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ABSTRACT

This Ohio Competency Analysis Profile (OCAP), derived from a modified Developing a Curriculum (DACUM) process, is a current comprehensive and verified employer competency program list for dairy producers. Each unit (with or without subunits) contains competencies and competency builders that identify the occupational, academic, and employability skills needed to enter this occupation. Within that outline are three levels of items: core, advancing, and futuring. Core items are essential to entry-level employment. Advancing items are needed to advance in a given occupation. Futuring items are needed to enter and remain in a given occupation 3 to 4 years from now. This profile contains 12 units: (1) general safety precautions; (2) milking and milking systems; (3) animal care; (4) genetics, reproduction, and breeding; (5) waste handling and disposal; (6) nutrition, feeds, and feeding; (7) herd health; (8) marketing; (9) business management; (10) agricultural mechanics; (11) crop production; and (12) employability skills. (NLA)

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# O C A P

## OHIO'S COMPETENCY ANALYSIS PROFILE

### DAIRY PRODUCER

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CE 05-9 527



Division of Vocational and Career Education  
Ohio Department of Education

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# What is OCAP?

"A comprehensive and verified employer competency list will be developed and kept current for each program." This is the second objective of Imperative 3 of the *Action Plan for Accelerating the Modernization of Vocational Education: Ohio's Future at Work*. Ohio's Competency Analysis Profile (OCAP) lists are the Division of Vocational and Career Education's response to that objective. OCAP lists evolve from a modified DACUM process involving business, industry, labor, and community agency representatives from throughout Ohio. The OCAP process is directed by the Vocational Instructional Materials Laboratory at The Ohio State University's Center on Education and Training for Employment.

## How is OCAP used?

Each OCAP contains units (with and without subunits), competencies, and competency builders that identify the occupational, academic, and employability skills needed to enter a given occupation or occupational area. Within that outline there are three levels of items: core, advancing, and futuring. Core items are essential to entry-level employment. These items are required to be taught and will be the basis for questions on the state vocational competency tests (scheduled to begin in FY93). Advancing items (marked with one asterisk) are needed to advance in a given occupation. Futuring items (marked with two asterisks) are needed to enter and remain in a given occupation three to four years from now.

Districts may add as many units, subunits, competencies, and competency builders as desired to reflect local employment needs, trends, and specialties. Local advisory committees should be actively involved in the identification and verification of additional items. Using OCAP lists, instructors will be able to formulate their courses of study and monitor competency gains via the new competency testing program.

The **Employability Skills** portion of this list was verified by the following employer panel:

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## OHIO COMPETENCY ANALYSIS PROFILE

### DAIRY PRODUCER

#### UNIT 1: General Safety Precautions

##### COMPETENCY 1.0.1: Maintain safe work environment

###### COMPETENCY BUILDERS:

- 1.0.1.1 Read and follow safety information
- 1.0.1.2 Organize and maintain clean and safe work area
- 1.0.1.3 Determine when work conditions are unsafe
- 1.0.1.4 Identify hazardous areas
- 1.0.1.5 Identify and correct safety hazards
- 1.0.1.6 Install and maintain safety devices
- 1.0.1.7 Ventilate work areas
- 1.0.1.8 Clean up and dispose of hazardous materials
- 1.0.1.9 Store hazardous materials

##### COMPETENCY 1.0.2: Apply safe work habits

###### COMPETENCY BUILDERS:

- 1.0.2.1 Wear protective clothing and equipment
- 1.0.2.2 Use safe lifting and carrying methods
- 1.0.2.3 Administer first aid
- 1.0.2.4 Follow safety directions on hazardous materials labels
- 1.0.2.5 Use fire extinguishers
- 1.0.2.6 Recognize symptoms of chemical injury or poisoning
- 1.0.2.7 Handle compressed gases
- 1.0.2.8 Maintain and use slow moving vehicle signs when operating vehicles on road
- 1.0.2.9 Prevent riders on tractors
- 1.0.2.10 Use safe animal handling practices

##### COMPETENCY 1.0.3: Operate and maintain equipment

###### COMPETENCY BUILDERS:

- 1.0.3.1 Follow safety rules for equipment operation and maintenance
- 1.0.3.1 Operate equipment defensively
- 1.0.3.2 Maintain safety shields on all equipment
- 1.0.3.3 Shut down power equipment before servicing

\* Advancing  
\*\* Futuring

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**UNIT 2: Milking and Milking Systems**

**COMPETENCY 2.0.1 Implement maintenance program**

**COMPETENCY BUILDERS:**

- 2.0.1.1 Follow general safety precautions
- 2.0.1.2 Clean pulsators
- 2.0.1.3 Establish premilking checklist
- 2.0.1.4 Replace rubber parts
- 2.0.1.5 Identify parts of milking and cooling systems
- 2.0.1.6 Recognize function of parts
- 2.0.1.7 Check vacuum gauges
- 2.0.1.8 Identify cooler problems\*
- 2.0.1.9 Use automatic and robotic on and off milking equipment\*\*
- 2.0.1.10 Use universal electronic identification systems\*\*

**COMPETENCY 2.0.2: Implement sanitation program**

**COMPETENCY BUILDERS:**

- 2.0.2.1 Follow general safety precautions
- 2.0.2.2 Clean milking parlor
- 2.0.2.3 Read and follow label directions for cleaning materials
- 2.0.2.4 Store milking equipment cleaning materials
- 2.0.2.5 Recognize milkstone and deposits\*

**COMPETENCY 2.0.3: Milk cows**

**COMPETENCY BUILDERS:**

- 2.0.3.1 Follow general safety precautions
- 2.0.3.2 Follow milking schedule
- 2.0.3.3 Operate milking equipment
- 2.0.3.4 Prepare udder and teats before each milking
- 2.0.3.5 Check for abnormal milk
- 2.0.3.6 Dip teats in sanitizing solution after milking
- 2.0.3.7 Attach and remove milkers
- 2.0.3.8 Prevent over- and under-milking
- 2.0.3.9 Recognize risk in handling animals

\* Advancing  
\*\* Futuring

**COMPETENCY 2.0.4: Manage mastitic cows\***

**COMPETENCY BUILDERS:**

- 2.0.4.1 Follow general safety precautions
- 2.0.4.2 Use C.M.T. to identify mastitis problems\*
- 2.0.4.3 Flush milkers after milking\*
- 2.0.4.4 Milk separately or last\*
- 2.0.4.5 Establish teat-dipping program \*
- 2.0.4.6 Interpret somatic cell count\*
- 2.0.4.7 Dry treat cows\*
- 2.0.4.8 Clean cows\*
- 2.0.4.9 Explore genetic links to mastitis\*\*

**COMPETENCY 2.0.5: Maintain milk quality\***

**COMPETENCY BUILDERS:**

- 2.0.5.1 Evaluate preliminary incubation count\*
- 2.0.5.2 Evaluate plate loop count\*
- 2.0.5.3 Evaluate somatic cell count\*
- 2.0.5.4 Prevent water and drug content\*

**UNIT 3: Animal Care**

**COMPETENCY 3.0.1: Perform general animal care procedures**

**COMPETENCY BUILDERS:**

- 3.0.1.1 Follow general safety precautions
- 3.0.1.2 Identify parts of animal anatomy
- 3.0.1.3 Follow animal identification system
- 3.0.1.4 Bed animals
- 3.0.1.5 Trim hooves\*
- 3.0.1.6 Remove extra teats\*
- 3.0.1.7 Castrate animals\*
- 3.0.1.8 Dehorn animals\*
- 3.0.1.9 Inject implants\*

**COMPETENCY 3.0.2: Restrain or pen animals**

**COMPETENCY BUILDERS:**

- 3.0.2.1 Follow general safety precautions
- 3.0.2.2 Pen animals according to size, weight, sex, temperament, and production
- 3.0.2.3 Isolate and observe newly purchased animals
- 3.0.2.4 Restrain animals

\* Advancing

\*\* Futuring

**COMPETENCY 3.0.3: Haul animals**

**COMPETENCY BUILDERS:**

- 3.0.3.1 Follow general safety precautions
- 3.0.3.2 Prepare carriers
- 3.0.3.3 Load and unload animals

**UNIT 4: Genetics, Reproduction, and Breeding**

**COMPETENCY 4.0.1: Demonstrate knowledge of genetics and reproduction**

**COMPETENCY BUILDERS:**

- 4.0.1.1 Identify parts and functions of reproductive system
- 4.0.1.2 Identify actions of hormones affecting reproduction
- 4.0.1.3 Apply principles of genetics
- 4.0.1.4 Establish and implement heat detection plan

**COMPETENCY 4.0.2: Plan breeding program\***

**COMPETENCY BUILDERS:**

- 4.0.2.1 Schedule breeding for even milk production\*
- 4.0.2.2 Schedule breeding for twelve- to thirteen-month calving intervals\*
- 4.0.2.3 Calculate losses caused by pregnancy delays\*
- 4.0.2.4 Evaluate artificial versus natural insemination\*
- 4.0.2.5 Determine age and/or weight for breeding\*
- 4.0.2.6 Arrange semen services\*
- 4.0.2.7 Arrange ova services\*\*

\* Advancing  
\*\* Futuring

**COMPETENCY 4.0.3: Select animals\***

**COMPETENCY BUILDERS:**

- 4.0.3.1 Determine types, amounts, and grades of livestock\*
- 4.0.3.2 Evaluate raising versus buying replacements\*
- 4.0.3.3 Analyze linear classification scores\*
- 4.0.3.4 Evaluate sires for proofs and reliability records\*
- 4.0.3.5 Analyze production records and pedigrees\*
- 4.0.3.6 Select for body type and conformation\*
- 4.0.3.7 Determine guidelines for selecting donor cows for embryo transfer\*
- 4.0.3.8 Verify registration papers for purebred animals\*
- 4.0.3.9 Interpret DHIA production records\*
- 4.0.3.10 Evaluate pedigrees\*
- 4.0.3.11 Select for heritability of traits\*
- 4.0.3.12 Select breeds\*
- 4.0.3.13 Identify purchase sources\*
- 4.0.3.14 Negotiate purchase price\*
- 4.0.3.15 Determine sex of semen\*\*

**COMPETENCY 4.0.4: Breed animals\***

**COMPETENCY BUILDERS:**

- 4.0.4.1 Follow general safety precautions\*
- 4.0.4.2 Regulate heat cycles with hormone therapy\*
- 4.0.4.3 Store and handle semen\*
- 4.0.4.4 Determine insemination and embryo deposit time\*
- 4.0.4.5 Breed using artificial insemination\*
- 4.0.4.6 Breed using natural insemination\*
- 4.0.4.7 Schedule pregnancy checks\*
- 4.0.4.8 Determine calving dates\*
- 4.0.4.9 Identify animals unable to conceive\*
- 4.0.4.10 Arrange medical intervention for slow-to-conceive animals\*
- 4.0.4.11 Explore genetic engineering\*\*

\* Advancing  
\*\* Futuring

**COMPETENCY 4.0.5: Care for newborn animals, mothers, and young animals**

**COMPETENCY BUILDERS:**

- 4.0.5.1 Follow general safety precautions
- 4.0.5.2 Identify signs of approaching parturition
- 4.0.5.3 Prepare facilities for parturition
- 4.0.5.4 Prepare mothers for parturition
- 4.0.5.5 Determine calving disorders
- 4.0.5.6 Assist mothers during delivery
- 4.0.5.7 Check newborn animals for physical deformities or health problems
- 4.0.5.8 Clip navel cords and apply disinfectant
- 4.0.5.9 Clean newborn animals
- 4.0.5.10 Check mothers for expelled placentas
- 4.0.5.11 Remove afterbirth from calving area
- 4.0.5.12 Assist newborn animals in nursing
- 4.0.5.13 Record animal identification
- 4.0.5.14 Administer preventive health measures
- 4.0.5.15 Implement parturition monitors\*\*

**UNIT 5: Waste Handling and Disposal**

**COMPETENCY 5.0.1: Establish and maintain waste handling and disposal system\***

**COMPETENCY BUILDERS:**

- 5.0.1.1 Follow general safety precautions\*
- 5.0.1.2 Follow local, state, and federal legislation\*
- 5.0.1.3 Operate and maintain equipment\*
- 5.0.1.4 Manage nutrient value of manure\*

**COMPETENCY 5.0.2: Handle and dispose of waste**

**COMPETENCY BUILDERS:**

- 5.0.2.1 Follow general safety precautions
- 5.0.2.2 Control waste runoff from feedlots and housing quarters
- 5.0.2.3 Determine application methods and rates
- 5.0.2.4 Dispose of dead animals\*
- 5.0.2.5 Dry and recycle waste\*\*
- 5.0.2.6 Follow local, state, and federal legislation\*

\* Advancing  
\*\* Futuring

**UNIT 6: Nutrition, Feeds, and Feeding**

**COMPETENCY 6.0.1: Establish nutrient requirements\***

**COMPETENCY BUILDERS:**

- 6.0.1.1 Determine production requirements\*
- 6.0.1.2 Determine reproduction requirements\*
- 6.0.1.3 Determine growth requirements\*
- 6.0.1.4 Determine maintenance requirements\*
- 6.0.1.5 Determine effects of environmental factors on nutritional requirements\*

**COMPETENCY 6.0.2: Determine nutritive value of feedstuffs\***

**COMPETENCY BUILDERS:**

- 6.0.2.1 Classify feeds according to major nutrient groups\*
- 6.0.2.2 Identify factors influencing feedstuff quality\*
- 6.0.2.3 Collect grain and forage samples for nutrient analysis\*
- 6.0.2.4 Interpret nutrient analysis methods and results\*
- 6.0.2.5 Interpret feed tags and labels\*
- 6.0.2.6 Interpret nutrient requirement tables\*
- 6.0.2.7 Interpret feed composition tables\*
- 6.0.2.8 Determine nutrients provided by pasture\*

**COMPETENCY 6.0.3: Balance rations\***

**COMPETENCY BUILDERS:**

- 6.0.3.1 Use nutrient analysis results\*
- 6.0.3.2 Perform math calculations\*
- 6.0.3.3 Determine costs\*
- 6.0.3.4 Select feeds and additives\*
- 6.0.3.5 Substitute feedstuffs\*

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## Dairy Producer--8/91

### COMPETENCY 6.0.4: Feed animals

#### COMPETENCY BUILDERS:

- 6.0.4.1 Follow general safety precautions
- 6.0.4.2 Follow feed handling guidelines
- 6.0.4.3 Identify feeds
- 6.0.4.4 Prepare feedstuffs
- 6.0.4.5 Prepare mineral mixes
- 6.0.4.6 Follow feed additive mixing regulations
- 6.0.4.7 Control waste feed
- 6.0.4.8 Remove spoiled feedstuffs
- 6.0.4.9 Observe animal for loss of appetite
- 6.0.4.10 Evaluate and report ration palatability
- 6.0.4.11 Lead feed producing cows
- 6.0.4.12 Feed colostrum to newborn animals
- 6.0.4.13 Feed veal calves
- 6.0.4.14 Wean calves\*
- 6.0.4.15 Start calves on bucket feeding
- 6.0.4.16 Feed milk replacer to calves
- 6.0.4.17 Start calves on grain and roughage feeding
- 6.0.4.18 Clean and maintain equipment

### UNIT 7: Herd Health

#### COMPETENCY 7.0.1: Monitor health

##### COMPETENCY BUILDERS:

- 7.0.1.1 Follow general safety precautions
- 7.0.1.2 Follow health program
- 7.0.1.3 Evaluate condition of animals
- 7.0.1.4 Take animals' temperatures
- 7.0.1.5 Determine when to call veterinarian
- 7.0.1.6 Isolate injured or diseased animals
- 7.0.1.7 Recognize common animal illnesses
- 7.0.1.8 Use electronic detection methods\*\*

#### COMPETENCY 7.0.2: Follow sanitation program

##### COMPETENCY BUILDERS:

- 7.0.2.1 Follow general safety precautions
- 7.0.2.2 Identify sanitation problems
- 7.0.2.3 Disinfect buildings and equipment
- 7.0.2.4 Use insect repellants
- 7.0.2.5 Select cleaning chemicals and equipment\*

\* Advancing

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**COMPETENCY 7.0.3: Follow parasite control program**

**COMPETENCY BUILDERS:**

- 7.0.3.1 Follow general safety precautions
- 7.0.3.2 Identify common internal and external parasites and their symptoms\*
- 7.0.3.3 Select materials to control parasites\*
- 7.0.3.4 Construct and maintain back scratcher for insecticide application\*
- 7.0.3.5 Apply pesticides

**COMPETENCY 7.0.4: Treat minor health problems**

**COMPETENCY BUILDERS:**

- 7.0.4.1 Follow general safety precautions
- 7.0.4.2 Treat cuts and bruises
- 7.0.4.3 Record medication treatments
- 7.0.4.4 Identify types of injections and procedures
- 7.0.4.5 Treat animals suffering from bloat
- 7.0.4.6 Identify and mark treated animals
- 7.0.4.7 Determine amount of medication or material to use\*
- 7.0.4.8 Administer medications and antibiotics\*
- 7.0.4.9 Administer new preventive medications\*\*

**COMPETENCY 7.0.5: Control nutritional problems**

**COMPETENCY BUILDERS:**

- 7.0.5.1 Administer stomach magnets
- 7.0.5.2 Identify symptoms of nutritional imbalance\*
- 7.0.5.3 Supplement diet to lower incidence of milk fever\*

**COMPETENCY 7.0.6: Control bacterial, viral, and fungal diseases**

- 7.0.6.1 Follow general safety precautions
- 7.0.6.2 Identify common disease symptoms
- 7.0.6.3 Follow vaccination program
- 7.0.6.4 Follow mastitis control program
- 7.0.6.5 Treat calves for scours
- 7.0.6.6 Regulate air movement and temperature in facilities\*
- 7.0.6.7 Administer time release medications\*\*
- 7.0.6.8 Use biotech applications\*\*

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**COMPETENCY 7.0.7: Manage medications and chemicals**

**COMPETENCY BUILDERS:**

- 7.0.7.1 Follow general safety precautions
- 7.0.7.2 Store properly labeled medications and chemicals
- 7.0.7.3 Dispose of unused or outdated medications and chemicals
- 7.0.7.4 Maintain inventory-and-use record
- 7.0.7.5 Follow government regulations

**UNIT 8: Marketing**

**COMPETENCY 8.0.1: Analyze market\***

**COMPETENCY BUILDERS:**

- 8.0.1.1 Identify information sources\*
- 8.0.1.2 Interpret market reports\*
- 8.0.1.3 Analyze market cycles\*
- 8.0.1.4 Evaluate effect market grades have on market prices\*
- 8.0.1.5 Determine daily cash and future prices\*
- 8.0.1.6 Calculate expected returns and profits\*
- 8.0.1.7 Calculate end product pricing system for milk\*
- 8.0.1.8 Compare and evaluate base milk prices and milk market differential prices\*
- 8.0.1.9 Breed cows for milk composition\*\*
- 8.0.1.10 Evaluate niche marketing (e.g., goat milk)\*\*

**COMPETENCY 8.0.2: Establish marketing plans\***

**COMPETENCY BUILDERS:**

- 8.0.2.1 Evaluate options of feeding grains, purchasing feeds, or marketing grains\*
- 8.0.2.2 Evaluate marketing options\*
- 8.0.2.3 Develop crop marketing plan\*
- 8.0.2.4 Develop livestock marketing plan\*

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**COMPETENCY 8.0.3: Market products\***

**COMPETENCY BUILDERS:**

- 8.0.3.1 Determine when to market\*
- 8.0.3.2 Verify market grades or classes of products sold\*
- 8.0.3.3 Determine how milk is priced\*
- 8.0.3.4 Complete delayed price transaction\*
- 8.0.3.5 Complete hedging transaction\*
- 8.0.3.6 Complete forward contract transaction\*
- 8.0.3.7 Consign animals to sales\*
- 8.0.3.8 Photograph animals for advertisements\*
- 8.0.3.9 Prepare advertisements\*
- 8.0.3.10 Use electronic marketing\*\*

**COMPETENCY 8.0.4: Ship products**

**COMPETENCY BUILDERS:**

- 8.0.4.1 Follow general safety precautions
- 8.0.4.2 Contract for milk pickup\*
- 8.0.4.3 Arrange crop or livestock transport\*
- 8.0.4.4 Prepare vehicle and load crops or livestock
- 8.0.4.5 Transport and unload crops or livestock
- 8.0.4.6 Calculate livestock shrinkage\*
- 8.0.4.7 Verify market class or grade on sales ticket
- 8.0.4.8 Verify weights and prices on sales ticket
- 8.0.4.9 Process milk product using ultra filtration \*\*

**UNIT 9: Business Management**

**COMPETENCY 9.0.1: Perform general office work**

**COMPETENCY BUILDERS:**

- 9.0.1.1 Process incoming and outgoing mail
- 9.0.1.2 Establish filing system
- 9.0.1.3 File materials
- 9.0.1.4 Schedule and hold appointments
- 9.0.1.5 Meet with people
- 9.0.1.6 Use telephone
- 9.0.1.7 Write correspondence
- 9.0.1.8 Operate computer
- 9.0.1.9 Use two-way radio

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**COMPETENCY 9.0.2: Perform general banking procedures**

**COMPETENCY BUILDERS:**

- 9.0.2.1 Write checks
- 9.0.2.2 Prepare bank deposit slips and make bank deposits
- 9.0.2.3 Balance bank statements
- 9.0.2.4 Use electronic banking procedures\*\*

**COMPETENCY 9.0.3: Inventory business**

**COMPETENCY BUILDERS:**

- 9.0.3.1 Establish inventory system\*
- 9.0.3.2 Take physical inventory of structures, facilities, equipment, and livestock
- 9.0.3.3 Calculate amount of grain and forage
- 9.0.3.4 Determine volume or capacity of storage facilities\*
- 9.0.3.5 Categorize inventory items as current, intermediate, or long-term assets\*
- 9.0.3.6 Determine current market value for inventory items\*

**COMPETENCY 9.0.4: Supervise and manage labor\***

**COMPETENCY BUILDERS:**

- 9.0.4.1 Determine amount of labor needed\*
- 9.0.4.2 Evaluate hiring labor versus contracting services\*
- 9.0.4.3 Prepare for periods of peak work loads\*
- 9.0.4.4 Maintain clean, safe working environment\*
- 9.0.4.5 Establish pay scale, benefits, and incentives\*
- 9.0.4.6 Hire workers\*
- 9.0.4.7 Plan work schedules\*
- 9.0.4.8 Train workers\*
- 9.0.4.9 Evaluate worker performance\*
- 9.0.4.10 Establish job termination procedures\*

**COMPETENCY 9.0.5: Maintain supplies**

**COMPETENCY BUILDERS:**

- 9.0.5.1 Set minimum and maximum inventory levels
- 9.0.5.2 Regulate storage facility environment
- 9.0.5.3 Compare costs and quality of supplies from different sources\*
- 9.0.5.4 Purchase supplies\*
- 9.0.5.5 Use electronic management procedures\*\*

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\*\* Futuring

**COMPETENCY 9.0.6: Complete financial and tax records**

**COMPETENCY BUILDERS:**

- 9.0.6.1 Maintain record-keeping system\*
- 9.0.6.2 Record receipts and expenses
- 9.0.6.3 Maintain livestock and crop enterprise records
- 9.0.6.4 Maintain accounts payable and receivable record\*
- 9.0.6.5 Evaluate cash versus accrual reporting methods\*
- 9.0.6.6 Maintain payroll records\*
- 9.0.6.7 Determine depreciation method\*
- 9.0.6.8 Compute book value of depreciable assets\*
- 9.0.6.9 Calculate and record depreciation\*

**COMPETENCY 9.0.7: Complete general and production records**

**COMPETENCY BUILDERS:**

- 9.0.7.1 Maintain inventory records
- 9.0.7.2 Maintain crop production records
- 9.0.7.3 Maintain labor records
- 9.0.7.4 Maintain livestock production records
- 9.0.7.5 Maintain accident records
- 9.0.7.6 Maintain pedigree records
- 9.0.7.7 Maintain equipment service records
- 9.0.7.8 Maintain health records
- 9.0.7.9 Determine field acreage using actual measurements and scale maps
- 9.0.7.10 Draw and interpret farm map including field boundaries, major soil types, topography, vegetation, surface drainage, and travel areas \*
- 9.0.7.11 Draw and interpret farm map of subsurface drainage system\*

**COMPETENCY 9.0.8: Summarize and analyze business records\***

**COMPETENCY BUILDERS:**

- 9.0.8.1 Make ten-month summary of cash expenses and receipts\*
- 9.0.8.2 Calculate efficiency factors\*
- 9.0.8.3 Calculate family labor and management income\*
- 9.0.8.4 Determine net income and profit\*
- 9.0.8.5 Analyze and compare use of capital with standards for similar farms\*
- 9.0.8.6 Prepare income statement\*
- 9.0.8.7 Calculate and record net worth\*
- 9.0.8.8 Determine effectiveness of management practices\*

\* Advancing

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**COMPETENCY 9.0.9: Finance business**

**COMPETENCY BUILDERS:**

- 9.0.9.1 Identify credit strengths and weaknesses
- 9.0.9.2 Develop cash flow projections
- 9.0.9.3 Establish budget
- 9.0.9.4 Evaluate risks of using borrowed capital
- 9.0.9.5 Identify factors influencing credit ratings
- 9.0.9.6 Plan one-year, intermediate, and long-term credit needs
- 9.0.9.7 Identify credit sources
- 9.0.9.8 Evaluate loan repayment terms and conditions
- 9.0.9.9 Select credit source
- 9.0.9.10 Negotiate credit plan
- 9.0.9.11 Calculate cost of loan
- 9.0.9.12 Fill out loan application
- 9.0.9.13 Sign loan agreement
- 9.0.9.14 Maintain balance of savings and cash
- 9.0.9.15 Make loan payments

**COMPETENCY 9.0.10: Prepare and file tax forms\***

**COMPETENCY BUILDERS:**

- 9.0.10.1 Calculate property taxes\*
- 9.0.10.2 Select tax consultant service\*
- 9.0.10.3 Determine amount of social security to be paid\*
- 9.0.10.4 Estimate income tax\*
- 9.0.10.5 Prepare federal income tax FICA schedule\*
- 9.0.10.6 Prepare federal income tax capital gains or loss schedule\*
- 9.0.10.7 Prepare federal income tax form 1040\*
- 9.0.10.8 Prepare state income tax form\*
- 9.0.10.9 Apply for a refund for nonhighway use of federal and state gas tax\*

**COMPETENCY 9.0.11: Plan insurance coverage\***

**COMPETENCY BUILDERS:**

- 9.0.11.1 Determine type and amount of insurance needed\*
- 9.0.11.2 Evaluate different types of insurance\*
- 9.0.11.3 Identify insurance providers and evaluate programs\*
- 9.0.11.4 Complete insurance application and purchase insurance\*
- 9.0.11.5 Apply for collections\*

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**COMPETENCY 9.0.12: Follow legal requirements**

**COMPETENCY BUILDERS:**

- 9.0.12.1 Identify government agencies regulating dairy operations
- 9.0.12.2 Comply with employers' and employees' legal responsibilities
- 9.0.12.3 Establish system for government regulation compliance\*

**COMPETENCY 9.0.13: Obtain land\***

**COMPETENCY BUILDERS:**

- 9.0.13.1 Determine amount of land needed\*
- 9.0.13.2 Determine amount of capital available for obtaining land\*
- 9.0.13.3 Determine whether to purchase or lease land\*
- 9.0.13.4 Appraise available land and identify factors influencing use\*
- 9.0.13.5 Evaluate and complete lease agreement\*
- 9.0.13.6 Evaluate land price cycles and determine when to purchase\*
- 9.0.13.7 Purchase land\*

**COMPETENCY 9.0.14: Plan structures\***

**COMPETENCY BUILDERS:**

- 9.0.14.1 Estimate structure needs\*
- 9.0.14.2 Calculate returns expected from structure investments\*
- 9.0.14.3 Calculate construction, remodeling, and repair costs\*
- 9.0.14.4 Determine locations of new structures\*
- 9.0.14.5 Build or lease structures\*
- 9.0.14.6 Determine zoning requirements\*

**COMPETENCY 9.0.15: Manage equipment program\***

**COMPETENCY BUILDERS:**

- 9.0.15.1 Determine equipment needs\*
- 9.0.15.2 Determine whether to purchase or lease equipment, or to hire work done\*
- 9.0.15.3 Determine whether to repair or trade in equipment\*
- 9.0.15.4 Determine whether to do custom work for others\*
- 9.0.15.5 Estimate returns expected from equipment investments\*
- 9.0.15.6 Evaluate advantages and disadvantages of different types and brands of equipment\*
- 9.0.15.7 Evaluate joint ownership of equipment\*

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COMPETENCY 9.0.16: Purchase livestock\*

COMPETENCY BUILDERS:

- 9.0.16.1 Determine types, amounts, and grades of livestock\*
- 9.0.16.2 Identify purchase sources\*
- 9.0.16.3 Evaluate raising versus buying replacements\*
- 9.0.16.4 Verify registration papers for purebred animals\*
- 9.0.16.5 Interpret DHIA production records\*
- 9.0.16.6 Negotiate purchase price\*
- 9.0.16.7 Evaluate pedigrees\*

COMPETENCY 9.0.17: Enter, establish, and expand business\*

COMPETENCY BUILDERS:

- 9.0.17.1 Establish farm family goals\*
- 9.0.17.2 Evaluate costs and returns for various enterprises\*
- 9.0.17.3 Evaluate options of sole proprietorship, corporation, or partnership\*
- 9.0.17.4 Determine type of business organization\*
- 9.0.17.5 Decide whether to specialize or diversify\*
- 9.0.17.6 Develop plan for adjusting management practices\*
- 9.0.17.7 Determine when to secure professional help\*
- 9.0.17.8 Establish land use plan\*

COMPETENCY 9.0.18: Plan retirement and estate\*

COMPETENCY BUILDERS:

- 9.0.18.1 Select retirement program\*
- 9.0.18.2 Plan orderly transfer of property\*
- 9.0.18.3 Transfer ownership or sell farm\*
- 9.0.18.4 Develop plan for bestowing estate\*
- 9.0.18.5 Identify payment methods for estate and gift taxes\*

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**UNIT 10: Agricultural Mechanics**

**COMPETENCY 10.0.1: Operate and maintain small engines**

**COMPETENCY BUILDERS:**

- 10.0.1.1 Follow general safety precautions
- 10.0.1.2 Check fuel and fuel engine
- 10.0.1.3 Schedule fluid and filter changes\*
- 10.0.1.4 Select oil
- 10.0.1.5 Check oil level and change oil and oil filters
- 10.0.1.6 Start, operate, and shut down engine
- 10.0.1.7 Mix gas and oil for two-cycle engine
- 10.0.1.8 Clean external engine components
- 10.0.1.9 Service air cleaner
- 10.0.1.10 Remove, clean, and regap spark plugs
- 10.0.1.11 Replace starter cord\*
- 10.0.1.12 Pull and replace flywheel and clutch assembly\*
- 10.0.1.13 Remove manifold carbon deposits\*
- 10.0.1.14 Service and clean crankcase breathers\*
- 10.0.1.15 Clean and adjust carburetor\*
- 10.0.1.16 Service and clean fuel strainer\*
- 10.0.1.17 Check engine compression\*
- 10.0.1.18 Check and service battery\*
- 10.0.1.19 Troubleshoot problems\*
- 10.0.1.20 Store engine

**COMPETENCY 10.0.2: Service cooling systems for large engines**

**COMPETENCY BUILDERS:**

- 10.0.2.1 Follow general safety precautions
- 10.0.2.2 Test antifreeze
- 10.0.2.3 Add radiator coolant
- 10.0.2.4 Replace hoses
- 10.0.2.5 Flush cooling system\*
- 10.0.2.6 Test thermostat\*
- 10.0.2.7 Replace thermostat\*
- 10.0.2.8 Replace water pump\*
- 10.0.2.9 Replace radiator\*
- 10.0.2.10 Troubleshoot problems\*

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**COMPETENCY 10.0.3: Service lubrication systems for large engines**

**COMPETENCY BUILDERS:**

- 10.0.3.1 Follow general safety precautions
- 10.0.3.2 Select oil
- 10.0.3.3 Change oil and oil filters
- 10.0.3.4 Lubricate equipment
- 10.0.3.5 Maintain grease fittings
- 10.0.3.6 Repack bearings\*
- 10.0.3.7 Remove and replace oil seal\*
- 10.0.3.8 Troubleshoot problems\*

**COMPETENCY 10.0.4: Service fuel and air systems for large engines**

**COMPETENCY BUILDERS:**

- 10.0.4.1 Follow general safety precautions
- 10.0.4.2 Service air cleaner
- 10.0.4.3 Bleed diesel fuel system
- 10.0.4.4 Service fuel strainer, filters, and sediment bowl\*
- 10.0.4.5 Clean carburetor\*
- 10.0.4.6 Perform basic carburetor overhaul\*
- 10.0.4.7 Adjust engine governor\*
- 10.0.4.8 Adjust engine valves\*
- 10.0.4.9 Replace exhaust system components\*
- 10.0.4.10 Replace fuel pump\*
- 10.0.4.11 Troubleshoot problems\*

**COMPETENCY 10.0.5: Maintain and service electrical systems for large engines**

**COMPETENCY BUILDERS:**

- 10.0.5.1 Follow general safety precautions
- 10.0.5.2 Install battery
- 10.0.5.3 Clean and treat battery terminals, cables, and battery box
- 10.0.5.4 Charge battery
- 10.0.5.5 Check ammeter
- 10.0.5.6 Replace fuses and light bulbs
- 10.0.5.7 Replace distributor cap and rotor\*
- 10.0.5.8 Replace spark plugs and wires\*
- 10.0.5.9 Clean and adjust spark plug gap\*
- 10.0.5.10 Time engine\*
- 10.0.5.11 Check specific gravity of battery\*
- 10.0.5.12 Inspect, adjust, or change breaker points\*
- 10.0.5.13 Troubleshoot problems\*

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**COMPETENCY 10.0.6: Service belt and drive chain assemblies**

**COMPETENCY BUILDERS:**

- 10.0.6.1 Follow general safety precautions
- 10.0.6.2 Replace belts
- 10.0.6.3 Maintain gear drives
- 10.0.6.4 Clean sprockets, chains, and gears
- 10.0.6.5 Replace gears\*
- 10.0.6.6 Replace and adjust chains
- 10.0.6.7 Replace pulleys
- 10.0.6.8 Replace rollers
- 10.0.6.9 Clean and lubricate drive parts
- 10.0.6.10 Troubleshoot problems

**COMPETENCY 10.0.7: Repair and service wheels, tires, and tracks**

**COMPETENCY BUILDERS:**

- 10.0.7.1 Follow general safety precautions
- 10.0.7.2 Check tire pressure
- 10.0.7.3 Check and tighten lug nuts
- 10.0.7.4 Protect tires during equipment storage
- 10.0.7.5 Replace implement wheels
- 10.0.7.6 Adjust wheel spacing\*
- 10.0.7.7 Service wheel bearing assembly\*
- 10.0.7.8 Patch tire\*

**COMPETENCY 10.0.8: Service hydraulic systems**

**COMPETENCY BUILDERS:**

- 10.0.8.1 Follow general safety precautions
- 10.0.8.2 Check and add oil
- 10.0.8.3 Check gauges each operation
- 10.0.8.4 Bleed air from system\*
- 10.0.8.5 Drain, clean, flush, and refill hydraulic system\*
- 10.0.8.6 Replace oil filter\*
- 10.0.8.7 Troubleshoot problems\*

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**COMPETENCY 10.0.9: Hitch equipment to power units**

**COMPETENCY BUILDERS:**

- 10.0.9.1 Follow general safety precautions
- 10.0.9.2 Connect front-end operated equipment
- 10.0.9.3 Connect 3-point hitch equipment
- 10.0.9.4 Attach and detach PTO equipment
- 10.0.9.5 Hitch towed equipment
- 10.0.9.6 Connect hydraulic systems and equipment
- 10.0.9.7 Connect electrical hookups
- 10.0.9.8 Connect safety chains

**COMPETENCY 10.0.10: Operate equipment and vehicles**

**COMPETENCY BUILDERS:**

- 10.0.10.1 Follow general safety precautions
- 10.0.10.2 Identify engine fundamentals
- 10.0.10.3 Refuel power units
- 10.0.10.4 Add wheel and front-end weights
- 10.0.10.5 Check prestart mechanism
- 10.0.10.6 Start engine
- 10.0.10.7 Read equipment gauges
- 10.0.10.8 Operate equipment and vehicles under work conditions and on public roads according to certification standards
- 10.0.10.9 Use hand operating signals
- 10.0.10.10 Adjust equipment and vehicles\*

**COMPETENCY 10.0.11: Identify components of material handling systems**

**COMPETENCY BUILDERS:**

- 10.0.11.1 Identify components of silo loaders
- 10.0.11.2 Identify components of manure handling equipment
- 10.0.11.3 Identify components of grain handling equipment
- 10.0.11.4 Identify components of feed handling equipment

**COMPETENCY 10.0.12: Operate material handling equipment**

**COMPETENCY BUILDERS:**

- 10.0.12.1 Follow general safety precautions
- 10.0.12.2 Identify equipment
- 10.0.12.3 Adjust equipment\*

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**COMPETENCY 10.0.13: Clean and store equipment**

**COMPETENCY BUILDERS:**

- 10.0.13.1 Follow general safety precautions
- 10.0.13.2 Remove debris from equipment
- 10.0.13.3 Steam or high-pressure wash equipment
- 10.0.13.4 Protect equipment from weather
- 10.0.13.5 Lubricate for storage

**COMPETENCY 10.0.14: Plan construction of farm structures**

**COMPETENCY BUILDERS:**

- 10.0.14.1 Follow general safety precautions\*
- 10.0.14.2 Calculate board footage of lumber
- 10.0.14.3 Identify nominal and dressed sizes of lumber
- 10.0.14.4 Select types of structures required\*
- 10.0.14.5 Determine space requirements\*
- 10.0.14.6 Design plans for new structures or improvement or expansion of current structures\*
- 10.0.14.7 Interpret blueprints\*
- 10.0.14.8 Develop bill of materials\*
- 10.0.14.9 Select building materials\*
- 10.0.14.10 Identify grading categories for softwood and for hardwood\*
- 10.0.14.11 Excavate structure sites for concrete pouring\*

**COMPETENCY 10.0.15: Construct with concrete\***

**COMPETENCY BUILDERS:**

- 10.0.15.1 Follow general safety precautions\*
- 10.0.15.2 Use survey level\*
- 10.0.15.3 Calculate volume of concrete to order or mix\*
- 10.0.15.4 Select concrete materials\*
- 10.0.15.5 Build and remove concrete forms\*
- 10.0.15.6 Order concrete\*
- 10.0.15.7 Mix and pour concrete\*
- 10.0.15.8 Install concrete reinforcement\*
- 10.0.15.9 Evaluate concrete slump\*
- 10.0.15.10 Finish concrete surface\*
- 10.0.15.11 Cure concrete\*
- 10.0.15.12 Mix mortar\*
- 10.0.15.13 Lay blocks\*

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**COMPETENCY 10.0.16: Construct with wood**

**COMPETENCY BUILDERS:**

- 10.0.16.1 Follow general safety precautions
- 10.0.16.2 Identify types of lumber
- 10.0.16.3 Cut lumber to dimension
- 10.0.16.4 Stack, season, and store lumber\*
- 10.0.16.5 Install and repair bracing\*
- 10.0.16.6 Install and repair wood siding\*
- 10.0.16.7 Install and repair doors and hardware\*
- 10.0.16.8 Repair minor leaks in roof\*
- 10.0.16.9 Replace window panes\*
- 10.0.16.10 Cut and fit joints\*
- 10.0.16.11 Select and apply metal fasteners
- 10.0.16.12 Assemble joints with glue\*
- 10.0.16.13 Select and install insulation\*

**COMPETENCY 10.0.17: Plan electrical installations\***

**COMPETENCY BUILDERS:**

- 10.0.17.1 Follow general safety precautions\*
- 10.0.17.2 Determine electrical needs\*
- 10.0.17.3 Plan wiring layouts\*
- 10.0.17.4 Plan distribution system\*
- 10.0.17.5 Plan service entrance\*
- 10.0.17.6 Select wire and electrical supplies\*
- 10.0.17.7 Determine total cost of materials\*
- 10.0.17.8 Select alternative electrical sources\*

**COMPETENCY 10.0.18: Install and maintain electrical systems**

**COMPETENCY BUILDERS:**

- 10.0.18.1 Follow general safety precautions
- 10.0.18.2 Read electric meter
- 10.0.18.3 Replace circuit breakers and fuses
- 10.0.18.4 Repair and replace electrical cord
- 10.0.18.5 Connect and disconnect alternative power sources
- 10.0.18.6 Select and use tools, measuring devices, and other equipment\*
- 10.0.18.7 Wire electrical circuits\*
- 10.0.18.8 Replace lighting fixtures\*
- 10.0.18.9 Clean and lubricate motors\*
- 10.0.18.10 Maintain records of electrical maintenance\*
- 10.0.18.11 Install and maintain electric motors on structure\*
- 10.0.18.12 Troubleshoot problems\*

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**COMPETENCY 10.0.19: Install and maintain water systems**

**COMPETENCY BUILDERS:**

- 10.0.19.1 Follow general safety precautions
- 10.0.19.2 Cut and fit pipe or tubing
- 10.0.19.3 Thread metal pipe
- 10.0.19.4 Install and repair pipe and pipe fittings
- 10.0.19.5 Plan system\*
- 10.0.19.6 Determine required quantity and quality of water\*
- 10.0.19.7 Select water source\*
- 10.0.19.8 Determine tools and equipment needed\*
- 10.0.19.9 Contract for system installation\*
- 10.0.19.10 Select pipe, pipe fittings, insulation, and plumbing fixtures\*
- 10.0.19.11 Determine cost of materials\*
- 10.0.19.12 Install and repair valves and faucets\*
- 10.0.19.13 Install insulation and filter\*
- 10.0.19.14 Troubleshoot problems\*
- 10.0.19.15 Troubleshoot and maintain automatic waterers\*

**COMPETENCY 10.0.20: Install and maintain fencing**

**COMPETENCY BUILDERS:**

- 10.0.20.1 Follow general safety precautions
- 10.0.20.2 Install gates
- 10.0.20.3 Install fasteners
- 10.0.20.4 Determine amount of fence required\*
- 10.0.20.5 Select fencing materials\*
- 10.0.20.6 Select posts and braces\*
- 10.0.20.7 Select finish or preservative\*
- 10.0.20.8 Select fasteners\*
- 10.0.20.9 Install posts and braces\*
- 10.0.20.10 Install braces\*
- 10.0.20.11 Lay out and stretch fence\*
- 10.0.20.12 Select and install electric charging units\*

**COMPETENCY 10.0.21: Use and maintain hand and power tools**

**COMPETENCY BUILDERS:**

- 10.0.21.1 Follow general safety precautions
- 10.0.21.2 Identify tools
- 10.0.21.3 Select tools
- 10.0.21.4 Follow operation instructions
- 10.0.21.5 Set up and adjust tools
- 10.0.21.6 Clean and lubricate tools
- 10.0.21.7 Store tools
- 10.0.21.8 Recondition tools\*

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**COMPETENCY 10.0.22: Weld with gas\***

**COMPETENCY BUILDERS:**

- 10.0.22.1 Follow general safety precautions\*
- 10.0.22.2 Set up and adjust gas welding equipment\*
- 10.0.22.3 Select rod\*
- 10.0.22.4 Select and apply flux\*
- 10.0.22.5 Make lap weld\*
- 10.0.22.6 Make butt weld\*
- 10.0.22.7 Make fillet weld\*
- 10.0.22.8 Weld steel in horizontal and non horizontal positions\*
- 10.0.22.9 Weld steel with filler rod\*
- 10.0.22.10 Weld steel by fusion\*
- 10.0.22.11 Braze metal\*
- 10.0.22.12 Hardsurface metal\*
- 10.0.22.13 Cut metal\*
- 10.0.22.14 Clean and store gas welding equipment\*
- 10.0.22.15 Secure and store gas cylinders\*

**COMPETENCY 10.0.23: Weld with electric arc and MIG**

**COMPETENCY BUILDERS:**

- 10.0.23.1 Follow general safety precautions
- 10.0.23.2 Select welding equipment and accessories
- 10.0.23.3 Select electrode sizes and types
- 10.0.23.4 Select settings
- 10.0.23.5 Prepare metal
- 10.0.23.6 Weld steel in horizontal positions
- 10.0.23.7 Make lap weld
- 10.0.23.8 Make butt weld
- 10.0.23.9 Make fillet weld
- 10.0.23.10 Weld pipe
- 10.0.23.11 Cut metal using electrode
- 10.0.23.12 Hardsurface metal\*
- 10.0.23.13 Weld steel in non-horizontal positions\*
- 10.0.23.14 Weld cast iron\*
- 10.0.23.15 Clean and store welding equipment

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**COMPETENCY 10.0.24: Fabricate with metal**

**COMPETENCY BUILDERS:**

- 10.0.24.1 Follow general safety precautions
- 10.0.24.2 Design metal project\*
- 10.0.24.3 Prepare bill of materials\*
- 10.0.24.4 Identify types of metal\*
- 10.0.24.5 Identify nominal sizes of metal\*
- 10.0.24.6 Determine metal properties\*
- 10.0.24.7 Test metal for type and hardness\*
- 10.0.24.8 Punch and drill metal
- 10.0.24.9 Cut metal
- 10.0.24.10 Select thread and size for tap or die
- 10.0.24.11 Grind metal
- 10.0.24.12 Attach hardware to sheet metal
- 10.0.24.13 Store metal
- 10.0.24.14 Join metal with pop rivets
- 10.0.24.15 Bend sheet metal\*
- 10.0.24.16 Join metal with spot welder\*

**COMPETENCY 10.0.25: Solder\***

**COMPETENCY BUILDERS:**

- 10.0.25.1 Follow general safety precautions\*
- 10.0.25.2 Select soldering method\*
- 10.0.25.3 Select tools\*
- 10.0.25.4 Select flux\*
- 10.0.25.5 Select solder\*
- 10.0.25.6 Prepare surfaces\*
- 10.0.25.7 Apply solder\*
- 10.0.25.8 Clean equipment\*

**COMPETENCY 10.0.26: Apply protective coatings**

**COMPETENCY BUILDERS:**

- 10.0.26.1 Follow general safety precautions
- 10.0.26.2 Determine type of coating\*
- 10.0.26.3 Select and use application tools
- 10.0.26.4 Use steam cleaner and pressure washer
- 10.0.26.5 Sand surface
- 10.0.26.6 Apply masking tape
- 10.0.26.7 Mix thinner
- 10.0.26.8 Apply primer coat
- 10.0.26.9 Apply finish coat
- 10.0.26.10 Use paint and varnish remover

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**UNIT 11: Crop Production**

**COMPETENCY 11.0.1: Evaluate and manage soil\***

**COMPETENCY BUILDERS:**

- 11.0.1.1 Evaluate soil drainage\*
- 11.0.1.2 Identify soil texture and percent organic matter\*
- 11.0.1.3 Identify soil structure and type\*
- 11.0.1.4 Determine slope\*
- 11.0.1.5 Determine soil use capability for agriculture\*
- 11.0.1.6 Determine suitability of soil for nonagricultural uses\*
- 11.0.1.7 Evaluate problems affecting soil use and management\*
- 11.0.1.8 Determine and implement management and conservation practices\*
- 11.0.1.9 Follow government regulations and guidelines\*
- 11.0.1.10 Use infrared mapping\*\*

**COMPETENCY 11.0.2: Plan crop planting**

**COMPETENCY BUILDERS:**

- 11.0.2.1 Identify seeds
- 11.0.2.2 Interpret seed tag information
- 11.0.2.3 Determine crops to plant\*
- 11.0.2.4 Establish crop rotation\*
- 11.0.2.5 Select seed\*
- 11.0.2.6 Conduct seed germination and vigor tests\*
- 11.0.2.7 Inoculate seed
- 11.0.2.8 Determine seeding rate\*
- 11.0.2.9 Store seed

**COMPETENCY 11.0.3: Plant and till crops**

**COMPETENCY BUILDERS:**

- 11.0.3.1 Follow general safety precautions
- 11.0.3.2 Select planting or seeding method and date\*
- 11.0.3.3 Prepare seedbed
- 11.0.3.4 Determine planting depth and rate\*
- 11.0.3.5 Calibrate planting equipment\*
- 11.0.3.6 Operate planting equipment\*
- 11.0.3.7 Compact seedbed after seeding\*
- 11.0.3.8 Cultivate crops\*
- 11.0.3.9 Identify planting failure problems\*
- 11.0.3.10 Use seed encapsulating\*\*

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**COMPETENCY 11.0.4: Test soil and plant tissues**

**COMPETENCY BUILDERS:**

- 11.0.4.1 Take soil samples
- 11.0.4.2 Submit prepared soil samples and forms to analysis laboratory\*
- 11.0.4.3 Interpret soil analysis results\*
- 11.0.4.4 Take plant tissue samples\*
- 11.0.4.5 Submit prepared plant tissue samples and forms to analysis laboratory\*
- 11.0.4.6 Interpret plant analysis results\*
- 11.0.4.7 Use infrared photographs\*\*
- 11.0.4.8 Use infield monitors\*\*

**COMPETENCY 11.0.5: Determine fertilization needs\***

**COMPETENCY BUILDERS:**

- 11.0.5.1 Identify factors influencing fertilizer requirements\*
- 11.0.5.2 Use soil analysis results to determine nutrient levels\*
- 11.0.5.3 Determine crop nutrient needs\*
- 11.0.5.4 Identify plant nutrient deficiency symptoms\*
- 11.0.5.5 Determine amount and kind of nutrients and lime to apply\*
- 11.0.5.6 Evaluate effect leaching has on nutrient availability\*
- 11.0.5.7 Evaluate influence soil pH has on nutrient availability\*
- 11.0.5.8 Maintain pH levels for crops grown\*
- 11.0.5.9 Estimate costs of lime and fertilizer recommendations\*
- 11.0.5.10 Develop fertilization plan\*
- 11.0.5.11 Define meaning of NPK and trace elements on fertilizer information\*

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**COMPETENCY 11.0.6: Fertilize crops\***

**COMPETENCY BUILDERS:**

- 11.0.6.1 Follow general safety precautions\*
- 11.0.6.2 Analyze and interpret manure sample information\*
- 11.0.6.3 Interpret fertilization rate charts\*
- 11.0.6.4 Select fertilizer analysis\*
- 11.0.6.5 Select fertilizer application method\*
- 11.0.6.6 Determine time for fertilizer application\*
- 11.0.6.7 Mix fertilizer solutions\*
- 11.0.6.8 Calibrate fertilizer application equipment\*
- 11.0.6.9 Adjust fertilizer application rates \*
- 11.0.6.10 Transfer NH5 from nurse tank to applicator\*
- 11.0.6.11 Transfer liquid fertilizer from nurse tank to applicator\*
- 11.0.6.12 Apply fertilizer\*
- 11.0.6.13 Recognize signs of fertilizer injury\*

**COMPETENCY 11.0.7: Control insects and diseases\***

**COMPETENCY BUILDERS:**

- 11.0.7.1 Follow general safety precautions\*
- 11.0.7.2 Inspect crops and determine when controls are needed\*
- 11.0.7.3 Evaluate options and select control method\*
- 11.0.7.4 Interpret chemical labels and compatibility charts\*
- 11.0.7.5 Follow chemical use regulations\*
- 11.0.7.6 Calibrate application equipment\*
- 11.0.7.7 Select and apply chemicals \*
- 11.0.7.8 Recognize chemical injury\*
- 11.0.7.9 Maintain application record\*
- 11.0.7.10 Apply biological control methods\*
- 11.0.7.11 Recognize insect injury\*

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**COMPETENCY 11.0.8: Control weeds**

**COMPETENCY BUILDERS:**

- 11.0.8.1 Follow general safety precautions
- 11.0.8.2 Identify plants as monocots or dicots\*
- 11.0.8.3 Identify plants as annuals, biennials, or perennials\*
- 11.0.8.4 Identify plant parts and functions\*
- 11.0.8.5 Determine type of control needed\*
- 11.0.8.6 Interpret chemical labels and compatibility charts\*
- 11.0.8.7 Calibrate application equipment\*
- 11.0.8.8 Follow chemical use regulations
- 11.0.8.9 Maintain application record
- 11.0.8.10 Select and apply chemicals\*
- 11.0.8.11 Recognize chemical injury\*
- 11.0.8.12 Cultivate fields\*
- 11.0.8.13 Clip fields
- 11.0.8.14 Apply biological control methods\*
- 11.0.8.15 Rotate crops\*

**COMPETENCY 11.0.9: Apply pesticides**

**COMPETENCY BUILDERS:**

- 11.0.9.1 Follow general safety precautions
- 11.0.9.2 Mix and load chemical application equipment
- 11.0.9.3 Use proper handling procedures
- 11.0.9.4 Dispose of containers
- 11.0.9.5 Wear protective clothing and equipment
- 11.0.9.6 Follow proper cleaning and storing procedures

**COMPETENCY 11.0.10: Harvest crops**

**COMPETENCY BUILDERS:**

- 11.0.10.1 Follow general safety precautions
- 11.0.10.2 Determine crop maturity\*
- 11.0.10.3 Determine moisture content\*
- 11.0.10.4 Determine acreage to cut at one time\*
- 11.0.10.5 Determine forage cuttings to harvest\*
- 11.0.10.6 Cut and condition hay
- 11.0.10.7 Rake and ted hay
- 11.0.10.8 Cut forages for green chop feeding\*
- 11.0.10.9 Combine grain crops\*
- 11.0.10.10 Bale dried forages and bedding materials\*
- 11.0.10.11 Clip grain stubble after harvesting
- 11.0.10.12 Determine harvest losses\*
- 11.0.10.13 Determine yields\*
- 11.0.10.14 Utilize intensive grazing\*
- 11.0.10.15 Use microwave drying\*\*

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**COMPETENCY 11.0.11: Store crops**

**COMPETENCY BUILDERS:**

- 11.0.11.1 Follow general safety precautions
- 11.0.11.2 Estimate amount of grain storage needed\*
- 11.0.11.3 Select storage facilities\*
- 11.0.11.4 Load and unload bales
- 11.0.11.5 Unload grain wagons
- 11.0.11.6 Unload silage wagons
- 11.0.11.7 Stack bales
- 11.0.11.8 Fill silo, bags and balage\*
- 11.0.11.9 Apply silage and hay additives\*
- 11.0.11.10 Estimate amount of grain in storage
- 11.0.11.11 Estimate amount of forage in storage\*

**COMPETENCY 11.0.12: Maintain quality of stored crops**

**COMPETENCY BUILDERS:**

- 11.0.12.1 Follow general safety precautions
- 11.0.12.2 Clean storage areas
- 11.0.12.3 Use grain probe to collect crop samples
- 11.0.12.4 Determine moisture content
- 11.0.12.5 Determine condition of stored crops\*
- 11.0.12.6 Determine safe moisture content for storing grains and forages\*
- 11.0.12.7 Control temperature and humidity in storage areas\*
- 11.0.12.8 Operate dryer and fans\*
- 11.0.12.9 Identify storage problems\*

**UNIT 12: Employability Skills**

**SUBUNIT 12.1: Career Development**

**COMPETENCY 12.1.1: Investigate career options**

**COMPETENCY BUILDERS:**

- 12.1.1.1 Determine interests and aptitudes
- 12.1.1.2 Identify career options
- 12.1.1.3 Research occupations matching interests and aptitudes
- 12.1.1.4 Select career(s) that best match(es) interests and aptitudes
- 12.1.1.5 Identify advantages and disadvantages of career options, including nontraditional careers
- 12.1.1.6 Assess differences in wages, annual incomes, and job opportunities based on geographic location
- 12.1.1.7 Develop a career plan

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**COMPETENCY 12.1.2: Analyze potential barriers to employment**

**COMPETENCY BUILDERS:**

- 12.1.2.1 Identify common barriers to employment
- 12.1.2.2 Develop strategies to overcome employment barriers

**UNIT 12: Employability Skills**

**SUBUNIT 12.2: Decision Making and Problem Solving**

**COMPETENCY 12.2.1: Apply decision-making techniques in the workplace**

**COMPETENCY BUILDERS:**

- 12.2.1.1 Identify the decision to be made
- 12.2.1.2 Compare alternatives
- 12.2.1.3 Determine consequences of each alternative
- 12.2.1.4 Make decisions based on values and goals
- 12.2.1.5 Evaluate the decision made

**COMPETENCY 12.2.2: Apply problem-solving techniques in the workplace**

**COMPETENCY BUILDERS:**

- 12.2.2.1 Diagnose the problem and its causes
- 12.2.2.2 Identify alternatives and their consequences in relation to the problem
- 12.2.2.3 Examine multicultural and nonsexist dimensions of problem solving
- 12.2.2.4 Utilize resources to explore possible solutions to the problem
- 12.2.2.5 Compare and contrast the advantages and disadvantages of each solution
- 12.2.2.6 Determine appropriate action
- 12.2.2.7 Evaluate results

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**UNIT 12: Employability Skills**

**SUBUNIT 12.3: Work Ethic**

**COMPETENCY 12.3.1: Evaluate the relationship of self-esteem to work ethic**

**COMPETENCY BUILDERS:**

- 12.3.1.1 Identify special characteristics and abilities in self and others
- 12.3.1.2 Identify internal and external factors that affect self-esteem

**COMPETENCY 12.3.2: Analyze the relationship of personal values and goals to work ethic both in and out of the workplace**

**COMPETENCY BUILDERS:**

- 12.3.2.1 Distinguish between values and goals
- 12.3.2.2 Determine the importance of values and goals
- 12.3.2.3 Evaluate how values affect goals
- 12.3.2.4 Identify short-term and long-term goals
- 12.3.2.5 Prioritize personal goals
- 12.3.2.6 Describe how personal values are reflected in work ethic
- 12.3.2.7 Describe how interactions in the workplace affect personal work ethic
- 12.3.2.8 Examine how life changes affect personal work ethic

**COMPETENCY 12.3.3: Demonstrate work ethic**

**COMPETENCY BUILDERS:**

- 12.3.3.1 Examine factors that influence work ethic
- 12.3.3.2 Exhibit characteristics that reflect an appropriate work ethic

**UNIT 12: Employability Skills**

**SUBUNIT 12.4: Job-Seeking Skills**

**COMPETENCY 12.4.1: Prepare for employment**

**COMPETENCY BUILDERS:**

- 12.4.1.1 Identify traditional and nontraditional employment sources
- 12.4.1.2 Utilize employment sources
- 12.4.1.3 Research job opportunities, including nontraditional careers
- 12.4.1.4 Interpret equal employment opportunity laws
- 12.4.1.5 Explain the critical importance of personal appearance, hygiene, and demeanor throughout the employment process
- 12.4.1.6 Prepare for generic employment tests and those specific to an occupation/organization

**COMPETENCY 12.4.2: Design a résumé**

**COMPETENCY BUILDERS:**

- 12.4.2.1 Identify personal strengths and weaknesses
- 12.4.2.2 List skills and/or abilities, career objective(s), accomplishments/achievements, educational background, and work experience
- 12.4.2.3 Demonstrate legible written communication skills using correct grammar, spelling, and concise wording
- 12.4.2.4 Complete résumé using various formats
- 12.4.2.5 Secure references

**COMPETENCY 12.4.3: Complete and process job application forms**

**COMPETENCY BUILDERS:**

- 12.4.3.1 Explain the importance of an application form
- 12.4.3.2 Identify ways to obtain job application forms
- 12.4.3.3 Describe methods for handling illegal questions on job application forms
- 12.4.3.4 Demonstrate legible written communications skills using correct grammar, spelling, and concise wording
- 12.4.3.5 Return application to proper person, request interview, and follow up

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**COMPETENCY 12.4.4: Demonstrate interviewing skills**

**COMPETENCY BUILDERS**

- 12.4.4.1 Investigate interview environment and procedures
- 12.4.4.2 Explain the critical importance of personal appearance, hygiene, and demeanor
- 12.4.4.3 Demonstrate question and answer techniques
- 12.4.4.4 Demonstrate methods for handling difficult and/or illegal interview questions

**COMPETENCY 12.4.5: Secure employment**

**COMPETENCY BUILDERS:**

- 12.4.5.1 Identify present and future employment opportunities within an occupation/organization
- 12.4.5.2 Research the organization/company
- 12.4.5.3 Use follow-up techniques to enhance employment potential
- 12.4.5.4 Compare and evaluate job offers

**UNIT 12: Employability Skills**

**SUBUNIT 12.5: Job Retention Skills**

**COMPETENCY 12.5.1: Analyze the organizational structure of the workplace**

**COMPETENCY BUILDERS:**

- 12.5.1.1 Identify and evaluate employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene
- 12.5.1.2 Be aware of and obey all company policies and procedures
- 12.5.1.3 Examine the role/relationship between employee and employer
- 12.5.1.4 Recognize opportunities for advancement and reasons for termination

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**COMPETENCY 12.5.2: Maintain positive relations with others**

**COMPETENCY BUILDERS:**

- 12.5.2.1 Exhibit appropriate work habits and attitude
- 12.5.2.2 Identify behaviors to establish successful working relationships
- 12.5.2.3 Cooperate and compromise through teamwork and group participation
- 12.5.2.4 Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age

**UNIT 12: Employability Skills**

**SUBUNIT 12.6: Job Advancement**

**COMPETENCY 12.6.1: Analyze opportunities for personal and career growth**

**COMPETENCY BUILDERS:**

- 12.6.1.1 Determine opportunities within an occupation/organization
- 12.6.1.2 Compare and contrast other opportunities
- 12.6.1.3 List benefits of job advancement
- 12.6.1.4 Evaluate factors involved when assuming a new position within or outside an occupation/organization

**COMPETENCY 12.6.2: Exhibit characteristics needed for advancement**

**COMPETENCY BUILDERS:**

- 12.6.2.1 Display a positive attitude
- 12.6.2.2 Demonstrate knowledge of a position
- 12.6.2.3 Perform quality work
- 12.6.2.4 Adapt to changing situations and technology
- 12.6.2.5 Demonstrate capability for different positions
- 12.6.2.6 Participate in continuing education/training programs
- 12.6.2.7 Respect, accept, and work with ALL individuals in the workplace

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**UNIT 12: Employability Skills**

**SUBUNIT 12.7: Technology in the Workplace**

**COMPETENCY 12.7.1: Assess the impact of technology in the workplace**

**COMPETENCY BUILDERS:**

- 12.7.1.1 Cite how past business/industry practices have influenced present business/industry processes
- 12.7.1.2 Investigate the use of technology in the workplace
- 12.7.1.3 Analyze how present skills can be applied to learning new technologies

**COMPETENCY 12.7.2: Use a variety of technological applications**

**COMPETENCY BUILDERS:**

- 12.7.2.1 Explore basic mathematical, scientific, computer, and technological principles
- 12.7.2.2 Use technology to accomplish assigned tasks
- 12.7.2.3 Create solutions to problems using technical means

**UNIT 12: Employability Skills**

**SUBUNIT 12.8: Lifelong Learning**

**COMPETENCY 12.8.1: Apply lifelong learning to individual situations**

**COMPETENCY BUILDERS:**

- 12.8.1.1 Define lifelong learning
- 12.8.1.2 Identify factors that cause the need for lifelong learning

**COMPETENCY 12.8.2: Adapt to change**

**COMPETENCY BUILDERS:**

- 12.8.2.1 Analyze the effects of change
- 12.8.2.2 Identify reasons why goals change
- 12.8.2.3 Describe the importance of flexibility when reevaluating goals
- 12.8.2.4 Evaluate the need for continuing education/training

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**UNIT 12: Employability Skills**

**SUBUNIT 12.9: Economic Education**

**COMPETENCY 12.9.1: Analyze global enterprise systems**

**COMPETENCY BUILDERS:**

- 12.9.1.1 Identify characteristics of various enterprise systems
- 12.9.1.2 Examine the relationship between competition, risk, and profit
- 12.9.1.3 Illustrate how supply and demand influence price

**COMPETENCY 12.9.2: Evaluate personal money management**

**COMPETENCY BUILDERS:**

- 12.9.2.1 Describe the need for personal management records
- 12.9.2.2 Identify methods of taxation
- 12.9.2.3 Analyze how credit affects financial security
- 12.9.2.4 Compare types and methods of investments
- 12.9.2.5 Prepare a personal budget
- 12.9.2.6 Be an informed and responsible consumer
- 12.9.2.7 Analyze the effects of advertising on the consumer

**UNIT 12: Employability Skills**

**SUBUNIT 12.10: Balancing Work and Family**

**COMPETENCY 12.10.1: Analyze the effects of family on work**

**COMPETENCY BUILDERS:**

- 12.10.1.1 Recognize how family values, goals, and priorities are reflected in the workplace
- 12.10.1.2 Identify present and future family structures and responsibilities
- 12.10.1.3 Describe personal and family roles
- 12.10.1.4 Analyze concerns of working parent(s)
- 12.10.1.5 Examine how family responsibilities can conflict with work
- 12.10.1.6 Resolve family-related conflicts
- 12.10.1.7 Explain how to use support systems/community resources to help resolve family-related conflicts

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**COMPETENCY 12.10.2: Analyze the effects of work on family**

**COMPETENCY BUILDERS:**

- 12.10.2.1 Identify responsibilities associated with paid and nonpaid work
- 12.10.2.2 Compare the advantages and disadvantages of multiple incomes
- 12.10.2.3 Examine how work can conflict with family responsibilities
- 12.10.2.4 Describe how work-related stress can affect families
- 12.10.2.5 Identify family support systems and resources

**UNIT 12: Employability Skills**

**SUBUNIT 12.11: Citizenship in the Workplace**

**COMPETENCY 12.11.1: Exercise the rights and responsibilities of citizenship in the workplace**

**COMPETENCY BUILDERS:**

- 12.11.1.1 Identify the basic rights and responsibilities of citizenship
- 12.11.1.2 Examine the history and contributions of all racial, ethnic, and cultural groups

**COMPETENCY 12.11.2: Cooperate with others in the workplace**

**COMPETENCY BUILDERS:**

- 12.11.2.1 Identify situations in which compromise is necessary
- 12.11.2.2 Examine how individuals from various backgrounds contribute to work-related situations
- 12.11.2.3 Demonstrate initiative to facilitate cooperation
- 12.11.2.4 Give and receive constructive criticism to enhance cooperation

**UNIT 12: Employability Skills**

**SUBUNIT 12.12: Leadership**

**COMPETENCY 12.12.1: Evaluate leadership styles appropriate for the workplace**

**COMPETENCY BUILDERS:**

- 12.12.1.1 Identify characteristics of effective leaders
- 12.12.1.2 Compare leadership styles
- 12.12.1.3 Demonstrate effective delegation skills
- 12.12.1.4 Identify opportunities to lead in the workplace

**COMPETENCY 12.12.2: Demonstrate effective teamwork skills**

**COMPETENCY BUILDERS:**

- 12.12.2.1 Identify the responsibilities of a valuable group member
- 12.12.2.2 Exhibit open-mindedness
- 12.12.2.3 Identify methods of involving each member of a team
- 12.12.2.4 Contribute to the efficiency and success of a group
- 12.12.2.5 Determine ways to motivate others

**COMPETENCY 12.12.3: Utilize effective communication skills**

**COMPETENCY BUILDERS:**

- 12.12.3.1 Demonstrate the importance of listening
- 12.12.3.2 Demonstrate assertive communication
- 12.12.3.3 Recognize the importance of verbal and nonverbal cues and messages
- 12.12.3.4 Analyze written material
- 12.12.3.5 Prepare written material
- 12.12.3.6 Give and receive feedback
- 12.12.3.7 Articulate thoughts
- 12.12.3.8 Use appropriate language

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**UNIT 12: Employability Skills**

**SUBUNIT 12.13: Entrepreneurship**

**COMPETENCY 12.13.1: Evaluate the role of small business in the economy**

**COMPETENCY BUILDERS:**

- 12.13.1.1 Identify the benefits of small business to a community
- 12.13.1.2 Analyze opportunities for small business in a community

**COMPETENCY 12.13.2: Examine considerations of starting a business**

**COMPETENCY BUILDERS:**

- 12.13.2.1 Research a business idea
- 12.13.2.2 Compare various ways to become a small business owner
- 12.13.2.3 Investigate factors to consider in financing a new business
- 12.13.2.4 Evaluate entrepreneurship as a career option

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