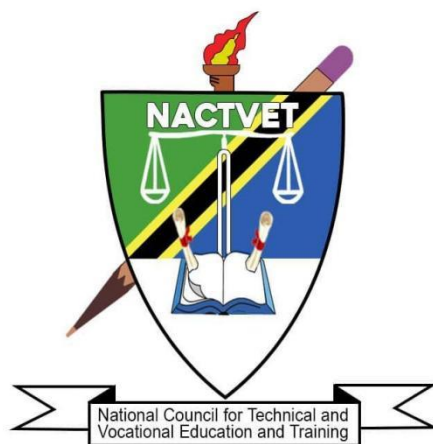


**NATIONAL COUNCIL FOR TECHNICAL AND VOCATIONAL EDUCATION AND
TRAINING**



MAY 2023

PROPOSED OCCUPATIONAL STANDARDS

OCCUPATION: ANIMAL BREEDING TECHNICIAN

LEVEL: NTA 4

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ABBREVIATIONS

CBET	Competency Based Education and Training
NACTVET	National Council for Technical and Vocational Education and Training
NOS	National Occupational Standards
OSHA	Occupational Safety and Health Administration
OS	Occupational Standards
OXT	Oxytocin
PG	Prostaglandin
PMSG	Pregnant Mare Serotonin (Gonadotropin)
SOP	Standard Operating Procedures
TET	Technical Education and Training
TVET	Technical and Vocational Education and Training

GLOSSARY OF TERMS

Circumstantial Knowledge:	Detailed knowledge, which allows the decision-making in regard to different circumstances and cross cutting issues.
Competence:	The ability to use knowledge, understanding, practical, and thinking skills to perform effectively to the workplace standards required in employment.
Competency:	A description of the ability one possesses when able to perform a given occupational task effectively and efficiently.
Competency-based Education:	An instructional programme that derives its content from validated tasks and bases assessment on the learner's performance.
Curriculum:	A description or composite of statements about "what is to be learned" by the trainee/student in a particular instructional programme; a product that states the "intended learning outcomes".
Educational/Training Programme:	The complete curriculum and instruction (what and how) that is designed to prepare a person for employment in a job or other particular performance situation.
Occupation:	A specific position requiring the performance of specific tasks - essentially the same tasks are performed by all employees having the same title. (Example: baker)
Occupational Area:	This is a broad grouping of related jobs. (Examples: livestock breeding services).
Occupational Standards:	Specific requirements of competences people are expected to demonstrate in a particular occupational area, including knowledge and relevant attitudes. They also act as a performance tool of assessment of the prescribed outcomes.
Occupational/Job Analysis:	A process used to identify the tasks that are important to employees in any given occupation.
Performance Criteria:	Indicate expected end results or outcomes in the form of evaluative statements.
Skills:	The ability to perform occupational tasks with a high degree of proficiency within a given occupation. Skill is conceived of as a composite of three completely interdependent components: cognitive, affective, and psychomotor.
Standards:	A set of statements, which, if proved true under working conditions, means that an individual is meeting an expected level and type of performance.
Task Analysis:	The process of analysing each task to determine the steps, circumstantial knowledge, attitudes, performance standards, tools and

materials needed, as well as safety concerns required for the employees performing it.

Task:

A work activity that has a definite beginning and ending, is observable or measurable, and consists of two or more definite steps that leads to a product, service, or decision.

**Underpinning
Knowledge:**

Crucial knowledge that an individual must acquire in order to demonstrate competences that are associated in performing a given task.

Verification Process:

The process of having experts review and confirm the importance of the task (competency) statements identified through occupational analysis. Other questions, such as the degree of task learning difficulty are also frequently asked. This process is also sometimes referred to as validation.

**Occupational
Competence:**

The application of knowledge and skills that consistently meet the standards required by the work context.

1.0. INTRODUCTION

Technical Education and Training (TET) is one of the most important education sub-sectors in Tanzania, responsible for developing a skilled workforce to support the country's industrialization economic agenda. Tanzania's *Development Vision 2025* intends to raise the country's economy to a middle-income status. This requires a skilled workforce that is aligned with the needs of the public and private sectors of the economy. The National Council for Technical Education has begun the job of drafting Occupational Standards that will eventually be adopted as National Occupational Standards for TET in order to ensure that it meets the needs of the labour market and the country's economic agenda.

National Occupational Standards (NOS) are performance criteria that are matched with labour market demands. Each National Occupation Standard describes functions, performance standards, and knowledge/understanding for one important function or task. They combine skills, knowledge, and attitudes to describe best practice. They are useful tools for establishing job roles, personnel recruiting, supervision, and appraisal, as well as TET standards. They're also helpful for benchmarking and harmonizing qualifications on a national and international level. Standards, in general, provide a solid framework for high-quality TET that is labour market-relevant, current, and consistent in delivery across all public and private institutions.

However, it must be noted that, Occupational Standards and Training standards/qualifications standards are different. Occupational Standards are defined in terms of activities performed by a person in a selected occupation (e.g., an electrical engineer designs electrical circuits, performs troubleshooting in electrical circuits, etc.) and they are usually defined by employers following procedures agreed upon by all stakeholders. Education and training standards are developed from the activities defined in occupational standards, and they include learning objectives to ensure that the necessary skills and knowledge are developed by a person to enable him or her to function at an agreed level in an occupation. Education and Training standards are used to define curricula in training institutions. It is however critical that there must be a direct link between the occupational standards and the training standards to respond to the demands of the labour market.

In TET delivery, Tanzania adopted the Competence Based Education and Training (CBET) approach. The CBET approach focuses on providing learners with the skills and knowledge required to meet

the occupational standards. Occupational Standards are thus the starting point for developing competency-based training (CBET) programmes. TET institutions will be required to benchmark their curricula with relevant occupational standards.

Occupational Standards are developed based on a given occupation's current and future demands. As a result, they serve as a means of bridging the gap between the worlds of employment and technical education and training (TET).

The Animal Breeding Technician Occupation has its own set of occupational standards. The document explains how the occupational standards were developed, as well as the scope, the occupational profile in the form of DACUM charts, and the Occupational Standards.

2.0. OCCUPATIONAL STANDARD DEVELOPMENT PROCESS

The Occupational standards development process began with an examination of major documents that guide Tanzanian skill development. The *10-year National Skills Development Strategy (2016-2026)* was one of the documents reviewed, and it outlined six (6) economic sectors that should be prioritized when developing skills development programmes.

These sectors include: Transport and Logistics, Tourism and Hospitality, Agribusiness, Construction, Energy and ICT. NACTE labour market reports were also used in the literature review to determine the skills demand in the Tanzanian labour market as a whole.

After the literature review, a workshop comprised of expert workers and educators with substantial knowledge and experience in the occupation conducted an occupational analysis utilizing the DACUM approach to produce the occupational profile. The analysis resulted in DACUM Charts, which are attached as **Appendix 1** to this document.

The Occupational Standards were then developed. Experts in Occupational Analysis and the Development of Occupational Standards facilitated the workshop. Interviews, online surveys, and a stakeholder forum were used to validate the Occupational Standards. Engineers, Supervisory Technicians on the job, and experienced Animal Breeding Technicians were key informants in the survey to discover occupational trends. This information was used to gain insight from the workplaces regarding trends and changes in the profession, including how well graduates are prepared for working in the occupation. A total of ... online surveys were completed by experts from the labour market across the country. Apart from the survey aiding in defining the scope for the occupational

analysis, they also served to engage a wide cross-section of experts in the occupation. Apart from this, the stakeholders' forum was attended by ... participants from different parts of the country representing various companies.

3.0. THE SCOPE AND OVERVIEW OF THE OCCUPATION STANDARDS FOR ANIMAL BREEDING TECHNICIANS

These standards cover a broad range of duties and tasks that can be performed by an Animal Breeding Technician. However, the occupational standards are not meant to replace individual job descriptions. Instead, they are to be used for guidance in defining skill levels and knowledge for the technician in specific settings or positions. The Animal Breeding Technician may perform tasks in a number of key areas of the occupational standards, but not necessarily in all areas. For example, in large operations, other individuals may be employed or designated to perform specific tasks.

The Animal Breeding Technician plays an important role in the feeding, management, reproduction, epidemic prevention, feed and utilization during the breeding of livestock and poultry. They will provide the society with excellent meat, egg and milk products to meet people's food and nutritional needs. The Animal Breeding Technician is responsible for various tasks in delivery, midwifery, nursing of newborn and lactating young animals, animal breeding control, breeding management, feeding, and epidemic prevention of livestock and poultry. Generally, the Animal Breeding Technician performs the following responsibilities:

- a) Estrus identification of female livestock
- b) Collection of the semen of male livestock and poultry
- c) Treatment of the semen of livestock and poultry
- d) Breeding technology of livestock and poultry through artificial insemination
- e) Animal breeding control
- f) Knowing and identification of feed ingredients
- g) Identification of feed additives
- h) Mastering the underpinning knowledge of animal nutrition
- i) Animal nutritional requirements and feeding standards

- j) Livestock midwifery
- k) Livestock pregnancy diagnosis
- l) Livestock midwifery
- m) Egg hatching
- n) Collection of farm data
- o) Common equipment applications in farms
- p) Basic management of livestock and poultry breeding
- q) Feeding basic management of commercial livestock and poultry farms
- r) Disinfection of livestock and poultry farms
- s) Treatment of feces of livestock and poultry
- t) Livestock and poultry immunity
- u) Epidemic prevention measures of farms
- v) Basic management of farms

The Occupational Standards have been clustered into NTA qualification levels, i.e. NTA level 4, 5 and 6.

4.0. VALIDITY PERIOD

Due to the rapid development of technology, the validity period of occupational standards is 3-5 years. The review will proceed in the same manner as the one before it, with new occupational standards being developed based on current trends of the labour market.

5.0. OCCUPATIONAL STANDARDS

5.1 OCCUPATIONAL STANDARDS FOR ANIMAL BREEDING TECHNICIAN - NTA 4

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ESTRUS IDENTIFICATION OF LIVESTOCK AND POULTRY	DUTY NO.	401
TASK TITLE	BREED GENDER IDENTIFICATION	TASK NO.	4011
PERFORMANCE CRITERIA	The person performing this task must be able to determine the gender of the livestock and poultry according to the physiological characteristics of the livestock and poultry and through visual observation.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Protective equipment: medical rubber gloves, protective suit, mask, hat, rubber boots (shoes); 2. Tools and instruments: restraint rope, restraint frame.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Drive livestock and poultry correctly; 4. Restrain livestock and poultry; 5. Identify the gender of poultry by turning the anus; 6. Identify the gender by observing the shape of the pudendal hole of the rabbit; 7. Identify the gender by visual observation of pigs, cattle and sheep; 8. Maintain sanitation and hygiene.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Restrain livestock and poultry; 1.2 Identify gender by turning the anus; 1.3 Identify gender by observing the pudendal hole; 1.4 Identify gender by observing the external characteristics of livestock and poultry. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The importance of gender identification of livestock and poultry; 2.2 Differences in gender identification methods of livestock and poultry; 2.3 The physiological function of the reproductive system of livestock; 2.4 The physiological function of the reproductive system of poultry.	

	3.0 Theories The person performing this task must be able to explain the following: 3.1 Methods for gender identification of different types of livestock and poultry; 3.2 Methods for gender identification of livestock and poultry at different ages; 3.3 Anatomical orientation of reproductive organs of livestock and poultry; 3.4 Differences in physiological functions of the reproductive system of different genders in livestock and poultry. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Accurate gender identification on livestock and poultry is conducted according to production practice, and they are grouped by gender.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Occupational health and safety; 2. Livestock and poultry health management; 3. Agricultural laws and regulations; 4. National or industry standards; 5. Young animal care; 6. Principles for group feeding by gender.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ESTRUS IDENTIFICATION OF LIVESTOCK AND POULTRY	DUTY NO.	401
TASK TITLE	REGULATION OF REPRODUCTIVE HORMONE	TASK NO.	4012
PERFORMANCE CRITERIA	The person performing this task must be able to regulate breeding activities such as estrus induction, synchronized estrus, and superovulation of livestock and poultry according to the characteristics of commonly-used reproductive hormones.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Reproductive female livestock: sow, cow, ewe, female rabbit; 2. Reproductive hormone: prostaglandin (PG), progesterone (P), gonadotropin-releasing hormone (GnRH), follicle-stimulating hormone (FSH), luteinizing hormone (LH), human chorionic gonadotropin (HCG), pregnant mare's serum hormone (PMSG), oxytocin (OXT); 3. Metal syringe (with needle); 4. Cattle and sheep vaginal plug (CIDR, PRID); 5. Cattle and sheep vaginal speculum; 6. Disinfectants: iodophor, 75% alcohol; 7. Wiping items: towels, paper, cotton balls; 8. Vulva disinfectants: lysol, bromogeramine or potassium permanganate; 9. Lubricant; 10. Protective equipment: protective hat, mask, long-arm gloves, short-arm gloves, work clothes, work shoes, nail clipper; 11. Tweezers.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and drugs for this task; 3. Classify and store various reproductive hormones; 4. Use the syringe;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Take health protection and safety precautions; 1.2 Standardize the classification and storage of reproductive hormones; 1.3 Standardize the use of reproductive hormones; 1.4 Induce estrus of the female livestock;	

5. Conduct intramuscular injection; 6. Conduct intravenous injection; 7. Place cattle and sheep vaginal plug; 8. Induce estrus of the female livestock; 9. Stimulate the synchronized estrus of the female livestock; 10. Stimulate superovulation of the female livestock; 11. Induce the synchronized delivery of the female livestock; 12. Record status; 13. Maintain sanitation and hygiene.	1.5 Regulate the synchronized estrus of the female livestock; 1.6 Regulate superovulation of the female livestock; 1.7 Regulate the synchronized delivery of the female livestock; 1.8 Install the vaginal plug. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Function of reproductive hormones; 2.2 Proper use of reproductive hormones. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Classification and preservation of reproductive hormones; 3.2 Selection of reproductive hormones; 3.3 Use of reproductive hormones. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The appropriate reproductive hormones are selected for estrus induction, synchronized estrus and superovulation according to production plan.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Occupational health and safety; 2. Breeding and health management of the female livestock; 3. Agricultural laws and regulations; 4. National or industry standards; 5. Animal disinfection and epidemic prevention; 6. Waste disposal methods.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ESTRUS IDENTIFICATION OF LIVESTOCK AND POULTRY	DUTY NO.	401
TASK TITLE	ESTRUS IDENTIFICATION OF CATTLE AND SHEEP	TASK NO.	4013
PERFORMANCE CRITERIA	The person performing this task must be able to preliminarily judge the estrus of cattle and sheep by observing their physical changes and behavior changes, and identify their estrus through vaginal examination or rectal examination.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Reproductive cow and ewe; 2. Marker crayon; 3. Cattle and sheep vaginal speculum; 4. Electronic pedometer; 5. Head-mounted searchlight; 6. Lubricant or soap; 7. Wiping items: towels, paper, cotton balls; 8. Protective equipment: protective hat, mask, long-arm gloves, short-arm gloves, work clothes, work shoes, nail clipper; 9. Restraint frame; 10. Estrus record book; 11. Electronic computer.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Observe the expression, feeding situation, vulva changes and mucus of the estrous cows (sheep); 3. Restrain the estrous cows (sheep); 4. Use vaginal speculum and head-mounted searchlights to observe the cervix of the estrous cows (sheep);		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Take health protection and safety precautions; 1.2 Observe the external changes of the estrous cows (sheep); 1.3 Check the vagina of the estrous cows (sheep); 1.4 Check the rectum of estrous cows; 1.5 Use marker crayons.	

5. Conduct rectal examination to determine the estrus situation of the cows; 6. Analyse the steps of the electronic pedometer to determine the estrus situation of the cows (sheep); 7. Accurately mark the estrous cows (sheep); 8. Accurately record the estrus situation of the cows (sheep); 9. Statistically analyse the estrus situation of the cows (sheep) by electronic computers; 10. Maintain sanitation and hygiene.	2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Key points of visual observation of the estrous cows (sheep); 2.2 Key points of vaginal examination of the estrous cows (sheep); 2.3 Key points of rectal examination of the estrous cows. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Judgment of the estrus period of the cows (sheep); 3.2 Estrus duration of the cows (sheep); 3.3 Number of estrus identifications; 3.4 Precautions for vaginal examination; 3.5 Precautions for rectal examination. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The estrus situation of the cows (sheep) is determined through visual observation, estrus test, vaginal examination, rectal examination and pedometer, and the estrus status of the cows (sheep) is marked correctly and standardly using marking crayons.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Occupational health and safety; 2. Restraint of cattle and sheep; 3. Animal disinfection and epidemic prevention; 4. Waste disposal methods; 5. Agricultural laws and regulations; 6. National or industry standards; 7. Nutrition and feeding of the cows (sheep).

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	ESTRUS IDENTIFICATION OF LIVESTOCK AND POULTRY	DUTY NO.	401
TASK TITLE	ESTRUS IDENTIFICATION OF THE PIG	TASK NO.	4014
PERFORMANCE CRITERIA	The person performing this task can judge the pig's estrus situation through estrus test, visual observation, vaginal examination and standing reaction.		
RANGE STATEMENT	The task can be performed in the breeding house of the pig farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Reproductive sow; 2. Estrus-checking boar; 2. Marker crayon; 3. Vaginal speculum; 4. Head-mounted searchlight; 6. Lubricant or soap; 7. Wiping items: towels, paper, cotton balls; 8. Protective equipment: protective hat, mask, short-arm gloves, work clothes, work shoes, nail clipper; 9. Estrus record book; 10. Electronic computer.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Drive the estrus-checking boars to contact the reproductive sows; 3. Observe the expression, feeding situation, vulva changes and mucus of the estrous sow; 4. Use vaginal speculum and head-mounted searchlights to observe the cervix of the estrous sows; 5. Carry out a back pressure test on estrous sows to judge whether they stand still; 6. Accurately mark the estrous sows;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Take health protection and safety precautions; 1.2 Properly drive the estrus-checking boars into contact with the sows; 1.3 Observe physical and behavioral changes of the estrous sows; 1.4 Check the vagina of the estrous sow; 1.5 Conduct standardized and safe back pressure test; 1.6 Use marker crayons.	

7. Accurately record the estrus situation of sows; 8. Statistically analyse the estrus situation of the sows by electronic computers; 9. Maintain sanitation and hygiene.	2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Key points of visual observation of estrous sows; 2.2 Key points of vaginal inspection of estrous sows; 2.3 Key points of back pressure test of estrous sows. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Judgment of sow's estrus period; 3.2 Estrus duration of sows; 3.3 Number of estrus identifications; 3.4 Estrus test of boars; 3.5 Judgment of the results of the sow back pressure test. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The estrus status of sows is judged through visual observation, estrus test, vaginal examination and back pressure test, and the estrus situation of sows is correctly marked with a marking crayon, and the estrus situation of sows is recorded in a standardized manner.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Occupational health and safety; 2. Animal disinfection and epidemic prevention; 3. Sow feeding and nutrition; 4. Waste disposal methods; 5. Agricultural laws and regulations; 6. National or industry standards.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	COLLECTION OF THE SEMEN OF MALE LIVESTOCK AND POULTRY	DUTY NO.	402
TASK TITLE	COLLECTION OF THE SEMEN OF THE LIVESTOCK	TASK NO.	4021
PERFORMANCE CRITERIA	The person performing this task must be able to make preparations before semen collection and conduct livestock semen collection according to the requirements of livestock semen collection.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Semen collection site; 2. Protective equipment: medical rubber gloves, protective suit, mask, hat, rubber boots (shoes); 3. Tools and instruments: artificial vagina outer cylinder, inner tube, semen collection cup (bottle, tube), piston (gas nozzle), fixed collar, disposable fresh-keeping bag, gauze; 4. Dummy teaser: fake dummy teaser, real dummy teaser; 5. Other drugs: potassium permanganate, towel, lubricant.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Train the male livestock; 4. Install the artificial vagina; 5. Conduct proper disinfection of semen collection instruments; 6. Collect semen from cattle, sheep, horses, and rabbits by using the artificial vagina method; 7. Collect semen from pigs by hand holding method; 8. Mark the male livestock that have been collected of semen;		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Prepare tools and equipment for semen collection; 1.2 Train the male livestock; 1.3 Use artificial vagina method and hand holding method in a standardized and safe manner to collect semen from different male livestock. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The purpose and significance of semen collection from the male livestock.	

9. Clean the place and tools; 10. Store tools and equipment.	3.0 Theories The person performing this task must be able to explain the following: 3.1 Reproductive organs and functions of the male livestock; 3.2 Different semen collection methods for different male livestock. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The task of semen collection of male livestock is completed according to the production practice.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Livestock nutrition supply; 2. Livestock health management; 3. Occupational health and safety; 4. Disinfection and sterilization of instruments; 5. Waste disposal methods.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	COLLECTION OF THE SEMEN OF MALE LIVESTOCK AND POULTRY	DUTY NO.	402
TASK TITLE	COLLECTION OF THE SEMEN OF THE POULTRY	TASK NO.	4022
PERFORMANCE CRITERIA	The person performing this task must be able to make preparations before semen collection and conduct poultry semen collection according to the requirements of poultry semen collection.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Semen collection site; 2. Protective equipment: medical rubber gloves, protective suit, mask, hat, rubber boots (shoes); 3. Tools and instruments: Semen collection cup (bottle, tube), plastic dropper, scissors.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Train the male poultry; 4. Conduct proper disinfection of semen collection instruments; 5. Shear the male poultry; 6. Collect semen from the male poultry by massaging; 7. Mark the male poultry after semen collection; 8. Clean the place and tools; 9. Store tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Prepare tools and equipment for semen collection; 1.2 Train the male poultry; 1.3 Use the massage method in a standardized and safe manner to collect semen from the male poultry. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The purpose and significance of semen collection from the male poultry. 3.0 Theories The person performing this task must be able to explain the following:	

	3.1 Reproductive organs and functions of the male poultry; 3.2 Different semen collection methods for different male poultry. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The task of semen collection of male livestock is completed according to the production practice.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Poultry nutrition supply; 2. Poultry health management; 3. Occupational health and safety; 4. Disinfection and sterilization of instruments; 5. Waste disposal methods.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	IDENTIFICATION OF FEED INGREDIENTS	DUTY NO.	403
TASK TITLE	IDENTIFICATION OF THE COARSE FODDER	TASK NO.	4031
PERFORMANCE CRITERIA	The person performing this task must be able to accurately identify various kinds of coarse fodder and collect coarse fodder samples reasonably according to the characteristics and value of coarse fodder.		
RANGE STATEMENT	The task can be performed in the feeding workshop of the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Porcelain plate; 2. Personal medical protective equipment: disposable gloves, protective suit, mask, headgear, etc.; 3. Tweezers; 4. Ensilage cutter; 5. Sampler; 6. Scissors; 7. Record book, pen; 8. Sample sack.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Collect coarse fodder samples; 4. Identify the coarse fodder; 4. Clean the tools, equipment and workplaces; 5. Safely arrange and store the tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Conduct coarse fodder sampling; 1.1 Identify the coarse fodder. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The identification principle of the coarse fodder; 2.2 The significance of rational utilization of the coarse fodder; 2.3 Key points of coarse fodder sampling.	

	3.0 Theories The person performing this task must be able to explain the following: 3.1 Categories of different coarse fodders. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Calculating skills; 4.6 Communication skills; 4.7 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The reasonable sampling method is chosen and it is accurately identified according to the characteristics of the coarse fodder.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Use of stockbreeding machine; 2. Development and marketing of feed; 3. Production cost accounting.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	IDENTIFICATION OF FEED INGREDIENTS	DUTY NO.	403
TASK TITLE	IDENTIFICATION OF THE GREEN FORAGE	TASK NO.	4032
PERFORMANCE CRITERIA	The person performing this task must be able to accurately identify various kinds of green forage and collect pasture samples reasonably according to the characteristics and value of green forage.		
RANGE STATEMENT	The task can be performed in the feeding workshop of the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Porcelain plate; 2. Personal medical protective equipment: disposable gloves, protective suit, mask, headgear, etc.; 3. Sickle; 4. Sampler; 5. Scissors; 6. Record book, pen; 7. Sample sack.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Identify the green forage; 4. Collect pasture samples; 5. Clean the tools, equipment and workplaces; 6. Safely arrange and store the tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Identify green forage; 1.2 Conduct pasture sampling. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The nutritional characteristics and feeding value of green forage; 2.2 Principles of pasture sampling; 2.3 Key points of pasture sample collection. 3.0 Theories The person performing this task must be able to	

	explain the following: 3.1 Types of green forage. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Calculating skills; 4.6 Communication skills; 4.7 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Various green forages are accurately identified according to the characteristics of green forages, and the reasonable sampling method for pasture is chosen.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Use of stockbreeding machine for classification of feed ingredients; 2. Development and marketing of feed; 3. Production cost accounting; 4. Detection of microbial content and types.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	IDENTIFICATION OF FEED INGREDIENTS	DUTY NO.	403
TASK TITLE	IDENTIFICATION OF THE ENERGY FODDER	TASK NO.	4033
PERFORMANCE CRITERIA	The person performing this task must be able to accurately identify energy fodders such as corn, bran, sorghum, and sweet potatoes according to the characteristics and value of the energy fodder, and be able to reasonably collect their samples.		
RANGE STATEMENT	The task can be performed in the feeding workshop of the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Porcelain plate; 2. Personal medical protective equipment: disposable gloves, protective suit, mask, headgear, etc.; 3. Tweezers; 4. Planting bottle; 5. Scissors; 6. Record book, pen; 7. Sample sack.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Identify energy fodders such as corn, bran, sorghum, and sweet potatoes; 4. Evaluate the nutritional value of energy fodders such as corn, bran, sorghum, and sweet potatoes; 5. Collect energy fodder samples; 6. Clean the tools, equipment and workplaces; 7. Safely arrange and store the tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Identify energy fodders such as corn, bran, sorghum, and sweet potatoes; 1.2 Correctly evaluate the nutritional characteristics of energy fodders such as corn, bran, sorghum, and sweet potatoes by consulting relevant information; 1.3 Conduct energy fodder sampling. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Feeding value of energy fodders;	

	2.2 Principles of energy fodder sample collection. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Type of energy fodder; 3.2 Common antinutritional factors in energy fodders and measures to eliminate them. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Calculating skills; 4.6 Communication skills; 4.7 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Various energy fodders are accurately identified and energy feed samples are collected correctly according to their characteristics.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Use of stockbreeding machine for classification of feed ingredients; 2. Development and marketing of feed; 3. Production cost accounting; 4. Nutritional value of common livestock products.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	IDENTIFICATION OF FEED INGREDIENTS	DUTY NO.	403
TASK TITLE	IDENTIFICATION OF THE PROTEIN FEED	TASK NO.	4034
PERFORMANCE CRITERIA	The person performing this task must be able to accurately identify soybean meal, cottonseed meal, fish meal and other feed, and reasonably collect their samples according to the characteristics and value of protein feed.		
RANGE STATEMENT	The task can be performed in the feeding workshop of the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Porcelain plate; 2. Personal medical protective equipment: disposable gloves, protective suit, mask, headgear, etc.; 3. Microscope; 4. Planting bottle; 5. Scissors; 6. Record book, pen; 7. Sample sack.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Identify the protein feeds such as soybean meal, cottonseed meal and fish meal; 4. Evaluate the nutritional value of protein feeds such as soybean meal, cottonseed meal and fish meal; 5. Collect protein feed samples; 6. Clean the tools, equipment and workplaces; 7. Safely arrange and store the tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Identify the protein feeds such as soybean meal, cottonseed meal and fish meal; 1.2 Correctly evaluate the nutritional characteristics of protein feeds such as soybean meal, cottonseed meal and fish meal by consulting relevant information; 1.3 Conduct protein feed sampling. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Feeding value of protein feeds; 2.2 Principles of protein feed sample collection.	

	3.0 Theories The person performing this task must be able to explain the following: 3.1 Type of protein feeds; 3.2 Common antinutritional factors in protein feed and measures to eliminate them. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Calculating skills; 4.6 Communication skills; 4.7 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The protein feeds such as soybean meal, cottonseed meal and fish meal are accurately identified and protein feed samples are correctly collected according to the characteristics of protein feeds.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Use of stockbreeding machine for classification of feed ingredients; 2. Development and marketing of feed; 3. Production cost accounting; 4. Nutritional value of common livestock products.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	IDENTIFICATION OF FEED INGREDIENTS	DUTY NO.	403
TASK TITLE	IDENTIFICATION OF MINERALS	TASK NO.	4035
PERFORMANCE CRITERIA	The person performing this task must know characteristics and values of different minerals and be able to use them rationally on different breeds.		
RANGE STATEMENT	The task can be performed in the feeding workshop of the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Medicine spoon; 2. Personal medical protective equipment: disposable gloves, protective suit, mask, headgear, etc.; 3. Tweezers; 4. Balance; 5. Record book, pen; 6. Sample sack.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Conduct correct classification of minerals; 4. Evaluate the nutritional value of various minerals; 5. Clean the tools, equipment and workplaces; 6. Safely arrange and store the tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Conduct correct mineral supplementation in feed; 1.2 Conduct reasonable classification of mineral feeds. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Feeding value of minerals; 2.2 Key points for the rational use of minerals in different animals. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Type of minerals;	

	3.2 Various mineral feed sources. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Calculating skills; 4.6 Communication skills; 4.7 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The nutritional value of common minerals is known, and their characteristics and feeding points on different breeds are mastered.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Use of stockbreeding machine for classification of feed ingredients; 2. Development and marketing of feed; 3. Production cost accounting; 4. Nutritional value of common livestock products.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	IDENTIFICATION OF FEED INGREDIENTS	DUTY NO.	403
TASK TITLE	IDENTIFICATION OF VITAMIN FEEDS;	TASK NO.	4036
PERFORMANCE CRITERIA	The person performing this task must be able to rationally utilize vitamin feeds on different breeds according to the characteristics and value of different vitamin feeds.		
RANGE STATEMENT	The task can be performed in the feeding workshop of the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Balance; 2. Personal medical protective equipment: disposable gloves, protective suit, mask, headgear, etc.; 3. Medicine spoon; 4. Scissors; 5. Record book, pen; 6. Sample sack.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Conduct correct classification of vitamins; 4. Evaluate the nutritional value of various vitamin feeds; 5. Clean the tools, equipment and workplaces; 6. Safely arrange and store the tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Conduct correct supplementation of commonly-used vitamin feeds in different breeds; 1.2 Conduct reasonable classification of vitamin feeds. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Feeding value of vitamin feeds; 2.2 Significance of vitamin feeds for animal growth. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Concepts of vitamin feeds;	

	3.2 Types of vitamin feeds. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Calculating skills; 4.6 Communication skills; 4.7 Time management skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The nutritional value of vitamin feeds is known, and their characteristics and feeding points on different breeds are mastered.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Use of stockbreeding machine for classification of feed ingredients; 2. Development and marketing of feed; 3. Production cost accounting; 4. Nutritional value of common livestock products.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	IDENTIFICATION OF THE FEED ADDITIVES	DUTY NO.	404
TASK TITLE	IDENTIFICATION OF THE NUTRITIOUS FEED ADDITIVES	TASK NO.	4041
PERFORMANCE CRITERIA	The person performing this task must be able to take samples of nutritious feed additives and identify them by their characteristics.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Personal medical protective equipment: disposable gloves, mask, etc.; 2. Sampling drill; 3. Sample sack; 4. Record book, pen.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Use a sampling drill to collect samples of nutritional additives; 4. Identify nutritious feed additives such as amino acids, vitamins and trace elements; 4. Clean the tools, equipment and workplaces; 5. Safely arrange and store the tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Collect samples of nutritious feed additives; 1.2 Identify the nutritious feed additives. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Identification methods of nutritious feed additives; 2.2 Sampling points of nutritious feed additives. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Types and properties of nutritious feed additives; 3.2 Reasonable use of nutritious feed additives such as amino acids, vitamins and trace elements.	

	4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Memory skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Accurate identification is carried out according to the characteristics of different nutritious feed additives.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Livestock and poultry feeding standards; 2. Moral and ethical norms; 3. Health and safety; 4. Animal growth cycle.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	IDENTIFICATION OF THE FEED ADDITIVES	DUTY NO.	404
TASK TITLE	IDENTIFICATION OF THE NON-NUTRITIOUS FEED ADDITIVES	TASK NO.	4042
PERFORMANCE CRITERIA	The person performing this task must be able to take samples of non-nutritious feed additives and identify them by their characteristics.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Personal medical protective equipment: disposable gloves, mask, etc.;; 2. Sampling drill; 3. Sample sack; 4. Record book, pen.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Use a sampling drill to collect samples of non-nutritional additives; 4. Identify non-nutritious feed additives such as probiotic preparations, enzyme preparations, anti-mold agents, and mildew-removing agents; 4. Clean the tools, equipment and workplaces; 5. Safely arrange and store the tools and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Collect samples of the non-nutritious feed additives; 1.2 Identify the non-nutritious feed additives. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Sampling points of different nutritious feed additives; 2.2 Reasonable use of nutritious feed additives such as probiotic preparations, enzyme preparations, anti-mold agents, and mildew-removing agents. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Types and properties of different non-nutritious feed additives;	

	3.2 Identification methods of different non-nutritious feed additives. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Memory skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	Accurate identification is carried out according to the characteristics of different nutritious feed additives.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Moral and ethical norms; 2. Health and safety; 3. Animal growth cycle.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	COLLECTION OF FARM DATA	DUTY NO.	405
TASK TITLE	COLLECTION OF FARM DATA	TASK NO.	4051
PERFORMANCE CRITERIA	The person performing this task must be able to accurately record various breeding data of the farm according to the breeding situation of the farm, and use computer software to collect and analyse various breeding data of the farm		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Protective equipment: medical rubber gloves, protective suit, mask, hat, rubber boots (shoes); 2. Data record form; 3. Data record book; 4. Electronic computer; 5. Data analysis software.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Prepare farm data statistical tables; 3. Classify farm production data, breeding data, cost management data, material management data; 4. Correctly record various data of the farm; 5. Use electronic computers to sort out various data of the farm; 6. Conduct the preliminary analysis of various data of the farm by using electronic computers; 7. Form a farm data analysis report.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Prepare Data record forms; 1.2 Fill in the data accurately and standardly; 1.3 Sort and classify farm production data, breeding data, cost management data, material management data; 1.4 Use electronic computers to organise data; 1.5 Preliminarily analyse data. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Various data components of the farm; 2.2 Basic principles of statistics; 2.3 The role of electronic computers in data collection on farms.	

	3.0 Theories The person performing this task must be able to explain the following: 3.1 Fundamentals of Livestock Economics; 3.2 Classification of farm data; 3.3 Requirements for the preparation of farm data collection forms; 3.4 Specifications for filling in farm data; 3.5 Basic application of electronic computers. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Report writing skills; 4.5 Time management; 4.6 Information technology application skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The farm data are classified, the compilation of data collection forms is standardized, and electronic computers are correctly used to organise and analyse data according to production practices.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Occupational health and safety; 2. Livestock and poultry feeding and nutrition; 3. Marketing; 4. Agricultural laws and regulations; 5. National or industry standards.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	DISINFECTION MANAGEMENT OF LIVESTOCK AND POULTRY	DUTY NO.	406
TASK TITLE	USE OF DISINFECTION FACILITIES AND EQUIPMENT	TASK NO.	4061
PERFORMANCE CRITERIA	The person performing this task must be able to select appropriate disinfection facilities and equipment according to the standards and requirements of farm disinfection to ensure that the disinfection effectiveness of the pasture meets the breeding safety indicators.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Equipment: High-pressure cleaner, spray sterilizer, etc.; 2. Facilities: Disinfection pool (pad, basin), disinfection room, shower room, disinfection channel, etc.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Maintain facilities and equipment.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Use disinfection facilities and equipment. 1.2 Maintain disinfection facilities and equipment. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Rules for the use of disinfection facilities and equipment. 3.0 Theories The person performing this task must be able to explain the following: 3.1 Instructions for the use of disinfection facilities and equipment; 3.2 Precautions for the use of disinfection facilities and equipment.	

	4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Problem-solving skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The farm disinfection facilities are selected according to the standards and requirements of farm disinfection to ensure that the disinfection effectiveness of the pasture meets the breeding safety indicators.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Implementation of laws and regulations on disinfection systems; 2. The construction process of disinfection facilities and equipment.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	DISINFECTION MANAGEMENT OF LIVESTOCK AND POULTRY	DUTY NO.	406
TASK TITLE	PREPARATION OF DISINFECTANTS	TASK NO.	4062
PERFORMANCE CRITERIA	The person performing this task must be able to prepare suitable disinfectants according to the disinfection requirements of the farm to ensure the disinfection effectiveness.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Weighing equipment: balance, measuring cylinder, beaker, etc.;; 2. Commonly-used disinfectants: glutaraldehyde, potassium hydrogen persulfate, etc.;; 3. Device: glass rod, etc.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Determine the disinfection method; 3. Determine the disinfection procedures and steps; 4. Use weighing instruments and be able to do calculations.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Calculate the amount and ratio of disinfectant used; 1.2 Prepare disinfectants. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 Principle of disinfectant dissolution. 3.0 Theories The person performing this task must be able to explain the following: 3.1 The concept for use of disinfectants; 3.2 The reasons for use of disinfectants. 4.0 Essential skills 4.1 Learning skills;	

	4.2 Communication skills; 4.3 Teamwork skills; 4.4 Problem-solving skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The person performing this task must be able to prepare disinfectants according to disinfection standards and requirements.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Occupational health and safety; 2. Storage of disinfectants; 3. Waste disposal.

OCCUPATION	ANIMAL BREEDING TECHNICIAN	OCCUPATION CODE	
DUTY TITLE	DISINFECTION OF LIVESTOCK AND POULTRY FARMS	DUTY NO.	406
TASK TITLE	IMPLEMENTATION OF FARM DISINFECTION	TASK NO.	4061
PERFORMANCE CRITERIA	The person performing this task must be able to conduct disinfection according to the standards and requirements of farm disinfection to ensure that the disinfection effectiveness of the pasture meets the breeding safety indicators.		
RANGE STATEMENT	The task can be performed in the farm under the supervision of animal breeding engineers or senior technicians. The tools and equipment to be used include: 1. Protective equipment: personal medical protective equipment, such as disposable long-arm gloves, protective suit, masks, headgear and disposable medical gloves; 2. Disinfection facilities and equipment: disinfection pool (pad, basin), disinfection room, spray sterilizer, flame disinfection equipment, etc.; 3. Disinfectants: glutaraldehyde, potassium hydrogen persulfate, etc.		
EVIDENCE REQUIREMENT			
PRACTICAL PERFORMANCE		UNDERPINNING KNOWLEDGE	
The person performing this task must be able to do the following: 1. Abide by the health and safety regulations when performing this task; 2. Select appropriate tools and equipment for this task; 3. Carry out scientific and effective disinfection and achieve disinfection effectiveness.		Detailed knowledge about: 1.0 Methods The person performing this task must be able to explain how to: 1.1 Use disinfection facilities and equipment, and disinfect them correctly; 1.2 Prepare chemical disinfectants; 1.3 Conduct effective disinfection. 2.0 Principles The person performing this task must be able to explain the following principles: 2.1 The purpose and significance of disinfection; 2.2 Correct use of disinfection facilities and equipment. 3.0 Theories The person performing this task must be able to	

	explain the following: 3.1 Principles and methods of different disinfection methods; 3.3 Disinfection emergency measures; 3.4 Application precautions for various methods. 4.0 Essential Skills 4.1 Learning skills; 4.2 Communication skills; 4.3 Teamwork skills; 4.4 Problem-solving skills.
DESCRIPTION OF THE END PRODUCT / SERVICE	The disinfection technology of farms is mastered according to the standards and requirements of farm disinfection.
CIRCUMSTANTIAL KNOWLEDGE	Detailed knowledge about: 1. Scope of duties; 2. Code of conduct; 3. Research ethics; 4. Laws, regulations and policies applicable to the agribusiness sector.

TABLE 1: DACUM CHARTS FOR ANIMAL BREEDING TECHNICIAN - NTA 4

DUTIES	TASKS	ENABLERS
1.0 Estrus identification of livestock and poultry	1.1 Breed gender identification.	General skills and knowledge • Personal protection • Livestock and poultry breed identification • Effects of reproductive hormones livestock and poultry • Reproductive hormone preparation • Intramuscular injection • Intravenous injection • Vaginal plug installation • Livestock and poultry feeding Management Tools and equipment • Protective suit • Mask • Hat • Rubber boots • Long tweezers • Nail clipper • Vaginal speculum • Head-mounted searchlight • Syringe • Vaginal plug • CIDR placer • PRID placer • Medical rubber gloves • Disposable long-arm gloves • Marker crayon • Pig driving board Materials • Reproductive hormone: GnRH, FSH, LH, HCG, PMSG, PG, P4 (CIDR, PRID), OXT • Other drugs: 75% alcohol, potassium permanganate,
	1.2 Regulation of reproductive hormone.	
	1.3 Estrus identification of cattle and sheep.	
	1.4 Estrus identification of the pig.	

DUTIES	TASKS	ENABLERS
		bromogeramine, iodine tincture, cotton ball, towel, lubricant Requirements for employees • Sense of responsibility • Time management • Working hard • Keeping promises • Good morals • Integrity • Self-motivation
2.0 Collection of the semen of male livestock and poultry	2.1 Collection of the semen of the livestock.	General skills and knowledge • Knowledge of livestock and poultry breed identification • Basic knowledge of livestock and poultry physiology • Knowledge of livestock and poultry feeding management • Training skills of male livestock and poultry • Disinfection skills of sperm collection equipment • Installation skills of artificial vagina • Semen collection skills of artificial vagina • Semen collection skills by hand holding method • Semen collection skills by massage method • Semen collection skills Tools and equipment • Computer • Commonly-used equipment and tools for semen collection • Basic equipment for farm management • Recording software such as excel
	2.2 Collection of the semen of the poultry.	

DUTIES	TASKS	ENABLERS
		Materials • Commonly-used equipment and tools for semen collection • Male livestock and poultry Requirements for employees • Time management • Working hard • Keeping promises • Good morals • Patience and meticulousness • Solidarity and cooperation • Being trustworthy • Self-motivation
3.0 Identification of feed ingredients	3.1 Identification of the coarse fodder.	General skills and knowledge • Classification of feed ingredients • Knowledge of livestock and poultry feeding management • Problem-solving skills • Communication skills • Safety skills Tools and equipment • Personal medical protective equipment: disposable gloves, protective suit, mask, headgear, etc. • Ensilage cutter • Sampler • Balance Materials • Porcelain plate • Tweezers • Scissors • Record book, pen • Sample sack • Feed ingredient
	3.2 Identification of the green forage.	
	3.3 Identification of the energy fodder.	
	3.4 Identification of the protein feed.	
	3.5 Identification of minerals.	
	3.6 Use of vitamin feeds.	

DUTIES	TASKS	ENABLERS
		Requirements for employees • Time management • Working hard • Keeping promises • Good morals • Being trustworthy • Self-motivation
4.0 Identification of the feed additives	4.1 Identification of the nutritious feed additives.	General skills and knowledge • Classification of feed additives • Knowledge of livestock and poultry feeding management • Problem-solving skills • Communication skills • Safety skills Tools and equipment • Personal medical protective equipment: disposable gloves, mask, etc. • Sampling drill Materials • Record book, pen • Sample sack • Feed additives Requirements for employees • Time management • Working hard • Keeping promises • Good morals • Being trustworthy • Self-motivation
	4.2 Identification of the non-nutritious feed additives.	
5.0 Collection of farm data	5.1 Collection of farm data.	General skills and knowledge • Personal protection • Health and safety • Knowledge of statistics • Computer application

DUTIES	TASKS	ENABLERS
		• Livestock and poultry feeding Management Tools and equipment • Medical rubber gloves • Protective suit • Mask • Hat • Rubber boots • Data record book • Computer • Data analysis software Materials • Disinfection and epidemic prevention drugs: 75% alcohol, potassium permanganate, bromogeramine, iodine tincture, cotton ball, towel Requirements for employees • Sense of responsibility • Time management • Working hard • Keeping promises • Good morals • Integrity • Self-motivation
6.0 Disinfection management of livestock and poultry	6.1 Use of disinfection facilities and equipment.	General skills and knowledge • Types of disinfectants • Selection of disinfection methods • Problem-solving skills • Communication skills • Safety skills Tools and equipment • Spray sterilizer • Flame disinfection instruments • High-pressure cleaner
	6.2 Preparation of disinfectants.	
	6.3 Implementation of farm disinfection.	

DUTIES	TASKS	ENABLERS
		• Disinfection pool (pad, basin) • Disinfection room • Shower room • Disinfection channel • Balance • Measuring cylinder • Beaker Materials • Disposable gloves • Protective suit • Mask • Headgear • Disinfectants: glutaraldehyde, potassium hydrogen persulfate, etc. Requirements for employees • Working hard • Adhering to the principle • Keeping promises • Good morals • Self-motivation