



NOVA SCOTIA
OCCUPATIONAL STANDARD
Farm Technician

FORWARD

This occupational standard was developed by a committee of industry experts in the field led by a facilitator from the Nova Scotia Apprenticeship Agency. It has the following objectives:

- to describe and group the tasks performed by skilled workers
- to identify which tasks are performed by skilled workers
- to develop instruments for use in the preparation of examinations and curricula for training leading to the certification of skilled workers
- to facilitate the mobility of apprentices and skilled workers in Canada; and,
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

Any questions, comments, or suggestions for changes, corrections, or revisions to this standard or any of its related products may be forwarded to:

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ACKNOWLEDGEMENTS

The Nova Scotia Apprenticeship Agency (Agency) wishes to acknowledge the contributions of trade advisory committee members, tradespersons, industry establishments, professional associations, labour organizations, training providers, government departments and agencies and all others who contributed to this publication.

Special thanks are offered to the following representatives who contributed greatly to the original draft of the standard and provided expert advice throughout its development:

Steve Ells, Ellslea Farms Ltd.

Angus Ells, Bragg Lumber Company

Jean Lynds, Dalhousie University

Geneve Newcombe, Cornwallis Farms Limited

Mark Stirling, Stirlings Mountainside Farms 2017 Ltd.

Kimberly Stokdijk, Stokdijk Greenhouses Ltd.

Jack Thomson, West River Holsteins

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STRUCTURE OF THE OCCUPATIONAL STANDARD

To facilitate the understanding of the occupation, the work performed is divided into the following categories:

Description of the trade: an overview of the trade's duties

Essential Skills Summary: An overview of how each of the 9 essential skills is applied in this trade

Industry Expected Performance: description of the expectations regarding the level of performance of the tasks, including information related to specific codes, regulations and standards that must be observed

Pie Chart of Red Seal Examination Weightings: a graph which depicts the percentages of exam questions assigned to the major work activities

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Task Descriptor: a general description of the task

Sub-task: distinct actions that describe the activities within a task

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DESCRIPTION OF THE FARM TECHNICIAN TRADE

Agriculture in Nova Scotia is a dynamic and diverse industry that produces over one hundred products and supports over twenty-nine specific commodities. Farms vary in size, specific production requirements and value chain opportunities. There are three general occupations associated with farming in Nova Scotia; owner/manager, Farm Technician/middle manager and general labourer.

Farm Technicians work on farms that raise livestock and/or grow crops and fibres. Farm Technicians are responsible for key areas and daily operation of the farm.

Given the diverse nature of agriculture, the roles and responsibilities of a Farm Technician may vary by individual farm. Farm Technicians may carry out crop production activities such as soil and nutrient management, crop management and integrated pest management. On specific crop operations Farm Technicians are involved in packing, grading, storing and shipping of food and farm products. In indoor production facilities they are responsible for environmental control, fertigation and other specialized activities. On livestock farms they are responsible for herd/flock management including health, care and welfare, breeding, feeding and environmental control.

Farm Technicians maintain properties such as buildings, farm grounds and storage facilities. They safely operate, maintain and adjust a variety of occupation-specific equipment such as tractors, forklifts, skid steers, loaders, implements and precision agriculture systems. They use and maintain shop equipment and supplies, including various hand and power tools. They may also use various types of technology to increase overall efficiency and productivity including computers, robotics, programmable logic controllers (PLC) and mobile devices.

Key attributes for this trade are manual dexterity and mechanical aptitude. Farm Technicians demonstrate good leadership, time management and communication skills. They must be flexible and able to prioritize work as well as problem solve. Farming is physically and mentally demanding work that is carried out within established and evolving industry/government regulations and farm protocols and guidelines such as OHS, HACCP, on-farm food safety, regulatory compliance, bio security, etc. Farm Technicians may function in a supervisory role with diverse groups of people; demonstrating cultural sensitivity is key.

Farm Technicians work in specific agricultural settings such as fields, barns, livestock housing, greenhouses, pack houses, coolers, maintenance facilities and farm shops. Depending on the farm they may specialize in equipment operation, crop production, livestock production or product storage and handling. Farm safety and accident prevention is a priority regardless of setting.

ESSENTIAL SKILLS SUMMARY

Essential skills are needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.

Through extensive research, the Government of Canada and other national and international agencies have identified and validated nine essential skills. These skills are used in nearly every occupation and throughout daily life in different ways. The nine identified skills are:

- Reading
- Document Use
- Writing
- Oral Communication
- Numeracy
- Thinking
- Digital Technology
- Working with Others
- Continuous Learning

A series of CCDA-endorsed tools have been developed to support apprentices in their training and to be better prepared for a career in the trades. The tools can be used independently or with the assistance of a tradesperson, trainer, employer, teacher or mentor to:

- understand how essential skills are used in the trades;
- learn about individual essential skills strengths and areas for improvement; and
- improve essential skills and increase success in an apprenticeship program.

Tools are available online or for order at: <http://www.esdc.gc.ca/eng/jobs/les/tools/index.shtml>.

The application of these skills may be described throughout this document within the competency statements which support each subtask of the trade. For a complete description of the nine essential skills for various trades, please visit:

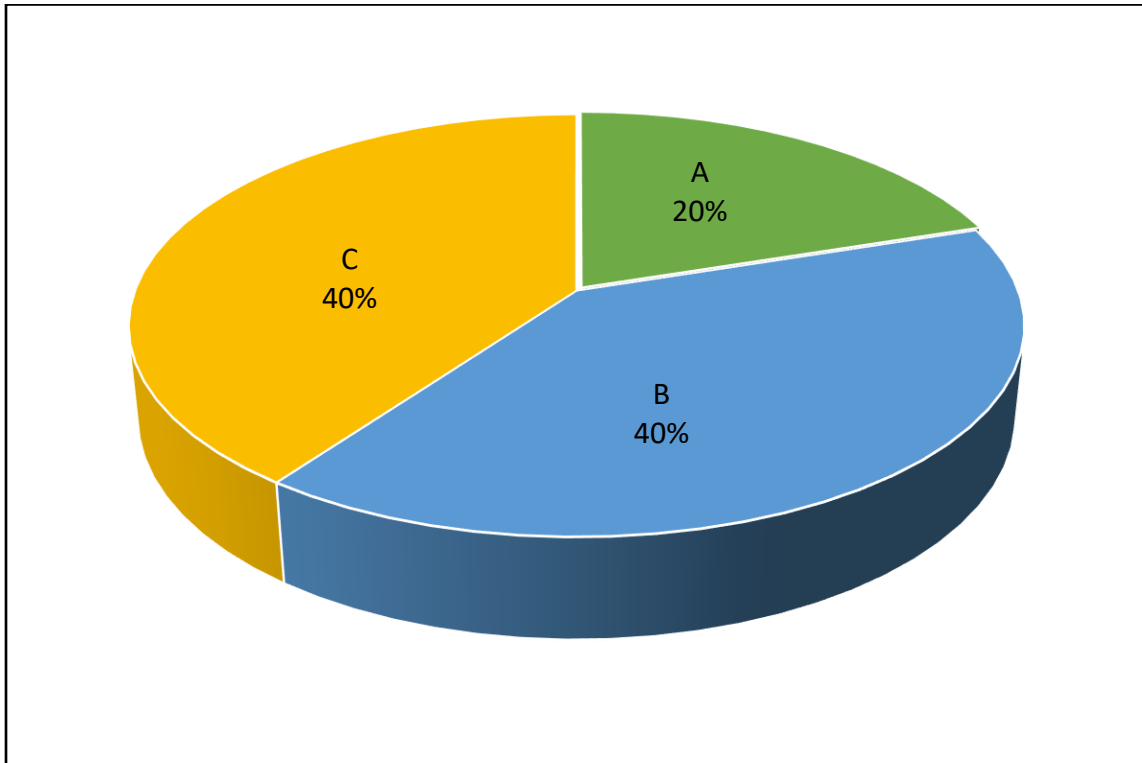
<https://www.jobbank.gc.ca/essentialskillsresults/297>

INDUSTRY EXPECTED PERFORMANCE

All tasks must be performed according to Nova Scotia regulations and standards. All health and safety standards must be respected and observed. Work should be performed efficiently and at a high quality without material waste or environmental damage. All requirements of the manufacturer specifications, employers and client expectations must be met. At a journeyperson level of performance, all tasks must be completed with minimal direction and supervision. As a journeyperson progresses in their career there is an expectation they continue to upgrade their skills and knowledge to keep pace with industry and promote continuous learning in their trade through mentoring of apprentices.

PIE CHART

OF CERTIFICATION EXAMINATION WEIGHTINGS



MWA A	Performs Common Occupational Skills	20%
MWA B	Performs Routine Work Practices	40%
MWA C	Manages Production	40%

This pie chart represents a breakdown of the Nova Scotia provincial certification examination. The task matrix on the following pages indicates the breakdown of tasks and sub-tasks within each major work activity. Provincial certification examinations typically have between 100 and 150 questions.

FARM TECHNICIAN

TASK MATRIX

A – PERFORMS COMMON OCCUPATIONAL SKILLS

20%

<p>Task A-1 Performs safety related functions 8%</p>	<p>A-1.01 Uses personal protective equipment (PPE) and safety equipment</p>	<p>A-1.02 Maintains a safe worksite</p>	<p>A-1.03 Protects the environment</p>
<p>Task A-2 Uses tools and equipment 8%</p>	<p>A-2.01 Uses hand and power tools</p>	<p>A-2.02 Uses testing and measurement devices</p>	<p>A-2.03 Uses shop equipment</p>
	<p>A-2.04 Uses access equipment</p>	<p>A-2.05 uses jacking/lifting, loading and moving equipment</p>	
<p>Task A-3 Uses communication and mentoring techniques 4%</p>	<p>A-3.01 Uses communication techniques</p>	<p>A-3.02 Uses mentoring techniques</p>	

B – PERFORMS ROUTINE WORK PRACTICES

40%

Task B-4 Operates and maintains farm equipment 22%	B-4.01 Uses farm equipment	B-4.02 Maintains farm equipment	B-4.03 Operates material handling equipment
	B-4.04 Operates automated equipment	B-4.05 Operates seeding and application equipment	
Task B-5 Maintains facilities, grounds and infrastructure 6%	B-5.01 Maintains farm grounds and access points	B-5.02 Performs routine maintenance to farm infrastructure	B-5.03 Manages farm water
Task B-6 Performs farm management practices 12%	B-6.01 Performs record keeping	B-6.02 Practices on-farm food safety and animal care programs	B-6.03 Plans projects and tasks
	B-6.04 Performs human resource leadership	B-6.05 Performs human resource tasks	

C – MANAGES PRODUCTION

40%

Task C-7 Performs production tasks 30%	C-7.01 Prepares production site	C-7.02 Maintains input inventory	C-7.03 Implements production plan	
	C-7.04 Monitors production	C-7.05 Maintains crop health	C-7.06 Maintains livestock health	
	C-7.07 Controls pests			
	Task C-8 Prepares products for sale or distribution 10%	C-8.01 Prepares for harvest and collection	C-8.02 Performs harvest and collection	C-8.03 Manages production waste
		C-8.04 Stores product	C-8.05 Prepares product for market	

MAJOR WORK ACTIVITY A

MWA A Performs common occupational skills

TASK A-1 Performs safety-related functions

Task Descriptor

Farm Technicians must be able to recognize hazards and protect themselves and others. They must also protect property and the environment

A-1.01

Uses personal protective equipment (PPE) and safety equipment

Performance Criteria

- 1.01.01 Recognize **workplace hazards** that require the use of PPE and safety equipment
- 1.01.02 Select **PPE** and **safety equipment** specific to task
- 1.01.03 Inspect and maintain PPE and safety equipment
- 1.01.04 Ensure fit of PPE
- 1.01.05 Operate safety equipment
- 1.01.06 Use PPE
- 1.01.07 Organize PPE and safety equipment
- 1.01.08 Recognize, remove and replace worn, damaged, expired or defective PPE
- 1.01.09 Recognize, remove, service or replace defective or expired safety equipment

Range of Variables

PPE: safety boots, safety glasses, respirator, single-use disposable suit, gloves, dust masks, safety vests, bee suits, harnesses, aprons, face shields, hearing protection, sunscreen, bug spray, safety sunglasses, hard hats

safety equipment: rollover protection structures, seatbelt, ventilation, first aid kits, fire extinguishers, eye wash stations, lock out devices, cages, atmospheric monitors, fall protection, guards and power take-off (PTO) shields

workplace hazards: personal, environmental, shop/facility, high voltage systems, production sites, biological, grain tanks, controlled atmosphere storage, silos, confined spaces, chemical, heights, livestock, motorized equipment, spills, defective equipment, livestock waste storage, hydraulic and high-pressure systems

A-1.02**Maintains safe worksite**

Performance Criteria

- 1.02.01** Recognize **workplace hazards** through a risk assessment
- 1.02.02** Identify controls to address workplace hazards and risks
- 1.02.03** Handle, store and dispose of hazardous materials in accordance with relevant **acts and regulations**
- 1.02.04** Report and document hazards, safety concerns and near misses
- 1.02.05** Apply relevant acts and regulations
- 1.02.06** Apply equipment safety protocols
- 1.02.07** Maintain clean and clutter-free work area
- 1.02.08** Adhere to manufacturers safety guidelines
- 1.02.09** Perform required documentation

Range of Variables

workplace hazards: personal, environmental, shop/facility, high voltage systems, production sites, biological, grain tanks, controlled atmosphere storage, silos, confined spaces, chemical, heights, livestock, motorized equipment, spills, defective equipment, livestock waste storage, hydraulic and high-pressure systems

acts and regulations: Occupational Health and Safety (OH&S), Workplace Hazardous Materials Information System (WHMIS), Globally Harmonized System, Traffic Safety Act and regulations, Pesticide Regulations

A-1.03**Protects the environment**

Performance Criteria

- 1.03.01** Practice environmental farm plan
- 1.03.02** Recognize and mitigate **environmental hazards**
- 1.03.03** Report potential environmental hazards
- 1.03.04** Practice due diligence procedures to avoid contamination
- 1.03.05** Practice storage, disposal and clean-up procedures of hazardous materials
- 1.03.06** Practice **soil conservation**
- 1.03.07** Handle and manage **organic materials** to protect the environment

Range of Variables

environmental hazards: contamination (water, air, soil), hazardous materials

soil conservation: surface run-off, wetlands, buffer zones

organic materials: manure, litter, compost, orts, deadstock, culls

TASK A-2 Uses tools and equipment

Task Descriptor

Farm Technicians use various tools and equipment to perform their work. This includes maintenance to ensure optimal efficiency and safe operation.

A-2.01 Uses hand and power tools

Performance Criteria

- 2.01.01 Select required **hand** and **power tools**
- 2.01.02 Inspect, repair and replace damaged, expired or defective hand and power tools
- 2.01.03 Use hand and power tools to manufacturers guidelines
- 2.01.04 Organize and store hand and power tools
- 2.01.05 Clean, lubricate and maintain hand and power tools

Range of Variables

hand tools: hammers, wrenches, sledgehammers, snips, shears

power tools: post hole diggers, jack hammers, air powered equipment, powered cutting tools, saws, drills, drivers, grinders

A-2.02 Uses testing and measurement devices

Performance Criteria

- 2.02.01 Select the required testing or **measurement devices**
- 2.02.02 Operate and maintain mechanical measuring and testing devices
- 2.02.03 Set up the device
- 2.02.04 Sample and test for calibration
- 2.02.05 Calibrate device operation as necessary
- 2.02.06 Verify calibration
- 2.02.07 Identify device deficiencies
- 2.02.08 Performs required documentation

Range of Variables

measurement devices: scales, pH and electrical conductivity (EC) meters, injectors, refractometers, flow meters, weather stations, ammeters

A-2.03 Uses shop equipment

Performance Criteria

- 2.03.01 Select required **shop equipment**
- 2.03.02 Inspect, repair and replace damaged, expired or defective shop equipment
- 2.03.03 Operate and adjust shop equipment to manufacturers guidelines
- 2.03.04 Organize and store shop equipment
- 2.03.05 Clean, lubricate and maintain shop equipment

Range of Variables

shop equipment: torches, welding equipment, grinders, saws, presses, air compressors, ventilation

A-2.04 Uses access equipment

Performance Criteria

- 2.04.01 Perform pre-use inspection on **access equipment**
- 2.04.02 **Set up and operate** access equipment
- 2.04.03 Identify, tag and remove from service unsafe, worn, damaged or defective access equipment
- 2.04.04 Store access equipment
- 2.04.05 Select access equipment for the specific job
- 2.04.06 Disassemble and store access equipment
- 2.04.07 Clean and maintain access equipment

Range of Variables

access equipment: ladders, fixed ladders, scaffolding, mobile elevated work platforms, greenhouse lift carts

set up and operate: secures footing, uses tie-offs, ensures height and positioning, observes load limits, guards area, erects scaffolding

A-2.05**Uses jacking/lifting, loading and moving equipment**

Performance Criteria

- 2.05.01 Select jacking/lifting, loading and moving **equipment**
- 2.05.02 Inspect equipment for wear, damage, defects and certification date
- 2.05.03 Identify **jacking/lifting, loading and moving hazards**
- 2.05.04 Determine load size and **parameters**
- 2.05.05 Secure the move area
- 2.05.06 Set up jacking/lifting, loading and moving equipment
- 2.05.07 Secure load pre and post move
- 2.05.08 Perform jacking/lifting, loading and moving
- 2.05.09 Maintain and store jacking/lifting, loading and moving equipment
- 2.05.10 Adhere to weight restrictions and highway regulations
- 2.05.11 Tag and remove defective equipment from service

Range of Variables

equipment: slings, come-alongs/chain falls, shackles, jacks, hoists, belts, ropes, cables, spreader bars, pry bars, tow chains, hitch pins

jacking/lifting, loading and moving hazards: overhead lines, excavations, excessive loads, weather, road conditions, load shifts, uneven terrain, tree branches

parameters: weight, distance to be travelled, obstacles

TASK A-3 Uses communication and mentoring techniques

Task Descriptor

Farm Technicians use communication and mentoring techniques to improve the quality and efficiency of farm operations at all levels.

A-3.01**Uses communication techniques**

Performance Criteria

- 3.01.01 Demonstrate **communication practices** individually or in a group
- 3.01.02 Use **active listening** practices
- 3.01.03 Receive and respond to feedback
- 3.01.04 Explain and provide feedback
- 3.01.05 Use questioning to improve communication
- 3.01.06 Participate in safety and information meetings

3.01.07 Confirm understanding of information

Range of Variables

communication practices: verbal communication techniques, written communication techniques, electronic communication techniques, hand signal techniques

active listening: hearing, interpreting, reflecting, responding, paraphrasing, questioning

A-3.02 Uses mentoring techniques

Performance Criteria

- 3.02.01 Demonstrate performance of a skill to a learner
- 3.02.02 Set up condition required for a learner to develop proficiency in a skill
- 3.02.03 Assess and give feedback
- 3.02.04 Support apprentices in pursuing technical training opportunities

Range of Variables

N/A

MAJOR WORK ACTIVITY B

MWA B Performs routine work practices

TASK B-4 Operates and maintains farm equipment

Task Descriptor

Farm technicians use various farm equipment in the day-to-day operation of the farm. Farm Technicians ensure that farm equipment is well maintained, serviced and kept in safe working order.

B-4.01 Uses farm equipment

Performance Criteria

- 4.01.01 Select the required **powered or hand-held farm equipment**
- 4.01.02 Select and install required **attachments and implements**
- 4.01.03 Perform pre-operational inspections

- 4.01.04 Perform post-operational inspections
- 4.01.05 Complete daily equipment logbook
- 4.01.06 Operate and adjust farm equipment, attachments and implements

Range of Variables

powered farm equipment: tractors, forklifts, skid steers, pallet jacks, lifting devices, irrigation equipment, milk and parlour, greenhouse seeders

hand-held farm equipment: pruners, knives, hoes, rakes, shovels

attachments and implements: tillers, planters, harvesters, sprayers

B-4.02 Maintains farm equipment

Performance Criteria

- 4.02.01 Perform scheduled and preventative maintenance
- 4.02.02 Recognize and report worn, damaged or defective **farm equipment, attachments and implements**
- 4.02.03 Perform basic repairs
- 4.02.04 Document repairs
- 4.02.05 Maintain service records
- 4.02.06 Identify and report specialized repair and maintenance requirements
- 4.02.07 Store farm equipment, attachments and implements
- 4.02.08 Wash, clean, disinfect and paint farm equipment, attachments and implements

Range of Variables

farm equipment: tractors, forklifts, skid steers, pallet jacks, lifting devices, irrigation equipment, milk and parlour, greenhouse seeders

attachments and implements: tillers, planters, harvesters, sprayers

B-4.03 Operates material handling equipment

Performance Criteria

- 4.03.01 Calculate volume and weight of material
- 4.03.02 Select required **material handling equipment**
- 4.03.03 Operate and adjust material handling equipment
- 4.03.04 Monitor delivery and flow of material
- 4.03.05 Clean and remove any residual material

Range of Variables

material handling equipment: augers, conveyors, gravity boxes, total mixed ration (TMR) mixers, forage boxes, pumps

B-4.04 Operates automated equipment

Performance Criteria

- 4.04.01 Operate **automated equipment**
- 4.04.02 Read and interpret automated equipment data
- 4.04.03 Monitor and respond to automated equipment data
- 4.04.04 Trouble shoot automated equipment
- 4.04.05 Adjust automated equipment

Range of Variables

automated equipment: programmable logic controllers (PLCs), environmental control systems, feeders, milkers, heating ventilation and air conditioning (HVAC) systems, alarm systems

B-4.05 Operates seeding and application equipment

Performance Criteria

- 4.05.01 Select and operate **seeding and application equipment**
- 4.05.02 Identify calibration requirements
- 4.05.03 Calibrate seeding and application equipment as necessary
- 4.05.04 Verify calibration and operation of seeding and application equipment
- 4.05.05 Record calibration, operation, location and **material**

Range of Variables

seeding and application equipment: sprayers, seeders, spreaders, planters, medicators, injectors, irrigation systems

material: manure, fertilizer, pH additives, seed, biological controls, pesticides

TASK B-5 Maintains facilities, grounds and infrastructure

Task Descriptor

Farm Technicians maintain farm grounds and access points and perform routine maintenance to farm infrastructure. Farm technicians may manage farm water to ensure safe usage and healthy production while maintaining environmental controls.

B-5.01 Maintains farm grounds and access points

Performance Criteria

- 5.01.01 Maintain grounds and vegetation
- 5.01.02 Clear snow and ice
- 5.01.03 Remove clutter
- 5.01.04 Clear drains
- 5.01.05 Maintain **access points** and parking areas
- 5.01.06 Maintain fencing and gates
- 5.01.07 Maintain signage

Range of Variables

access points: roadways, laneways, entrances and culverts

B-5.02 Performs routine maintenance to farm infrastructure

Performance Criteria

- 5.02.01 Inspect and identify hazards and deficiencies in **farm infrastructure**
- 5.02.02 Perform **general maintenance procedures**
- 5.02.03 Remove snow and debris from roofs and loading areas
- 5.02.04 Inspect and maintain pest control program

Range of Variables

farm infrastructure: buildings, employee residences, fuel tanks, power, storage tanks, water and feed systems, generators, HVAC systems, waste storage facilities, fences, barriers

general maintenance procedures: plumbing, electrical, carpentry, welding, painting, cleaning, fencing

B-5.03**Manages farm water**

Performance Criteria

- 5.03.01 Inspect and maintain **water sources**
- 5.03.02 Take water samples
- 5.03.03 Analyze and interpret lab reports
- 5.03.04 Apply recommendations of water tests
- 5.03.05 Observe for potential sources of contamination
- 5.03.06 Inspect and maintain **drainage systems**
- 5.03.07 Manage wastewater

Range of Variables

water sources: wells, ponds, streams, rivers, municipal, farmyard water

drainage systems: ditches, tiles, outlets, water ways, buffer zones, berms, spill ways

TASK B-6 Performs farm management practices

Task Descriptor

Farm Technicians take a leadership role in human resource management and projects while practicing on-farm food safety and animal care programs

B-6.01**Performs record keeping**

Performance Criteria

- 6.01.01 Organize and complete **records**
- 6.01.02 Compile and store records
- 6.01.03 Analyze and interpret results
- 6.01.04 Communicate results
- 6.01.05 Use **software**

Range of Variables

records: livestock, field, harvest, calibration, Hazard Analysis Critical Control Points (HACCP), food safety, water, OH&S, maintenance and service, animal care program, pesticide

software: accounting, herd and flock management, crop management, inventory, office suites, point of sale (POS)

B-6.02**Practices on-farm food safety and animal care programs**

Performance Criteria

- 6.02.01 Implement **industry and regulatory programs**
- 6.02.02 Monitor updates
- 6.02.03 Maintain traceability program
- 6.02.04 Monitor and maintain biosecurity
- 6.02.05 Perform required documentation

Range of Variables

industry and regulatory programs: Canada Good Agricultural Practices (CanadaGAP), ProAction, Start Clean Stay Clean, Safe Safer Safest, Safe Quality Food (SQF) Codes, Egg Quality Assurance, Canadian Food Inspection Agency's (CFIA) regulations, Verified Beef, Verified Sheep

B-6.03**Plans projects and tasks**

Performance Criteria

- 6.03.01 Determine scope of project or task
- 6.03.02 Determine procedures and timeline
- 6.03.03 Identify required tools and **resources**
- 6.03.04 Schedule and acquire supplies
- 6.03.05 Coordinate tasks with co-workers
- 6.03.06 Monitor and follow-up on completion
- 6.03.07 Evaluate processes

Range of Variables

resources: consumables, parts, supplies, equipment, PPE, labour

B-6.04**Performs human resource leadership**

Performance Criteria

- 6.04.01 Manage expectations of employment

- 6.04.02 Create diverse and inclusive work environment
- 6.04.03 Motivate and lead others
- 6.04.04 Cultivate culture of accountability
- 6.04.05 Work within cultural sensitivities
- 6.04.06 Show ethical and responsible leadership

Range of Variables

N/A

B-6.05 Performs human resource tasks

Performance Criteria

- 6.05.01 Review job descriptions
- 6.05.02 Interview labour candidates
- 6.05.03 Provide employee orientation
- 6.05.04 Provide training opportunities
- 6.05.05 Evaluate, communicate and monitor employee performance
- 6.05.06 Develop and manage employee schedules
- 6.05.07 Complete required **human resource documentation**

Range of Variables

human resource documentation: time sheets, incident reports, progressive discipline, Temporary Foreign Worker (TFW) program information, orientation records, training certificates

MAJOR WORK ACTIVITY C

MWA C Manages Production

TASK C-7 Performs production tasks

Task Descriptor

Farm Technicians implement production plans, prepare the production site and maintain crop and livestock health. They monitor production, maintain input inventories and control pests as required.

C-7.01**Prepares production site**

Performance Criteria

- 7.01.01 Identify **production site**
- 7.01.02 Perform site analysis
- 7.01.03 Clean and sanitize production site
- 7.01.04 Clear site of debris and garbage
- 7.01.05 Identify product and production system
- 7.01.06 Identify order in which production tasks are performed
- 7.01.07 Plan production schedule
- 7.01.08 Update production protocol
- 7.01.09 Identify market demands

Range of Variables

production site: barn, field, greenhouse, lot, yard, grove, orchard, pasture, bog

C-7.02**Maintains input inventory**

Performance Criteria

- 7.02.01 Prepare list of **production inputs** that complies to regulations
- 7.02.02 Order supplies
- 7.02.03 Update inventory sheets
- 7.02.04 Rotate supplies
- 7.02.05 Identify obsolete and expired supplies

Range of Variables

production inputs: semen, feed, seeds, nutrients, fertilizer, pesticides, chemicals, medications, bedding, trellis, manure, compost, water

C-7.03**Implements production plan**

Performance Criteria

- 7.03.01 Apply and distribute **production inputs**
- 7.03.02 Manage production site
- 7.03.03 Monitor production inputs

Range of Variables

production inputs: semen, feed, seeds, nutrients, fertilizer, pesticides, chemicals, medications, bedding, trellis, manure, compost, water

C-7.04 Monitors production

Performance Criteria

- 7.04.01 Monitor production challenges
- 7.04.02 Test inputs, production site and products
- 7.04.03 Maintain production supplies
- 7.04.04 Handle and store **samples**
- 7.04.05 Identify reason and proper conditions for sampling
- 7.04.06 Take sample utilizing appropriate sample technique
- 7.04.07 Collect ongoing production data
- 7.04.08 Interpret results and make production decisions

Range of Variables

samples: feed, soil, water, tissue, product

C-7.05 Maintains crop health

Performance Criteria

- 7.05.01 Practice **crop health programs**
- 7.05.02 Monitor **crop health indicators**
- 7.05.03 Monitor **environmental conditions**

Range of Variables

crop health programs: integrated pest management (IPM), fertigation plan, scouting, tissue and sap samples

crop health indicators: moisture levels, nutrient deficiencies, crop appearance

environmental conditions: temperature, humidity, sunlight, weather, carbon dioxide (CO₂) levels, heat units, pH, electrical conductivity (EC)

C-7.06 Maintains livestock health

Performance Criteria

- 7.06.01 Practice **livestock health programs**
- 7.06.02 Monitor livestock **health and welfare indicators**
- 7.06.03 Monitor air quality and environmental conditions

Range of Variables

livestock health programs: veterinary checks, vaccinations, pest control, animal safety, tissue sample analysis

health and welfare indicators: lameness, feathering, temperature, deadstock, respiration rate, rumination, injury, abnormal behaviour, off feed

C-7.07

Controls pests

Performance Criteria

- 7.07.01 Plan control operations
- 7.07.02 Identify **pests**
- 7.07.03 Implement scouting procedures and **scouting aids** for pests
- 7.07.04 Identify **control method**
- 7.07.05 Interpret action thresholds
- 7.07.06 Monitor and adjust effectiveness of controls
- 7.07.07 Clean-up and store control products

Range of Variables

pests: insects, weeds, diseases, nuisance wildlife

scouting aids: traps, weather stations, combs

control method: physical, mechanical, chemical, biological, integrated pest management

TASK C-8 Prepares product for sale or distribution

Task Descriptor

Farm Technicians perform harvest and collection in preparation for sale and distribution. They may store products and manage production waste.

C-8.01

Prepares for harvest and collection

Performance Criteria

- 8.01.01 Select **harvest and collection equipment**
- 8.01.02 Inspect harvest and collection equipment

- 8.01.03 Clean and disinfect harvest and collection equipment
- 8.01.04 Prepare harvest or collection site
- 8.01.05 Determine if environmental conditions are suitable for harvest or collection
- 8.01.06 Test **product readiness**
- 8.01.07 Determine harvest targets and collection schedule
- 8.01.08 Determine labour requirements

Range of Variables

harvest and collections equipment: belts, harvesters, robots, harvesting tools, packaging materials, milking equipment, bins and trays, pipelines, storage tanks

product readiness: moisture tests, weight, size, colour, chemical analysis, appearance, health, documentation, maturity

C-8.02 Performs harvest and collection

Performance Criteria

- 8.02.01 Operate and adjust **harvest and collection equipment**
- 8.02.02 Supervise harvest labour
- 8.02.03 Control mechanical damage of product
- 8.02.04 Perform production site **grading and evaluation**
- 8.02.05 Maintain quality control
- 8.02.06 Prepare for transporting product
- 8.02.07 Transfer product to secondary handling facility

Range of Variables

harvest and collections equipment: belts, harvesters, robots, harvesting tools, packaging materials, milking equipment, bins and trays, pipelines, storage tanks

grading and evaluation: bruising, foreign materials contamination, cracks, plant damage, injury, loss mitigation, maturity

C-8.03 Manages production waste

Performance Criteria

- 8.03.01 Sort waste
- 8.03.02 Manage **recyclable waste**
- 8.03.03 Manage **crop waste**
- 8.03.04 Manage **animal waste**
- 8.03.05 Manage dead stock

Range of Variables

recyclable waste: metal, paper, plastic, chemical containers

crop waste: culls, grading line residue, expired product, spoiled product, production materials

animal waste: manure, litter, feed waste, offal, bedding, animal tissue, spoiled product

C-8.04 Stores product

Performance Criteria

- 8.04.01 **Prepare** product for storage
- 8.04.02 Load product in storage
- 8.04.03 Monitor and maintain **storage conditions**
- 8.04.04 Manage product inventory
- 8.04.05 Rotate product inventory

Range of Variables

storage conditions: environment, sanitation, hazards, pests, diseases, indoor storage, outdoor storage

prepares: wax, cure, ethylene inhibitors, dry, control atmosphere, pre-cool, cool, freeze, clean

C-8.05 Prepares product for market

Performance Criteria

- 8.05.01 Wash product
- 8.05.02 **Grade** product
- 8.05.03 Package product
- 8.05.04 Apply label and lot code
- 8.05.05 Palatize product
- 8.05.06 Ship product

Range of Variables

grades: length and diameter, colour, weight, quality, size, internal defects, external defects, maturity

APPENDIX A: FARM EQUIPMENT

Farm Equipment

Powered farm equipment

Tractors, combines, self-propelled forage harvesters, trucks, single-axle trucks, tandem-axle trucks, truck tractors, self-propelled wild blueberry harvesters, self-propelled cultivated blueberry harvesters, self-propelled picking platforms, loaders, bulldozers, excavators, self-propelled harvest aids, self-propelled vegetable harvesters, self-propelled grape harvesters, side by side utility vehicle, all-terrain vehicle (ATV), Stieners, transplanters, passenger vans

Hand-held farm equipment

Pruners, knives, hoes, rakes, shovels, forks, measuring wheels, soil probes, shears, string trimmers, pole saws, clearing saws, chain saws, blowers, tape and tie applicators, vibrating post pounders, picking bags, brooms, sprayers

Attachments and implements

Tillage: mouldboard ploughs, chisel ploughs, rippers, vertical disks, vertical tillage tools, tandem disk harrows, offset disk harrows, field cultivators, bedformers, hillers, rock windrowers, rock pickers, land levellers, box scrapers, back blades, root rakes, cultivators, strip tillage implements, in row precision cultivators, spaders, mole plows, power harrows, rototillers,

Haying: mowers, conditioners, tedders, windrow inverters, rakes, balers (round and square) forage harvesters, bale wrappers, mergers

Harvesting: harvest aids, potato windrowers, potato/onion harvesters, onion lifters, onion toppers, carrot harvesters, grape harvesters, cranberry harvesters, wild blueberry harvesters, forage harvesters (corn silage and snapper heads), corn heads, small grain heads, bale accumulators

Irrigation: stationary irrigation pumps, power take-off (PTO) irrigation pumps, drip irrigation systems, solid set sprinkler systems, hard hose traveler systems (booms and guns), centre pivot systems, fertigation systems, drip lines, filter systems

Other: flail mowers, rotary mowers, post hole diggers, snow blowers, stump grinders, bale busters, tub grinders, compost turners, de-leafers, pruning equipment, mulch layers, generators, rolling crimpers, pressure washers, frost fans

Livestock equipment

Feeding: grinder-mixers, total mixed ration (TMR) mixers, self-propelled feed carts and mixers, grain handling equipment, feed mills, portable feeders

Handling: chutes, squeeze chutes, gates, penning, trailers

Milking: robotic systems, parlour systems, tie-stall systems, pipeline systems, milk storage tanks, vacuum pumps, milk cooling systems

Ventilation: fans, thermostats, vents, chimneys, curtains, misters

Health/Welfare: dehorning devices, castration devices, bolus guns, speculum, tube feeders, drenching pumps, snare, calving jacks

Storing, grading, and packing equipment

Storing: bin pilers, box fillers, conveyors, dirt eliminators, bins, tanks, controlled atmosphere (CA), refrigeration, vacuum coolers, hydro coolers

Grading: sizers, inspection lines, optical sorters, bin dumpers, vibrating tables, ultrasound

Packing: weighers, baggers, box fillers, palletizers, box makers, cappers, pallet strappers, box strappers, fill station, egg collection systems, tree baler

Materials handling equipment

Powered equipment

Skid steer loaders, wheel loaders, rough terrain forklifts, forklifts, front-end loaders, pallet jacks, pumps

Manure handling equipment

Solid manure spreaders, slurry manure spreaders, liquid manure spreaders, liquid manure pumps, agitators, drag hose, injectors

Haulage equipment

Flat-bed trailers and wagons, forage wagons, high dump trailers and wagons, dump trailers, gravity boxes, dump trucks, live bottom vegetable bodies, bulk potato bodies, bins, trays, bale wagons, grain buggies, water tanks

Attachments

Pallet forks, manure buckets, produce buckets, rock buckets, bale forks, grapples, bin dumpers, bin rotators, snow blades, bale grabs, reel buckets, post pounders

Grain handling equipment

Augers, bucket elevators, pneumatic systems, cleaners, dryers, extruders, sizing screens, tote bags, hopper bottom bins

Seeding and application equipment

Seeding equipment

Corn-soy planters, grain drills, air drills, no-till drills, forage seeders, vacuum vegetable seeders, mechanical vegetable seeders, transplanters, broadcast seeders

Application equipment

Self-propelled boom sprayers, mounted boom sprayers, trailed boom sprayers, mounted air-blast sprayers, trailed air-blast sprayers, pesticide mixing stations, mounted fertilizer spreaders, trailed fertilizer spreaders, trailed lime spreaders, weed wipers, fertigation systems, compost spreaders, sump/water pumps

Automatic equipment list

environmental control systems
fertigation systems
feed pushers
livestock scales
sort and diversion gates (manual and automatic)
alarm systems
heating ventilation and air conditioning (HVAC) systems
controlled atmosphere (CA) storage systems
programmable logic controllers (PLCs)
feeding systems
irrigation systems
manure systems

APPENDIX B: GLOSSARY