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IMPLEMENTATION PLAN FOR FOOD SAFETY SYSTEMS ALONG THE VALUE CHAIN

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Implementation Plan for Food Safety Systems along the Value Chain

Work Package 74, Sub-activity 5.4 & 5.5

This report should be considered in conjunction with the report “Establishments mapped, survey designed, gap assessment conducted and upgrading plan developed for milk and meat value chain” which were developed as part of deliverables 1.5.1 and 1.5.2. The report was developed following on-site evaluations of value chain actors in the meat and milk sectors and multi-stakeholder workshops where actors discussed the challenges and opportunities in strengthening food safety along the value chain.

This report, “Implementation Plan for Food Safety Systems along the Value Chain” draws on the findings of these assessments and stakeholder workshops. It is also complimented by a proposal for a “Capital Investment Scheme for Strengthening Food Safety in Meat and Milk Value Chains” which outlined possible investment areas for private sector actors that could enhance their food safety practices. The Implementation Plan for Food Safety Systems along the Value Chain is intended as a guide for both Food Business Operators and Regulatory Agencies. It outlines implementation plans on relevant food safety systems, including pre-requisite programs such as SOP and GMP along the production line and HACCP implementation based on CODEX requirements as a primary and mandatory food safety system that relates to private certification programs. This report is developed in response to sub-activities 1.5.4 and 1.5.5.

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Abbreviations and Acronyms

AMI	Ante Mortem Inspection
AMR	Antimicrobial Resistance
BFSA	Bangladesh Food Safety Authority
BSTI	Bangladesh Standards and Testing Institute
CAC	Codex Alimentaria Commission
CA	Competent Authority
CC	City Corporations
DYD	Department of Youth Development
DLO	District Livestock Officer
DLS	Department of Livestock Services
GAHP	Good Animal Husbandry Practices
GHP	Good Hygiene Practices
HACCP	Hazard Analysis Critical Control Point
LDDP	Livestock and Dairy Development Project
MoFL	Ministry of Fisheries and Livestock
MRL	Maximum Residue Level
MO	Market Operator
PPE	Personal Protective Equipment
PMI	Post Mortem Inspection
SoP	Standard Operational Procedure
THI	Temperature Humidity Index
UNIDO	United Nations Industrial Development Organization
WOAH/ OIE	World Organization for Animal Health (formerly the Organization Internationale des Epizooties)

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EXECUTIVE SUMMARY

The Implementation Plan for Food Safety Modalities along the Food Chain has been developed as part of Activity 1.5. "Support the establishment of quality assurance schemes for the livestock sector". It draws on a number of different UNIDO reports undertaken as part of the wider Food Safety Workstream, linking policy recommendations for regulators in Bangladesh with how these interact with food safety controls along the food chain.

The report exists in the context of supporting the establishment of quality assurance schemes for the livestock sector and draws on the findings of the report "Establishments mapped, survey designed, gap assessment conducted and upgrading plan developed for milk and meat value chain" which were developed as part of deliverables 1.5.1 and 1.5.2. The report was developed following on-site evaluations of value chain actors in the meat and milk sectors and multi-stakeholder workshops where actors discussed the challenges and opportunities in strengthening food safety along the value chain.

The gap assessment identifies an absence of primary food safety controls along the food chain for meat and milk products. While these challenges exist, it is abundantly clear that stakeholders with whom we have engaged, are keen to implement effective measures that can enable them to make declarations about the foods they produce and to be credible in their statements that their foods are safe to consume.

A pragmatic approach is proposed in developing modalities that are appropriate to the current production system in Bangladesh and that can be readily applied by all actors along the supply chain.

Accordingly in the short term, it is not proposed to initiate Global Certification Schemes across the Bangladesh Food Chains. To do so would be to create a system of checks and audits of processes that just do not as yet exist. Appendix 1 provides an overview of some of the more common international certification systems which could be considered at a later stage.

However the approach proposed in this report is based on the current regulatory frameworks within Bangladesh and application of HACCP and GHP along the food chain. The successful adoption of these measures within the food chain will fundamentally change the food ecosystem in Bangladesh and at that stage, consideration of Global Certification Systems is appropriate.

Finally it must be recognised that the development of effective food safety measures along the food chain requires the input of all actors and therefore initiatives must be established that facilitate regular, focused and relevant interaction between all actors including regulators, policymakers and food business operators.

The development of a more effective food safety ecosystem in Bangladesh will take time, but constructive and progressive collaboration between all actors will ensure that its achievements can become sustainable in a relatively short time and with clear benefits for consumers.

CONTEXT

The Implementation Plan for Food Safety Systems along the Value Chain is developed within the framework of the Livestock and Milk Development Project (LDDP), a World Bank funded project amounting to 578.66 Million USD, with the overall objective to promote productivity growth, enhance market access, and improve risk management among smallholder farmers and agro-entrepreneurs in Bangladesh. The project development objective is to contribute to productivity improvement, market access, and resilience of smallholder farmers and agro-entrepreneurs operating in selected livestock value chains in target areas.

The project targets all main value chains in the country: i) Milk from small and medium scale mixed crop-livestock systems; ii) poultry from improved scavenging and semi-scavenging systems, and semi-intensified broilers systems; and iii) red meat from small and mid-scale cattle and small ruminant production units. UNIDO is contributing to two components of the LDDP, namely; a) sub- component A2 on improved climate smart production practices by addressing the aspect of health in animal production, and b) sub-component C2 on food safety and public health by addressing food safety and quality assurance.

UNIDO interventions are structured into two outputs, with the specific objective to improve the food safety system for the protection of public health systems along the livestock value chains:

Output 1: Food assurance and public health systems designed along livestock value chains. This output will focus on i) Gap analysis of existing legislation of food safety enforcement, ii) Legal amendments and drafts of regulations for stronger food safety enforcement in relevant value chains, iii) Baseline data on current level of food safety in relevant value chains, iv) Establishment of foods of animal origin inspection program, and v) Support to the establishment in quality assurance schemes (GAP, HACCP, ISO, CODEX);

Output 2: AMR surveillance and risk mitigation program as well as surveillance and monitoring of microbial chemical and residual hazards are developed. This output will focus on i) conceptual development of AMR surveillance system, monitoring of antimicrobial use and risk mitigation in animal and foods of animal origin, and ii) design of surveillance and monitoring programme on biological and chemical hazards in animal and foods of animal origin.

The Implementation Plan for Food Safety Systems along the Value Chain exists in the context of supporting the establishment of quality assurance schemes for the livestock sector and draws on the findings of the report “Establishments mapped, survey designed, gap assessment conducted and upgrading plan developed for milk and meat value chain” which were developed as part of deliveries 1.5.1 and 1.5.2. The report was developed following on-site evaluations of value chain actors in the meat and milk sectors and multi-stakeholder workshops where actors discussed the challenges and opportunities in strengthening food safety along the value chain.

BACKGROUND

Meat and Milk production in Bangladesh has grown in response to increased domestic demand assisted in part by government policy to achieve self-sufficiency in all primary food products. The approach has proven to be successful in part with Bangladesh now self-sufficient in meat production while milk production is nearing self-sufficiency.

The Government of Bangladesh is now keen to improve the safety of foods of animal origin and has received assistance via the World Bank funded Livestock and Dairy Development Project (LDDP) of the Department of Livestock Services (DLS) to support this objective. The United Nations Industrial Development Organization (UNIDO) has been engaged to deliver a series of actions to support the objective of improved food safety in foods of animal origin including a gap analysis of existing food safety legislation; drafting legal amendments to existing legislation; development of baseline data of food safety; proposals for the establishment of food inspection programs and quality assurance schemes for foods of animal origin.

Based on the most recent DLS statistics, the current annual production of meat is 87.10 lakh Metric Tons; per capita supply is 137.38 gm per day, which exceeds the national target of 120 gm/per capita/per day. Milk production is 140.68 lakh Metric Tons, with per capita supply of 221.89 ml per day, which is near to the targeted 250 ml/per capita/per day. However, there are challenges including the economic sustainability of current milk and meat production systems, underdeveloped processing capacity, insufficient logistical systems, and poor enforcement of existing regulatory requirements.

While milk and meat production has increased by a considerable level, its safety and quality has not been addressed sufficiently, which presents a challenge to the health of consumers and also acts as a barrier to developing export markets. The key challenge is how to implement effective food safety controls in the Bangladesh Food System from farmers to processors, to retailers while not undermining the economic sustainability of the sector or reducing self-sufficiency.

Meat and milk are produced through long and complex value chains. The scale of production in Bangladesh poses additional challenges as many farmers and actors along the supply chains operate at levels where the introduction of modern technologies is economically difficult. Nevertheless, the primary focus of this initiative is the production of safe food, regardless of size or scale of operation as there exists the risk of health hazards in each and every step of the value chain, which ultimately impacts consumers health.

The approach adopted is a mapping of the meat and Milk value chains, followed by an analysis of the environment, infrastructure and practices to identify health risks in the areas. The World Organization for Animal Health (WOAH) and Codex Alimentarius guidelines are considered as the standard of practice in Bangladesh. This requires adoption of Good Animal Husbandry Practices (GAHP) and Good Hygienic Practices (GHP), monitoring and inspection, laboratory infrastructure, skilled manpower, infrastructural and financial resources along the entire value chain.

It is appropriate therefore to recall the elements of the Codex General Principles of Hygiene (CXC1-1996) and specifically its contribution to defining the language of food safety across value chains, the seven principles of HACCP and the principle elements of Good Hygiene Practices

(GHP). These are set out in the following sections of this report.

CODEX GENERAL PRINCIPLES OF HYGIENE

The Codex Alimentarius, or “Food Code” is a collection of standards, guidelines and codes of practice adopted by the Codex Alimentarius Commission. The Commission, also known as CAC, is the central part of the Joint FAO/WHO Food Standards Programme and was established by FAO and WHO to protect consumer health and promote fair practices in food trade. Codex standards are adopted in most cases by consensus among member countries and are based on the best scientific and technical knowledge. International organizations with official observer status in Codex may make interventions in Codex meetings and submit written comments for consideration, but only Codex member countries have voting rights to approve Codex outputs.

The Codex General Principles of Hygiene (CXC1-1996) provide the basis for modern food systems. It introduced the concept of Food Business Operators (FBO’s) which created a commonality of responsibility for all FBO’s across supply chains and in doing so created the basis for traceability systems based on the “one-up “one down” principle. It defines FBO’s as “The entity responsible for operating a business at any step in the food chain” and in so doing apportions equal responsibility for food safety to all FBO’s.

The Codex General Principles of Hygiene also set out the approach to managing food safety through Hazard Analysis and Critical Control Points (HACCP) and for Good Hygiene Practice (GHP) which collectively encompass the entire food system through a risk based system. In this way FBO’s are empowered to identify the risks appropriate to their businesses and to implement the processes appropriate to the production of safe food within their areas of control.

The definitions within the General Principles of Hygiene have defined the terminology of the global food system and are set out here for reference.

Acceptable level	A level of hazard in a food at or below which the food is considered to be safe according to its intended use.
Allergen cross-contact	The unintentional incorporation of an allergenic food, or ingredient, into another food that is not intended to contain that allergenic food or ingredient.
Cleaning	The removal of soil, food residues, dirt, grease, or other objectionable matter.
Competent authority	The government authority or official body authorized by the government that is responsible for the setting of regulatory food safety requirements and/or for the organization of official controls including enforcement.
Contaminant	Any biological, chemical or physical agent, foreign matter or other substances not intentionally added to food that may compromise food safety or suitability.

Contamination	The introduction or occurrence of a contaminant in the food or food environment.
Control (when used as a noun)	The state wherein correct procedures are being followed and any established criteria are being met;
Control (when used as a verb)	to take all necessary actions to ensure and maintain compliance with established criteria and procedures.
Control measure	Any action or activity that can be used to prevent or eliminate a hazard or reduce it to an acceptable level.
Corrective action	Any action taken when a deviation occurs in order to re-establish control, segregate and determine the disposition of the affected product if any and prevent or minimize reoccurrence of the deviation.
Critical control point (CCP)	A step at which a control measure or control measures, essential to control a significant hazard, is/are applied in a HACCP system.
Critical limit	A criterion, observable or measurable, relating to a control measure at a CCP which separates acceptability from unacceptability of the food.
Deviation	Failure to meet a critical limit or to follow a GHP procedure.
Disinfection	Reduction by means of biological or chemical agents and/or physical methods in the number of viable microorganisms on surfaces, in water or air to a level that does not compromise food safety and/or suitability.
Flow diagram	A systematic representation of the sequence of steps used in the production or manufacture of food.
Food business operator (FBO)	The entity responsible for operating a business at any step in the food chain.
Food handler	Any person who directly handles packaged or unpackaged food, equipment and utensils used for food, or surfaces that come into contact with food and that is expected, therefore, to comply with food hygiene requirements.
Food hygiene	All conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.
Food hygiene system	Prerequisite programmes, supplemented with control measures at CCPs, as appropriate, that when taken as a whole, ensure that food is safe and suitable for its intended use.
Food safety	Assurance that food will not cause adverse health effects to the consumer when it is prepared and/or eaten according to its intended use.
Food suitability	Assurance that food is acceptable for human consumption according to its intended use.
Good hygiene practices (GHPs)	Fundamental measures and conditions applied at any step within the food chain to provide safe and suitable food.

HACCP plan	Documentation or set of documents, prepared in accordance with the principles of HACCP to ensure control of significant hazards in the food business.
HACCP system	The development of a HACCP plan and the implementation of the procedures in accordance with that plan.
Hazard	A biological, chemical or physical agent in food with the potential to cause an adverse health effect.
Hazard analysis	The process of collecting and evaluating information on hazards identified in raw materials and other ingredients, the environment, in the process or in the food, and conditions leading to their presence to decide whether or not these are significant hazards.
Monitor	The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a control measure is under control.
Primary production	Those steps in the food chain up to and including storage and, where appropriate, transport of outputs of farming. This would include growing crops, raising fish and animals, and the harvesting of plants, animals or animal products from a farm or their natural habitat.
Prerequisite programme	Programmes including good hygiene practices, good agricultural practices and good manufacturing practices, as well as other practices and procedures such as training and traceability, that establish the basic environmental and operating conditions that set the foundation for implementation of a HACCP system.
Significant hazard	A hazard identified by a hazard analysis, as reasonably likely to occur at an unacceptable level in the absence of control, and for which control is essential given the intended use of the food.
Step	A point, procedure, operation, or stage in the food chain, including raw materials, from primary production to final consumption.
Validation of control measures	Obtaining evidence that a control measure or combination of control measures, if properly implemented, is capable of controlling the hazard to a specified outcome.
Verification	The application of methods, procedures, tests, and other evaluations, in addition to monitoring, to determine whether a control measure is or has been operating as intended.

Hazard Analysis and Critical Control Point (HACCP)

Hazard analysis and critical control points, or HACCP, is a systematic preventive approach to food safety from biological, chemical, and physical hazards in production processes. HACCP is a process that is developed by the Food Business Operator (FBO) within a defined framework,

allowing the risks specific to the activities of the FBO to be identified and managed. HACCP empowers the FBO to be proactive in their approach to managing and mitigating the risks associated with their specific processes.

HACCP is defined within the Codex General Principles of Hygiene (CX1-1996¹) and is comprised of seven principles which can be expanded as follows:

1. Identify the hazards

Consider each activity including purchasing, delivery, storage, preparation, cooking, chilling, in operations and identify what can go wrong, e.g., salmonella in a cooked chicken product due to cross contamination with raw meat (biological hazard), contamination of uncovered food with detergent (chemical hazard) or a piece of broken glass fallen into an uncovered food (physical hazard).

2. Determine the critical control points (CCPs)

Identify the points in operations that ensures control of the hazards, e.g., cooking raw meat thoroughly will kill pathogens such as E. coli O157.

3. Establish critical limit(s)

Set limits to enable identification when a CCP is out of control, e.g., when cooking beef burgers, the centre of the burger must reach a minimum temperature of 75° C (or an equivalent time temperature combination, e.g. 70° C for two minutes) to ensure pathogens are destroyed.

4. Establish a system to monitor control of the CCP

When CCPs and critical limits have been identified it is important to have a way to monitor and record what is happening at each CCP. Typically monitoring will involve measuring parameters such as temperature and time. However, monitoring and frequency will depend on the size and nature of the business. Monitoring should in all cases be simple, clear and easy to do, e.g., probe refrigerated food to ensure that it is being maintained below 5° C.

5. Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control

When monitoring indicates that a CCP is not under control, corrective action must be taken, e.g., the temperature of the food in a refrigerator rises to 10° C due to a technical fault. Discard the food and repair the refrigerator using the manufacturer's instructions to ensure the correct temperature of 5° C is achieved.

6. Establish procedures for verification to confirm the HACCP system is working effectively

1 GENERAL PRINCIPLES OF FOOD HYGIENE CXC 1-1969, Adopted in 1969. Amended in 1999. Revised in 1997, 2003, 2020, 2022. [fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCXC%2B1-1969%252FCXC_001e.pdf](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCXC%2B1-1969%252FCXC_001e.pdf)

Review and correct the system periodically and whenever you make changes to the operation, e.g., when replacing an oven, verify that the time/temperature settings in the new oven achieves the minimum safe cooking temperature for a particular dish by probing the food.

7. Establish documentation concerning all procedures and records appropriate to these principles and their application

For the successful implementation of HACCP-based procedures, appropriate documentation and records must be kept and be readily available. It is unrealistic to operate HACCP-based procedures or to demonstrate compliance with the current legislation without providing evidence such as written records. As with the HACCP-based procedures themselves, the complexity of the record keeping will very much depend on the nature and complexity of the business. The aim should be to ensure control is maintained without generating excessive paperwork.

Good Hygiene Practices (GHP)

Good Hygiene Practices, or GHPs, form the basis of all food hygiene systems that support the production of safe and suitable food. The development, implementation, and maintenance of GHPs ensure that the conditions and activities that are necessary to support the production of safe food at all stages of the food value chain. Knowledge of the food, its production process and value chain is essential for the effective implementation of GHPs.

GHPs manage many sources of food hazards which could contaminate food products, e.g. persons who handle food at harvest, during manufacturing, and during preparation; raw materials and other ingredients purchased from suppliers; cleaning and maintaining the work environment; storage and display.

HACCP is defined within the Codex General Principles of Hygiene (CX1-1996²) and can be defined by the following eight elements:

1. Primary Production

Primary production should be managed in a way that ensures that food is safe and suitable for its intended use. Where necessary, this will include an assessment of the suitability of water used where it may pose a hazard, for example, crop irrigation, rinsing activities, etc.; avoiding the use of areas where the environment poses a threat to the safety of food (e.g. contaminated sites); controlling contaminants, pests and diseases of animals and plants, to the extent practicable, to minimize the threat to food safety (e.g. appropriate use of pesticides and veterinary drugs); and adopting practices and measures to ensure food is produced under appropriately hygienic conditions (e.g. cleaning and maintaining harvest equipment, rinsing, hygienic milking practices).

2. Establishment – Design of Facilities and Equipment

² GENERAL PRINCIPLES OF FOOD HYGIENE CXC 1-1969, Adopted in 1969. Amended in 1999. Revised in 1997, 2003, 2020, 2022. [fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCXC%2B1-1969%252FCXC_001e.pdf](https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?lnk=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCXC%2B1-1969%252FCXC_001e.pdf)

Depending on the nature of the operations and the associated risks, premises, equipment, and facilities should be located, designed and constructed to ensure that contamination is minimized; design and layout permit appropriate maintenance, cleaning and disinfection and minimize airborne contamination; surfaces and materials, in particular those in contact with food, are non-toxic for their intended use; where appropriate, suitable facilities are available for temperature, humidity, and other controls; there is effective protection against pest access and harbourage; and there are sufficient and appropriate washroom facilities for personnel.

3. Training and Competence

All those engaged in food operations who come directly or indirectly into contact with food should have sufficient understanding of food hygiene to ensure they have competence appropriate to the operations they are to perform.

4. Establishment Maintenance, Cleaning and Disinfection, Pest Control

To establish effective systems that: ensure appropriate establishment maintenance; ensure cleanliness and, when necessary, adequate disinfection; ensure pest control; ensure waste management; and monitor effectiveness of cleaning and disinfection, pest control and waste management procedures.

5. Personal Hygiene

To ensure that those who come directly or indirectly into contact with food: maintain appropriate personal health; maintain an appropriate degree of personal cleanliness; and behave and operate in an appropriate manner.

6. Control of Operation

To produce food that is safe and suitable for human consumption by: formulating design requirements with respect to raw materials and other ingredients, composition/formulation, production, processing, distribution, and consumer use to be met as appropriate to the food business; and designing, implementing, monitoring and reviewing effective control systems as appropriate to the food business.

7. Product Information and Consumer Awareness

Appropriate information about food should ensure that: adequate and accessible information is available to the next FBO in the food chain or the consumer to enable them to handle, store, process, prepare and display the product safely and correctly; consumers can identify allergens present in foods; and the lot or batch can be easily identified and removed/returned if necessary.

Consumers should be given enough information on food hygiene to enable them to: be aware of the importance of reading and understanding the label; make informed choices appropriate to the individual, including about allergens; and prevent contamination and growth or survival of foodborne pathogens by storing, preparing and using food correctly.

8. Transportation

During transportation, measures should be taken where necessary to protect food from potential sources of contamination, including allergen cross-contact; protect food from damage likely to render the food unsuitable for consumption; and provide an environment which effectively controls the growth of pathogenic or spoilage microorganisms and the production of toxins in food.

NAVIGATING MEAT AND MILK VALUE CHAINS IN BANGLADESH

As previously outlined an extensive mapping exercise was undertaken of the milk and meat value chains, from which a gap analysis of current food safety systems and practices was undertaken, highlighting the risks within the respective value chains. The findings of this assessment were validated in workshops with stakeholders across the value chains. Food safety risk was determined for all stages of the meat and milk value chains and are summarised here:

Dairy Farms

- Poor hygienic management
- No isolation and quarantine of diseased animals from healthy animals
- Poor recording system
- Poor vaccination coverage
- Limited disease reporting and diagnostic facilities
- Feeding of heavy metal contaminated fodder
- Misuse and overuse of the antimicrobials

Goyala / Milk Transporter

- Poor hygienic practices
- Poor health of the Goyala
- Poor handling practices
- Uncontrolled temperature
- Uncontrolled fly and insect movement

- Poor control of dust
- Poor waste management facilities
- Poor uses of personal protective equipment (hand gloves, caps, apron)

Chilling Facility

- Contaminated and unclean tank
- Inappropriate temperature
- Dirty environment
- Poor data recording
- Lack of standard operating procedure

Processor / Sweetmeat Shop

- Reluctant to use Personal Protective Equipment (Caps, hand gloves, apron)
- Poor hygiene of the shop
- Don't maintain shelf life of the product
- Improper preservation facilities
- Free movement of flies, and insects

Meat Value Chain

- Poor operational guidelines for value chain actors
- Capacity building was lacking
- Absence of recording systems at all levels
- Lack of animal and farm traceability
- Unskilled workforce
- Poor inspection, supervision, monitoring
- Disorganized slaughter facilities and practices
- Poor enforcement of animal slaughter act and rule
- Meat selling with almost no hygiene of safety practices, etc.

IMPLEMENTATION PLAN FOR FOOD SAFETY

MODALITIES IN BANGLADESH

The gap assessment identifies an absence of primary food safety controls along the food chain. Animals lack traceability, with the result that the health status of animals is unknown at the time of slaughter and it is not possible to satisfy a declaration of meat or milk being produced from clinically healthy animals.

There is not a cold chain for milk at farm level or at processing facilities nor is testing of milk ex-farm or along the supply chain at a level that can provide assurance that the microbiological criteria have been met for milk and milk products.

There is not sufficient testing of foods to detect residues of animal remedies or other chemicals potentially added to raw products in the absence of a cold chain.

While these challenges exist, it is abundantly clear that stakeholders with whom we have engaged, are keen to implement effective measures that can enable them to make declarations about the foods they produce and to be credible in their statements that their foods are safe to consume.

A pragmatic approach is required in developing modalities that are appropriate to the current production system in Bangladesh and that can be readily applied by all actors along the supply chain.

Accordingly in the short term, it is not proposed to initiate Global Certification Schemes across the Bangladesh Food Chains. To do so would be to create a system of checks and audits of processes that just do not as yet exist. Appendix 1 provides an overview of some of the more common international certification systems which could be considered at a later stage.

However the approach proposed in this report is based on the current regulatory frameworks within Bangladesh and application of HACCP and GHP along the food chain. The successful adoption of these measures within the food chain will fundamentally change the food ecosystem in Bangladesh and at that stage, consideration of Global Certification Systems is appropriate.

Knowing the appropriate regulatory agency

The Department of Livestock Services (DLS) has responsibility for regulatory oversight on primary production of foods of animal origin. However it shares many responsibilities with other agencies and clarity is required not just for the administration of its own food safety enforcement duties but also for food business operators who themselves must interact with their respective regulatory agencies. The report “Integration of Risk-Based Approach Related to The Livestock Sector” by Prof. Samuel Godefroy proposed the following approach with respect to roles and responsibilities in the oversight of foods of animal origin along the food chain.

Table 1: Findings of Relevance Related to Shared Roles and Responsibilities and Oversight on Food of Animal Origin

Rule / Standard	Authority <u>Empowered</u> to Set the Rule / Standard in General	Authority <u>involved</u> in <u>Setting the Rule / Standard</u> for Primary Production of Food of Animal Origin	Corresponding Enforcement Agency for Primary Production of Food of Animal Origin
Horizontal Standards: Contaminants in Food	BFSA in collaboration with DLS and BSTI	BFSA with consultation of DLS	DLS
Horizontal Standards: Additives	BFSA in collaboration with DLS and BSTI	BFSA with consultation of DLS	DLS
Horizontal Standards: Microbial Criteria	BFSA in collaboration with DLS and BSTI	BFSA with consultation of DLS	DLS
Horizontal Standards: Methods of Analysis and Sampling	BFSA in collaboration with DLS and BSTI	BFSA with consultation of DLS	DLS
Horizontal Standards: Maximum Residue Limits of Pesticides in Food	BFSA / BSTI	BSTI/BFSA in collaboration with DLS	DLS
Horizontal Standards: Maximum Residue Limits of Veterinary Substances in Food	BFSA / BSTI (with the involvement of the Drugs Directorate, Ministry of Health for the approval)	BSTI/BFSA in collaboration with DLS	DLS
Horizontal Standards: Labeling	BSTI	BSTI/BFSA	DLS
Rules Supporting Sanitary Conditions of Production: Pre-requisite Programs (PRPs), Preventive Controls, Traceability These rules should underpin Licensing of Establishments	BFSA	BFSA, City Corporation and DLS This function needs to shift entirely to DLS	DLS
Licensing	BFSA (Some authority exercised)	DLS / City Corporation	DLS

DRAFTING STANDARD OPERATING PROCEDURES

A Standard Operating Procedure (SOP) is a set of written instructions that document a routine or repetitive activity that is specific to a function or process. SOP's are developed to ensure consistency in the delivery of actions and form an essential part of a quality system. They document the way activities are to be performed to facilitate consistent conformance to technical and quality system requirements and to support data quality.

SOPs should be written in a concise, step-by-step, easy-to-read format. The information presented should be unambiguous and not overly complicated. Ideally, SOP's include a flow chart to illustrate the process being described.

In developing SOP's, the following approach can be used.

1. Defining the Objective

It is essential that the objective or process to be supported by the SOP is clearly understood, and what is intended to be documented is already considered to be best practice. SOP's should not be used to propose new, untested processes.

SOP's must include a description of its scope and where necessary a description of what is not in scope.

2. Validating the SOP

SOPs should be reviewed prior to implementation by some team members with appropriate experience with the process. Ideally, draft SOPs should be tested by individuals other than the original writer before the SOPs are finalized.

SOP's should only be finalised following review and approval by the Quality Manager or the relevant Senior Leadership Team.

3. Review of SOP's

SOP's must remain relevant to the operation or function it is drafted to support. A review schedule should be planned, with many organisations reviewing SOP's every two years.

Changes in processes, technologies, or functions require an update of the SOP and a repeat of Step 2 "Validating the SOP".

Corrective actions that identify a need for process change will similarly trigger a review of SOP's.

4. Change Control

Changes to SOP's mean changing from a process or series of actions that previously were accepted as best practice. Changes to SOP's including review's or amendments should be included in a Change Control Process that documents the reason for change, the people

consulted regarding the proposed change, the results of testing of the amended practice or series of actions, and the approval of the appropriate manager for the change to the SOP.

5. Document Control

SOP's must be controlled documents that cannot be changed or amended without adherence to the Steps outlined earlier. Similarly, a process is required to ensure that only the most recent SOP is being used and outdated SOP's are removed and no longer used. Finally, SOP's can contain confidential or proprietary information and should be treated as confidential documents.

A document identification system is a central part of document control, and should include elements including Revision Number, Date, Number of Pages and a signature of the responsible person.

Farm Level Approaches to Food Safety

The focus of regulatory agencies when inspecting farm facilities should be on the conditions under which they are willing to issue farm registrations and be based on the application of Good Animal Husbandry Practices (GAHP) and Good Hygiene Practice (GHP). At a minimum regulatory inspection should encompass the following.

Farm Inspection

- Having documented records, which reflect compliance to present law, licensing regulation and the related applicable by laws and decisions of the authorities.
- Farm located in a suitable location, kept clean and maintained in good condition at all the times. The location shall be away from polluted and industrial areas and the area shall not be prone to pests and rodents.
- The new farm location should be chosen in order to protect the animals from any kind of health risk and welfare issues which can make the animal sick and the final product unfit for human consumption.
- Farms production site is of a suitable size, location, and construction, and be maintained to reduce the risk of disease and facilitate the production of healthy animals
- The layout and the animal facilities size of the farm is proportional to the species and the number of animals in order to breed them in a healthy and stressless manner.
- Materials used for the internal structure of buildings are durable, prevent build-up of dirt, be easy to clean and maintain and safe for staff
- The farm structure protects the animals from any health and welfare issues.
- Feeding facilities design and maintenance is sufficient and perfect

- Reliable supply of electricity
- Adequate personal hygiene and sanitary facilities available
- The premises have good lighting
- There is adequate natural or mechanical ventilation

Farm SOP's

Elements of a Farm level SOP's are:

Dairy Farm Milking SOP

1. Bring cows to collecting yard at their own pace
2. Ensure cooling equipment is switched on
3. Check that there is no residual water in the milk pipelines
4. Take new milk filter and install into filter system
5. Start milking machine and listen for abnormal sounds or escape of air
6. Release cows to milking area
7. Release feed (if used during milking)
8. Ensure udder is clean and free from loose dirt
9. Wash udder only if dirty but ensure teats are dry after washing
10. Check udder for signs of heat or animal discomfort
11. Pull sample of milk from teat to check for milk clots
12. Take milk cluster in right hand and place on teats in the order of Front Right; Front Left; Back Right; Back Left
13. Remove cluster when milked and hang immediately with the cluster cups faced downwards
14. Spray teats with approved teat dip on completion of milking
15. Release cow to an area where she has access to clean drinking water

Farm Biosecurity – Introduction of New Cattle to the Farm SOP

1. Before animals are moved, examine information and disease status of animals. Do not move animals until all information is made available for inspection.
2. Have animals delivered to a separate area, away from existing herd animals
3. Observe the behaviour of animals once they have been unloaded and have settled after the journey
4. Check for stability including evidence of stumbling, laminitis, nasal and vaginal discharge
5. Observe animal drinking and feeding normally
6. If abnormalities are observed in “3” and “4”, the veterinarian must be consulted and the animal confined to an area where they are segregated from all other animals.
7. Treat with vaccinations used in your herd
8. Insert farm tag or identification system.
9. Introduce animal to herd

Calf Feeding with Milk Replacer SOP

1. Heat water to 37°C
2. Weigh out milk replacer (3 jugs feeds 5 calves)
3. Pour warmed water into the bucket
4. Add weighed out milk replacer to the water
5. Mix well using a whisk
6. Once there are no lumps left add more warm water bringing the mix to full feeding volume
7. Place feeder on the gate and add milk
8. Ensure that all calves are drinking
9. Observe calves while drinking
10. Remove the feeder when the milk is gone and rinse with cold water first and squeeze each of the teats to remove any milk
11. Wash the feeder using warm soapy water and ensure all traces of milk and saliva are removed from the feeder and teats

12. Finally rinse feeder with cold water
13. Give calves concentrate (1kg per calf) and straw

Animal Transportation Approaches to Food Safety

The focus of regulatory agencies when inspecting transporters of animals to slaughterhouses or cattle markets should focus on the conditions under which they are willing to issue farm registrations and be based on the application of on Good Hygiene Practice (GHP) and ensure animal welfare. At a minimum regulatory inspection should encompass the following.

Animal Transport

- Transport equipment, facilities and documents must be maintained in good order and checked before being used.
- Animal transport should take place only if the animals' facilities, equipment, vehicle, loading/unloading procedures, documents and licenses are in perfect order and well organized to reduce, at the minimum, the animal stress and the risk of injuries.
- Inspection of animals and management of fallen livestock during transport and loading procedures
- Handling escaped animals during the unloading
- Follow animal loading and unloading instructions
- Transport equipment is washed after each unloading

Transport SOP's

Elements for inclusion in Transporter SOP's are:

Loading and Unloading SOP

1. Ramps and pens must be in good repair and have non-slip flooring.
2. In new facilities, concrete should be grooved in an 8 in. (20 cm) diamond or square pattern with 1 in. (3 cm) deep V grooves.
3. Slick areas in existing facilities can be roughed with a concrete grooving machine or a metal grate constructed from $\frac{3}{4}$ in. or 1 in. (2 cm to 3 cm) diameter steel rods can be constructed for use in high traffic areas.
4. Excessively steep ramps should be avoided. The recommended slope for a ramp is 20 degrees. Either stairsteps or cleats can be used.
5. On concrete ramps, stair steps that have a 3 $\frac{1}{2}$ in. (10 cm) rise and a minimum tread

length of 12 in. (30 cm) are recommended.

6. If cleats are used they should be spaced so that there is 8 in. (20 cm) of space between the cleats. This will fit the stride length of cattle.
7. Chutes that are used to unload cattle at slaughterhouses will work best if they have a level floor which is 10 ft. (3 m) to 20 ft. (6 m) long.
8. A level area will prevent wild cattle from jumping off the truck onto the ramp.
9. A wide ramp is recommended at a plant to provide cattle with an unimpeded exit. The most efficient ramps for loading large trucks with a 30 in. (76 cm) wide rear door are single file. They should be 30 in (76 cm) wide.
10. Low level trailers can be loaded and unloaded without the aid of a ramp.
11. The use of unloading ramps can be eliminated by building the yard floor at the same level as the trucks in slaughterhouses.

Animal Transport SOP

1. Stocking Densities - Overloading of trucks will increase the chances of an animal going down on a truck. Bruising is also increased when trucks are overloaded. Tall cattle are also more likely to get bruised backs.
2. Driving Methods – Careful driving will help prevent bruises and injuries. It will also help reduce weight losses. Rapid acceleration or sudden braking should be avoided because poor driving can cause animals to lose their balance. Air ride suspensions are strongly recommended to provide a smoother ride.
3. Prompt Unloading – Trucks should be scheduled so that they can be unloaded promptly when they reach the plant. Trucks should be unloaded within 15 minutes after arrival.
4. Non Slip Flooring – A new aluminium trailer has good non-slip footing but cattle start slipping when the diamond plate floor becomes worn. Cattle ride easier on nonslip flooring. One sign of a slick trailer is more manure on the floor. Slipping agitates cattle and causes more elimination. Slipping can be reduced by welding small bars or aluminium mesh on the floor.
5. Reduce Heat Stress – In high temperatures, if possible, cattle should be transported at night or in the early morning.
6. Where it is not possible to avoid heat, vehicles must be kept moving because heat builds up rapidly in a parked vehicle. Heat stress is especially a problem when cattle that are acclimated to living in a cold climate are transported to a hot climate.
7. Prevent Cold Stress – Since cattle are ruminants, animals that have been acclimatized to cold weather can withstand very low temperatures.

8. Checking the load – Drivers should check the cattle to make sure no animals have fallen down every time they stop at a weigh station or truck stop. Downed cattle are likely to be trampled and injured.
9. Vehicle Maintenance – Both the tractor and the trailer must be kept well maintained. Broken gates, ramps, decks and latches in the trailer must be replaced or repaired.
10. Vehicle Cleanliness – Vehicles must be thoroughly washed a minimum of once a week but with the trailer washed out every time animals are unloaded.
11. Driver Incentives – Implementation of financial incentives to reduce bruises and weight loss could be used to motivate drivers. Drivers who are financially rewarded will be more willing to handle cattle quietly and to drive carefully.

Slaughterhouse Approaches to Food Safety

The focus of regulatory agencies when inspecting slaughterhouses must be based on their compliance with the regulatory provisions and on which registration can be issued. At a minimum regulatory inspection should encompass the following.

Slaughterhouses

- Providing required documented records, which reflect compliance to present law, licensing regulation and the related applicable by laws and decisions of the authorities
- The production site should be of a suitable size, location and construction, and be maintained to reduce the risk of contamination and facilitate the production of safe and hygienic finished products (live animals ready to be slaughtered)
- The layout and the animal facilities size of the lairage abattoir should be proportional to the species and the number of animals in order to keep them in a healthy manner waiting for them to be slaughtered. This is crucial for the safety of the final product (meat).
- Materials used for the internal structure of buildings should be durable, prevent build-up of dirt, be easy to clean and maintain and safe for staff
- The lairage structure should protect the animals from any health and welfare issues.
- Feeding facilities design and maintenance provide feed to the animals only if they will stay in the lairage overnight. If the abattoir has a slaughtering flow system where the animals will be slaughtered without being accommodated for over 3 hours, then all the requirements about feeding facilities are not applicable.
- Provide a reliable supply of electricity
- Adequate personal hygiene and sanitary facilities must be provided in the abattoir.
- The premises must have good lighting

- There must be adequate natural or mechanical ventilation

Slaughterhouse SOP's

Elements for inclusion in Slaughterhouse SOP's are:

Cleanliness of Facilities SOP

1. Cleaning Procedures
 - a. Dirt is removed from equipment
 - b. Dirt is swept up and discarded in an area segregated from the processing area.
 - c. Facilities are hosed with potable water
 - d. Facilities are sprayed or rinsed with an approved detergent
 - e. Excess water is brushed away allowing washed facility to dry
 - f. Care must be taken to ensure that washing water does not remain in pools in any area of the facility.
 - g. Ensure proper water disposal facilities are in place to remove the washing water
2. Cleaning Frequency
 - a. Floors and walls are cleaned at the end of every processing day.
 - b. Ceilings, overhead fixtures, corridors and chillers should be cleaned at least once per week or more frequently depending on throughput.
3. Implementation and Monitoring
 - a. The manager must perform a daily visual inspection after completion of daily cleaning procedures. The results of this inspection must be recorded and where facilities are deemed to have been adequately cleaned, the inspection is signed off. Where corrective actions are identified, these should be recorded.
4. Corrective Action
 - a. Where the manager determines that cleaning procedures have not been undertaken sufficiently, the cleaning procedure and inspection must be repeated.

Operational Cleaning of Equipment and Structures SOP

1. Established personnel hygiene procedures for product operatives
 - a. All employees working in the slaughterhouse must wear hair nets

- b. All employees must wash hands with soap, before and after breaks, visits to toilets and as necessary during production.
 - c. All employees should clean and sanitise, gloves, knives and aprons, as necessary during production to minimise contamination
 - d. All equipment and tables are cleaned and sanitised throughout the day as required.
2. Established procedures for insect and rodent control include;
- a. Bait points and insectocutors should be present in the non-food areas of the slaughterhouse.
 - b. Areas such as dry goods store, chill rooms, maintenance areas, should be checked daily for visible rodent droppings and insects.
3. Implementation, monitoring and record keeping
- a. The manager is responsible for ensuring that GHP, pest and rodent control, and necessary cleaning procedures are maintained during production I,e, keeping drain covers clear. The manager monitors these operational sanitation procedures once during each processing shift and records their findings.
4. Corrective Actions
- a. When the manager identifies operational cleaning problems, they notify employees to take appropriate action to correct the cleaning problems. If necessary, production is stopped and / or employees are retained. Corrective actions must be recorded.

Dairy Processing SOP's

Recognising the risks associated with handling raw milk, reference is made in this section to the “Code of Hygienic Practice for Milk and Milk Products” CAC/RCP 57-2004³ which remains as the primary reference document for milk processing facilities and on which HACCP plans are based. An example SOP for milk intake based on this standard is set out below.

Milk Intake SOP

1. All raw milk must be received in dedicated tank-trucks that comply with regulatory requirements.
2. All milk must be tested for criteria listed as part of the milk processors quality system.
3. Make a record of each shipment received including information such as:
 - 1) volume
 - 2) temperature

³ Codex Code of Hygienic Practice for Milk and Milk Products [untitled \(fao.org\)](http://untitled(fao.org))

- 3) date and time of receipt
 - 4) person responsible for receiving
 - 5) where the product was stored
 - 6) any unusual activity observed
4. If the plant cannot immediately process the incoming raw milk, make sure there are enough tanks or silos to store it.
 5. To minimize the growth of micro-organisms, empty, clean and sanitize the raw milk silos and storage tanks at least once every 48 hours.
 6. Have a written cleaning program for making sure the cleaning and sanitizing was done properly.
 7. Use storage tanks or silos that are easy to clean and ideally be made of stainless steel and designed so they can be cleaned either by hand (for smaller tanks) or using a CIP system (for larger tanks or silos).
 8. While the milk is in the storage tanks or silos, monitor the temperature and make sure it stays between 1°C and 4°C.

ANNEX 1

International Certification Schemes

Global GAP



GLOBAL G.A.P. is a brand of smart farm assurance solutions developed by FoodPLUS GmbH in Cologne, Germany, with cooperation from producers, retailers, and other stakeholders from across the food industry. The GLOBAL G.A.P. brand began as EUREPGAP in 1997 and now has over 200,000 producers are under GLOBAL G.A.P. certification in 134 countries.

GlobalGAP is developed in a way that standards are aligned with the regulatory provisions within the country in which it is being applied. There are four elements to its process.

- 1) The GLOBALG.A.P. Checklist is the document for food business operators to complete their self-assessment.

- 2) The Control Points and Compliance Criteria (CPCC) document lists everything the applicable standard covers, and provides additional guidelines to fulfil the requirements.
- 3) The General Regulations document defines how the certification process works and lists the requirements for quality management systems and related issues.
- 4) The National Interpretation Guideline (NIG) clarifies how the CPCC have been adapted in a specific country.

The following examples are provided for illustration only and do not replace the actual GlobalGAP application processes.

Food Safety Declaration

The primary element of the GlobalGAP system is the declaration of compliance with National Legislation and the commitment to implementation of Good Hygiene Practices as outlined within the GlobalGAP Standard.

FOOD SAFETY POLICY DECLARATION A producer may use this template or any other format for compliance with AF15.1	
COMPANY NAME:	
MANAGER/OWNER NAME:	
SIGNATURE:	DATE:
We are committed to ensure that food safety is implemented and maintained throughout our production processes; from before planting up to product release.	
This is achieved by:	
1. COMPLIANCE AND IMPLEMENTATION OF RELEVANT LEGISLATION	
2. IMPLEMENTATION OF GOOD AGRICULTURAL PRACTICES AND CERTIFICATION AGAINST GLOBALG.A.P. INTEGRATED FARM ASSURANCE V5.0	
All of our staff has been trained in food safety and hygiene (see Chapter AF.3) and are strictly monitored to ensure it is continuously implemented.	
The following person/(s) have accountability for food safety	
DURING PRODUCTION:	
NAME(S):	
DESIGNATION:	
REPLACEMENT(S):	

N°	Control Point	Compliance Criteria	Level
AF	ALL FARM BASE		
	<i>Control points in this module are applicable to all producers seeking certification, as it covers issues relevant to all farming businesses.</i>		
AF 1	SITE HISTORY AND SITE MANAGEMENT		
	<i>One of the key features of sustainable farming is the continuous integration of site-specific knowledge and practical experiences into future management planning and practices. This section is intended to ensure that the land, buildings and other facilities, which constitute the fabric of the farm, are properly managed to ensure the safe production of food and protection of the environment.</i>		
AF 1.1	Site History		
AF 1.1.1	Is there a reference system for each field, orchard, greenhouse, yard, plot, livestock building/pen, and/or other area/location used in production?	Compliance shall include visual identification in the form of: - A physical sign at each field/orchard, greenhouse/yard/plot/livestock building/pen, or other farm area/location; or - A farm map, which also identifies the location of water sources, storage/handling facilities, ponds, stables, etc. and that could be cross-referenced to the identification system. No N/A.	Major Must
AF 1.1.2	Is a recording system established for each unit of production or other area/location to provide a record of the livestock/aquaculture production and/or agronomic activities undertaken at those locations?	Current records shall provide a history of GLOBALG.A.P. production of all production areas. No N/A.	Major Must
AF 1.2	Site Management		
AF 1.2.1	Is there a risk assessment available for all sites registered for certification (this includes rented land, structures and equipment) and does this risk assessment show that the site in question is suitable for production, with regards to food safety, the environment, and health and welfare of animals in the scope of the livestock and aquaculture certification where applicable?	A written risk assessment to determine whether the sites are appropriate for production shall be available for all sites. It shall be ready for the initial inspection and maintained updated and reviewed when new sites enter in production and when risks for existing ones have changed, or at least annually, whichever is shorter. The risk assessment may be based on a generic one but shall be customized to the farm situation. Risk assessments shall take into account: - Potential physical, chemical (including allergens) and biological hazards - Site history (for sites that are new to agricultural production, history of five years is advised and a minimum of one year shall be known) - Impact of proposed enterprises on adjacent stock/crops/ environment, and the health and safety of animals in the scope of the livestock and aquaculture certification. (See AF Annex 1 and AF Annex 2 for guidance on risk assessments. FV Annex 1 includes guidance regarding flooding)	Major Must

AF 1.2.2	Has a management plan that establishes strategies to minimize the risks identified in the risk assessment (AF 1.2.1) been developed and implemented?	A management plan addresses the risks identified in AF 1.2.1 and describes the hazard control procedures that justify that the site in question is suitable for production. This plan shall be appropriate to the farm operations, and there shall be evidence of its implementation and effectiveness. NOTE: Environmental risks do not need to be part of this plan and are covered under AF 7.1.1.	Major Must
AF 2	RECORD KEEPING AND INTERNAL SELF-ASSESSMENT/INTERNAL INSPECTION		
	<i>Important details of farming practices shall be recorded and records kept.</i>		
AF 2.1	Are all records requested during the external inspection accessible and kept for a minimum period of two years, unless a longer requirement is stated in specific control points?	Producers shall keep up-to-date records for a minimum of two years. Electronic records are valid and when they are used, producers are responsible for maintaining back-ups of the information. For the initial inspections, producers shall keep records from at least three months prior to the date of the external inspection or from the day of registration, whichever is longer. New applicants shall have full records that reference each area covered by the registration with all of the agronomic activities related to GLOBALG.A.P. documentation required for this area. For Livestock, these records shall be available for the current livestock cycle before the initial inspection. This refers to the principle of record keeping. When an individual record is missing, the respective control point dealing with those records is not compliant. No N/A.	Major Must
AF 2.2	Does the producer take responsibility to conduct a minimum of one internal self-assessment per year against the GLOBALG.A.P. Standard?	There is documented evidence that in Option 1 an internal self-assessment has been completed under the responsibility of the producer (this may be carried out by a person different from the producer). Self-assessments shall include all applicable control points, even when a subcontracted company carries them out. The self-assessment checklist shall contain comments of the evidence observed for all non-applicable and non-compliant control points. This has to be done before the CB inspection (See General Regulations Part I, 5.).No N/A, except for multi-site operations with QMS and producer groups, for which the QMS checklist covers internal inspections.	Major Must

AF 2.3	Have effective corrective actions been taken as a result of non-conformances detected during the internal self-assessment or internal producer group inspections?	Necessary corrective actions are documented and have been implemented. N/A only in the case no non-conformances are detected during internal self-assessments or internal producer group inspections.	Major Must
AF 3	HYGIENE		
	<i>People are key to the prevention of product contamination. Farm staff and contractors as well as producers themselves stand for the quality and safety of the product. Education and training will support progress toward safe production. This section is intended to ensure good practices to diminish hygiene risks to the product and that all workers understand the requirements and are competent to perform their duties. Further hygiene requirements, specific to certain activities such as harvest and product handling, are defined in the applicable Standard module.</i>		
AF 3.1	Does the farm have a written risk assessment for hygiene?	The written risk assessment for hygiene issues covers the production environment. The risks depend on the products produced and/or supplied. The risk assessment can be a generic one, but it shall be appropriate for conditions on the farm and shall be reviewed annually and updated when changes (e.g. other activities) occur. No N/A.	Minor Must
AF 3.2	Does the farm have a documented hygiene procedure and visibly displayed hygiene instructions for all workers and visitors to the site whose activities might pose a risk to food safety?	The farm shall have a hygiene procedure addressing the risks identified in the risk assessment in AF 3.1. The farm shall also have hygiene instructions visibly displayed for workers (including subcontractors) and visitors; provided by way of clear signs (pictures) and/or in the predominant language(s) of the workforce. The instructions must also be based on the results of the hygiene risk assessment in AF 3.1 and include at a minimum- The need to wash hands- The need to cover skin cuts- Limitation on smoking, eating and drinking to designated areas - Notification of any relevant infections or conditions. This includes any signs of illness (e.g. vomiting; jaundice, diarrhea), whereby these workers shall be restricted from direct contact with the product and food-contact surfaces- Notification of product contamination with bodily fluids- The use of suitable protective clothing, where the individuals' activities might pose a risk of contamination to the product.	Minor Must
AF 3.3	Have all persons working on the farm received annual hygiene training appropriate to their activities and according to the hygiene instructions in AF 3.2?	An introductory training course for hygiene shall be given in both written and verbal form. All new workers shall receive this training and confirm their participation. This training shall cover all instructions defined in AF 3.2. All workers, including the owners and managers, shall annually participate in the farm's basic hygiene training.	Minor Must

AF 3.4	Are the farm's hygiene procedures implemented?	Workers with tasks identified in the hygiene procedures shall demonstrate competence during the inspection and there is visual evidence that the hygiene procedures are being implemented. No N/A.	Major Must
AF 4	WORKERS' HEALTH, SAFETY AND WELFARE		
	<p><i>People are key to the safe and efficient operation of any farm. Farm staff and contractors as well as producers themselves stand for the quality of the produce and for environmental protection. Education and training will help progress towards sustainability and build on social capital. This section is intended to ensure safe practices in the work place and that all workers both understand, and are competent to perform their duties; are provided with proper equipment to allow them to work safely; and that, in the event of accidents, can obtain proper and timely assistance.</i></p>		
AF 4.1	Health and Safety		
AF 4.1.1	Does the producer have a written risk assessment for hazards to workers' health and safety?	The written risk assessment can be a generic one but it shall be appropriate to conditions on the farm, including the entire production process in the scope of certification. The risk assessment shall be reviewed and updated annually and when changes that could impact workers health and safety (e.g. new machinery, new buildings, new plant protection products, modified cultivation practices, etc.) occur. Examples of hazards include but are not limited to: moving machine parts, power take-off (PTO), electricity, farm machinery and vehicle traffic, fires in farm buildings, applications of organic fertilizer, excessive noise, dust, vibrations, extreme temperatures, ladders, fuel storage, slurry tanks, etc. No N/A.	Minor Must
AF 4.1.2	Does the farm have written health and safety procedures addressing issues identified in the risk assessment of AF 4.1.1?	The health and safety procedures shall address the points identified in the risk assessment (AF 4.1.1) and shall be appropriate for the farming operations. They shall also include accident and emergency procedures as well as contingency plans that deal with any identified risks in the working situation, etc. The procedures shall be reviewed annually and updated when the risk assessment changes. The farm infrastructure, facilities and equipment shall be constructed and maintained in such a way as to minimize health and safety hazards for the workers to the extent practical.	Minor Must

AF 4.1.3	Have all people working on the farm received health and safety training according to the risk assessment in AF 4.1.1?	All workers, including subcontractors, can demonstrate competency in responsibilities and tasks through visual observation (if possible on the day of the inspection). There shall be evidence of instructions in the appropriate language and training records. Producers may conduct the health and safety training themselves if training instructions or other training materials are available (i.e. it need not be an outside individual who conducts the training). No N/A.	Minor Must
AF 4.2	Training		
AF 4.2.1	Is there a record kept for training activities and attendees?	A record is kept for training activities, including the topic covered, the trainer, the date and a list of the attendees. Evidence of attendance is required.	Minor Must
AF 4.2.2	Do all workers handling and/or administering veterinary medicines, chemicals, disinfectants, plant protection products, biocides and/or other hazardous substances and all workers operating dangerous or complex equipment as defined in the risk analysis in AF 4.1.1 have evidence of competence or details of other such qualifications?	Records shall identify workers who carry out such tasks, and can demonstrate competence (e.g. certificate of training and/or records of training with proof of attendance). This shall include compliance with applicable legislation. No N/A. For aquaculture, cross-reference with Aquaculture Module AB 4.1.1. In livestock, for workers administering medicines proof of adequate experience is also required.	Major Must



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