cost of inputs and the actual returns thereof)	Should the industry partly lobby to salvage the situation as is it now?

MOMBASA REGION		
Visited Company	**Issues of concerns pertinent to the visited company**	**Suggested way forward/ Brainstorming questions**
Name: Loius Dreyfus Commodities (K) Ltd **Host**: Mohammed Sharif **Date**: Tuesday 15th /01/13	Sticking to traditional formulations by most millers has made the industry to depend on "traditional" raw material (especially protein sources e.g. fish meal) therefore perpetuating vulnerability to traditional challenges which includes: **1.** Adulteration (addition of sand/ shells) **2.** Seasonality **3.** High risk of aflatoxin infection (Is the lack of innovation in the feedstuff industry having a role to play in the raw materials shortage in the country …and what can be done about it?	There are other protein source raw materials readily available for use by feed miller such as milled Soya and Rapeseed cake which in some respects are better over the "traditional protein sources" considering the following merits: ✓ Sustained availability less in price/supply fluctuations ✓ Better price offers Lois Dreyfus Commodities (K) Ltd is willing to be involved in updating feedstuff industry players on the use of other available raw material options - protein sources (i.e. Soya meal & Rapeseed cake) and the emerging technological strides made globally in the feedstuff industries. **NB:** Lois Dreyfus offer is in line with the "**Training needs for professionals**" in the feedstuff industry identified as one of industry's priority areas.
	Import ban on GMO raw materials (Soya and Maize) keeps the Kenyan feed manufactures less and less competitive regionally/ globally. (Use of less competitive raw materials are reflected in the cost of the finished feed products which ultimately leading to less competitive farms' produce in the market)	There is need for lobbying through AKLEFEMA to influence the agricultural policies in the country
Name: Mombasa Maize Millers Ltd **Host**: Munir **Date**: Tuesday 15th /01/13	Maize and its by-product represents the major energy sources in feed formulation (accounting up to 60% in the formulated finished feed product) exacerbating maize competition between the humans and livestock - usually the later becomes the victim.	Lobby for the government to allow importation of duty-free yellow maize (this will ease if not completely do away with competition between human and the livestock)
	Feedstuff industry's views are hardly considered before implementation of most industry related action (e.g. the draft feedstuff policy)	AKEFEMA need to co-opt some key personnel (in the Agriculture and Livestock related ministries) to be members in its Executive council

MOMBASA REGION SAY IN SUMMARY	**Change is inevitable in order to achieve vibrancy in the feedstuff industry**: **1.** Adopt new technologies / innovative use of other emerging raw materials (change amongst the industry players) **2.** Lobby for friendly agricultural policies (be the driving force to bring about the required change in the government)

NAIROBI REGION			
Date/day	**Visited company**	**Issues of concerns pertinent to the visited company**	**Suggested way forward/ brainstorming questions**
07/01/13	Hemco feeds Ltd	Seasonality of raw materials poses a major challenges to feed manufacturing sub-sector Scarcity of protein source raw materials (sunflower and cotton seed cakes) within the country – attributed to government's poor policies which led to: ✓ Poor motivation to farmers resulting in dormant cotton/ sunflower industries in the country ✓ The little available cotton/sunflower seed cakes within the country are poorly milled (fibrous with too much oil) further aggravates unavailability of these raw materials	Lobby the government to initiate farmer friendly policies (especially leading to farming of protein source crops such as cotton and sunflower) The feed millers need to widen the scope of raw materials used in the formulation of finished feed products.
		Maize and its by-products shortages in most case is attributed to weak policies, creating room for "**artificial shortages**" triggered by: ✓ Cartels created by maize brokers purporting to buy maize from farmers on behalf of the National Cereal and Produce Board of Kenya (NCBP) -who then export/ or hoard the product resulting in unwarranted shortage later when it is discovered that NCBP is short of maize reserves (*the period of high maize demand in the market coincides with acute maize shortage in the country which then creates "the politics of importing maize")*	▪Demarcating the livestock feed reserves from the human feed reserves will alleviate this challenge. -Lobbing for livestock maize reserves will only be given following: ✓ Credible data on the maize consumption by the industry ✓ Lobbying the government to have provision for livestock maize reserve.

		▪ Recurrent annual shortage of wheat by-products (pollard and bran) witnessed during **February- March period** results from: ✓ Over production of the wheat products (wheat flour and other confectionaries) in the period prior to December festive season (to meet speculative high market demand).This suddenly leads to acute shortage of wheat byproducts in the subsequent period arising from less production of the wheat products.	
		Whereas raw material suppliers' work of sourcing and delivering raw materials is commendable, some raw materials such fish meal are highly prone to adulteration/ contamination posing significant challenge to feed millers considering the following concerns: ✓ Omena(high in protein) sourced from Tanzania is mixed intentionally with immature Tilapia fish (very low in protein) but having similar physical appearance with Omena proving tricky to differentiate. ✓ Milled fish meal is susceptible to adulteration deliberately done by ill motive traders to gain more value by adding foreign materials such as sand to increase the weight. ✓ Fishmeal is highly susceptible to aflatoxin if no proper processing/ handling is observed	▪ The industry should have internal methods to curb sub-standard raw materials ▪ The industry stakeholders should use alternative raw materials like Soya bean cake which is of high nutritional value 48% crude protein.

Date/day	Visited company	Issues of concerns pertinent to the visited company	Suggested way forward/ brainstorming questions
08/01/13	Pembe Feeds Ltd	The unsatisfactory quality issues witnessed in the feedstuff industry mostly emanates from weak enforcement linked to: ✓ Open entry which unfortunately has attracted unprofessional operations prompted by absence of clear entry requirement (enactment of the bending Feedstuff Bill will resolve this challenge) ✓ Absence of comprehensive surveillance throughout whole feedstuff chain has opened loopholes to unlawful operation such as entry of sub-standard raw materials (e.g. Omena heavy loaded with sand/ shells and addition of lime to maize germ) and re-packaging/ re-formulation of finished products within the distribution channels (addition of maize byproducts/ fish meal/cotton seedcake)	▪Raw materials rejected on quality grounds by quality conscious feed manufactures get back to the feedstuff chain through some feed manufacturers, feed stockist and distributors. -What can be done to ensure that fished products that reach the farmers is guaranteed in quality–engage all the stakeholders in the feeds chain? ✓ The role of KEBS? ✓ What role can AKEFEMA play? ✓ What role can stockist, distributors and farmers play?
		▪ Raw materials unavailability does not always mean complete absence of **any** raw material for use in production, rather at times it is used to mean: ✓Absence of QUALITY raw material e.g. soya sourced locally is either undercooked or overcooked posing the challenges of Tripsin inhibitor and destroyed protein respectively (thereby tempting the feed millers to use what is available irrespective of the quality) ✓Importation logistics/ levies not always within reach (thereby raising the cost of production which is then transferred to the farmer).	Results in finished products with no guaranteed quality infiltrate market and unsuspecting farmers fall prey. All the costs of raw materials passed over to the final consumers (farmers)

		▪ Maize seasonality in Kenya is experienced annually during May-July period- this may be attributed to exhaustion of the reserves (contract farming will alleviate maize shortage in the country)	There is need for contract farming laws clearly stipulating the roles and obligations of the partners involved
		▪ Maize as the main energy raw material presents the following important challenges: ✓ It is one of the staple food especially in developing economies meaning that the competition between the feed and food industries persists (yellow maize grown/imported purposely for animal feed may solve the challenge) ▪Soya in Kenya is not adequate and is of low quality. It is thus imported and subjected to world prices making its availability unpredictable (attempts to have local sources may ease the international soya pressures)	Contract farming of yellow maize specific for used in the feedstuff industry Sorghum can also be used as a substitute for maize(Sorghum performs well in UKAMBANI-Eastern County. Energy value of sorghum is rated as high as 90-100% of maize) ▪Government should give farmers incentives enable them to grow and supply soya locally (ensure there are industries to process the soy beans. There should also be locally available agro-processing industries for raw materials such as cotton ginneries).
		▪ Predatory malpractices among players in the feedstuff industry always results when some players are not doing things the right way (quality is compromised when sourcing of raw material/ formulation of finished product does not meet the set standards) presents uneven playing ground.	▪ Embracing professional feed formulation whereby sourcing of raw material is based on quality parameters and, formulation of finished products meeting the laid down standards – i.e. doing things the right way will provide a level playing ground

Date/day	Visited company	Issues of concerns pertinent to the visited company	Suggested way forward/ brainstorming questions
09/01/13	Economy Farm Products Ltd	The feedstuff industry in one of the key stakeholders driving the dairy sector in Kenya –its full potential will be realized if the following areas are addressed: ✓ A fully fledged secretariat to co-ordinate and advocate industry issues ✓ Industry's priority areas are satisfactorily met: i. *Database of all locally available raw materials Specification.* ii. *Accreditation of identified AKEFEMA reference labs for fast, accurate and reliable sample analysis.* iii. *Occasional refresher lessons for professionals in the industry.* ✓ Enabling business environment for the players in the feedstuff supply chain is conducive to motivate their operation in the country (*e.g. BIDCO operates in Uganda and the recent closure of CPC in the country*)	▪ AKEFEMA to work on possibilities of involving stakeholders/ partners in its projects -Identify the partners and the roles played by each– such a developing training modules for the nutritionists. The priority project areas mentioned alongside will solve the following challenges: i. Reduce industry's dependence on international standards when formulating feeds using locally available raw materials (whose contents are less known) ii. Reduce the turnaround time to receive lab results, achieve reliable and accurate lab results iii. Refresher courses will be a seed for innovative feed formulations likely to reduce dependence on the book formulae
		The introduction of Standardization Mark (SM) by KEBS was a good idea, but the weak enforcement by the KEBS' supervisory arm has rendered it ineffective – (*there is no value derived from the money paid to KEBS amount to Ksh. 0.4 Million annually or 0.2% monthly returns for use of SM*).	The industry's initiative of star rating (closely linked to training industry's professional) may proof a complement to KEBS' SM. Possibly the government could contract Livestock officers who could be inspecting feeds at farm level
		There is no open and convenient method of collecting data from players in the industry (*raw materials usage, production and products profiles and challenges related to the industry*)	▪ Active Association's website with provisions for members to link up, fill in quantities of raw materials usage and products produced on monthly basis, forums for discussing emerging issues which requires the attention of the feedstuff industry. -Possibility of partners to sponsor the hiring an IT expert attached to AKEFEMA secretariat to effect on this?

Date/day	Visited company	Issues of concerns pertinent to the visited company	Suggested way forward/ brainstorming questions
09/01/13	Pioneer feeds Ltd	The raw materials specifications is still a challenge	▪ Study done by NOVAS Int. on commonly used raw materials can be guiding toll meanwhile as the industry strategize on a more comprehensive document
		▪ Strengthen AKEFEMA Secretariat which can lobby and follow up on industry issues at the high government levels	▪ Co-opt partners to work hand in hand with AKEFEMA
		▪ Maize is the challenge raw material (the production in the country is not consummate with the consumption) – there is no substantive government policy to resolve the consideration	▪ There is need for a clear-cut between the human maize and the livestock maize to ease competition- either or both of the following provides a escape from maize shortage challenge: ✓ Allowed import yellow maize to caution the shortage as a short term strategy ✓ Plan for local farming of the yellow maize within the country
		KEBS failure to enforce the regulation laws- leading to influx of unprofessional feed millers - *such companies become:* ✓ the market of sub-standard raw material rejected by quality conscious companies ✓ price predators in the industry undercutting genuine feeds in the market ✓ Cheats on the farmers by gaining through sale of products not worth the price paid in by farmers	The industry assisted by other stakeholders should seek ways to curb rapidly increasing unprofessionalism in the feedstuff industry- options available: ✓ Consider introduction of AKEFEMA Mark of quality. ✓ Through training, build the capacity of the farmers to consider quality as choice of feeds to purchase other that price alone.

Date/day	Visited company	Issues of concerns pertinent to the visited company	Suggested way forward/ brainstorming questions
10/01/13	Tarime Supplies Ltd	▪ Raw materials sourcing from Tanzania and Uganda is growing difficult – attributed to the following: ✓ Dairy sector is being given emphasis in other East African countries (Uganda, Rwanda and Burundi) this consequently has stimulate the feed milling industries in these countries and are satisfying local demand first. ✓ Tanzania's cotton seedcake is currently receiving competitive offer from SADC trading block and preference is given to South African companies trading in Dollar. ▪ Other raw materials challenges include: ✓ Transport cost (distance /high fuel prices) ✓ Inconsistency in quality ✓ Fluctuation and seasonality in supply	▪ The national Government should be lobbied to initiate cotton /sunflower policies to stimulate farming of these crops (such as setting aside quality seed for farmers)
		High charges for samples analysis has prompted some feed millers to take shortcuts- use unanalysed raw materials to formulate feed.	▪ There is need to re-visit and negotiate business terms with the identified AKEFEMA Reference Labs (Nahashon Laboratory Report)
		▪ The commitment of industry members to work as a team is lacking resulting in: ▪ **Long-term implication** arising from what seemingly are **negligible shortcomings**. **Example:** **Negligible Shortcoming:** Failure to attend members' meetings (***attendance fail to attain the quorum***) **Long term Implication:** Failure to make decisive way forward on crucial industry issues (***minimal lobbying/failure to obtain support from willing development partners***)	

Date/day	Visited company	Issues of concerns pertinent to the visited company	Suggested way forward/ brainstorming questions
10/01/13	Sirari Supplies Ltd	Unhealthy competition the market ✓ Sub-standard finished products in the market ✓ Packaging and selling unknown materials using know brand names without the owner's consent	Other than relying whole on regulatory author, industry players should devices other ways to curb this menace
		Decreasing supply of protein raw materials (cotton & sunflower seedcakes) from the usual source countries (Uganda and Tanzania) -this is attribute to stiff competition from upcoming markets	▪ Explore options that will solve inconsistent supply of cotton and sunflower cakes in the country -Can some feedstuff industry players invest in the Soya crop project to alleviate shortage of protein source in the country?
24/01/13	Unga Farm Care (EA) Limited	Maize availability is a major issue as it varies from year to year and this year is especially bad. Since it needs to be substituted by a cereal grain e.g. wheat which is a good source of carbohydrates. There has been a growing concern regarding decreasing protein levels in Cotton and Sunflower seed and high aflatoxin levels in Cotton especially in Uganda. KEBS standards specification for feed formulas limits the manufacturers' ability to improve the feeds in tune to customers' specific needs i.e. formulation of feedstuff below or above the given specifications attracts banalities yet: ✓ *Some minerals are natural abundant in some regions therefore sticking to KBS specs leads to wastages or even worse may toxic levels* ✓ *Experience indicate that better performance results from customized feed formulas than sticking to conventional standards by KEBS*	▪ The government needs to allow importation of duty free feed wheat(counter of yellow maize) specific for animal feed ▪ Several studies have been done to curb the issue of aflatoxins. Some agents are put in the soil before the seeds are planted, this ensure that the harvested produce is aflatoxin free.

Date/day	Visited company	Issues of concerns pertinent to the visited company	Suggested way forward/ brainstorming questions
28/01/13	Nutrimix Limited	Few companies have fully trained in house millers and this often times results to commercial based formulations done by untrained millers (This could go a long way in helping the issue on star rating) The raw material range could be broadened if non-conventional materials like sorghum could be used and this would reduce the pressure on maize as it is a well suited substitute (Crude protein of sorghum is higher than that of maize but equal to wheat and the energy value is 90-100% of maize) Soya a good protein source for animals feed is mostly imported from either India or Uganda. It is expensive and has a 10% duty imposed on it.	▪ There is no standard curriculum for training, thus fully trained millers could be hired to develop training model and curriculum, train the others- all these can be done with the assistance of the leading feed manufactures in the country. ▪ To be able to produce cost effectively, production has to be based on scale and efficiency.

SUB-REPORT IV.2 HACCP AUDITS

Product safety management systems designed in line with HACCP principles have a clearly defined structure and benefits. A controlled operating environment and an effectively implemented product safety system, enhances customer and consumer confidence in the quality of feed and food products.
HACCP uses a systematic approach covering all aspects of production from raw materials, processing, storage, distribution and point of sale to consumption and beyond. It moves a company from a solely retrospective end-product testing and sampling approach, towards a preventative approach that is designed to reduce product losses and liabilities.
It enables management throughout a business to demonstrate their commitment to the production and supply of safe products. HACCP based approaches to businesses are a benefit to companies seeking to meet customer and legal requirements whether in the domestic or for the export market. Food safety management systems can be combined with other management systems such as ISO 9001:2004. This combination provides a hazard and risk analysis approach with pre-requisite programmes along with a framework to manage a food safety system whether for animals or human consumption. To verify the effectiveness of food safety management systems, businesses use proven food safety standards and tools such as the hazard analysis of the critical control points and standard operational procedures (SOPs) to control these.

As part of this study AgriQ Quest carried out an audit of three formal feed manufacturers of different size and levels of capitalization and market strengths. The selection of firms was based on willingness to cooperate. The audit is therefore not representative for the industry, but merely serves to give an illustration on the different levels of implementation of HAACP based quality control mechanisms in place. The sample was too small to draw credible conclusions, however – as could be expected – the two medium and smaller feedmills lacked comprehensive quality control and assurance systems (QC/QA). It is recommended that awareness on importance of adopting HACCP systems is created in the feed manufacturing industry.

Methodology
The audit was carried out using checklist, observations within the company and interviews with site management and workers, along the criteria of HACCP DZ 3027 STANDARD (Codex Alimentarius standard). The audit was done on 3 different firms based on market strengths (high, medium, low).

Audit Objectives
The audit had 3 objectives:

- To inform feeds manufacturers management about the status and progress of the sites HACCP management programs and practices.
- To assist the feed processers in improving their feed safety systems up to and beyond the standard as laid down in the HACCP standard.
- To establish extent of conformity to the feed safety standard among different industrial players bases on the strength of their resources.

Audit Findings (summary)

The audit was done on three firms with different levels of development based on market strength: Company A (high), Company B (medium) and Company C (low).

Company A, high market strength

Company A is a prime feed processer serving up-end market customers in the livestock, poultry, fish and pig industry. Upon auditing against the HACCP standard the firm was found to be compliant on the following HACCP aspects:

- Compliance level: The company has considerably higher levels of compliance to HACCP system requirements.
- Documentation: Systematic documentation on all systems available as a sign of conformity to requirements as per HACCP Standard.
- Auditing: There is evidence of internal and external audits.
- Training: Highly trained professionals recruited, on job training emphasized by the management.
- Traceability: Product traceability system in place.
- Certification: HACCP certified by Kenya Bureau of Standards. The company is in the process of implementing ISO 22000 standards (food safety management system).

Company B, medium market strength

Company B is a medium level feed processer serving customers in the livestock, poultry, fish and pig industry. Upon auditing against the HACCP standard, the firm was found to have significant draw backs in the following areas:

- Compliance level: The Company has not implemented the HACCP system in its operations.
- Documentation: Only operational documentation are captured in the company's records.
- Auditing: neither external nor internal systems audits done.
- Training: Senior staff trained on legal/technological and operational issues in the sector through participation in various government/NGO seminars.
- Traceability: No product traceability system in place.
- Certification: No certification process in place.

Company C, low market strength

Company C is a low level feed processer producing also for various livestock sub-sectors. Upon auditing against the HACCP standard the firm was found to have significant draw backs in the following areas:

- Compliance level: The company has not implemented the HACCP system in its operations.
- Documentation: Only operational documentation is captured in the company's records.
- Auditing: Neither external nor internal audits done.
- Training: No evidence on any form of staff training, the will is evident but firm lacks resources and capacity.
- Traceability: No product traceability system in place.
- Certification: No certification process in place.

APPENDIX 1: HACCP AUDIT FOR COMPANY A (HIGH LEVEL)

Introduction

Name of organization being audited:	Company A
Name of company conducting the audit:	AgriQ Quest Ltd.
Date of the audit:	13th March 2013
Standard used for the audit:	DS 3027 HACCP STANDARD
Nature of company:	Manufacture of animal feed (chicken, cattle and pig feed).

Company A is certified for HACCP by KEBS. The company is already in the process of getting ISO 22000 Certification as a way of upgrading the HACCP.

Company A produces 384 tonnes of feed per day. The process is automated and uses modern equipment, highly trained personnel who are aware of their individual responsibilities in ensuring that the company realizes its overall objective.

The raw materials used include:

- Fish meal
- Cottonseed cake
- Calcium phosphorus
- Premixes
- Soya
- Maize germ cake
- Wheat pollard
- Sunflower seed cake
- Dry maize
- Wheat bran

Audit Findings

Section 1: Hazard Analysis

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The written hazard analysis (which may be in table form) identifies animal and human hazards for each process step or includes the statement "none identified at this time"	YES	There is a written hazard analysis identifying all hazards associated with the company's processes
(b) The written hazard evaluation is science-based, considers hazard frequency and severity and has been performed for every identified hazard.	YES	The evaluation includes classification of hazards for severity
(c) The control measures for significant animal and human hazards have been identified	YES	Control measures for all hazards have been documented
(d) Prerequisite programs exist for significant animal hazards and are correctly referenced in the HACCP plan.	YES	There is a PRP at the storage process for removal of metals in final finished product.
(e) Control measures exist for significant human hazards	YES	Evidence in the prerequisite programmes
(f) The hazard analysis procedure included an evaluation of SOPs and modifications were performed if necessary	YES	Documented evidence exists
(g) Critical control points exist for significant human hazards	YES	CCP exist for aflatoxin in raw materials. There is a PRP for E-coli and Salmonella
(h) The hazard analysis considers external and internal hazards	YES	Documented evidence exists
(i) Evidence exist that the HACCP team considered, as a minimum, biological, chemical and physical hazards and have been listed	YES	Documented evidence exists
(j) The hazard analysis considered possible sources of adulteration including all process steps including packaging, storage, transportation, intended use, facility and equipment function and design, and plant sanitation including human hygiene	YES	Documented evidence exists

Section 2: HACCP Plan

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The HACCP team has been trained and the training has been recorded	YES	HACCP team was trained in 2011
(b) The HACCP plan is specific to the location and establishment	YES	Documented evidence exists
(c) The HACCP plan is specific to the ingredient, feed or process	YES	Documented evidence exists
(d) If ingredients, feeds or processes are grouped together in a single plan, evidence exists that they share common hazards	YES	Documented evidence exists
(e) The hazard analysis lists all animal and human hazards	YES	Documented evidence exists
(f) All identified hazards are evaluated for their significance	YES	Documented evidence exists
(g) CCPs are assigned for significant human hazards in the establishment	YES	Prerequisite programs documented and captures control of E-coli and Salmonella
(h) If applicable to process flow and hazard evaluation, CCPs are assigned for significant human hazards outside the establishment	YES	CCP for aflatoxin is elaborate
(i) Critical limits are identified for each CCP	YES	CCP for aflatoxin at raw materials section
(j) Procedures exist for monitoring each CCP	YES	Procedure specifies analysing for aflatoxins in the raw materials
(k) Monitoring frequency ensures adherence to the critical limit	YES	Done for every consignment
(l) The HACCP plan includes corrective action plans developed in accordance with section 3 (a)	YES	Corrective action states reject goods and return to supplier
(m) The HACCP plan lists validation and verification procedures and their frequency in accordance with section 4	YES	To analyse before use for every consignment
(n) The HACCP plan includes a recordkeeping system for monitoring CCPs in accordance with section 5	YES	Documented evidence exists

Section 3: Corrective Action

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The corrective action plan describes steps to be taken and assigns responsibility in response to deviations from the critical limits and:	YES	Documented evidence exists
(b) Ensures adulterated product is not distributed or used after the deviation has been identified and before the corrective action has been taken	YES	Adulteration may result from: - Misuse of premise - Packaging error Corrective action includes rework of product
(c) Corrects the deviation	YES	Records exist
(d) For deviations that occurs and the establishment doesn't have a corrective action plan products is segregated and held, tested for acceptability, not used until product is brought into conformance with HACCP plan	YES	Procedure is followed
(e) For deviations that occurs and the establishment doesn't have a corrective action plan the cause for the deviation is corrected and verified by a trained individual to determine whether HACCP plan requires modification	YES	Such an incident has not occurred to warrant modification of the HACCP plan
(f) Records provide evidence that corrective action were performed as described in the HACCP plan	YES	Documented evidence exists

Section 4: Verification and Validation

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Evidence that the establishment reviews consumer complaints and their relationship to the HACCP plan's performance or are a new hazard	YES	Customer complaints are addressed timely and this is the responsibility of the technical representatives who are located in every region where Company A distributes its products to. Documented evidence exists
(b) Verification that key manufacturing equipment are calibrated according to the plan was performed	YES	Calibrations are up to date and equipment are issued with calibration certificates and calibration stickers
(c) Verification of process monitoring equipment calibration was performed	YES	Records are evident that this is done
(d) Verification that the establishment performs end-product testing if included in the HACCP plan	YES	All finished products are tested in the company's laboratory
(e) Verification (within 7 days) that critical control point monitoring records were completed, signed and documented values were within the critical limits	YES	Certificates of analysis evident for the purchased products
(f) Verification (within 7 days) that corrective action records and actions were in accordance with section 3	YES	Documented evidence exists
(g) Verification (within 7 days) that calibration records for equipment and processing monitoring were performed in accordance with the HACCP plan	YES	Documented evidence exists
(h) Procedures outlined in section were followed whenever any verification activity establishes the need for corrective actions	YES	Procedures followed
(i) Validation procedures were conducted at specified time intervals and after process modifications by individuals trained in accordance with section 6 and recorded in accordance with section 5	YES	Records evident
(j) Whenever no significant hazards have been identified, a reassessment of the hazard analysis adequacy will be performed annually or after process modification by individuals trained in accordance with section 6 and recorded in accordance with section 5	YES	Hazard analysis is reviewed monthly

Section 5: Records

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Written hazard analysis in place that has identified all significant biological, chemical and physical human hazards	YES	Documented evidence exists
(b) Written HACCP plan for this location for each type of feed/feed ingredient	YES	Documented evidence exists
(c) Monitoring of critical control points and their critical limits	YES	Documented evidence exists
(d)Calibration of key manufacturing equipment	YES	Documented evidence exists
(e) Calibration of processing monitory instruments	YES	Documented evidence exists
(f) Correction actions including disposition	YES	Documented evidence exists
(g) Records documenting verification and validation of the HACCP plan	YES	Documented evidence exists
(h) Records are signed and dated by the most responsible person at the establishment (acceptance, modifications, verification and validation)	YES	Records are signed by – the Quality Assurance Manager, Quality Control and Plant Manager or Nutritionist
(i) All records required by this part includes the name and location	YES	Seen
(j) All records required by this part includes the date and time of records created in Section 5(h)	YES	Seen
(k) All records required by this part includes the signature or initials of the person performing the operation or creating the record	YES	Seen
(l) All records required by this part includes the identity of the product and if required the production code	YES	Seen
(m) All records required by this part includes processing observations and other information entered at the time observed	YES	Documented evidence exists
(n) Records required are retained for at least 1 year after the date of production (electronic records are acceptable)	YES	Records are retained for a max period of 8 years
(o) Records required are available for review and copying during certification audit	YES	Seen

Section 6: Training

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Include names of the HACCP team and training/job experience which qualifies the individuals in the application of HACCP principles	YES	Seen on employees files
(b)The individual Developing the hazard analysis, including delineating control measures, as required by section 6 successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	YES	Evidence of certificates for the trainings done seen
(c) The individual developing a HACCP plan that is appropriate for a specific establishment, in order to meet the requirements of section 2 successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	YES	Evidence of certificates for the trainings done seen
(d) The individual verifying and modifying the HACCP plan in accordance with the corrective action procedures specified in section 3(e) and the validation activities specified in section 4(i) and 4(j) successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	YES	Evidence of certificates for the trainings done seen
(e) The individual performing the record review required by Section 4 (g) successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	YES	Evidence of certificates for the trainings done seen

Good Manufacturing Practice Checklist for Feed and Feed Ingredients

Scoring System

Meets Requirements: *components for a prerequisite criterion are present and correct.*

Corrective Action Required: *components for a prerequisite criterion are incomplete or incorrect but pose no imminent threat to food safety.*

Fail: *components for a prerequisite criterion are missing or incorrect and do pose an imminent threat to food safety.*

To pass a HACCP audit, all prerequisite criteria must receive a **Pass** or criteria with a **Corrective Action Required** must be corrected within 30 days of inspection. Facilities that receive one or more **Fail** scores will not receive a letter of certification acknowledging the establishment passed their HACCP audit.

Personnel

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Personnel working in direct contact with feed and/or feed ingredients use good hygienic practices to minimize the risk of adulteration of feed and/or feed ingredients	YES	PRP for hygiene (personal and industrial) is fully adhered to
2.Records are available that demonstrate personnel competence and training	YES	Procedure for recruitment requires to evaluate this. Evidence exists
3.Training for employees on the manufacturing of medicated feeds is provided	YES	All personnel handling medicated feeds are highly qualified
4.Training for employees regarding the use of prohibited mammalian protein is provided	YES	Prohibited mammalian proteins are not used in the processes

Establishments

A) Construction and design

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Buildings, fixtures and other physical facilities are in good repair	YES	This is evident at the premise
2.Work areas are reasonably clean, orderly and well-lit	YES	Cleaning schedules are defined as per section and performed regularly
3.Buildings provide adequate space for equipment, processing and orderly receipt, shipping and storage of feed and feed ingredients	YES	Process layout is clearly defines, elaborate and facilitates efficiency
4.Building is of suitable construction to minimize access to rodents, birds, and other pests	YES	As with plant layout
5.Buildings used for manufacturing and storage of feed and feed ingredients provide for ease of access to structures and equipment to facilitate routine cleaning and maintenance	YES	Evident
6.Fertilizers, herbicides, insecticides, fungicides, rodenticides and other pesticide products or toxic substances are physically separated from feed and feed ingredients	N/A	The company has a contract with a licenced company that does the fumigation every six weeks

B) Grounds

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The grounds are maintained in a condition that minimizes pest infestation	YES	The areas where raw materials are stored is fitted with rat baits. Fumigation is done every 6 weeks by a licenced contractor

Maintenance and Housekeeping

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.A schedule exists (e.g. calendar, time table, etc.) for routine maintenance of equipment involved in handling or manufacturing of feed or feed ingredients (e.g. magnets, screens, conveyors, augers, mixers, grinders, grain rollers, pellet mills, etc.)	YES	Records seen, including calibration schedules
2.Equipment is constructed and maintained to minimize the potential for contamination, from substances such as lubricants or cleaning agents	YES	It's a closed operation
3.A housekeeping program exists that specifies the areas of the facility to be cleaned and the frequency of cleaning	YES	Evidence of cleaning checklist signed daily
4.Dust is controlled to minimize the potential for contamination of feed or feed ingredients	YES	A modern dust exhaust system in place that works effectively
5.Feed and feed ingredient spills are appropriately managed to minimize the potential for contamination	YES	Spills are swept, collected, sieved and reworked
6.Lubricants and cleaning agents are appropriate for use in feed and feed ingredient operations; are used in accordance with label instructions; and are stored in a manner that minimizes the potential for contamination of feed or feed ingredients	YES	It's a dry operation. But detergents are stored in the store rooms
7.Pallets used to store bagged products are clean, and are examined for pests and contaminants prior to use	YES	Evidence seen
8.A routine pest-control program is in place to control rodents, insects and birds	YES	As per prerequisite programs
9.Restricted-use pesticides are applied only by certified applicators	YES	Rentokil company is approved
10.Only trained personnel apply non-restricted-use pesticides or fumigants	YES	Rentokil personnel are trained

Equipment

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Scales, metering devices, mixers and other equipment are of suitable size, design, construction, precision and accuracy for their intended purpose, and to minimize the risk of ruination	YES	Design is appropriate
2.Scales, metering devices, mixers and other equipment are designed to facilitate inspection and cleaning, and are properly maintained and operated to minimize the risk of ruination	YES	Designed appropriately
3.All equipment is constructed and maintained so as to minimize the risk of lubricants and coolants becoming adulterants in feed and/or feed ingredients	YES	Designed appropriately
4.All scales and metering devices are tested for accuracy at the time of installation	YES	Records evident
5.All scales and metering devices are tested for accuracy at least annually. The establishment maintains records documenting the testing of scales and metering devices until a subsequent test is conducted or for one year from the date of the test, whichever is longer	YES	Calibration records seen
6.All mixers are tested at the time of installation to demonstrate the capability of the equipment to produce a homogeneous mix	YES	Process is automated
7.All mixers are tested periodically to ensure proper function and demonstrate the capability of the equipment to produce a homogeneous mix	YES	Maintenance records evident
8.The establishment maintains records that document the testing of mixers until a subsequent test is conducted or for one year from the date of the test, whichever is longer	YES	Records for maintenance records and calibrations seen

Receiving and Storage for Further Manufacture

A) Receipt

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Purchasing procedures are in place and conform to legal requirements and conform to traceability requirements to facilitate recall	YES	Documented procedures exist
2.Established inspection procedures ensure that purchase material specifications are in place, including contamination	YES	Records seen
3.Feed and/or feed ingredients are inspected visually during the receiving process to confirm identity and check required labelling	YES	Records seen. Raw materials inspection checklist
4.Carriers, product, and receiving equipment are examined prior to unloading to avoid cross contamination of biological, chemical or physical hazards	YES	Done as per procedure
5.Receiving pits and handling equipment are cleaned using appropriate procedures (e.g. flushing, sequencing or physical clean-out) to minimize the potential for contamination	YES	Sequencing and flushing done
6.Responsibility for monitoring adherence to quality assurance programs is clearly assigned and activities performed during receipt are recorded	YES	Procedure followed and records evident

B) Storage

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Storage bins and containers are clearly identified and designated for specific ingredients and protect ingredient from weather damage	YES	Evidence seen
2.Mammalian proteins prohibited from being fed to cattle or other ruminants under legal requirements are stored in a manner to prevent commingling or cross-contamination	YES	Storage areas are demarcated. Mammalian proteins are stored in a separate warehouse
3.The establishment has established and implemented inventory practices, including inventory rotation, for feed and/or feed ingredients to minimize the risk of adulteration	YES	Some of the evidence include max stack height of 3.4 metres high
4.The establishment maintains records identifying the immediate previous source, quantity, type/name and date received for each feed and/or feed ingredient for at least one year from the date of disposition	YES	Records seen
5.Ingredients are stored apart from hazardous materials and unapproved feed additives (e.g. pesticides, fertilizers, lubricants, petroleum products, caustic chemicals and cleaning agents)	YES	Seen

Feed Manufacturing

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Feed and feed ingredients that are adulterated are not used in the manufacture of feed unless made safe for the intended use	YES	Adulterated feed is reworked and diverted to other feeds
2.Manufacturing procedures and equipment are effective in minimizing risk of adulteration	YES	
a.Mixers are used according to manufacturer's specifications including minimum and maximum capacity limits	YES	Procedure followed
b.Mixers and conveyers do not contain excessive build-up of old material	YES	Monitored at all times
3.Written procedures are utilized that specify appropriate clean- out procedures to minimize the potential for cross- contamination that may endanger animal or human health	YES	Flushing is done properly
a.Describe below the clean-out procedures being used (sequencing, flushing and physical):		
Sequencing	YES	Process starts with non-medicated feeds and finished with the medicated feeds
Flushing	YES	Done using 50kg of wheat bran and feed reused for making dairy and pig feed
Physical	N/A	
Other (Describe):	N/A	
b.If flushing is utilized, a sufficient quantity of flush material is used. Captured flush material is identified, stored and used in a manner that minimizes the potential for contamination	YES	Flushing utilizes 50kg of wheat bran which is stored and used to make dairy and pig feed
4.The establishment describes the manufacturing operation for the feed and/or feed ingredients (e.g., formulation, mixing and production practices)	YES	As per process flow seen
5.Rework material is properly identified, stored and used in a manner that minimizes the potential for contamination of feed or feed ingredients	YES	Use of labelled stand to identify and material is segregated from other finished products

6.Production records are maintained for feed or feed ingredients; the records include a code or lot number that identifies the specific batches or lots manufactured	YES	Evidence seen
7.Production records are retained for an appropriate period. (Minimum of one year suggested.)	YES	At least 8 years
8.Production records are reviewed daily and management is immediately notified of significant discrepancies	YES	Procedure followed. Records available

Packaging

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Feed and ingredients are packaged in a manner to maintain identity and minimize the risk of adulteration	YES	Evident. Marking on the sacks and tally cards
2.Any packaging reuse must conform to legal requirements and recorded	N/A	No reuse

Labelling

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.A label or other unique identifier is present for each feed and/or feed ingredient that facilitates safe and effective use	YES	Ingredients are labelled accordingly
2.A label or other unique identifier accompanies every shipment of feed and/or feed ingredient	YES	All shipments have batch code numbers identifying each product
3.Labels are stored, handled and used in the establishment in a manner that minimizes errors	YES	Done as per batches daily. Stored securely
4.Obsolete labels are promptly discarded	N/A	No obsolete labels as they are prepared as per finished batches
5.Labels comply with applicable legal regulations	YES	Records evident

Storage of Finished Feed and Feed Ingredients

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Finished feed and ingredient are stored in a manner that minimizes adulteration	YES	Finished products are placed on pallets
2.Storage bins and bulk tanks are clearly identified	YES	Seen
3.Inventory practices including product rotation and sequencing are established and followed	YES	Procedures followed
4.Records document product rotation and sequencing are maintained for a minimum of one year	YES	Seen

Inspection, Sampling and Testing of Incoming and Finished Feed and Feed Ingredients for Adulterants

A) Laboratory Controls

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.When the establishment performs sampling and testing to monitor for adulteration of feed and/or feed ingredients, trained personnel review test results	YES	Personnel are trained
2.The establishment conducts comprehensive investigations of any test results that indicate feed and/or feed ingredients are adulterated, including a review of: a)ingredient specifications used in the development of the formula; b)formula; c)production records; and sampling and testing methods;	YES	Tests are comprehensive according to specs
3.Records are maintained for a minimum of one year	YES	At least 8 years

B) Formulation

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Formulas are reviewed and verified periodically for safety, regulatory compliance and appropriateness for the intended species and specific class of animal	YES	Tests are done
2.Formulas are identified and maintained to ensure they correspond with current labelling	YES	Each formulation has a specific number or code
3.Records are maintained for a minimum of one year	YES	At least 8 years

Transportation of Feed and Feed Ingredients

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The establishment inspects conveyances for cleanliness and structural integrity prior to loading any feed and/or feed ingredient into the conveyance	YES	Records are available to verify this
2.The establishment has developed and implemented procedures to protect against feed, feed ingredients or other materials that may pose a risk of adulterating feed and/or feed ingredients from being loaded onto the same conveyance, unless measures have been taken to minimize risk of adulteration	YES	Process is automated and regular monitoring is done. Procedures followed
3.The establishment maintains records for each feed and/or feed ingredient identifying the immediate subsequent recipient, quantity, type/name, unique identifier if available, and date shipped for at least one year from the date of disposition	YES	At least 8 years
4.Finished feed products are visually inspected by trained personnel	YES	Evidence seen

Voluntary Recall/Withdrawal

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The establishment maintains sufficient records and other information for at least one year from the date of disposition concerning the identity and disposition of feed and/or feed ingredients to permit the rapid and effective recall from the marketplace or withdrawal from feeding if a feed and/or feed ingredient is found to be adulterated.	YES	Recall happened once and procedure was followed
2.The establishment conducts voluntary recalls of feed and/or feed ingredients in accordance with the procedures outlined by the Food and Drug Administration regulations.	YES	Recall occurred once and procedures were followed

APPENDIX 2: HACCP AUDIT FOR COMPANY B (MEDIUM LEVEL)

Introduction

Name of organization being audited:	Company B
Name of company conducting the audit:	AgriQ Quest Ltd
Date of the audit:	13th March 2013
Standard used for the audit:	DS 3027 HACCP STANDARD
Nature of company:	Manufacture of animal feed (chicken, cattle and pig feed).

Executive Summary

- The staff understands and appreciates the need for implementing systems this was measured through positive interaction with staff.
- Basic perquisite programs (pest control and personnel hygiene) are in place though there is a need for emphasis on hygiene and other essential PRPs.
- The firm has not put up the HACCP plan/system since there is no HACCP manual available for the same to be audited.
- No requisite records available to support processes.
- The firm has not identified critical control points formally as per the requirements of the HACCP standard.
- The firm has not identified formally critical limits as per HACCP requirements.
- Training on HACCP needs to be done as per the HACCP standard.
- The firm needs to organize Internal Audits based on HACCP requirements or subcontract.
- Generally the firm need to be advised on how to design a HACCP plan implement and monitor performance of the system.

Raw materials used include:

- Fish meal
- Cottonseed cake
- Omena fish meal
- Magadi salt
- Soya
- Maize germ cake
- Wheat pollard
- Sunflower seed cake
- Dry maize
- Wheat bran

Audit Findings

Section 1: Hazard Analysis

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The written hazard analysis (which may be in table form) identifies animal and human hazards for each process step or includes the statement "none identified at this time"	Corrective action	No written document
(b) The written hazard evaluation is science-based, considers hazard frequency and severity and has been performed for every identified hazard.	Corrective action	Senior management aware but no document available
(c) The control measures for significant animal and human hazards have been identified	Fail	
(d) Prerequisite programs exist for significant animal hazards and are correctly referenced in the HACCP plan.	Yes	Personnel Hygiene & contracted pest control services
(e) Control measures exist for significant human hazards	Fail	
(f) The hazard analysis procedure included an evaluation of SOPs and modifications were performed if necessary	Fail	No hazard analysis documented
(g) Critical control points exist for significant human hazards	Partial fulfilment	On additives but not documented
(h) The hazard analysis considers external and internal hazards	Fail	No documented proof
(i) Evidence exist that the HACCP team considered, as a minimum, biological, chemical and physical hazards and have been listed	Fail	HACCP team not constituted
(j) The hazard analysis considered possible sources of adulteration including all process steps including packaging, storage, transportation, intended use, facility and equipment function and design, and plant sanitation including human hygiene	Fail	Not documented

Section 2: HACCP Plan

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The HACCP team has been trained and the training has been recorded	Partial	Staff trained on various training needs
(b) The HACCP plan is specific to the location and establishment	Fail	No HACCP plan in place
(c) The HACCP plan is specific to the ingredient, feed or process	Fail	
(d) If ingredients, feeds or processes are grouped together in a single plan, evidence exists that they share common hazards		
(e) The hazard analysis lists all animal and human hazards	Fail	Not documented
(f) All identified hazards are evaluated for their significance	Partial	Senior management with ideas
(g) CCPs are assigned for significant human hazards in the establishment	No CCP in place	CCP not officially declared
(h) If applicable to process flow and hazard evaluation, CCPs are assigned for significant human hazards outside the establishment	Fail	No formal indication of CCP
(i) Critical limits are identified for each CCP	Fail	
(j) Procedures exist for monitoring each CCP	Fail	
(k) Monitoring frequency ensures adherence to the critical limit	Fail	
(l) The HACCP plan includes corrective action plans developed in accordance with section 3 (a)	Fail	No plan available
(m) The HACCP plan lists validation and verification procedures and their frequency in accordance with section 4	Fail	No plan in place
(n) The HACCP plan includes a recordkeeping system for monitoring CCPs in accordance with section 5	Fail	No documented plan in place

Section 3: Corrective Action

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The corrective action plan describes steps to be taken and assigns responsibility in response to deviations from the critical limits and:	Partial	In case of customer complaints Senior management investigates and take corrective action though not documented
(b) Ensures adulterated product is not distributed or used after the deviation has been identified and before the corrective action has been taken	Yes	In case of use of additives strict limits are observed.
(c) Corrects the deviation	Yes	Through rework
(d) For deviations that occurs and the establishment doesn't have a corrective action plan products is segregated and held, tested for acceptability, not used until product is brought into conformance with HACCP plan	Yes	Quarantine of out of spec products evident
(e) For deviations that occurs and the establishment doesn't have a corrective action plan the cause for the deviation is corrected and verified by a trained individual to determine whether HACCP plan requires modification	Yes	Through production manager
(f) Records provide evidence that corrective action were performed as described in the HACCP plan	Fail	Records not available during audit

Section 4: Verification and Validation

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Evidence that the establishment reviews consumer complaints and their relationship to the HACCP plan's performance or are a new hazard	Partial	Review is done based on customer complaint but need to have records
(b) Verification that key manufacturing equipment are calibrated according to the plan was performed	Partial	In house scale calibration done though no records to capture the activity.
(c) Verification of process monitoring equipment calibration was performed	Fail	
(d) Verification that the establishment performs end-product testing if included in the HACCP plan	Yes	Lab raw material and end product testing done
(e) Verification (within 7 days) that critical control point monitoring records were completed, signed and documented values were within the critical limits	Partial	Records available are production related and are verified by production manager
(f) Verification (within 7 days) that corrective action records and actions were in accordance with section 3	Partial	
(g) Verification (within 7 days) that calibration records for equipment and processing monitoring were performed in accordance with the HACCP plan	Fail	No Records
(h) Procedures outlined in section were followed whenever any verification activity establishes the need for corrective actions	Partial	Processing procedures available
(i) Validation procedures were conducted at specified time intervals and after process modifications by individuals trained in accordance with section 6 and recorded in accordance with section 5	Partial	No records showing validation
(j) Whenever no significant hazards have been identified, a reassessment of the hazard analysis adequacy will be performed annually or after process modification by individuals trained in accordance with section 6 and recorded in accordance with section 5	Fail	No hazard analysis table available

Section 5: Records

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Written hazard analysis in place that has identified all significant biological, chemical and physical human hazards	Fail	
(b) Written HACCP plan for this location for each type of feed/feed ingredient	Fail	
(c) Monitoring of critical control points and their critical limits	Fail	
(d)Calibration of key manufacturing equipment	Partial	Calibration for scales done but no records to support
(e) Calibration of processing monitory instruments	Partial	Moisture measuring equipment not in use(prevention of micro)
(f) Correction actions including disposition	Yes	Disposition authorized in case returns have expired
(g) Records documenting verification and validation of the HACCP plan	Fail	No records
(h) Records are signed and dated by the most responsible person at the establishment (acceptance, modifications, verification and validation)	Partial	No evidence but Production manager does all the signing/authorization
(i) All records required by this part includes the name and location	Fail	No records
(j) All records required by this part includes the date and time of records created in Section 5(h)	Fail	No records
(k) All records required by this part includes the signature or initials of the person performing the operation or creating the record	Fail	
(l) All records required by this part includes the identity of the product and if required the production code	Fail	
(m) All records required by this part includes processing observations and other information entered at the time observed	Partial	Production information
(n) Records required are retained for at least 1 year after the date of production (electronic records are acceptable)	Partial	Records are retained for max 10yrs
(o) Records required are available for review and copying during certification audit	Fail	Most records not available

Section 6: Training

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Include names of the HACCP team and training/job experience which qualifies the individuals in the application of HACCP principles	Fail	No HACCP training done. OHSAS training done on fire and first aid only
(b)The individual Developing the hazard analysis, including delineating control measures, as required by section 6 successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	Partial	Senior management aware of HACCP but not fully. As per interaction
(c) The individual developing a HACCP plan that is appropriate for a specific establishment, in order to meet the requirements of section 2 successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	Fail	No HACCP plan development done
(d) The individual verifying and modifying the HACCP plan in accordance with the corrective action procedures specified in section 3(e) and the validation activities specified in section 4(i) and 4(j) successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	Fail	No training on HACCP/feed safety done
(e) The individual performing the record review required by Section 4 (g) successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	Fail	No evidence of training on HACCP for feeds

Good Manufacturing Practice Checklist for Feed and Feed Ingredients

Scoring System

Meets Requirements: *components for a prerequisite criterion are present and correct.*

Corrective Action Required: *components for a prerequisite criterion are incomplete or incorrect but pose no imminent threat to food safety.*

Fail: *components for a prerequisite criterion are missing or incorrect and do pose an imminent threat to food safety.*

To pass a HACCP audit, all prerequisite criteria must receive a **Pass** or criteria with a **Corrective Action Required** must be corrected within 30 days of inspection. Facilities that receive one or more **Fail** scores will not receive a letter of certification acknowledging the establishment passed their HACCP audit.

Personnel

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Personnel working in direct contact with feed and/or feed ingredients use good hygienic practices to minimize the risk of adulteration of feed and/or feed ingredients	Partial	Personnel have knowledge on hygiene requirements and a clean as u go principle in place
2.Records are available that demonstrate personnel competence and training	Fail	No evidence of training
3.Training for employees on the manufacturing of medicated feeds is provided	Yes	Senior Staff training
4.Training for employees regarding the use of prohibited mammalian protein is provided	Yes	Senior staff trained

Establishments

A) Construction and design

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Buildings, fixtures and other physical facilities are in good repair	Partial	
2.Work areas are reasonably clean, orderly and well-lit	Fail	Need to increase level of cleanliness
3.Buildings provide adequate space for equipment, processing and orderly receipt, shipping and storage of feed and feed ingredients	Partial	Can be better organized with clear sections displayed
4.Building is of suitable construction to minimize access to rodents, birds, and other pests	Fail	Bird proofing required as evidence of birds in the building during audit
5.Buildings used for manufacturing and storage of feed and feed ingredients provide for ease of access to structures and equipment to facilitate routine cleaning and maintenance	Meet expectation	Good spacing though need to clean more frequently especially towards the end of the miller
6.Fertilizers, herbicides, insecticides, fungicides, rodenticides and other pesticide products or toxic substances are physically separated from feed and feed ingredients	Meet expectation	Rodenticides applied by sub contracted contractor

B) Grounds

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The grounds are maintained in a condition that minimizes pest infestation	Partial	Open areas seen that could allow pests and birds into the building

Maintenance and Housekeeping

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.A schedule exists (e.g. calendar, time table, etc.) for routine maintenance of equipment involved in handling or manufacturing of feed or feed ingredients (e.g. magnets, screens, conveyors, augers, mixers, grinders, grain rollers, pellet mills, etc.)	Fail	No evidence of preventive maintenance schedule
2.Equipment is constructed and maintained to minimize the potential for contamination, from substances such as lubricants or cleaning agents	Partial	Diagonal miller/ grease gel used
3.A housekeeping program exists that specifies the areas of the facility to be cleaned and the frequency of cleaning	Partial	No documented proof though supervision being done at the time of the audit
4.Dust is controlled to minimize the potential for contamination of feed or feed ingredients	Fail	Accumulation of dust in the building witnessed during audits
5.Feed and feed ingredient spills are appropriately managed to minimize the potential for contamination	Partial	Clean as you go system in place but need enhancement
6.Lubricants and cleaning agents are appropriate for use in feed and feed ingredient operations; are used in accordance with label instructions; and are stored in a manner that minimizes the potential for contamination of feed or feed ingredients	Fail	Normal lubricants used not recommended feed/food grade . Storage separate with feeds
7.Pallets used to store bagged products are clean, and are examined for pests and contaminants prior to use	Meet requirements	Wooden pallets used are in good condition
8.A routine pest-control program is in place to control rodents, insects and birds	Partial	Need to have surveillance reports on presence of rodents in place. Birds proofing not adequate
9.Restricted-use pesticides are applied only by certified applicators	Meet requirements	Application done by contracted companies
10.Only trained personnel apply non-restricted-use pesticides or fumigants	Meet requirements	Application done by contracted companies

Equipment

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Scales, metering devices, mixers and other equipment are of suitable size, design, construction, precision and accuracy for their intended purpose, and to minimize the risk of ruination	Meet requirements	
2.Scales, metering devices, mixers and other equipment are designed to facilitate inspection and cleaning, and are properly maintained and operated to minimize the risk of ruination	Meet requirements	
3.All equipment is constructed and maintained so as to minimize the risk of lubricants and coolants becoming adulterants in feed and/or feed ingredients	Meet requirement	
4.All scales and metering devices are tested for accuracy at the time of installation	Fail	No external calibration which is a legal requirements under the weights and measures act
5.All scales and metering devices are tested for accuracy at least annually. The establishment maintains records documenting the testing of scales and metering devices until a subsequent test is conducted or for one year from the date of the test, whichever is longer	Fail	No external calibration
6.All mixers are tested at the time of installation to demonstrate the capability of the equipment to produce a homogeneous mix	Meet expectation	Before loading with raw materials testing is done to ensure proper mixing of ingredients
7.All mixers are tested periodically to ensure proper function and demonstrate the capability of the equipment to produce a homogeneous mix	Partial	Need evidence through records
8.The establishment maintains records that document the testing of mixers until a subsequent test is conducted or for one year from the date of the test, whichever is longer	Fail	All maintenance records/tests need to be documented

Receiving and Storage for Further Manufacture

A) Receipt

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Purchasing procedures are in place and conform to legal requirements and conform to traceability requirements to facilitate recall	Meet requirements	Records available
2.Established inspection procedures ensure that purchase material specifications are in place, including contamination	Meet requirement	Through lab analysis of raw materials before supply
3.Feed and/or feed ingredients are inspected visually during the receiving process to confirm identity and check required labelling	Yes	Staff trained on visual inspection though need to have quality specification at intake necessary
4.Carriers, product, and receiving equipment are examined prior to unloading to avoid cross contamination of biological, chemical or physical hazards	Yes	Inspection done before offloading of raw materials though recording of findings necessary.
5.Receiving pits and handling equipment are cleaned using appropriate procedures (e.g. flushing, sequencing or physical clean-out) to minimize the potential for contamination	Partial	Records necessary
6.Responsibility for monitoring adherence to quality assurance programs is clearly assigned and activities performed during receipt are recorded	Partial	Records/Job description

B) Storage

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Storage bins and containers are clearly identified and designated for specific ingredients and protect ingredient from weather damage	Partial	
2.Mammalian proteins prohibited from being fed to cattle or other ruminants under legal requirements are stored in a manner to prevent commingling or cross-contamination	Partial fulfilment	
3.The establishment has established and implemented inventory practices, including inventory rotation, for feed and/or feed ingredients to minimize the risk of adulteration	Partial fulfilment	
4.The establishment maintains records identifying the immediate previous source, quantity, type/name and date received for each feed and/or feed ingredient for at least one year from the date of disposition	Partial fulfilment	
5.Ingredients are stored apart from hazardous materials and unapproved feed additives (e.g. pesticides, fertilizers, lubricants, petroleum products, caustic chemicals and cleaning agents)	Yes	Hazardous materials stored separately from feeds

Feed Manufacturing

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Feed and feed ingredients that are adulterated are not used in the manufacture of feed unless made safe for the intended use	Yes	
2.Manufacturing procedures and equipment are effective in minimizing risk of adulteration		
a.Mixers are used according to manufacturer's specifications including minimum and maximum capacity limits	Meet expectation	
b.Mixers and conveyers do not contain excessive build-up of old material	Fail	Evidence of build-up of old materials in mixers
3.Written procedures are utilized that specify appropriate clean- out procedures to minimize the potential for cross- contamination that may endanger animal or human health	Fail	No written cleaning procedures
a.Describe below the clean-out procedures being used (sequencing, flushing and physical):		
Sequencing		
Flushing		
Physical	Yes	Buy empting the mixers and manually cleaning the mixers
Other (Describe):		
b.If flushing is utilized, a sufficient quantity of flush material is used. Captured flush material is identified, stored and used in a manner that minimizes the potential for contamination		
4.The establishment describes the manufacturing operation for the feed and/or feed ingredients (e.g., formulation, mixing and production practices)	Yes	Manufacturing operations described
5.Rework material is properly identified, stored and used in a manner that minimizes the potential for contamination of feed or feed ingredients	Yes	Quarantine area identified for temporal storage of products to be reworked

6.Production records are maintained for feed or feed ingredients; the records include a code or lot number that identifies the specific batches or lots manufactured	Yes	Special serial number representing production time and date are affixed on the finished products
7.Production records are retained for an appropriate period. (Minimum of one year suggested.)	Yes	3-5 yrs retention
8.Production records are reviewed daily and management is immediately notified of significant discrepancies	Yes	By the production manager

Packaging

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Feed and ingredients are packaged in a manner to maintain identity and minimize the risk of adulteration	Yes	All finished products are packed in sucks clearly identified
2.Any packaging reuse must conform to legal requirements and recorded	Meet expectation	No packaging reuse is encouraged

Labelling

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.A label or other unique identifier is present for each feed and/or feed ingredient that facilitates safe and effective use	Yes	Use of serialized numbers as batch number
2.A label or other unique identifier accompanies every shipment of feed and/or feed ingredient	Yes	Same as above
3.Labels are stored, handled and used in the establishment in a manner that minimizes errors	Yes	Only senior staff stock labels
4.Obsolete labels are promptly discarded	Yes	Minimal wastage since labels are orders for maximum 2 months production
5.Labels comply with applicable legal regulations	Yes	They contain type of feed, date of production, expiry date and feed contents

Storage of Finished Feed and Feed Ingredients

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Finished feed and ingredient are stored in a manner that minimizes adulteration	Yes	Proper storage witnessed
2.Storage bins and bulk tanks are clearly identified	N/A	
3.Inventory practices including product rotation and sequencing are established and followed	N/A	
4.Records document product rotation and sequencing are maintained for a minimum of one year	Fail	No systematic records available

Inspection, Sampling and Testing of Incoming and Finished Feed and Feed Ingredients for Adulterants

A) Laboratory Controls

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.When the establishment performs sampling and testing to monitor for adulteration of feed and/or feed ingredients, trained personnel review test results	Yes	General manager and Production manager review lab results
2.The establishment conducts comprehensive investigations of any test results that indicate feed and/or feed ingredients are adulterated, including a review of: a)ingredient specifications used in the development of the formula; b)formula; c)production records; and sampling and testing methods;	Yes	Evidence of lab records available indicating investigations are done on feed/raw materials before use
3.Records are maintained for a minimum of one year		

B) Formulation

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Formulas are reviewed and verified periodically for safety, regulatory compliance and appropriateness for the intended species and specific class of animal	Yes	Reviewed periodically based on customer complaints
2.Formulas are identified and maintained to ensure they correspond with current labelling	Yes	
3.Records are maintained for a minimum of one year	Yes	

Transportation of Feed and Feed Ingredients

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The establishment inspects conveyances for cleanliness and structural integrity prior to loading any feed and/or feed ingredient into the conveyance	Yes	Need to ensure records are kept
2.The establishment has developed and implemented procedures to protect against feed, feed ingredients or other materials that may pose a risk of adulterating feed and/or feed ingredients from being loaded onto the same conveyance, unless measures have been taken to minimize risk of adulteration	Yes	Approval of loading only by senior staff
3.The establishment maintains records for each feed and/or feed ingredient identifying the immediate subsequent recipient, quantity, type/name, unique identifier if available, and date shipped for at least one year from the date of disposition		
4.Finished feed products are visually inspected by trained personnel	Fail	Need to keep records of the requirement

Voluntary Recall/Withdrawal

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The establishment maintains sufficient records and other information for at least one year from the date of disposition concerning the identity and disposition of feed and/or feed ingredients to permit the rapid and effective recall from the marketplace or withdrawal from feeding if a feed and/or feed ingredient is found to be adulterated.	Yes	Production records retained for between 3-5 yrs
2.The establishment conducts voluntary recalls of feed and/or feed ingredients in accordance with the procedures outlined by the Food and Drug Administration regulations.	Fail	No mock recall evident

APPENDIX 3: HACCP AUDIT FOR COMPANY C (LOW LEVEL)

Introduction

Name of organization being audited:	Company C
Name of company conducting the audit:	AgriQ Quest Ltd
Date of the audit:	12th March 2013
Standard used for the audit:	DS 3027 HACCP STANDARD
Nature of company:	Manufacture of animal feed (chicken, cattle and pig feed).

The process is not automated and uses manual labour.

The raw materials used include:

- Fish meal
- Cotton seed cake
- Calcium phosphorus
- Lime salt
- Omena
- Magadi salt
- Soya
- Maize germ
- Poland
- Sunflower cake
- Dry maize
- Wheat bran

Audit Findings

Section 1: Hazard Analysis

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The written hazard analysis (which may be in table form) identifies animal and human hazards for each process step or includes the statement "none identified at this time"	NO	Hazard analysis not done
(b) The written hazard evaluation is science-based, considers hazard frequency and severity and has been performed for every identified hazard.	NO	Hazard analysis not done
(c) The control measures for significant animal and human hazards have been identified	NO	Hazard analysis not done
(d) Prerequisite programs exist for significant animal hazards and are correctly referenced in the HACCP plan.	NO	No HACCP plan. No PRPs in place
(e) Control measures exist for significant human hazards	NO	Hazard analysis not done
(f) The hazard analysis procedure included an evaluation of SOPs and modifications were performed if necessary	NO	No procedure in place
(g) Critical control points exist for significant human hazards	NO	CCP not identified
(h) The hazard analysis considers external and internal hazards	NO	Hazard analysis not done
(i) Evidence exist that the HACCP team considered, as a minimum, biological, chemical and physical hazards and have been listed	NO	No HACCP team. Hazard analysis not done
(j) The hazard analysis considered possible sources of adulteration including all process steps including packaging, storage, transportation, intended use, facility and equipment function and design, and plant sanitation including human hygiene	NO	Hazard analysis not done

Section 2: HACCP Plan

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The HACCP team has been trained and the training has been recorded	NO	No HACCP team
(b) The HACCP plan is specific to the location and establishment	NO	No HACCP plan in place
(c) The HACCP plan is specific to the ingredient, feed or process	NO	No HACCP plan in place
(d) If ingredients, feeds or processes are grouped together in a single plan, evidence exists that they share common hazards	NO	Hazard analysis not done
(e) The hazard analysis lists all animal and human hazards	NO	Hazard analysis not done
(f) All identified hazards are evaluated for their significance	NO	Hazard analysis not done
(g) CCPs are assigned for significant human hazards in the establishment	NO	Hazard analysis not done. No CCP assigned
(h) If applicable to process flow and hazard evaluation, CCPs are assigned for significant human hazards outside the establishment	NO	No CCP, Hazard analysis not done
(i) Critical limits are identified for each CCP	NO	CCP not identified
(j) Procedures exist for monitoring each CCP	NO	No procedure
(k) Monitoring frequency ensures adherence to the critical limit	NO	Critical limits not identified
(l) The HACCP plan includes corrective action plans developed in accordance with section 3 (a)	NO	No HACCP plan in place
(m) The HACCP plan lists validation and verification procedures and their frequency in accordance with section 4	NO	No HACCP plan in place
(n) The HACCP plan includes a recordkeeping system for monitoring CCPs in accordance with section 5	NO	No system in place

Section 3: Corrective Action

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) The corrective action plan describes steps to be taken and assigns responsibility in response to deviations from the critical limits and:	NO	There is no documented corrective action plan
(b) Ensures adulterated product is not distributed or used after the deviation has been identified and before the corrective action has been taken	NO	There is no documented evidence
(c) Corrects the deviation	NO	No records exist
(d) For deviations that occurs and the establishment doesn't have a corrective action plan products is segregated and held, tested for acceptability, not used until product is brought into conformance with HACCP plan	NO	There is no documented evidence
(e) For deviations that occurs and the establishment doesn't have a corrective action plan the cause for the deviation is corrected and verified by a trained individual to determine whether HACCP plan requires modification	NO	No HACCP plan in place
(f) Records provide evidence that corrective action were performed as described in the HACCP plan	NO	No records exists nor HACCP plan in place

Section 4: Verification and Validation

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Evidence that the establishment reviews consumer complaints and their relationship to the HACCP plan's performance or are a new hazard	NO	Customer complaints are addressed verbally and therefore no records exist. No documented evidence exists
(b) Verification that key manufacturing equipment are calibrated according to the plan was performed	NO	Calibrations are not performed by certified practitioners and hence calibration certificates are not issued
(c) Verification of process monitoring equipment calibration was performed	NO	No evidence of records
(d) Verification that the establishment performs end-product testing if included in the HACCP plan	NO	No evidence of records. No HACCP plan in place
(e) Verification (within 7 days) that critical control point monitoring records were completed, signed and documented values were within the critical limits	NO	No evidence of records
(f) Verification (within 7 days) that corrective action records and actions were in accordance with section 3	NO	No evidence of records
(g) Verification (within 7 days) that calibration records for equipment and processing monitoring were performed in accordance with the HACCP plan	NO	No evidence of records
(h) Procedures outlined in section were followed whenever any verification activity establishes the need for corrective actions	NO	No documented procedures
(i) Validation procedures were conducted at specified time intervals and after process modifications by individuals trained in accordance with section 6 and recorded in accordance with section 5	NO	No evidence of records
(j) Whenever no significant hazards have been identified, a reassessment of the hazard analysis adequacy will be performed annually or after process modification by individuals trained in accordance with section 6 and recorded in accordance with section 5	NO	Hazard analysis has not been done

Section 5: Records

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Written hazard analysis in place that has identified all significant biological, chemical and physical human hazards	NO	No evidence of records
(b) Written HACCP plan for this location for each type of feed/feed ingredient	NO	No evidence of records
(c) Monitoring of critical control points and their critical limits	NO	No evidence of records
(d)Calibration of key manufacturing equipment	NO	No evidence of records
(e) Calibration of processing monitory instruments	NO	No evidence of records
(f) Correction actions including disposition	NO	No evidence of records
(g) Records documenting verification and validation of the HACCP plan	NO	No evidence of records
(h) Records are signed and dated by the most responsible person at the establishment (acceptance, modifications, verification and validation)	YES	Records are signed by the Manager and supervisor
(i) All records required by this part includes the name and location	NO	Not done
(j) All records required by this part includes the date and time of records created in Section 5(h)	NO	Not done
(k) All records required by this part includes the signature or initials of the person performing the operation or creating the record	NO	Not done
(l) All records required by this part includes the identity of the product and if required the production code	NO	Not done
(m) All records required by this part includes processing observations and other information entered at the time observed	NO	No evidence
(n) Records required are retained for at least 1 year after the date of production (electronic records are acceptable)	YES	Time frame is not defined
(o) Records required are available for review and copying during certification audit	NO	No reviews done

Section 6: Training

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
(a) Include names of the HACCP team and training/job experience which qualifies the individuals in the application of HACCP principles	NO	No HACCP team
(b)The individual Developing the hazard analysis, including delineating control measures, as required by section 6 successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	NO	Not done
(c) The individual developing a HACCP plan that is appropriate for a specific establishment, in order to meet the requirements of section 2 successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	NO	Not done
(d) The individual verifying and modifying the HACCP plan in accordance with the corrective action procedures specified in section 3(e) and the validation activities specified in section 4(i) and 4(j) successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	NO	Not done
(e) The individual performing the record review required by Section 4 (g) successfully completed training in the application of HACCP principles or is otherwise qualified through job experience to perform these functions	NO	Not done

Good Manufacturing Practice Checklist for Feed and Feed Ingredients

Scoring System

Meets Requirements: *components for a prerequisite criterion are present and correct.*

Corrective Action Required: *components for a prerequisite criterion are incomplete or incorrect but pose no imminent threat to food safety.*

Fail: *components for a prerequisite criterion are missing or incorrect and do pose an imminent threat to food safety.*

To pass a HACCP audit, all prerequisite criteria must receive a **Pass** or criteria with a **Corrective Action Required** must be corrected within 30 days of inspection. Facilities that receive one or more **Fail** scores will not receive a letter of certification acknowledging the establishment passed their HACCP audit.

Personnel

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Personnel working in direct contact with feed and/or feed ingredients use good hygienic practices to minimize the risk of adulteration of feed and/or feed ingredients	NO	Not done. Casual labour is used
2.Records are available that demonstrate personnel competence and training	NO	Not done. Casual labour is used
3.Training for employees on the manufacturing of medicated feeds is provided	NO	Not done. Casual labour is used
4.Training for employees regarding the use of prohibited mammalian protein is provided	NO	Not done. Casual labour is used

Establishments

A) Construction and design

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Buildings, fixtures and other physical facilities are in good repair	YES	This is evident at the premise
2.Work areas are reasonably clean, orderly and well-lit	NO	Housekeeping is poor
3.Buildings provide adequate space for equipment, processing and orderly receipt, shipping and storage of feed and feed ingredients	YES	Adequate
4.Building is of suitable construction to minimize access to rodents, birds, and other pests	YES	Adequate
5.Buildings used for manufacturing and storage of feed and feed ingredients provide for ease of access to structures and equipment to facilitate routine cleaning and maintenance	NO	Heaping and poor segregation of material. Gang ways are not clear
6.Fertilizers, herbicides, insecticides, fungicides, rodenticides and other pesticide products or toxic substances are physically separated from feed and feed ingredients	N/A	Not applicable

B) Grounds

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The grounds are maintained in a condition that minimizes pest infestation	NO	Layout design does not facilitate

Maintenance and Housekeeping

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.A schedule exists (e.g. calendar, time table, etc.) for routine maintenance of equipment involved in handling or manufacturing of feed or feed ingredients (e.g. magnets, screens, conveyors, augers, mixers, grinders, grain rollers, pellet mills, etc.)	NO	No schedule, no records exist
2.Equipment is constructed and maintained to minimize the potential for contamination, from substances such as lubricants or cleaning agents	NO	Not done
3.A housekeeping program exists that specifies the areas of the facility to be cleaned and the frequency of cleaning	NO	No program exists
4.Dust is controlled to minimize the potential for contamination of feed or feed ingredients	NO	Design and operations do not allow control of dust
5.Feed and feed ingredient spills are appropriately managed to minimize the potential for contamination	NO	Spills are swept, collected, sieved and reworked. Possibility of contamination
6.Lubricants and cleaning agents are appropriate for use in feed and feed ingredient operations; are used in accordance with label instructions; and are stored in a manner that minimizes the potential for contamination of feed or feed ingredients	YES	It's a dry operation
7.Pallets used to store bagged products are clean, and are examined for pests and contaminants prior to use	NO	Not done
8.A routine pest-control program is in place to control rodents, insects and birds	NO	Not done
9.Restricted-use pesticides are applied only by certified applicators	NO	Not done
10.Only trained personnel apply non-restricted-use pesticides or fumigants	NO	Not done

Equipment

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Scales, metering devices, mixers and other equipment are of suitable size, design, construction, precision and accuracy for their intended purpose, and to minimize the risk of ruination	NO	Design is manual and locally made
2.Scales, metering devices, mixers and other equipment are designed to facilitate inspection and cleaning, and are properly maintained and operated to minimize the risk of ruination	NO	Design is manual and locally made
3.All equipment is constructed and maintained so as to minimize the risk of lubricants and coolants becoming adulterants in feed and/or feed ingredients	NO	Design is manual and locally made
4.All scales and metering devices are tested for accuracy at the time of installation	NO	No Records
5.All scales and metering devices are tested for accuracy at least annually. The establishment maintains records documenting the testing of scales and metering devices until a subsequent test is conducted or for one year from the date of the test, whichever is longer	NO	No records seen
6.All mixers are tested at the time of installation to demonstrate the capability of the equipment to produce a homogeneous mix	YES	No records seen
7.All mixers are tested periodically to ensure proper function and demonstrate the capability of the equipment to produce a homogeneous mix	NO	Maintenance records not seen
8.The establishment maintains records that document the testing of mixers until a subsequent test is conducted or for one year from the date of the test, whichever is longer	NO	No records for maintenance records and calibrations

Receiving and Storage for Further Manufacture

A) Receipt

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Purchasing procedures are in place and conform to legal requirements and conform to traceability requirements to facilitate recall	NO	No documented procedures
2.Established inspection procedures ensure that purchase material specifications are in place, including contamination	NO	No documented procedures
3.Feed and/or feed ingredients are inspected visually during the receiving process to confirm identity and check required labelling	NO	No documented evidence
4.Carriers, product, and receiving equipment are examined prior to unloading to avoid cross contamination of biological, chemical or physical hazards	NO	No documented procedures
5.Receiving pits and handling equipment are cleaned using appropriate procedures (e.g. flushing, sequencing or physical clean-out) to minimize the potential for contamination	NO	No procedure followed
6.Responsibility for monitoring adherence to quality assurance programs is clearly assigned and activities performed during receipt are recorded	NO	No procedure followed

B) Storage

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Storage bins and containers are clearly identified and designated for specific ingredients and protect ingredient from weather damage	NO	Not done
2.Mammalian proteins prohibited from being fed to cattle or other ruminants under legal requirements are stored in a manner to prevent commingling or cross-contamination	NO	Storage areas are not demarcated
3.The establishment has established and implemented inventory practices, including inventory rotation, for feed and/or feed ingredients to minimize the risk of adulteration	NO	Not evidenced
4.The establishment maintains records identifying the immediate previous source, quantity, type/name and date received for each feed and/or feed ingredient for at least one year from the date of disposition	NO	No records
5.Ingredients are stored apart from hazardous materials and unapproved feed additives (e.g. pesticides, fertilizers, lubricants, petroleum products, caustic chemicals and cleaning agents)	NO	Not done

Feed Manufacturing

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Feed and feed ingredients that are adulterated are not used in the manufacture of feed unless made safe for the intended use	NO	Adulterated feed is reworked and diverted to other feeds but records not available to verify
2.Manufacturing procedures and equipment are effective in minimizing risk of adulteration	NO	
a.Mixers are used according to manufacturer's specifications including minimum and maximum capacity limits	NO	No Procedure documented
b.Mixers and conveyers do not contain excessive build-up of old material	NO	No evidence to monitor and verify this
3.Written procedures are utilized that specify appropriate clean- out procedures to minimize the potential for cross- contamination that may endanger animal or human health	NO	No procedure in place
a.Describe below the clean-out procedures being used (sequencing, flushing and physical):		
Sequencing	NO	No procedure in place
Flushing	NO	No procedure in place
Physical	YES	Use of physical clean out
Other (Describe):	N/A	
b.If flushing is utilized, a sufficient quantity of flush material is used. Captured flush material is identified, stored and used in a manner that minimizes the potential for contamination	NO	Flushing is not done
4.The establishment describes the manufacturing operation for the feed and/or feed ingredients (e.g., formulation, mixing and production practices)	NO	No procedure in place
5.Rework material is properly identified, stored and used in a manner that minimizes the potential for contamination of feed or feed ingredients	NO	Labelling is not clear on material for rework

6.Production records are maintained for feed or feed ingredients; the records include a code or lot number that identifies the specific batches or lots manufactured	NO	The identification is not based on batches
7.Production records are retained for an appropriate period. (Minimum of one year suggested.)	YES	Not defined
8.Production records are reviewed daily and management is immediately notified of significant discrepancies	YES	Records available for customers

Packaging

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Feed and ingredients are packaged in a manner to maintain identity and minimize the risk of adulteration	YES	Marking is done on the sacks
2.Any packaging reuse must conform to legal requirements and recorded	N/A	No reuse

Labelling

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.A label or other unique identifier is present for each feed and/or feed ingredient that facilitates safe and effective use	YES	Ingredients are labelled accordingly
2.A label or other unique identifier accompanies every shipment of feed and/or feed ingredient	YES	Labelling is done on the final product
3.Labels are stored, handled and used in the establishment in a manner that minimizes errors	NO	No labels stored
4.Obsolete labels are promptly discarded	N/A	No labels available. Only the packaging material
5.Labels comply with applicable legal regulations	N/A	They don't use labels

Storage of Finished Feed and Feed Ingredients

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.Finished feed and ingredient are stored in a manner that minimizes adulteration	YES	Finished products are placed on pallets
2.Storage bins and bulk tanks are clearly identified	YES	Seen
3.Inventory practices including product rotation and sequencing are established and followed	NO	No Procedures followed
4.Records document product rotation and sequencing are maintained for a minimum of one year	NO	No records seen

Inspection, Sampling and Testing of Incoming and Finished Feed and Feed Ingredients for Adulterants

A) Laboratory Controls

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.When the establishment performs sampling and testing to monitor for adulteration of feed and/or feed ingredients, trained personnel review test results	NO	Not done on site
2.The establishment conducts comprehensive investigations of any test results that indicate feed and/or feed ingredients are adulterated, including a review of: a)ingredient specifications used in the development of the formula; b)formula; c)production records; and sampling and testing methods;	NO	Procedures not followed
3.Records are maintained for a minimum of one year	NO	No defined time frame

B) Formulation

Criteria	**Meets Requirements, Corrective Action Required, Fail**	**Comments**
1.Formulas are reviewed and verified periodically for safety, regulatory compliance and appropriateness for the intended species and specific class of animal	YES	Tests are done
2.Formulas are identified and maintained to ensure they correspond with current labelling	YES	Done
3.Records are maintained for a minimum of one year	YES	Not defined

Transportation of Feed and Feed Ingredients

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The establishment inspects conveyances for cleanliness and structural integrity prior to loading any feed and/or feed ingredient into the conveyance	YES	Records are not available to verify this
2.The establishment has developed and implemented procedures to protect against feed, feed ingredients or other materials that may pose a risk of adulterating feed and/or feed ingredients from being loaded onto the same conveyance, unless measures have been taken to minimize risk of adulteration	NO	No procedures in place
3.The establishment maintains records for each feed and/or feed ingredient identifying the immediate subsequent recipient, quantity, type/name, unique identifier if available, and date shipped for at least one year from the date of disposition	YES	Not defined
4.Finished feed products are visually inspected by trained personnel	YES	Evidence seen

Voluntary Recall/Withdrawal

Criteria	Meets Requirements, Corrective Action Required, Fail	Comments
1.The establishment maintains sufficient records and other information for at least one year from the date of disposition concerning the identity and disposition of feed and/or feed ingredients to permit the rapid and effective recall from the marketplace or withdrawal from feeding if a feed and/or feed ingredient is found to be adulterated.	YES	No documented evidence
2.The establishment conducts voluntary recalls of feed and/or feed ingredients in accordance with the procedures outlined by the Food and Drug Administration regulations.	YES	No documented evidence