Saskatchewan
Learning

# Field Crop Production 10, 20, 30 Agriculture Technician Program

## Curriculum Guide

## A Practical and Applied Art

**Saskatchewan Learning**
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These Field Crop Production curriculum guidelines have been adapted from Alberta Agriculture's Green Certificate Program.

# Overview

The Agriculture Technician (ATEC) Program develops students' knowledge, skills and abilities in six major areas of agricultural production. These six areas of production are:

- field crop and irrigated field crop
- cow/calf
- feedlot
- dairy
- sheep
- pork*

* Initially, pork will be developed as an ATEC program but may eventually be elevated to a designated trade.

The courses within each area of production are organized into three levels of knowledge, skills and abilities: introductory, intermediate, and advanced.

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**Introductory level modules (Level 10)** help students gain knowledge and build the skills and abilities that are used in the day-to-day operation of the particular production sector. These modules form the basis of further learning. The range of experience and knowledge of students at the introductory level will range from very little or none to considerable. Those students with prior knowledge and experience should be assessed and given credit for the core modules as quickly as possible. Then use the optional modules to enhance their knowledge, skills and abilities.

**Intermediate level modules (Level 20)** build on the competencies developed at the introductory level. These modules broaden or refine the knowledge, skills and abilities used in the particular production sector. Optional modules are used to enhance learning and address individual interests and learning needs. These modules also help students direct their learning toward related careers, job opportunities, and post-secondary education.

**Advanced level modules (Level 30)** demand that students acquire a higher level of knowledge, skills and abilities in the particular production sector. These modules encourage development of employability skills that help students gain entry into the workplace or related post-secondary program.

If articulation agreements are established, these courses could provide the desirable background and skills for farm employment or entry into related programs at public and vocational colleges, technical institutes, apprenticeship programs, and universities in Saskatchewan.

All of the courses have been prepared with the guidance of Saskatchewan Learning and follow the outline, format and required dimensions of the Saskatchewan Learning Practical and Applied Arts curricula.

# Philosophy and Rationale

Saskatchewan is a world leader in traditional primary production agriculture. Today, there is ever increasing and intense global competition for primary agriculture products. This means that Saskatchewan agricultural producers and employees need to have knowledge, skills and abilities in a variety of areas in order to maximize production and remain viable.

Providing students with practical knowledge, skills and abilities in crop production will help students provide meaningful contributions to their family farming operations or pursue related career and educational opportunities.

# Aim and Goals

### Aim

The aim of Field Crop Production is to provide students with knowledge, skills and abilities in field crop production including farm safety procedures, communication skills, and basic knowledge of equipment operation and procedures.

### Goals

**Awareness:** To provide students with an awareness of the nature of field crop production including the knowledge, skills and abilities required for field crop production.

**Connections between School and Work:** To create a connection for students between the world of school and the world of work.

**Business and Entrepreneurship Attitudes:** To develop the skills and abilities which encourage students to understand the business of field crop production and markets.

**Community Environment:** To use relevant community examples which will help develop students' skills and abilities as well as encourage a sense of pride and community.

**Communication:** To develop social and communication skills as potential employees or employers in field crop production.

**Employability Skills:** To encourage the development of employability skills in field crop production.

**Personal Management Skills:** To promote self-esteem, confidence, and a proactive attitude toward time management, communication, and technical capabilities.

# Course Components and Considerations

### Course Description

Field Crop Production 10, 20, 30 requires 100 hours of instruction per credit. The guidelines have been developed to provide a balance among:

- *knowledge* of all facets of field crop production including farm safety
- *skills and abilities* provided by information and practical application of concepts
- *exposure* to farms involved in field crop production
- *opportunities* for mentoring, job shadowing, or work study using resources in the community.

The ATEC Program guidelines are organized into two sets of modules.

**Field Crop Production 10, 20, 30 Core Modules** represent 50-65 hours of in-class or practical instruction which will develop student knowledge, skills and abilities at the introductory level of field crop production.

**Field Crop Production 10, 20, 30 Optional Modules** are used to meet the particular interests of individual students. Students should be encouraged to develop learning contracts indicating their particular area of interest.

### Training Plans

The Appendices contain training plans in the form of checklists. These training plans can be used by teachers or farmer-trainers for organizing, planning and monitoring work study or instruction at a work site. Student expectations include observation, assistance or demonstration of a skill or set of skills.

To successfully complete Crop Production, a student must spend in the range of 25-50 hours of every 100 hours receiving practical instruction at a work site.

## Adjusting for Prior Learning and Experience

Many students, particularly those coming from farm backgrounds, may have already acquired some of the basic knowledge and/or competencies in field crop production prior to taking this course. Teachers should assess individual students and evaluate their level of competency. Teachers should apply the Adaptive Dimension to all modules and encourage students to select optional modules which will enhance their knowledge, skills and abilities in field crop production.

Students should develop their own learning contracts according to their own needs. Each module has a suggested range of instructional hours allowing for flexibility in designing individual learning plans.

# Course Overview

In the Field Crop Production 10, 20, 30 series, there are no prerequisites for any of the courses. While it is recommended that students complete all three courses in the series, a teacher may choose to teach 20 or 30 without the others. In order to accommodate this option, few modules have prerequisite modules identified. However, when not providing the 10, 20 and 30 courses in order, teachers must review and may need to incorporate, learning objectives from earlier comparable modules to ensure that students gain the necessary knowledge and skills.

| Module Code | Module | Suggested Time |
|---|---|---|
| **Core and Optional Modules for Field Crop Production 10** | | |
| CROP01 | Module 1: Farm Safety (Core) | 7-9 hours |
| CROP02 | Module 2: Communications (Core) | 3-4 hours |
| CROP03 | Module 3: Career Exploration (Core) | 3-4 hours |
| CROP04 | Module 4: Planning for Field Crop Production (Core) | 4-6 hours |
| CROP05 | Module 5: Farm Equipment Maintenance and Repair (Core) | 12-14 hours |
| CROP06 | Module 6: Marketing (Core) | 4-5 hours |
| CROP07 | Module 7: Field Crops in Saskatchewan (Core) | 2-4 hours |
| CROP08 | Module 8: Field Crop Production Machinery (Core) | 2-3 hours |
| CROP09 | Module 9: Basic Maintenance and Operation of Crop Production Equipment (Core) | 4-6 hours |
| CROP10 | Module 10: Basic Operation of Tillage Equipment (Core) | 3-5 hours |
| CROP11 | Module 11: Basic Operation of Combine Equipment (Core) | 3-6 hours |
| CROP12 | Module 12: Basic Operation of Swathers (Core) | 3-4 hours |
| CROP13 | Module 13: Basic Operation of Forage Equipment (Optional) | 3-5 hours |
| CROP14 | Module 14: Developing a Crop Plan (Core) | 3-4 hours |
| CROP15 | Module 15: Land Leveling for Irrigation Equipment (Optional) | 5-10 hours |
| CROP16 | Module 16: Irrigation Pumping Equipment (Optional) | 5-7 hours |
| CROP17A | Module 17A: Work Study Preparation and Follow-up Activities (Core) | 5-10 hours |
| CROP18A | Module 18A: Work Study (Core) | 25-50 hours |
| **Core and Optional Modules for Field Crop Production 20** | | |
| CROP19 | Module 19: Farm Safety (Core) | 5-6 hours |
| CROP20 | Module 20: Communications (Core) | 3-4 hours |
| CROP21 | Module 21: Career Exploration (Core) | 3-4 hours |
| CROP22 | Module 22: Planning for Crop Production (Core) | 2-4 hours |
| CROP23 | Module 23: Farm Equipment Maintenance and Repair (Core) | 5-7 hours |
| CROP24 | Module 24: Marketing (Core) | 2-3 hours |
| CROP25 | Module 25: Cultivation and Seeding Equipment (Core) | 10-12 hours |
| CROP26 | Module 26: Fertilizer Storage, Handling and Application (Core) | 5-7 hours |
| CROP27 | Module 27: Harvesting Equipment (Core) | 10-12 hours |
| CROP28 | Module 28: Weed and Pest Control (Core) | 5-6 hours |
| CROP29 | Module 29: Operation and Maintenance of Gravity Type Irrigation Systems (Optional) | 5-10 hours |

| | | |
|---|---|---|
| CROP30 | Module 30: Operation and Maintenance of Pipe Type Irrigation Systems (Optional) | 5-10 hours |
| CROP31 | Module 31: Operation and Maintenance of Hand Move Type Irrigation Systems (Optional) | 5-10 hours |
| CROP32 | Module 32: Operating Tractors with Attachments (Optional) | 3-4 hours |
| CROP33 | Module 33: Forage Production (Optional) | 5-10 hours |
| CROP17B | Module 17B: Work Study Preparation and Follow-up Activities (Core) | 5-10 hours |
| CROP18B | Module 18B: Work Study (Core) | 25-50 hours |
| **Core and Optional Modules for Field Crop Production 30** | | |
| CROP34 | Module 34: Causes and Prevention of Farm Accidents (Core) | 4-5 hours |
| CROP35 | Module 35: First Response for Farm Accidents (Core) | 3-4 hours |
| CROP36 | Module 36: Communications (Core) | 4-5 hours |
| CROP37 | Module 37: Career Exploration (Core) | 3-4 hours |
| CROP38 | Module 38: Farm Planning (Core) | 3-4 hours |
| CROP39 | Module 39: Farm Equipment Maintenance and Repair (Core) | 5-7 hours |
| CROP40 | Module 40: Transporting Farm Equipment (Core) | 5-6 hours |
| CROP41 | Module 41: Environmental Regulations and Disposal of Farm Chemicals (Core) | 6-8 hours |
| CROP42 | Module 42: Grain Marketing (Core) | 6-8 hours |
| CROP43 | Module 43: Developing and Using Financial Plans (Core) | 6-8 hours |
| CROP44 | Module 44: Grain Storage (Core) | 5-6 hours |
| CROP45 | Module 45: Off Season Storage of Farm Equipment (Optional) | 5-7 hours |
| CROP46 | Module 46: Operation of Air Seeding Equipment (Optional) | 5-7 hours |
| CROP47 | Module 47: Operation and Maintenance of Wheel Move Type Irrigation Systems (Optional) | 5-10 hours |
| CROP48 | Module 48: Operation and Maintenance of Pivot Type Irrigation Systems (Optional) | 5-10 hours |
| CROP49 | Module 49: Techniques for Gathering Soil Samples (Optional) | 5-10 hours |
| CROP17C | Module 17C: Work Study Preparation and Follow-up Activities (Core) | 5-10 hours |
| CROP18C | Module 18C: Work Study (Core) | 25-50 hours |

# Considerations for Program Delivery

### Community Partnerships Involve Using Local Farms and Farmers to Learn

Throughout this program, crop producers, machinery dealers, and field crop production experts are recommended as resource persons to enhance student learning and to provide practical experience. Students should also use related field crop production businesses and services such as:

- grain elevators or inland terminals
- producer organizations
- chemical or fertilizer dealers
- short-line equipment manufacturers or machinery dealers.

Teachers will need to seek assistance from crop producers in the community in order to provide opportunities for practical experience and to act as resources as required. Adjustments should be made to accommodate the particular circumstances of the community as well as the related experiences of the students.

Work study opportunities are a requirement of the course (i.e., 25 to 50 hours per credit).

### Instructional Resources

There are a wide variety of resources available for the instruction of field crop production. Students should develop skills in finding and using the most current information on topics relating to field crop production.

Saskatchewan Agriculture, Food and Rural Revitalization is the most important source of current resources. Resources can be ordered from the Publication Distribution Centre Order Desk by telephone at (306) 721-4330, by fax at (306) 721-4626, or e-mail at valb.pad@sk.sympatico.ca. Saskatchewan Agriculture, Food and Rural Revitalization's web site is http://www.agr.gov.sk.ca.

### Instructional Strategies and Methods

Field Crop Production 10, 20, 30 encourages the use of the following instructional strategies and methods. Consult Saskatchewan Learning's foundation document *Instructional Approaches: A Framework for Practice* (1991), for additional information. Many methods are recommended for use with the ATEC program. Some examples follow.

**experiential**

- field trips
- field observations
- job shadowing.

**interactive**

- presentations including on-site demonstrations or symposiums
- discussions
- mentoring with co-operating farmers-trainers.

**independent learning**
- learning contracts
- student reference manuals.

Learning contracts and the creation of Student Reference Manuals are of particular importance in the ATEC Program.

**Learning Contracts**

Field Crop Production 10, 20, 30 is designed for more individualized exploration and application of skills and abilities through on-site practice with working farmers or on-site trainers. Learning contracts should be used to organize the on-site practice with the foundational and specific learning objectives required by the modules throughout the course. Examples of learning contracts can be found in the foundation document *Student Evaluation: A Teacher Handbook* (1991).

**Student Reference Manual**

The purpose of the Student Reference Manual is to be a repository of useful, work site reference material collected throughout the course and throughout the various levels.

The Student Reference Manual will provide an exhibit of a student's effort, progress, and achievement over a period of time. The manual should be organized so that it is clearly useful to the individual student.

Throughout each level, students will be requested to prepare material to insert and maintain in the manual. The material in the manual should be evaluated on usefulness, completeness, accuracy and organization of the material.

# Preparing for Field Crop Production

The courses in the ATEC Program focus on the skills and abilities required at the technician level of crop production. Students are expected to achieve the basic competencies outlined in the course by:
- engaging in hands-on, practical experiences with knowledgeable experts in field crop production
- monitoring progress using checklists at key points throughout the course. These checklists should be self-assessed and verified by the farmers-trainers as well as the teacher.

The key factor to successful achievements of the basic competencies is the contribution made by the co-operating farmer-trainer. In order to establish a successful relationship, expectations should be discussed, defined and mutually agreed upon by the co-operating farmers-trainers and the teacher. Teachers should refer to the "Guidelines for Work Study", a section of the *Practical and Applied Arts Handbook* (2003), for specific direction.

Teachers should also prepare an inventory of other community resources, work study opportunities and field trip or demonstration sites prior to implementing Field Crop Production 10, 20, 30.

## Planning Schedule for Teachers

| Time Period | To Do |
|---|---|
| Prior to course | Identify possible co-operating farmers-trainers*<br><br>Review guidelines for Work Study<br><br>Identify and select possible field trip or demonstration sites<br><br>Identify possible work study opportunities. |
| Early in course | Work with students to:<br>• prepare individual learning contracts<br>• identify and arrange field trip sites<br>• identify and arrange work study opportunities |
| Mid-way | Have students review individual learning contracts<br><br>Discuss progress with co-operating farmers-trainers. |
| End of course | Remind students of deadlines<br><br>Prepare for final assessment |

* Working with Saskatchewan Agriculture, Food and Rural Revitalization's (SAFRR) Green Certificate Program is considered optional but recommended in order for students to receive high school credit as well as certification through the SAFRR Green Certificate program. By having students enrol in the SAFRR Green Certificate Program, SAFRR can assist teachers with the identification of co-operating farmers-trainers as well as possible symposiums, field trips or demonstration sites.

# Student Evaluation

There are three areas of importance in this curriculum on which teachers will collect data on student progress. Teachers should clearly outline their expectations of students and make students aware of the expectations for content (concept attainment), application (knowledge of processes), and experiential knowledge**.**

| Areas of importance | Range of emphasis % | Suggested assessment techniques |
|---|---|---|
| Content<br>(concept attainment) | 20–30% | Ongoing student activities including written assignments, presentations, homework, attendance at workshops, and symposiums. |
| Application<br>(knowledge and application of basic competencies and processes)' | 30–40% | Checklists indicating achievement of basic competencies in field crop production. |
| Experiential<br>(application of knowledge; developing skills and abilities, processes, and attitudes using actual situations, site visitations, and work study) | 30–50% | Learning contracts (personal development and application of skills, abilities and attitudes )<br><br>Student Reference Manual including appropriate ongoing documentation indicative of independent learning<br><br>Work study component assessment. |

Refer to *Student Evaluation: A Teacher Handbook* (1991) for examples of a variety of assessment and evaluation techniques.

# Program Evaluation

Program evaluation is the systematic process of gathering and analyzing information about some aspect of the school program in order to make decisions or to communicate to others what is happening in a program.

By its nature, Field Crop Production 10, 20, 30 can accommodate the interests and needs of each individual student. The course also depends on the co-operation of farmers-trainers. Although assessment is time-consuming, the course should be assessed regularly to ensure that:

- the program is meeting the needs of individual students
- the co-operating farmer-trainer/student relationship is successfully operating
- the program provides meaningful awareness, adequate exploration opportunities, and relevant experiences.

Techniques for gathering and analyzing information on the course include anecdotal records and interviews as well as surveys at various times of the year. The information that is gathered can be used to make decisions about the program in future years.

## Relationship to Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program

Field Crop Production is based upon Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program - Technician Level. The following chart indicates the relationship with SAFRR's Green Certificate Program. Students or teachers should contact Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program (306) 787-8191 for more information.

| **Agriculture Technician Program** | | **Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program** |
|---|---|---|
| Field Crop Production 10 – Introductory Level<br>1 high school credit | | |
| Field Crop Production 20 – Intermediate Level<br>1 high school credit |  | Green Certificate Program<br>Level I: Technician |
| Field Crop Production 30 –<br>Advanced Level<br>1 high school credit | | |

Students completing all three courses of Field Crop Production will be eligible for certification as a Level I Technician: Field Crop Production through Saskatchewan Agriculture, Food and Rural Revitalization. This applies for all production sectors with the exception of pork. Students completing the pork production sector may be eligible to receive credit in SIAST's swine management program when articulation processes have been completed with Saskatchewan Learning and the Apprenticeship and Trade Certification Unit.

The ATEC Program relies on a partnership of students, teachers, and co-operating farmers-trainers. Teachers may also wish to involve Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Coordinator to assist in the program.

The charts on the following pages outline the roles and responsibilities of each person involved in the ATEC Program. Teachers should review this information prior to making arrangements for delivery of the program.

## Roles, Responsibilities and Accountability

The following charts indicate the role of each person involved in the ATEC Program.

**Note:** Working with the Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program is considered optional but is recommended in order for students to receive high school credit as well as receive certification through the Saskatchewan Agriculture, Food and Rural Revitalization Green Certificate Program. SAFRR's Green Certificate Program can also provide students with various learning opportunities through workshops, symposiums, and demonstrations.

| **Teacher** |
|---|
| Read, interpret and comply with policy regarding Work Study. |
| Identify course needs of students and ensure the registration process. |
| Determine if the work site is acceptable. Facilitate the location and approval of a suitable training site. The co-operating farmers-trainers should:<br>• be qualified in the occupation<br>• be able and willing to give direction to the student<br>• have time to supervise and give direction. |
| Ensure that the work place is safe, complying with Occupational Health and Safety Standards. |
| Supervise the student's on-site work experience in accordance with school and Saskatchewan Learning policies. |
| Monitor student and co-operating farmer-trainer on a regular basis for progress and results on training. |
| Provide for sound education program for students. |
| Evaluate students. |
| **Optional:** Communicate with Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Coordinator. Look for opportunities which would be of mutual benefit (i.e., symposiums, testing days for training periods, locating co-operating farmers-trainers, and tour sites). |

| **Student** |
|---|
| Show initiative in taking the course and understanding the course requirements. |
| Establish an individual learning contract. |
| Participate in training sessions, symposiums, and meetings. |
| Learn the skills outlined in the course to the level required. |
| Work with the co-operating farmer-trainer to learn and acquire basic competencies. |
| Maintain records in the Student Reference Manual. |
| Keep records, prepare reports, and complete other assessment procedures required by the teacher to receive high school credit in the course. |
| **Optional:** Attend a test day for a training period as required by Saskatchewan Agriculture, Food and Rural Revitalization's Green Certificate Program. |

| **Co-operating Farmer-Trainer** |
|---|
| Participate in orientation for the ATEC Program. |
| Spend time and energy to help in the training of the student. |
| Provide a safe, learning environment for student. |
| Ensure that the student has achieved competence in the skills according to the various standards outlined in the course. |
| Communicate with the teacher on the student's program. |

| **Optional: SAFRR Green Certificate Coordinator** |
|---|
| Work with the teacher to establish the program. |
| Recognize the difference between the roles of the teacher, the co-operating farmer-trainer, the student and the SAFRR Green Certificate Coordinator. |
| Provide information and outline the process to students who wish to enroll in the ATEC Program for high school credit as well as receive certification through Agriculture and Food's Green Certificate Program – Technician Level. |
| Help supply materials, manuals, and other resources which support the delivery of the program. |
| If requested by the teacher, help identify suitable co-operating farmers-trainers for various production sectors. |
| Invite students to participate in test days for training periods, workshops or symposiums. |
| Arrange testers and organize test days. |

**Note:** These tables have been modified from Battle River Regional Division #31 (1997), *Green Certificate Program: Handbook for Administrators and School Coordinators*, Camrose, AB.

# Core and Optional Modules for Field Crop Production 10

## Module 1: Farm Safety (Core)

**Suggested Time:** 7-9 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to establish the critical importance of farm safety. Students are alerted to become aware of a variety of potential farm hazards. Students are also introduced to safety precautions and procedures associated with operating and maintaining farm vehicles.

Teachers, students and farmer/on-site trainers should be well familiar with farm safety including how to perform a farm safety audit. Further information can be obtained from the Farm Safety Division, Occupational Health and Safety, Saskatchewan Labour.

The significance of farm safety should be reinforced by stipulating to students that failure to demonstrate farm safety procedures would result in non-completion of the program.

**Foundational Objectives**
- To understand and use farm safety procedures at all times.
- To be able to recognize potential hazards on farms.
- To observe, assist with or demonstrate farm safety skills and procedures.

**Common Essential Learnings Foundational Objective**
- To understand how technology influences occupational roles within society and affects the work site (e.g., occupational health, safety, etc.). (TL)

| | Learning Objectives | Notes |
|---|---|---|
| 1.1 | To identify potential farm hazards. | Invite a farm safety specialist to talk to the students about general farm safety. Use site visitations also and have students identify potential hazards and precautionary measures. Explain why these areas need cautionary attention.<br><br>Have students work with the farmer-trainer to prepare a farm safety audit. Contact Farm Safety Division, Occupational Health and Safety, Saskatchewan Labour (787-8399 or 1-800-567-7233) for more information. |
| 1.2 | To identify safety guards, shields, safety devices and warning signs used on farm equipment. | Demonstrate a safety walk around all machinery and other devices to check for the placement and installment of safety devices. Point out the use of safety guards, shields and other safety devices used on farm equipment. Have students demonstrate the ability to locate, read, and comprehend the warning messages on the farm equipment. |

| | Learning Objectives | Notes |
|---|---|---|
| | | Involve students in a discussion on farm safety in all areas of crop production.<br><br>**Student Reference Manual:** Have students prepare a safety checklist and inspection to be used on a routine basis. |
| 1.3 | To describe the kind of proper clothing and protective gear necessary to observe farm safety. | Discuss the kind of clothing, footwear, gloves, glasses, and breathing and ear devices necessary to work on farms and operate farm machinery. Identify the farm jobs or situations that warrant these precautionary measures. |
| 1.4 | To develop safe practices using manual and power tools and jacks or winches. (COM) | Manual and power tools as well as lifting equipment (jacks and winches) are used by all production sectors. Often students do not recognize that these power tools and lifting equipment can be potentially dangerous. Have students examine the safety hazards associated with these kinds of small tools, jacks or winches. Have students prepare individual presentations on a particular small tool, jack or winch. Share with others in the ATEC program. |
| 1.5 | To identify potential fire hazards and prevention procedures on farms. | Fires on farms can be caused by a variety of sources. Have students list the various fire hazards on farms. Have students describe fire prevention on farms and investigate various types of fire equipment. Invite members of the local fire department to talk about the hazards associated with burning stubble or sloughs.<br><br>**Student Reference Manual:** Have students prepare a list and description of the various types of fire extinguishers including equipment for burning stubble or sloughs. |
| 1.6 | To know when and how to use basic First Aid. | Basic First Aid is an essential skill on farms. Inform students of the benefits of taking a First Aid course. Invite a practical nurse or St. John's Ambulance personnel to instruct students in basic First Aid such as cuts, burns, sprains, and breaks. Students should be familiarized with emergency procedures for police, ambulance and fire fighters.<br><br>**Student Reference Manual:** Have students prepare a list of basic First Aid procedures. |

## Module 2: Communications (Core)

**Suggested Time:** 3-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Effective oral and written communication skills are important skills in all areas of crop production. Throughout the course, students should be encouraged to develop and use effective verbal and written communication skills. An important component of effective communication is the use of appropriate industry language including accurate technical terms. Teachers may wish to have students establish vocabulary lists.

**Foundational Objectives**
- To develop effective oral and written communications skills.
- To observe, assist with or demonstrate effective communication.

**Common Essential Learnings Foundational Objectives**
- To gradually incorporate the vocabulary of field crop production into their talk and writing. (COM)
- To understand and use organizational structures (e.g., to order ideas sequentially or chronologically, to compare and contrast, to discern cause and effect). (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 2.1 | To understand the need for reliable information throughout all activities associated with field crop production. (COM) | Providing and understanding current and reliable information involves a number of effective oral and written communication skills. Discuss with students the various kinds of communication required in field crop production including reading and forwarding messages, reading and interpreting charts, calculating seed and chemical rates, and interpreting manuals and other types of information.<br><br>Often non-verbal communication can interfere with messages. Role play various situations with students, emphasizing employee/employer interactions. |
| 2.2 | To identify the characteristics of effective verbal and written communication. | Effective use of words is very important in making sure that the message is clearly understood. Effective communication depends on:<br>• choice of words<br>• simple instructions and answers<br>• concise, specific language.<br><br>In farming, communication is critical not only to the operation of the farm but to follow safety procedures. Have students identify the information and communication needs on the farm. |

| | Learning Objectives | Notes |
|---|---|---|
| | | Role play situations with other students enrolled in ATEC courses where effective and accurate information is required on a farm. |
| 2.3 | To develop skills in receiving and passing on messages and important information. | Farmers are continually receiving and passing on information on everything from machinery repairs to livestock market reports. There are specific skills that a student should use when receiving a message that needs to be passed on as well as giving messages. Many times these messages are verbal (i.e., telephone, face to face) or through electronic communication such as faxes and e-mail.<br><br>Have students compose and pass on messages and information that might be used on a farm through a variety of ways. Some examples include:<br>• telephone messages with written notes<br>• messages left and retrieved through voice mail or answering machines<br>• messages delivered or received through faxes<br>• face to face messages and information. |
| 2.4 | To locate and use specific information contained in a variety of publications. | Field crop production makes use of many sources of information. Finding and sorting information is an important skill particularly for technical information including farm equipment maintenance, crop information and chemicals or fertilizers. Provide students with a number of manuals. Using specific examples, have students develop skills in locating, sorting and summarizing specific information.<br><br>**Student Reference Manual:** Have students prepare a list of useful manuals and publications relating to field crop production. |

## Module 3: Career Exploration (Core)

**Suggested Time:** 3-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Students should explore the career options available to them throughout the course on field crop production. This module can be used as a guideline for future career and educational plans. It also introduces students to the concept of employability skills.

**Foundational Objectives**
- To develop an understanding of post-secondary programs, careers, and employment opportunities in field crop production.
- To observe, assist with or demonstrate career knowledge and employability skills.
- To develop a career plan.
- To understand the concept of employability skills.

**Common Essential Learnings Foundational Objectives**
- To seek information through a steadily expanding network of options including other libraries, databases, individuals and agencies. (IL)
- To recognize that learning is continuous from birth to death (e.g., life experiences). (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 3.1 | To develop individual career profiles. | This learning objective is used to help students identify specifically their areas of interest and abilities in production of field crops. This will enable students over the long term to maintain their enthusiasm as well as act as a positive reinforcement. Ask students to create an inventory of activities and interests.<br><br>Assist students in identifying their academic and non-academic strengths focusing on their present knowledge base. Encourage students to value their life experiences and their abilities outside of school. Emphasize the importance of relevant experience and expertise.<br><br>Have students prepare a list of the many kinds of career opportunities in field crop production.<br><br>Have students research career clusters and the range of occupational opportunities related to field crop production.<br><br>Students should investigate various factors before making career choices including:<br>• description of the work duties<br>• personal qualities an individual must possess to succeed in the career |

| | Learning Objectives | Notes |
|---|---|---|
| | | • processes required to become certified within the career or trade<br>• length of education and training<br>• school locations<br>• cost of education and up-grading<br>• trends within the business or career<br>• worst and best aspects of the job<br>• starting salary<br>• opportunities for advancement.<br><br>Have students use this information to develop individual career profiles and a statement of educational and career goals particularly related to production of field crops. |
| 3.3 | To identify basic personal and employability skills. | This learning objective is used to reinforce the notion of employability skills in students including:<br>• teamwork<br>• punctuality<br>• personal responsibility<br>• positive attitude<br>• co-operation.<br><br>Have students provide a description of each of these employability skills. Role play situations demonstrating situations where these skills would come into play. |
| 3.4 | To understand and practise time management. | Time management is an important lifelong skill. Have students list the jobs on a particular farm that need to be done on a weekly, monthly, seasonal or yearly basis. Prioritize the jobs and ask students to prepare a time management system.<br><br>Have students list their own jobs including schoolwork and extra curricular activities. Have students prioritize and prepare a personal time management system.<br><br>**Student Reference Manual:** Have students prepare a personal time management system. |

## Module 4: Planning for Field Crop Production (Core)

**Suggested Time:** 4-6 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to outline the basic types of planning required for field crop production.

**Foundational Objectives**
- To understand basic types of planning used in the production of various kinds of crops.
- To collect and use information related to farm planning.
- To observe, assist with or demonstrate planning skills for crop production.

**Common Essential Learnings Foundational Objectives**
- To distinguish between primary and secondary sources of information. (COM)
- To apply conclusions and generalizations to new situations. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 4.1 | To describe the kinds of plans that are used in field crop production. | There are a number of plans used daily, monthly and yearly on a farm. Some of these include:<br>• land management<br>• financial<br>• crop<br>• cash projections<br>• equipment usage<br>• fertilizer and chemical plans.<br><br>Discuss with students the basics of a plan, what they are used for, and how they are developed. Plans are used to assist in the daily, monthly, and yearly operation of a farm. They are developed using a review of past performance, identifying future goals, suggesting strategies to help achieve the goals, and checking to see how well the plan worked.<br><br>Describe the basic elements of planning. Ask students to apply these basics and provide a brief description using these elements in a land management plan, financial plan, and equipment usage plan. Have students list the kinds of information they would need to complete each of these plans. |
| 4.2 | To develop a land management or farm plan. | At this basic level, students are introduced to planning through a land management (or farm) plan. Inform students of the purpose of a land management or farm plan. Have them discuss why it is important. |

**Learning Objectives** **Notes**

In preparing a land management or farm plan, it is important to identify all the resources that are available or required to operate the farm. To prepare a land management plan, students need to study and describe:

- land features including soil types and water sources/ availability
- cultivated/non-cultivated land
- uses of various land types
- most suitable types of farming/ranching
- other environmental considerations.

To prepare a farm management plan, students need to study and describe:

- natural, human and equipment resources
- financial resources
- geographical area
- natural resources - soil type, land formations and cultivated acres
- most suitable type of farm/ranching for the area
- storage requirements

Have students select a location and develop a farm and/or land management plan. Use Saskatchewan Agriculture, Food and Rural Revitalization's web site to assist in finding information.

**Student Reference Manual:** Have students prepare plans for land use, crop rotations, equipment storage and grain storage.

## Module 5: Farm Equipment Maintenance and Repair (Core)

**Suggested Time:** 12-14 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to provide students with an introduction into general maintenance and repair of farm machinery. Farm safety is stressed throughout the module.

**Note:** In dealing with all modules on farm equipment, teachers should inform students of the dangers and legalities of under-aged drivers operating farm machinery.

**Foundational Objectives**
- To develop basic skills and abilities in the repair and maintenance of farm machinery.
- To develop skills and abilities in the use of hand and power tools which are used to service farm machinery.
- To observe, assist with or demonstrate skills related to farm machinery maintenance and repair.

**Common Essential Learnings Foundational Objectives**
- To determine own learning needs. (IL)
- To analyze data to create hypotheses, predictions and estimates. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 5.1 | To develop skills in the processes associated with regular machinery maintenance. | The first step in maintenance of farm machinery is preventive maintenance process (i.e., checking oil, and fuel levels, cleaning radiators, preventing chaff build-up, and monitoring gauges).<br><br>Explain regular maintenance processes to students. Have students use the manuals of several different kinds of farm equipment to describe preventive practices related to maintaining the particular machine.<br><br>**Student Reference Manual:** Have students develop a checklist of preventive maintenance procedures for each piece of field crop production equipment. |
| 5.2 | To identify and describe a variety of different types of tools (power and manual). | On a farm operation, there are a number of screwdrivers, wrenches, and tools used in the daily maintenance and operation of farm machinery such as, the daily maintenance of the machinery, daily routine checkups of pulleys, or adapting the machinery to different uses.<br><br>Each tool has a distinct operational procedure. Have students describe how to use a variety of common farm tools. Students should examine and demonstrate the standards illustrated in the operator's manual of each specific tool. |

| | Learning Objectives | Notes |
|---|---|---|
| | | Have students determine the different types and sizes of wrenches (manual and power) that best suit the job that the wrench is designed to achieve.<br><br>Demonstrate that correct selection and use of the specific tool to fit the correct screw or bolt is very important to prevent damage to the tool, bolt or screw.<br><br>Distinguish between a safe practice and an unsafe practice when using specific manual and power tools. |
| 5.3 | To identify and describe the characteristics of the common farm mechanical, hydraulic, and hand jacks and winches. | In order to maintain machinery, it is often necessary to hoist or elevate machinery, parts of machinery, or other objects while working around the farm. There are a number of different ways to hoist an object depending on the structure of the article. It is important for students to be aware of the weight range, strength, and capacity of the jack and the item being lifted.<br><br>Have students compare and contrast the uses and efficiencies of the direct vertical, automotive, floor type, and any other lift. Identify the type of lift that is best suited for each job.<br><br>**Student Reference Manual:** Have students prepare a summary of the type of common farm mechanical, hydraulic and hand jacks and winches. |
| 5.4 | To identify the dangers and hazards associated with common lifting equipment. | Overloading, tipping of the jack, and damaged or worn equipment can be just a few of the hazards when using lifting equipment. Select and illustrate the dangers and hazards that are associated with common lifting equipment.<br><br>Demonstrate the correct operating procedures in using the jack or hoisting equipment in a safe and efficient manner. |
| 5.5 | To identify the transportation regulations for moving farm equipment on public roads. | Transporting large farm equipment requires skills and caution. The province and rural municipalities have a number of regulations relating to agriculture. It is the responsibility of the farmer or rancher to know and abide by these regulations. Legal settlements for negligence can be very costly to a farming operation. |

| | Learning Objectives | Notes |
|---|---|---|
| | | Identify and explain licensing, insurance, operator's qualifications and *Dangerous Goods Transportation Act* for handling all types of farm equipment on public roads. Consideration should be given to liability insurance, license class, and types of roads.<br><br>Examine and describe the width/height/length requirements, lighting requirements, slow moving signs, clear visibility rules and seasonal restrictions on all farm equipment. |
| 5.6 | To understand the need for having emergency equipment. | Outline and give examples of the tools and emergency equipment which are required if the farm machinery has a crisis while in transport on a public road. Assess student's knowledge using a short answer test or other assessment technique. |

## Module 6: Marketing (Core)

**Suggested Time:** 4-5 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Marketing is one of the most important activities in crop production. This module gives students basic awareness and knowledge of agricultural marketing.

**Foundational Objectives**
- To develop an understanding of how agricultural commodities are marketed.
- To develop an awareness of the market information available to producers.
- To observe, assist with or demonstrate marketing skills related to field crops.

**Common Essential Learnings Foundational Objectives**
- To read and interpret quantitative information found in newspapers, magazines and government, political and business publications and evaluate the validity of arguments based on such information. (NUM)
- To propose generalizations that explain relationships. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 6.1 | To gain first-hand knowledge of how marketing information is used in producing an agricultural commodity. (NUM) | Students would benefit from a field trip to an inland terminal or grain elevator as a practical introduction to marketing. Prepare hosts ahead of time for the level of students' understanding and the kind of information that would be helpful to students.<br><br>Students could use a case history or interview approach to gather and sort information about marketing grains, oilseeds, or specialty crops. |
| 6.2 | To describe the basic steps involved in marketing crops. | At this level, students should develop only a basic understanding of the marketing of commodities. Marketing involves gathering and making decisions about when to sell grain as well as what to seed. Have students locate and sort current market current information. Have students provide a description of the various kinds of markets used in field crop production. |

## Module 7: Field Crops in Saskatchewan (Core)

**Suggested Time:** 2-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used as an introduction to field crops in Saskatchewan. Students investigate the varieties of field crops, the conditions under which they grow and the interrelationship between them.

**Foundational Objectives**
- To understand the conditions that influence the choice of crops which are grown.
- To observe, assist with or demonstrate knowledge about Saskatchewan field crops.

**Common Essential Learnings Foundational Objectives**
- To generate, classify and explore reasons or rules underlying categories. (CCT)
- To organize information for reporting, discussing or sharing. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 7.1 | To identify and describe various crops grown in the local area. | Have students identify the crops grown in the local area. Describe the difference between type and variety of coarse grains, cereal grains, oilseeds, pulse crops, and specialty crops.<br><br>If possible, have students prepare a display of crop varieties. Ask students to include information on the use of each crop.<br><br>**Student Resource Manual:** Have students prepare lists of descriptions of various kinds of crops grown in the local area. |
| 7.2 | To describe the factors that influence crop selection in a given area. | Soil types, climatic conditions, and frost-free days are factors which influence the selection of crops.<br><br>**Student Reference Manual:** Have students prepare a list of the most suitable crop varieties for the area. |

## Module 8: Field Crop Production Machinery (Core)

**Suggested Time:** 2-3 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
In this module, students develop basic understanding of the kinds and functions of crop production machinery. Basic operating procedures are presented at a later stage. This module is intended as a broad overview of crop production equipment.

**Foundational Objectives**
- To understand the types and functions of various kinds of crop production machinery.
- To observe, assist with or demonstrate knowledge about crop production machinery.

**Common Essential Learnings Foundational Objective**
- To explore the evolution of technological developments related to field crop production machinery. (TL)

| | Learning Objectives | Notes |
|---|---|---|
| 8.1 | To identify different types and functions of crop production machinery. | Crop production machinery is highly mechanized.<br><br>Have students identify and list grain production machinery and specialized equipment required to operate a grain farm.<br><br>Have students prepare an inventory of the various types of tillage equipment, combines and swathers including their uses and functions on the farm. |
| 8.2 | To describe the basic mechanical principles of various crop production equipment. | This learning objective is intended to give students an awareness of the basic mechanical principles behind various types of crop production equipment. Have a machinery dealer, salesman or crop producer talk about the basics behind combines, seeding equipment or other types of crop production equipment.<br><br>**Student Reference Manual:** Have students prepare a list of various kinds of crop production equipment including prices and dealers. |

## Module 9: Basic Maintenance and Operation of Crop Production Equipment (Core)

**Suggested Time:** 4-6 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module introduces students to the basic maintenance and operation of farm equipment. Farm safety is critical throughout this course and should always be first and foremost in the teaching of any aspect of the course.

**Foundational Objectives**
- To develop a regime of regular maintenance for crop production equipment.
- To develop basic skills in safely operating farm equipment.
- To observe, assist with or demonstrate skills in maintaining and operating crop production equipment.

**Common Essential Learnings Foundational Objective**
- To learn through synthesizing understandings, experiences, interests and needs. (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 9.1 | To identify and practice routine inspection of crop production equipment. | Students should become familiar with routine inspection and practices before learning to operate crop production equipment. Have students list and describe the items to be checked in a pre-start walk around inspection. Include the proper fluid, greases, and oil levels, filters (air and fluid), lubrication, and engine start-up procedures. Identify the time span between changes.<br><br>**Student Reference Manual:** Have students prepare a checklist of routine inspection practices. |
| 9.2 | To identify various gauges and controls of farm equipment. | Modern farm equipment uses a variety of gauges and controls. Students should become familiar with all gauges and controls, their function and their normal range of operation.<br><br>Have students identify and analyze all of the operator's controls and gauges stating their purpose and method of operation. Make sure that students are able to interpret the information and identify the recommended range of the engine load and RPM. |

| | Learning Objectives | Notes |
|---|---|---|
| 9.3 | To demonstrate basic operating procedures of crop production equipment. | When students have a clear understanding of safety procedures as well as maintenance and routine checks of equipment, demonstrate the proper and safe operating procedures for each of the following:<br>• starting equipment<br>• shifting, clutching and braking<br>• operating power take-offs (PTOs)<br>• hydraulic systems. |

## Module 10: Basic Operation of Tillage Equipment (Core)

**Suggested Time:** 3-5 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to introduce students to the basic operation of tillage equipment. Students will need access to tillage equipment to complete this module.

**Foundational Objectives**
- To develop basic skills in operating tillage equipment.
- To observe, assist with or demonstrate basic skills in operating tillage equipment.

**Common Essential Learnings Foundational Objective**
- To use questions as tools to further students' understandings. (COM)

| Learning Objectives | Notes |
|---|---|
| 10.1 To describe the basic characteristics and operating mechanisms of tillage equipment | All types of tillage equipment have basic characteristics and operating mechanisms. Introduce students to these basic characteristics including the routine care and service.<br><br>Have students identify the characteristics of various kinds of tillage equipment (cultivators, discers, harrows) indicating the function and use. Demonstrate to students how each type of equipment prepares the soil and manages trash cover, and the advantages and disadvantages of each type. |
| 10.2 To identify a regime for pre-start check of tillage equipment. | Have students identify and describe the pre-start check-up routines that must take place before the equipment is used each day or throughout the day's operation.<br><br>**Student Reference Manual:** Have students develop a checklist for pre-start routine inspections. |
| 10.3 To develop basic skills in operating tillage equipment. | Have a crop producer or extension agrologist explain and demonstrate the operational procedures of tillage equipment. Indicate width and depth limitations, procedures to prevent wear on equipment, field working patterns, and appropriate speed limitations.<br><br>Include instructions and demonstrations on the proper turning procedures. Draw students' attention to the outcome if improper turning procedures occur. |

| | Learning Objectives | Notes |
|---|---|---|
| 10.4 | To identify problems which can occur when operating tillage equipment. | Problems occur on a regular basis when operating any kind of tillage equipment. At this basic level of skills, however, students should only become aware of what to look for and seek assistance in correcting the problem. Students should not attempt to fix problems at this level. |

## Module 11: Basic Operation of Combine Equipment (Core)

**Suggested Time:** 3-6 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to introduce students to the basic operation of combine equipment. Students will need to have access to combine equipment to complete this module. This module provides a basic level of skills in the operation of the combine equipment. Students should not be expected to acquire complete proficiency at this time nor work without supervision.

**Foundational Objectives**
- To develop basic skills in operating combine equipment including farm safety procedures and routine inspection checks.
- To observe, assist with or demonstrate basic skills in operating combine equipment.

**Common Essential Learnings Foundational Objectives**
- To develop and use point-form notes. (COM)
- To make decisions based on knowledge of own needs and interests. (IL)

| Learning Objectives | Notes |
|---|---|
| 11.1 To describe the major components and operating mechanisms of combine equipment. | Machinery companies are designing combine equipment that addresses the needs of today's grain farm (i.e., larger and more diverse acres, distance). One of the results of these changes is that combine equipment is now simpler to operate on one hand, but more mechanically complex on the other. This means that combine operators need a high level of competency in order to avoid costly breakdowns and loss of precious time during harvest season.<br><br>The first step in operating a combine is to become familiar with the major components and operating mechanisms of a combine. Have students identify the major parts of the combine, their function and their normal operating characteristics. Have students become familiar with combine manuals.<br><br>**Student Reference Manual:** Have students list the major components, operating procedures, safety precautions, and routine maintenance of combines. |
| 11.2 To identify a regime for pre-start check of combine equipment. | The care and service of combine equipment is critical. Preventive maintenance and repairs are critical to combine operation. |

| Learning Objectives | | Notes |
|---|---|---|
| | | Have students identify and describe the pre-start check-up routines that must take place before the equipment is used each day or throughout the day's operation.<br><br>**Student Reference Manual:** Have students make a checklist of the items to be included in a pre-start check of a combine. Remind students to include structural components such as sheet metal and tires.<br><br>Also have students make a checklist identifying any points of lubrication. |
| 11.3 | To develop basic skills in operating combine equipment. | Be prepared to explain and demonstrate the operational procedures of combine equipment including table height, unloading, procedures to prevent wear on equipment, field working patterns, and appropriate speed limitations.<br><br>Include instructions and demonstrations on the proper turning procedures. Draw students' attention to the consequences of improper turning. |
| 11.4 | To identify operating gauges. | Introduce students to the combine gauges and the purpose of each. Describe their operating ranges and allowable tolerances. |
| 11.5 | To identify problems that can occur when operating combine equipment. | Problems occur on a regular basis when operating any kind of combine equipment. At this basic level of skills, however, students should only become aware of what to look for and seek assistance in correcting the problem. Students should not attempt to fix problems at this level. |

## Module 12: Basic Operation of Swathers (Core)

**Suggested Time:** 3-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to introduce students to the basic operation of swathers. Students will need access to swather equipment to complete this module.

**Foundational Objectives**
- To develop basic skills in operating various kinds of swathers.
- To observe, assist with or demonstrate skills in operating swathers.

**Common Essential Learnings Foundational Objective**
- To use questions as tools to further their own and others' understandings. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 12.1 | To describe the basic components and operating mechanisms of swather equipment. | Have students identify and describe the function and operation of the major components of the different types of swathers. These major parts require adjustments to get the optimum output from the swathers. Explain each control and define its operational limits. Have students become familiar with operating manuals for swathers. |
| 12.2 | To identify a regime for pre-start check of swather equipment. | Have students identify and describe the pre-start check up routines that must take place before swathing equipment is used each day as well as throughout the day's operation.<br><br>**Student Reference Manual:** Have students identify the lubrication points and belts, chains, bearings and other linkages that need adjustment. |
| 12.3 | To develop basic skills in operating swather equipment. | Be prepared to explain and demonstrate the operational procedures according to width and depth limitations, procedures to prevent wear on equipment, field working patterns, and appropriate speed limitations.<br><br>Include instructions and demonstrations on the proper turning procedures. Draw students' attention to the outcome if improper turning procedures occur. |
| 12.4 | To identify problems which can occur when operating swather equipment. | Problems occur on a regular basis when operating any kind of swather equipment. At this basic level of skills, however, students should only become aware of what to look for and seek assistance in correcting the problem. Students should not attempt to fix problems at this level. |

## Module 13: Basic Operation of Forage Equipment (Optional)

**Suggested Time:** 3-5 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module is used to introduce students to the basic operation of forage equipment including balers and forage harvesters. Students will need access to balers and forage harvesters to complete this module.

Farmers often use forage crops to diversify their operation or to include forages as a critical element in crop rotation and land management. The equipment used in harvesting, handling, and storing forage crops needs the same kind of care and consideration that other types of crop production equipment demands.

**Foundational Objective**
- To develop basic skills in safely operating and maintaining various kinds of forage equipment.
- To observe, assist with or demonstrate skills relating to the operation of forage equipment.

**Common Essential Learnings Foundational Objective**
- To use questions as tools to further their own and others' understandings. (COM)

| Learning Objectives | Notes |
|---|---|
| 13.1 To describe the basic characteristics and operating mechanisms of forage equipment. | Have students identify and describe the function and operation of the major components of the different types of mowers, mower-conditioners, windrowers, balers and forage harvesters.<br><br>These major parts require adjustments to get the optimum output from the equipment. Explain each control and define its operational limits. Have students become familiar with operating manuals. |
| 13.2 To identify a regime for pre-start or field inspection of forage equipment. | Have students prepare a regime of items to be checked during a field inspection or walk-around inspection. From the owner's manual identify the lubrication points and belts, chains, bearings, and other linkages that need regular inspection, lubrication, and adjustment.<br><br>**Student Reference Manual:** Have students describe the major components and maintenance procedures of forage equipment. |

| | Learning Objectives | Notes |
|---|---|---|
| 13.3 | To develop basic skills in operating forage harvesting equipment. | Have students identify and describe the function and operation of the major components of the different types of forage harvesters, square balers and round balers. Identify the major parts that require adjustments, lubrication, and monitoring to get the optimum output from the equipment. Explain each control on the machine and define its operational limits. |
| 13.4 | To identify problems which can occur when operating various types of forage harvesting equipment. | Problems can occur on a regular basis when operating any kind of forage equipment. At this basic level of skills, however, students should only become aware of what to look for and seek assistance in correcting the problem. Students should not attempt to fix problems at this level. |

## Module 14: Developing a Crop Plan (Core)

**Suggested Time:** 3-4 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
This module encourages students to develop their own crop plan using their particular farm or selected location.

**Foundational Objectives**
- To develop the ability to plan cropping rotations.
- To observe, assist or demonstrate skills in developing a crop plan.

**Common Essential Learnings Foundational Objectives**
- To differentiate main and subordinate ideas. (COM)
- To generate and evaluate alternative solutions to problems. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 14.1 | To describe local soil and crop conditions in a particular area. | Have students study the climate of the regional and local area. Then have students list all the features that would affect the type of crops grown.<br><br>Have students prepare a description of the conditions including:<br>• soil moisture<br>• cropping history. |
| 14.2 | To investigate the various crop varieties suitable for the growing area. | Have students complete a study of the different types of grain and forage crops. Remind students to list the advantages and disadvantages of each type.<br><br>Have students identify various government and other agencies that provide soil, weather, and soil information.<br><br>**Student Reference Manual:** Have students prepare a crop plan. |

## Module 15: Land Leveling for Irrigation Equipment (Optional)

**Suggested Time:** 5-10 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Land leveling is required for all types of irrigation equipment. This optional module introduces students to some of the basic concepts of land leveling for the purposes of irrigation.

**Foundational Objectives**
- To understand the basic components, operation, and maintenance of land leveling equipment.
- To observe, assist with and/or demonstrate related concepts, skills or abilities in leveling land for irrigation equipment.

**Common Essential Learnings Foundational Objective**
- To summarize information in a variety of ways. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 15.1 | To develop an understanding of the need to level land. | The efficiency of irrigation equipment (as well as the wise use of water) requires that the land be as level as possible to minimize run-off. Discuss with students the need to level land and the factors and conditions under which land should be leveled. Have students consider soil quality, contours of the land and water drainage patterns. |
| 15.2 | To identify the parts and function of land leveling equipment. | Have students identify the component parts and describe the function of a land plane or leveler. Indicate to students how to perform periodic maintenance and lubrication procedures. Discuss the proper procedures for transporting irrigation equipment noting the requirements for lights, flags and slow-moving equipment signs.<br><br>Demonstrate proper hitch setting and hook-up procedures. Indicate to students the need to ensure that the proper height is set and that all hoses are connected properly. |
| 15.3 | To demonstrate proper operating procedures. | Explain the need for proper operating procedures including the need to level the land according to the specialist's or farmer's specifications. Demonstrate to students what minimal ridging and reducing the cut lines, which result from leveling land, means.<br><br>If possible, have students describe elements of "good" land leveling in contrast to characteristics of a job poorly done. |

## Module 16: Irrigation Pumping Equipment (Optional)

**Suggested Time:** 5-7 hours **Level:** Introductory
**Prerequisite:** None

**Module Overview**
Students will be introduced to the basic maintenance and operation of irrigation pumping equipment.

**Foundational Objectives**
- To understand the basic components, operation, and maintenance of irrigation pumping equipment.
- To observe, assist with and/or demonstrate related concepts, skills or abilities in operating irrigation pumping equipment.

**Common Essential Learnings Foundational Objective**
- To develop and use point-form notes. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 16.1 | To identify the components and function of irrigation pumping equipment. | Demonstrate to students the components of an irrigation pump. Identify how they work. |
| 16.2 | To identify a regime for pre-start inspection. | Irrigation pumps require a pre-start inspection of the engine, power driveline, pipe and couplers around the pipe.<br><br>**Student Reference Manual:** Have students prepare a checklist of pre-start inspection. |
| 16.3 | To demonstrate proper start-up procedures. | Using either an electric or internal combustion engine, inform students how to start the pump and bring it up to speed according to manufacturer's specifications. In the event that the pump needs priming, show students how to operate the priming mechanism. |
| 16.4 | To describe proper procedures for starting the pump, pressurizing the system, and setting pressure and speed. | Indicate to students that pressurization must be done carefully. Inattention will result in personal harm or damage to the pump. Using the manufacturer's specifications, describe how students should ensure that the system meets system requirements and limitations by setting the proper pumping pressure and speed. |
| 16.5 | To describe the corrective procedures for seized pumps. | Seizing can cause damage to pump motors. Demonstrate the proper corrective procedures to ensure that the pump is freed up with no damage to the motor or to the bearings. Demonstrate how to check if bearings are seized and how to rectify the situation. |

## Module 17A, B, C: Work Study Preparation and Follow-up Activities (Core)

**Suggested Time:** 5-10 hours **Level:** Introductory, Intermediate, Advanced
**Prerequisite:** None

**Module Overview**
This module is used to prepare students for work study placement. Learning objectives include pre-placement information, preparation for interviews, and expectations for the workplace experience.

**Foundational Objective**
- To develop workplace skills in the crop production sector.

**Common Essential Learnings Foundational Objective**
- To increase awareness of a variety of employability skills in the workplace. (CCT, COM, PSVS, TL)

| | Learning Objectives | Notes |
|---|---|---|
| 17.1 | To create an awareness of the expectations of each of the partners in the work study component. | In order to establish a successful working relationship with all of the partners involved in the workplace, it is important to define the expectations of each partner.<br><br>Refer to Guidelines for Work Study, a section of the *Practical and Applied Arts Handbook* (2003) for expectations of business, student, teacher monitor, and school. |
| 17.2 | To determine factors that would affect the student contribution in the workplace. (CCT) | The students may formulate a list of what they can bring to the workplace and how each may impact on their jobs. Their lists may include topics such as:<br>• school subjects<br>• past experiences<br>• self-concept and personality<br>• needs, values and interests<br>• knowledge skills and attributes<br>• career goals and plans.<br><br>Ask students to do a self-assessment of skills using the influences in the above list as a guide. Have students explain how these skills are valuable to field crop production. Try to incorporate the value of communication and teamwork in the discussion. |

| | Learning Objectives | Notes |
|---|---|---|
| 17.3 | To foster an awareness of building good communication in the workplace. | Discuss verbal and non-verbal communication. List some ways in which negative non-verbal communication may be addressed. Encourage students to role play ways of demonstrating effective techniques of verbal communication on the job when giving or receiving instructions, and resolving conflict. With the use of case studies, divide the students into groups and role play to show how effective use of communication can be used to resolve conflict on the job. |
| 17.4 | To develop a résumé and cover letter that can be forwarded to a potential employer. | The student will develop a résumé and cover letter using the correct format. ATEC teachers can work with other staff members to ensure résumé and cover letter preparation is taught. The résumé and cover letter is currently addressed in English Language Arts, Information Processing, and Career and Work Exploration.<br><br>Students should develop the résumé on a computer disk and update the résumé during the progression of the course as references are accumulated.<br><br>If students have already completed the résumé and cover letter in another course, the teacher may do a review and encourage students to update their résumé. Students shall submit a résumé for teacher approval prior to going to the workplace.<br><br>The résumé and cover letter may be used as an introduction for the employer of a work site prior to an interview with the student. |
| 17.5 | To determine student guidelines in preparation for an interview. | Through a classroom discussion or in groups, have students generate a list of guidelines for an interview. After the students formulate their list, the instructor may add missing items to it.<br><br>Outline and describe the three stages of an interview. Point out to the students in what stage each of their previously discussed guidelines will be used. A brief description of the three stages of an interview follows.<br><br>The **greeting** involves an introduction between the student and employer. Discuss or demonstrate how this should be done.<br><br>The **exchange** is where the employer asks a series of questions and engages in a conversation with the student about information on the résumé and other matters relating to the job placement. |

| | Learning Objectives | Notes |
|---|---|---|
| | | The **parting** brings the interview to a close. It can be just as important as the greeting. Explain how this can be done.<br><br>Provide students with a list of questions frequently asked by employers or ask students to formulate a list in a group and role play the stages of the interview. |
| 17.6 | To discuss the interview. | After the student has completed the interview with the employer, do a follow-up activity. Review the interview with the student using the three stages as a point for discussion. |
| 17.7 | To develop procedural guidelines for the work site. | Discuss work site guidelines, related to the following factors, with students:<br>• transportation<br>• hours of work<br>• absence and tardiness<br>• procedures for conflict resolution<br>• role of the student, teacher and work place supervisor<br>• dress code<br>• job description<br>• school and employer expectations.<br><br>Ensure that students understand these guidelines by asking students to describe each of these guidelines. |
| 17.8 | To relate feedback from the work placement. | Students should be encouraged to provide feedback about work placement including: where they were placed, type of business, duties, most rewarding experience, most difficult situation, and how they handled it.<br><br>It is recommended that each student send a thank-you note or card to the employer upon the completion of each work placement. If more than one placement has been made in the course, follow-up activities must be completed after each placement. |

## Module 18A, B, C: Work Study (Core)

**Suggested Time:** 25-50 hours **Level:** Introductory, Intermediate, Advanced
**Prerequisite:** 17A, B, C respectively

**Module Overview**
Refer to the Work Study Guidelines included in the *Practical and Applied Arts Handbook* (2003) for direction on implementing work study.

**Foundational Objectives**
- To be aware of the careers and opportunities in the field of agriculture that exist in Saskatchewan and other provinces.
- To integrate classroom learning with work-related learning.
- To increase awareness of employability skills as they relate to the work environment.

**Common Essential Learnings Foundational Objectives**
- To engage in a work study experience and develop entry level workplace skills that may lead to sustainable employment. (PSVS)
- To expand career research beyond the classroom setting. (IL)

Teachers need to use or design appropriate learning objectives for this module (e.g., to demonstrate ability to follow a "Training Plan").

**Note:** Consult the Career and Work Exploration Curriculum Guide and the Department of Labour for content about Labour Standards, Occupational Health and Safety, and Workplace Hazardours Materials Information System (WHMIS). Add more depth regarding labour standards if you offer several work studies during grade 11 or 12 in a course series.

# Core and Optional Modules for Field Crop Production 20

## Module 19: Farm Safety (Core)

**Suggested Time:** 5-6 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Given the importance of farm safety, each level of ATEC courses begins with a core module on farm safety. This module provides students with knowledge, skills and abilities used when operating or maintaining farm equipment in all areas of production. Remind students of farm safety precautions at all times including the rules and regulations associated with operating farm vehicles.

Students should develop comprehensive and useful notes on each module studied and place the information in their Student Reference Manuals.

**Foundational Objectives**
- To understand and use farm safety procedures at all times.
- To observe, assist with or demonstrate farm safety procedures in all aspects of crop production.

**Common Essential Learnings Foundational Objective**
- To understand how technology influences occupational roles within field crop production and affects the work site (e.g., occupational health, safety, etc.). (TL)

| | Learning Objectives | Notes |
|---|---|---|
| 19.1 | To identify existing or potential hazards on the farm. | Have a farm safety specialist talk to the students about general farm safety. Identify hazardous equipment or chemicals around the farm. Use site visitations and have students identify potential hazards and precautions. Explain why these areas need cautionary attention.<br><br>Have students consider the existing or potential hazards that are unique to crop production.<br><br>**Student Reference Manual:** Have students develop and/or use a farm safety audit that includes safety for operators, handlers and visitors. |
| 19.2 | To describe the use of safety guards, shields, and other safety devices used on farm equipment. | Demonstrate a safety walk-around check on all the devices used for safety and make sure everything is in proper working order. Ask students with prior knowledge to point out the use of safety guards, shields and other safety devices used on farm equipment. |

| | Learning Objectives | Notes |
|---|---|---|
| | | Have students demonstrate their knowledge and ability to locate, read, and comprehend the warning messages on the farm equipment.<br><br>**Student Reference Manual:** Have students develop a safety checklist and inspection to be used on a routine basis. |
| 19.3 | To describe the proper clothing and protective gear used on farms. | Engage students in a discussion about the proper clothing, footwear, gloves, glasses, and breathing and ear devices to use when working around and operating farm machinery, applying chemicals and other hazardous materials.<br><br>Have students identify when and where protective gear should be used. |
| 19.4 | To distinguish between a safe practice and an unsafe practice when using specific manual and power tools as well as lifting equipment such as jacks and winches. | Examine the safety hazards associated with the use of power or manual tools. Identify the hazards associated with jacks and winches. |
| 19.5 | To identify fire hazards and precautions on farms. | Examine and list the fire hazards on farms. Students should know how and when to use various types of fire fighting equipment. |
| 19.6 | To know when and how to use basic First Aid. | Have students prepare a list of basic First Aid procedures. If possible, encourage students to take a First Aid Course. |

## Module 20: Communications (Core)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Students will enhance their verbal and written communication skills including the use of forms and recordkeeping. Recordkeeping is extremely important in crop production particularly for analyzing production and return or break-even prices.

An important marketing and management tool for crop production is the ability to access and use the most current information and human resources available. This module is intended to encourage students to develop the practice of seeking information on a regular basis.

The module is also used to remind students of the how and where to find information including reading manuals and finding industry-related information.

**Foundational Objectives**
- To enhance verbal and written communication skills used on farms.
- To develop skills in using forms and for recordkeeping on farms.
- To observe, assist with or demonstrate effective communication.
- To develop skills in finding and using information.

**Common Essential Learnings Foundational Objectives**
- To gradually incorporate the vocabulary of field crop production into their talk and writing. (COM)
- To understand and use organizational structures (e.g., to order ideas sequentially or chronologically, to compare and contrast, to discern cause and effect). (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 20.1 | To encourage effective verbal and written communication skills. (COM) | Ask students to list a number of examples of verbal and written communication that is used on a daily basis on a farm. Review the characteristics of effective communication and ask students to prepare examples.<br><br>Role play employee/employer situations using verbal and written communication. Emphasize the importance of communication skills on the farm. (COM) |
| 20.2 | To develop skills in using and filling out a variety of forms used on a farm. | There are a variety of forms that are used on farms. Some of these include:<br>• employee time logs<br>• tax forms<br>• compensation reports<br>• market forms |

| Learning Objectives | Notes |
|---|---|
| | • production records<br>• budget forms and other types of banking information.<br><br>Using a variety of forms such as, weigh dockets, time sheets, tax forms, production records, and inventory sheets, have students develop skills in completing forms. Indicate when they should be used as well as those which are legal requirements. |
| 20.3 To develop skills in finding, analyzing and using a variety of information. (IL) | Crop producers need current information in order to make profitable decisions about marketing and production. This information can be found in manuals, weekly or monthly publications, trade magazines, and government and industry publications.<br><br>Have students find, analyze and describe the use of a variety of kinds of information on crop production. Remind students of the importance of using the table of contents, index, order forms, toll free numbers, or on-line assistance.<br><br>Saskatchewan Agriculture, Food and Rural Revitalization is a good source for information on crop production.<br><br>Students may also want a chance to access the Internet for a variety of product and equipment information. The *Western Producer Farm Directory* has a wide variety of web sites listed.<br><br>**Student Reference Manual:** Have students list the most important publications and web sites for personal use. |

## Module 21: Career Exploration (Core)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Students will explore the career options available to them in crop production and develop long term plans. Students will also review the concept of employability skills. Students who have previously taken Career Exploration at Level 10 of the ATEC courses should re-examine and update their career plans.

**Foundational Objectives**
- To develop a career or educational plan.
- To understand and appreciate the importance of employability skills.
- To observe, assist with or demonstrate career exploration and employability skills.

**Common Essential Learnings Foundational Objectives**
- To seek information through a steadily expanding network of options including other libraries, databases, individuals and agencies. (IL)
- To recognize that learning is continuous from birth to death (e.g., life experiences). (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 21.1 | To examine the importance of employability skills. (CCT) | Have students examine the following list of employability skills and describe how they would apply to careers in agriculture:<br>• ability to communicate effectively<br>• problem-solving skills<br>• technological ability<br>• positive attitude<br>• punctuality<br>• responsibility<br>• adaptability<br>• independence and self-reliance.<br><br>Have students interview crop producers or farmers/trainers to determine the kinds of employability skills that are important. |
| 21.2 | To examine different career choices in the production of crops. | Have students look at a number of career choices that fit their personality and learning styles.<br><br>Have students prioritize these choices by interest and job requirements. Have students state the reasons for these decisions. |

| | Learning Objectives | Notes |
|---|---|---|
| 21.3 | To identify the sources of career counseling and organizations that can assist in planning a career. | A number of services can assist students in planning a career. Assist students with the preparation of a list of these services including post-secondary institutions, employment agencies, and courses at regional colleges. |
| 21.4 | To develop a career plan and appropriate educational strategy. | Have students prepare a career plan including both short term (1-2 years) and long term (2-6 years) objectives. Have students describe the objectives in writing and how they might achieve them. Review the plans with students making sure that they are realistic. |

## Module 22: Planning for Crop Production (Core)

**Suggested Time:** 2-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module helps students enhance their knowledge and use of farm planning techniques, or review and evaluate existing plans.

**Foundational Objectives**
- To enhance skills associated with crop production plans.
- To understand more advanced aspects of financial planning.
- To observe, assist with or demonstrate skills related to planning for crop production.

**Common Essential Learnings Foundational Objectives**
- To distinguish between primary and secondary sources of information. (COM)
- To apply conclusions and generalizations to new situations. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 22.1 | To review and/or develop farm and land management plans specifically related to crop production. | Core modules in Level 10 develop the basic elements of farm planning. Review the strategies presented at this level. Have students review and/or develop the farm and land management plans specifically relating to crop production.<br><br>Have students share their plans with students in other ATEC courses. Have students discuss, share and critique plans. If possible, have students present their plans to an extension agrologist or financial person for review. |
| 22.2 | To review the process of effective time management (personal and farm). | Have students review or prepare a personal time management schedule as well as a farm time management schedule. Make sure students develop their time management schedules to balance school, work, and recreation. In crop production, managing personal time is often beyond the control of the individual producer. Remind students that, in spite of the seasonal pressures of seeding or harvesting, balance in life is important.<br><br>Students should also be reminded that lack of sleep is a leading cause of farm injuries.<br><br>**Student Reference Manual:** Have students prepare, review and update time management plans. |

| | Learning Objectives | Notes |
|---|---|---|
| 22.3 | To develop a basic understanding of financial planning. | Financial planning and maintaining business records are some of the most important components of operating a grain farm. Have students research the different ways that a financial plan can be prepared. Contact various financial institutions for plans and/or resource people that can provide useful information or assistance to students. Refer to Saskatchewan Learning's Accounting Curriculum Guide, Farm Accounting Module, for more information and practice activities.<br><br>**Student Reference Manual:** Have students prepare a financial plan for a particular farming operation. |
| 22.4 | To develop a farm recordkeeping system. | Preparing a financial plan for a farm is as easy as the quality and accessibility of the records that provide the information.<br><br>Have students develop a filing system for a farming operation. Discuss the categories that need to be included as well as how to file and retrieve information when it is required.<br><br>Farmers need to know what they have in inventory. Developing and using an inventory system is required for effective operation of a farm. This inventory should include cost, ownership, current value and date, and replacement value.<br><br>Have students gather or prepare inventory records for agricultural commodities. |

## Module 23: Farm Equipment Maintenance and Repair (Core)

**Suggested Time:** 5-7 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module is used to reinforce the basic skills of general maintenance and repair of farm machinery that were introduced in Level 10. Rather than observe, students will be expected to assist and demonstrate skills listed in the training plans.

Farm safety is stressed throughout the module.

**Note:** In dealing with all modules on farm equipment teachers should inform students of the dangers and legalities of under-aged drivers operating farm machinery.

**Foundational Objectives**
- To develop more advanced skills and abilities in the repair and maintenance of farm machinery.
- To develop skills and abilities in the use of hand and power tools which are used to service farm machinery.
- To assist and demonstrate skills associated with general farm maintenance and repair.

**Common Essential Learnings Foundational Objectives**
- To determine own learning needs. (IL)
- To analyze data to create hypotheses, predictions and estimates. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 23.1 | To assist or demonstrate skills in the processes associated with regular machinery maintenance. | The first step in maintenance of farm machinery is preventive maintenance process (i.e., checking oil and fuel levels, cleaning radiators, preventing chaff build-up, and monitoring gauges).<br><br>Have students describe the regular maintenance of the farm equipment used on a regular basis.<br><br>Students should be able to use the manuals of several different kinds of farm equipment to describe preventive practices of the particular machine.<br><br>**Student Reference Manual:** Have students prepare or update checklists of preventive maintenance procedures for each piece of crop production equipment. |
| 23.2 | To identify and describe a variety of different types of tools (power and manual). | On a farm operation, there are a number of screwdrivers, wrenches, and tools used in the daily maintenance and operation of farm machinery such as, the daily maintenance of the machinery, daily routine checkups of pulleys, or adapting the machinery to different uses. |

| Learning Objectives | Notes |
|---|---|
| | Each tool has a distinct operational procedure. Have students describe how to use a variety of common farm tools. Students should examine and demonstrate the standards illustrated in the operator's manual of each specific tool.<br><br>Have students determine the different types and sizes of wrenches (manual and power) that best suit the job that the wrench is designed to achieve.<br><br>Demonstrate that the correct selection and use of the specific tool to fit the correct screw or bolt is very important to prevent damage to the tool, bolt or screw.<br><br>Distinguish between a safe practice and an unsafe practice when using specific manual and power tools. |
| 23.3 To identify and describe the characteristics of the common farm mechanical, hydraulic, and hand jacks and winches. | In order to maintain machinery, it is often necessary to hoist or elevate machinery, parts of machinery, or other objects while working around the farm. There are a number of different ways to hoist an object depending on the structure of the article. It is important for students to be aware of the weight range, strength, and capacity of the jack and the item being lifted.<br><br>Have students compare and contrast the uses and efficiencies of the direct vertical, automotive, floor type, and any other lift. Identify the type of lift that is best suited for each job.<br><br>**Student Reference Manual:** Have students prepare a summary of the type of common farm mechanical, hydraulic and hand jacks and winches. |
| 23.4 To identify the dangers and hazards associated with common lifting equipment. | Overloading, tipping of the jack, and damaged or worn equipment can be just a few of the hazards when using lifting equipment. Select and illustrate the dangers and hazards that are associated with common lifting equipment.<br><br>Demonstrate the correct operating procedures in using the jack or hoisting equipment in a safe and efficient manner. |

| Learning Objectives | | Notes |
|---|---|---|
| 23.5 | To identify the transportation regulations for farm equipment and loads of grain being shipped on public roads. | Transporting grain and large farm equipment requires skills and caution. The province and rural municipalities have a number of regulations relating to agriculture. It is the responsibility of the farmer or rancher to know and abide by these regulations. Legal settlements for negligence can be very costly to a farming operation.<br><br>Identify and explain licensing, insurance, operator's qualifications and *Dangerous Goods Transportation Act* for handling all types of farm equipment on public roads. Consideration should be given to liability insurance, license class, and types of roads.<br><br>Examine and describe the width/height/length requirements, the lighting requirements, slow moving signs, clear visibility rules and seasonal restrictions on all farm equipment.<br><br>Grain transportation regulations also specify the types of trailers that can be used as well as restrictions.<br><br>**Student Reference Manual:** Have students prepare a number of descriptions/situations of transportation of grain or farm equipment. Include outside sources of information for specific rules and regulations (i.e., Highway Traffic Board for over-width, over-height vehicles). |
| 23.6 | To understand the need for having emergency equipment. | Outline and give examples of the tools and emergency equipment which are required if the farm machinery has a crisis while in transport on a public road. |

## Module 24: Marketing (Core)

**Suggested Time:** 2-3 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Marketing is one of the most important activities in the production of crop. This module is intended to enhance students' basic understanding of the marketing by exposing them to the variety of options available to crop producers.

**Foundational Objectives**
- To develop skills in using market information.
- To describe different marketing mechanisms.
- To observe, assist with or demonstrate skills in marketing crops.

**Common Essential Learnings Foundational Objectives**
- To read and interpret quantitative information found in newspapers, magazines and government, political and business publications and evaluate the validity of arguments based on such information. (NUM)
- To propose generalizations that explain relationships. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 24.1 | To describe how to market an agricultural commodity. | Marketing of any products incorporates a series of activities. These activities include but are not limited to:<br>• locating, sorting and analyzing market information for current and potential markets<br>• identifying and considering the factors which influence marketing such as, product supply and demand, imports and exports, consumer trends and economic conditions<br>• assessing the potential for advertising and promotion in a variety of markets.<br><br>Describe what each of these activities entails in practical terms and have students apply the activities using a particular agricultural commodity. Compare the marketing activities of different commodities. |
| 24.2 | To develop skills in gathering and using market information for a particular agricultural commodity. | Have students locate current sources of market information for a particular agricultural commodity. Review market terminology with students including terms such as futures market, bull or bear market, FOB pricing and open market. Have students practice reading commodity markets and discuss the events that might affect the price.<br><br>Have students graph the price of a particular commodity for the duration of the course. |

| Learning Objectives | | Notes |
|---|---|---|
| | | **Student Reference Manual:** Have students list sources of current market information including web sites, radio or television broadcasts and print information. |
| 24.3 | To identify factors that influence decisions about marketing an agricultural commodity. (CCT) | Commodity prices are based on supply and demand. However, there are other factors, however, which influence decisions about when to sell a commodity. These factors include:<br>• financial constraints such as, limited cash flow or credit requirements<br>• limits on the amount of time for perishable products<br>• distribution and transportation requirements<br>• international and domestic trade policies and regulations.<br><br>Farmers need to consider these factors and more when making decisions about marketing an agricultural commodity. Discuss these factors with students. Encourage students to think of ways to mitigate the negative influences as well as how to take advantage of favourable influences. |
| 24.4 | To identify different market opportunities. | Many farmers have chosen to market their agricultural products through alternative contracts or niche markets. Have students investigate the different marketing opportunities for a particular commodity. Encourage students to analyze the advantages and disadvantages.<br><br>Engage students in a discussion on the best time to sell crops, purchase fertilizer and chemicals, and lease or buy equipment.<br><br>Students may also wish to explore the opportunities that may exist in marketing clubs. Local extension agrologists should be able to assist students in locating a nearby marketing club.<br><br>Have students describe their ideas for innovative marketing opportunities of field crops.<br><br>If possible, have students attend the Canadian Western Agribition, Farm Progress Show or Crop Production Show to gain first-hand information on crop marketing. |

## Module 25: Cultivation and Seeding Equipment (Core)

**Suggested Time:** 10-12 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
In this module, students enhance their basic level of knowledge about cultivation equipment to include the efficient operation of cultivation and seeding equipment in a variety of soil types and terrain. Students identify the different types of seeding implements, describe the main operating components of each and determine some of the adjustments that must be made to operate the equipment properly.

**Foundational Objectives**
- To become familiar with the operation of cultivation and seeding equipment in a variety of situations.
- To observe, assist with or demonstrate skills in operating cultivation and seeding equipment.

**Common Essential Learnings Foundational Objective**
- To use questions as tools to further their own and others' understandings. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 25.1 | To identify the general features of cultivation and seeding equipment and carry out routine service and maintenance. | Students will have been exposed to the basic components of cultivation and seeding equipment and routine inspection of equipment in Field Crop Production 10.<br><br>Have students identify the major components of seeding and cultivation equipment.<br><br>Have students demonstrate a routine inspection and maintenance of cultivation and seeding equipment. Ensure that they are able to identify the major components of the equipment. Review if necessary. |
| 25.2 | To develop an awareness of tillage patterns. | Indicate to students the correct lines of tillage that maximize the use and operation of equipment.<br><br>Identify the types of working patterns for fields including:<br>• working back and forth<br>• round<br>• angled<br>• width of turn strips<br>• working patterns for irregular shaped fields.<br><br>Indicate to students how to minimize time wastage while achieving optimum coverage and care of the equipment.<br><br>**Student Reference Manual:** Have students make diagrams and notes on the tillage patterns of particular fields. (COM) |

| | Learning Objectives | Notes |
|---|---|---|
| 25.3 | To develop skills in operating cultivation and seeding equipment at the proper speed. | Demonstrate to students the ways in which the operation of cultivation and seeding equipment affects how parts are worn or broken.<br><br>Discuss proper operating speed, depth of shovels, angle of penetration, and wing and machinery levels.<br><br>Indicate the proper speed range for equipment including the various RPM ranges and proper gears for different terrain and soils. |
| 25.4 | To identify the appropriate width and depth ranges of equipment. | Identify how to set the depth control on cultivation and seeding equipment and how to adjust the depth according to soil type or conditions.<br><br>Identify and discuss the hazards which students may encounter including improper turning techniques.<br><br>**Student Reference Manual:** Have students make notes on how to adjust seeding and cultivation equipment. |
| 25.5 | To develop the ability to turn cultivation and seeding equipment properly. | Describe to students the proper turning procedures. Describe and demonstrate:<br>• turning radius<br>• tractor-implement clearance<br>• cornering methods. |
| 25.6 | To demonstrate the ability to unplug cultivation and seeding equipment. | Discuss the ways in which cultivation and seeding equipment can become plugged (i.e., rocks, crop residue or wet field conditions).<br><br>Identify methods for unplugging equipment and how to prevent situations where plugging occurs. |
| 25.7 | To develop skills in filling and maintaining seeding equipment. | Describe pre-fill procedures with students such as :<br>• cleaning seed boxes<br>• clearing of tubes for air machines<br>• preparing seed for filling<br>• use of proper spouts<br>• operation of hoists<br>• backing up and hooking up to seeding equipment. |

| | Learning Objectives | Notes |
|---|---|---|
| | | Discuss how to protect the seed and seeding equipment from climate conditions. |
| 25.8 | To develop skills in monitoring and maintaining depth adjustment of seeding. | Discuss how to monitor and maintain the depth adjustment of seeding equipment in order to keep the seed placed at a uniform depth throughout field. |
| 25.9 | To develop accurate seeding techniques. | Describe some of the causes and effects of seeding problems. |

## Module 26: Fertilizer Storage, Handling and Application (Core)

**Suggested Time:** 5-7 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module is used to develop students' knowledge of fertilizer storage, handling, and application. Farm safety practices are emphasized throughout.

**Foundational Objectives**
- To understand and use farm safety procedures in the storage, handling and application of fertilizer.
- To observe, assist, or demonstrate skills and procedures used to store, handle, and apply fertilizer.

**Common Essential Learnings Foundational Objectives**
- To use a variety of resources to cover the breadth and depth of a topic. (COM)
- To look for signal phrases and key words. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 26.1 | To develop an understanding of the storage and handling of various types of fertilizer. | Fertilizer comes in three forms:<br>• liquid<br>• gas<br>• granular.<br><br>Discuss the reason for the choice of fertilizer.<br><br>Demonstrate to students how to handle the type of fertilizer used on the farm.<br><br>Indicate the safety procedures for handling including the type of protective clothing that is required. |
| 26.2 | To describe the storage requirements of various types of fertilizer. | Explain to students the storage requirements of the type of fertilizer being used.<br><br>Describe the corrosive nature of fertilizer as well as problems that can arise from mixing different types of fertilizer.<br><br>Demonstrate to students the proper areas to store fertilizer as well as the steps required to keep moisture away from granule fertilizer. |

| | Learning Objectives | Notes |
|---|---|---|
| 26.3 | To describe the necessary First Aid procedures. | Improper handling of fertilizer can result in many serious physical problems. Discuss the proper ways to handle fertilizer with a crop protection specialist.<br><br>Describe the First Aid and treatment procedures.<br><br>**Student Reference Manual:** Have students make notes on the First Aid and treatment of injuries caused by improper handling. |
| 26.4 | To identify the different types of fertilizer applicators. | Identify the various types of fertilizer applicators. Pay particular attention to the attachments and filling mechanisms.<br><br>Have students become familiar with all components, operation and safety procedures.<br><br>Whenever possible, have students study and be prepared to use the operating manual. (COM, IL)<br><br>**Student Reference Manual:** Have students identify the major components of a fertilizer applicator. |
| 26.5 | To develop the ability to service and maintain fertilizer applicators. | Explain routine service and maintenance of fertilizer applicators. Include reference to checking for and correcting plugged lines and nozzles.<br><br>**Student Reference Manual:** Have students develop a checklist of routine service and maintenance procedures. |
| 26.6 | To demonstrate the ability to operate a fertilizer applicator. | Indicate to students the desirable characteristics of efficient fertilizer application including:<br>• no skips, overlaps or misses<br>• minimal plugged line misses<br>• speed maintained<br>• correct amount applied to field. |

## Module 27: Harvesting Equipment (Core)

**Suggested Time:** 10-12 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Harvesting equipment is a collective term used to describe swathers and combines. In this module, students demonstrate proper swather and combine driving skills including cleaning obstructions, and field patterns for efficient swathing and combining. Students demonstrate a practical knowledge of using equipment manuals to operate, service and repair equipment.

**Foundational Objectives**
- To understand and use farm safety procedures in operating swathers and combines.
- To observe, assist with or demonstrate skills and procedures used in operating harvesting equipment.

**Common Essential Learnings Foundational Objectives**
- To develop and use point-form notes. (COM)
- To make decisions based on knowledge of own needs and interests. (IL)

| Learning Objectives | Notes |
|---|---|
| 27.1 To describe/review the basic operation, routine inspection and maintenance of harvesting equipment. | Field Crop Production 10 provided students with a basic introduction to the operation, inspection and maintenance of harvesting equipment.<br><br>Have students describe (or have the farmer-trainer review) the major components of swathers and combines.<br><br>These parts include:<br>• reel<br>• cutterbar<br>• canvases<br>• drive train<br>• steering mechanism<br>• pickup reel<br>• auger<br>• cylinder.<br><br>Students should be able to perform routine inspections and maintenance procedures. Have students refer to their Student Reference Manual for Level 10. Ensure that students have a reasonable ability to perform basic skills in inspecting, servicing and operating harvesting equipment. |

| | Learning Objectives | Notes |
|---|---|---|
| 27.2 | To demonstrate the ability to use operating manuals. (COM, IL) | Operating manuals provide students with important information on the operation, servicing, maintenance and repair of harvesting equipment.<br><br>Have students demonstrate their ability to use the index, and table of contents and to interpret information contained in the operating manuals. |
| 27.3 | To demonstrate the ability to operate a swather. | Describe the proper operation of a swather including:<br>• identifying the items to be checked or monitored during operation<br>• describing the effect of canvas speed on swath placement<br>• adjusting the speed of the canvas<br>• identifying the desired cutting height<br>• operating header to properly maintain height<br>• establishing the proper machine speed when swathing different crops under various conditions.<br><br>Students should demonstrate these operating procedures. |
| 27.4 | To demonstrate proper swather driving skills. | Describe and demonstrate the proper driving techniques of swathers including:<br>• using various steering mechanisms<br>• adjusting steering procedures for different conditions<br>• adjusting speed for particular situations.<br><br>Swathing should be performed smoothly and efficiently with straight, evenly spaced windrows. |
| 27.5 | To develop the ability to clear a plugged swather safely. | Plugged swathers are common problems in crop production. Indicate to students how to safely unplug machines.<br><br>Discuss with students possible causes of plugging including dull knives, excessive speed or improper reel placement.<br><br>Students should be able to demonstrate the ability to unplug a swather with no damage to the machine and without exposing the operator to danger. |

| Learning Objectives | | Notes |
|---|---|---|
| 27.6 | To describe/review the major components and gauges used in combines. | Students will have gained exposure to the major components and their operation in Field Crop Production 10.<br><br>Ensure that students are able to:<br>• identify the major parts and their function of a combine<br>• identify all combine and power train controls<br>• identify all gauges, indicators and operating ranges<br>• monitor all gauges.<br><br>**Student Reference Manual:** Have students describe each of the above. Remind students to include notes and diagrams. |
| 27.7 | To demonstrate the ability to operate a combine safely and efficiently. | Demonstrate and/or describe to students how to:<br>• maintain proper ground speed controls. (Indicate that the operator must use care and judgement in adjusting the speed for various types of crop conditions.)<br>• adjust ground speed for field conditions and topography<br>• adjust pick-up height to suit crop and field conditions<br>• demonstrate proper combine driving skills<br>• unload a combine safely<br>• monitor grain tank level<br>• understand/use hand signals<br>• signal truck driver when to be on hand to unload.<br><br>**Student Reference Manual:** Have students make appropriate notes on above operations. |
| 27.8 | To identify and be prepared for fire hazards. | Identify the areas where fires may occur on a combine or in a crop. Indicate safety procedures including how to:<br>• demonstrate caution when fueling<br>• keep the engine clean<br>• watch for damaged bearings<br>• park machines off the field<br>• shut down the machine completely before fueling, cleaning or servicing<br>• locate the fire extinguishers. |

## Module 28: Weed and Pest Control (Core)

**Suggested Time:** 5-6 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module is used to develop a student's ability to identify signs of weed and pest infestations in grain crop fields. Techniques are described which can be used to minimize introduction and spread of weeds and pests (large or small) in grain crop fields. Students also consider the environmental issues that are associated with weeds and pests.

**Foundational Objectives**
- To become knowledgeable about how to identify and control weeds and pests.
- To observe, assist, or demonstrate skills and procedures used in weed and pest control.

**Common Essential Learnings Foundational Objective**
- To explore the evolution of technological developments related to weed and pest control with a focus on the political and social forces that spawned the development and the steps involved in it. (TL)

| Learning Objectives | Notes |
|---|---|
| 28.1 To develop the ability to identify, describe and differentiate newly emerged crops and weeds. | Early detection of weed infestations is one of the best ways to protect crops from weed. Early detection helps farmers plan which crop protection products to use.<br><br>Demonstrate to students what to look for in early crops by describing the visual characteristics of newly emerged crop plants that distinguish them from weeds.<br><br>Work with students to help them develop the ability to detect weed infestations in crops.<br><br>There are several helpful publications on weed identification and control available from Saskatchewan Agriculture, Food and Rural Revitalization.<br><br>**Student Reference Manual:** Have students develop or gather illustrations on weeds. |

| | Learning Objectives | Notes |
|---|---|---|
| 28.2 | To use techniques which can minimize the introduction and spread of disease. | Discuss with students the various ways in which common weeds are spread such as:<br>• implements carrying weed seeds or roots<br>• using dirty seed<br>• poor farming practices<br>• livestock.<br><br>Have various examples of contaminated grain on hand and demonstrate weed seeds. Identify samples that have unacceptable levels of weed contamination.<br><br>Discuss with students the ways in which the spread of weeds can be minimized. Introduce the concept of Integrated Pest Management.<br><br>Students should be able to recognize contaminated seed samples. |
| 28.3 | To develop the ability to identify pest infestations in crops. | Identify the most common insect pests for a given crop. Indicate to students the signs of damage and what to look for in monitoring crops.<br><br>**Student Reference Manual:** Have students develop a list of common insect pests associated with a variety of crops. Indicate what to look for when examining crops. |
| 28.4 | To develop the ability to identify signs of damage caused by common large and small pests. | Crops can be damaged by non-insect pests such as rodents, birds, and deer.<br><br>Identify areas that are susceptible to damage of this kind and discuss ways in which farm practices could be changed to prevent problems. |
| 28.5 | To become aware of some of the environmental issues associated with the control of weeds and other pests. | Have students discuss the environmental concerns that surround agricultural practices. (CCT)<br><br>Critical reflection and the ability to view issues from various perspectives are valuable personal skills. |

## Module 29: Operation and Maintenance of Gravity Type Irrigation Systems (Optional)

**Suggested Time:** 5-10 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module prepares students to observe, assist or demonstrate the operation and maintenance of gravity type irrigation systems.

**Foundational Objective**
- To observe, assist with or demonstrate the operation and maintenance of gravity type irrigation systems.

**Common Essential Learnings Foundational Objective**
- To appreciate the concept of scale and proportion in geometric and technical drawings, maps, etc. (NUM)

| | Learning Objectives | Notes |
|---|---|---|
| 29.1 | To become familiar with how to prepare gravity type irrigation systems for operation. | Describe to students what preparation and inspection is needed:<br>• clean up head ditch<br>• inspect turnout and check gates for proper operation<br>• inspect, repair and clean main ditch outlets. |
| 29.2 | To develop the ability to locate field ditches for optimum water distribution. | Demonstrate to students how to use eye judgement or surveying techniques to ensure that the field pattern of ditches is efficient.<br><br>**Student Reference Manual:** Have students make diagrams of the field ditches. |
| 29.3 | To develop the ability to make ditches for gravity irrigation. | Demonstrate how to make field ditches indicating how to adjust the depth of the ditch for heavy and light soils. Indicate the importance of making well formed banks and ensuring that the size of the ditch is adequate for the water flow. |
| 29.4 | To monitor and maintain the gravity irrigation system during operation. | Demonstrate how to evaluate and monitor the water flow and condition of the ditches.<br><br>Show students how to place and use canvas dams to control water flow. Indicate the necessary steps to shut down or change the flow.<br><br>Remind students of the key points to monitor during field applications. |

| Learning Objectives | | Notes |
|---|---|---|
| 29.4 | To develop the ability to shut down the irrigation system. | Indicate the correct procedures to shut down the system and to operate a ditch filler.<br><br>Remind students to use farm safety practices at all times.<br><br>**Student Reference Manual:** Have students make notes necessary for the preparation, monitoring, maintenance and shut down of the gravity irrigation system. |

## Module 30: Operation and Maintenance of Pipe Type Irrigation Systems (Optional)

**Suggested Time:** 5-10 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module prepares students to observe, assist or demonstrate the operation and maintenance of a pipe type irrigation system.

**Foundational Objective**
- To observe, assist with or demonstrate the operation and maintenance of pipe type irrigation systems.

**Common Essential Learnings Foundational Objectives**
- To ask relevant questions in order to further their own understanding. (COM)
- To read dials, meters and scales and understand how to interpret these results. (NUM)

| | Learning Objectives | Notes |
|---|---|---|
| 30.1 | To become familiar with how to prepare pipe type irrigation systems for operation. | Describe to students what preparation and inspection is needed to:<br>• identify appropriate implements and establish proper corrugates to match soil absorption and gates in pipe<br>• place and hook up according to manufacturer's suggestions necessary pumping equipment ensuring proper placement for the most efficient water flow<br>• place the pipe in the proper field location ensuring that the pipe runs the proper length and that the pump placement is appropriate. |
| 30.2 | To develop the ability to apply and control water flow with a gated system. | Demonstrate to students how to apply and control water flow to ensure that the irrigation is done effectively and efficiently.<br><br>**Student Reference Manual:** Have student make diagrams and notes as necessary. |
| 30.3 | To monitor and maintain the pipe irrigation system during operation. | Demonstrate how to evaluate and monitor the water flow. Remind students of the key points to monitor during field applications. |
| 30.4 | To develop the ability to shut down the irrigation system. | Indicate the correct procedures to shut down the system.<br><br>Remind students of using farm safety practices at all times.<br><br>**Student Reference Manual:** Have students make notes necessary for the preparation, monitoring, maintenance and shut down of the pipe irrigation system. |

## Module 31: Operation and Maintenance of Hand Move Type Irrigation Systems (Optional)

**Suggested Time:** 5-10 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
This module prepares students to observe, assist, or demonstrate the operation and maintenance of a hand type irrigation system.

**Foundational Objective**
- To observe, assist with or demonstrate the operation and maintenance of hand move type irrigation systems.

**Common Essential Learnings Foundational Objective**
- To make and use point-form notes. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 31.1 | To become familiar with how to move hand move irrigation pipe system. | Describe to students what precautions are needed when moving mainline and laterals from storage to the field location.<br><br>Students should be instructed to exercise care when loading, moving, and unloading pipe to ensure that there is no damage to heads, couplers, or pipe.<br><br>Demonstrate/indicate to students the proper sequence of unloading. |
| 31.2 | To develop the ability to prepare the irrigation system for operation. | Demonstrate to students how to lay out and connect the pipe system. Indicate how to check that the mainline is placed correctly with respect to water supply and that the laterals are placed in correct relation to mainline.<br><br>When equipment is in place, demonstrate to students the items to be checked before, during and after pressurization or start-up.<br><br>**Student Reference Manual:** Have students make diagrams or notes as necessary. |

| Learning Objectives | Notes |
|---|---|
| 31.3 To monitor and maintain the hand move type irrigation system during operation. | Demonstrate how to evaluate and monitor the water flow. Ensure that proper steps are followed and obstructions cleared.<br><br>During operation, look for:<br>• plugged nozzles or poor spray patterns<br>• leaking pipe couplers.<br><br>Show students how to repair problems. Remind students of the key points to monitor during field applications. |
| 31.4 To develop the ability to shut down the irrigation system. | Indicate the correct procedures to shut down the irrigation system and drain, disconnect, move, and reconnect lateral connections.<br><br>Remind students of using farm safety practices at all times.<br><br>**Student Reference Manual:** Have students make notes necessary for the preparation, monitoring, maintenance, moving and shut-down of the hand move irrigation system. |

## Module 32: Operating Tractors with Attachments (Optional)

**Suggested Time:** 3-4 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
In this module, students develop the skills to operate tractors equipped with front-end loaders, scrapers, and three point hitch items such as mowers, tillage equipment, sprayers, and post pounders.

**Foundational Objective**
- To observe, assist with or demonstrate the ability to operate, maintain and service tractors with attachments.

**Common Essential Learnings Foundational Objective**
- To use questions as tools to further their own and others' understandings. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 32.1 | To develop an understanding of the mechanical technology used in three point hitches and front end loaders | Have the students identify the major parts of attachments to tractors. Describe and demonstrate the operation of hydraulics. |
| 32.2 | To develop a habit of appropriate and safe operating techniques | Students should describe the hazards associated with operating front-end loaders and three-point hitch equipment and demonstrate the precautions that should be taken when operating the equipment. |
| 32.3 | To demonstrate routine start-up checks, maintenance and service of tractor attachments. | Students should demonstrate routine start-up checks, maintenance and service. Demonstrate the operation of the attachments. Encourage students to use operators' manuals.<br><br>**Student Reference Manual:** Have student develop a checklist of routine inspection, maintenance and service of tractor attachments used in crop production or around the farm. |

## Module 33: Forage Production Equipment (Optional)

**Suggested Time:** 5-10 hours **Level:** Intermediate
**Prerequisite:** None

**Module Overview**
Students were introduced to forage production equipment at level 10. This module enhances that learning by including more advanced levels of maintenance and operation of forage production equipment.

**Foundational Objective**
- To observe, assist with or demonstrate maintaining and operating forage production equipment.

**Common Essential Learnings Foundational Objective**
- To use questions as tools to further their own and others' understandings. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 33.1 | To develop the ability to use the operator's manual for the maintenance and repair of various components of forage production equipment. (COM) | Review the major components of forage production equipment.<br><br>Use the operator's manual to identify the service needs of belts, chains, clutches and other linkages on the equipment.<br><br>**Student Reference Manual:** Have students identify the periodic adjustment and service needs of equipment as specified by the manufacturer. |
| 33.2 | To develop the ability to operate forage production equipment. | Identify the various controls on the equipment including gauges, belts and hydraulic hoses or PTOs.<br><br>Identify the ideal operating range or running speed. Check with the operator's manual for settings.<br><br>Discuss with students how to determine the ground speed. Have them consider factors such as crop height, yield, conditions, and terrain.<br><br>Have students describe the types of problems that can occur with forage production equipment and what might interfere with operation. Students should be able to identify some of the hazards of operation as well as demonstrate safety practices.<br><br>**Student Reference Manual:** Have students prepare a checklist of routine inspection and service areas and indicate operational procedures. |

| Learning Objectives | | Notes |
|---|---|---|
| 33.3 | To identify the source of a plugging problem in forage production equipment. | Forage production equipment is known for its plugging problems. Demonstrate to students the proper procedures for clearing obstructions. |
| 33.4 | To demonstrate the proper procedures for transporting forage equipment. | Demonstrate to students the proper procedures for transporting forage equipment. Refer to the module on transporting equipment at the 30 level. |

# Core and Optional Modules for Field Crop Production 30

## Module 34: Causes and Prevention of Farm Accidents (Core)

**Suggested Time:** 4-5 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
At the advanced level of ATEC courses, students should be thoroughly familiarized with the importance of farm safety. This module serves as a review of farm safety and emphasizes the causes of accidents as well as procedures and practices that can prevent farm accidents.

Students should refer to their Student Reference Manuals for checklists and examples of farm safety audits.

**Foundational Objectives**
- To demonstrate operating and maintenance procedures of various pieces of farm equipment.
- To observe, assist with or demonstrate skills associated with farm safety.

**Common Essential Learnings Foundational Objective**
- To understand how technology influences occupational roles related to field crop production and affects the work site (e.g., occupational health, safety, etc.). (TL)

| | Learning Objectives | Notes |
|---|---|---|
| 34.1 | To identify farm hazards. | Have a farm safety specialist speak to students about farm safety. Students should be able to identify a number of hazardous situations that should be monitored on a farm. Students should also be familiar with various farm safety groups, organizations and regulations such as Workers' Compensation. |
| 34.2 | To describe the use of safety guards, shields, and other safety devices used on farm equipment. | Students should demonstrate a safety walk-around check on all the devices used for safety and make sure everything is in proper order pointing out the use of safety guards, shields and other safety devices used on farm equipment.<br><br>Students should also be knowledgeable about the proper clothing, footwear, gloves, glasses, and breathing and ear devices necessary for personal safety when working around and operating farm machinery, sand when applying chemicals and other hazardous materials.<br><br>**Student Reference Manual:** Have students revise and/or develop and use safety checklists for specific equipment on the farm.<br><br>Have students develop a personal safety audit of a farm. |

| | Learning Objectives | Notes |
|---|---|---|
| 34.3 | To demonstrate safe practices when using lifting equipment. | Students should be able to demonstrate safe practices when using specific manual and power tools as well as lifting equipment such as jacks and winches. Have students examine the safety hazards associated with the use of power or manual tools. Identify the hazards associated with jacks and winches.<br><br>Have students describe the kinds and sizes of jacks and winches which should be used for various farm equipment repair and maintenance. |
| 34.4 | To identify potential fire hazards and recommend precautions and fire fighting techniques. | Students should be able to identify fire hazards and demonstrate all types of fire fighting techniques. Have students examine and list the fire hazards on farms. Students should know how and when to use various types of fire fighting equipment.<br><br>**Student Reference Manual:** Have students prepare a checklist of potential fire hazards, types of fire extinguishers and fire safety precautions. |

## Module 35: First Response for Farm Accidents (Core)

**Suggested Time:** 3-4 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Students have been encouraged throughout this program to take advantage of a First Aid Course. This module is used to develop students' practices related to "first response" in the event of farm accidents.

**Foundational Objectives**
- To develop skills in dealing with emergency situations on a farm.
- To observe, assist with or demonstrate skills in responding to emergency situations on the farm.

**Common Essential Learnings Foundational Objective**
- To generate and evaluate alternative solutions to problems. (CCT)

| Learning Objectives | Notes |
|---|---|
| 35.1 To develop skills in handling emergency situations. | A course in First Aid is highly recommended but not always possible. With the help of an ambulance driver, RCMP or local police officer, St. John's Ambulance, nurse or doctor, help prepare students to deal with emergency situations by identifying the steps involved in seeking assistance, caring for injured people, and First Aid supplies.<br><br>**Student Reference Manual:** Have students prepare a checklist of the components of a well-equipped First Aid kit.<br><br>Students should also make a chart of emergency phone numbers, police and fire departments, and ambulance services. |

## Module 36: Communications (Core)

**Suggested Time:** 4-5 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Producers rely on accurate information and effective communication on their farms. Effective communication skills are critical to maintaining good employee-employer relationships.

Throughout this module, students develop and use skills required to find and sort useful information and to communicate effectively. Students may choose to focus on specific production information including finding and using specific information.

**Foundational Objectives**
- To locate, gather and use information related to a production sector.
- To be able to differentiate between fact and opinion in gathered information.
- To develop a range of skills used for effective communication.
- To observe, assist with or demonstrate effective communication skills in field crop production.

**Common Essential Learnings Foundational Objectives**
- To gradually incorporate the vocabulary related to field crop production into their talk and writing. (COM)
- To understand and use organizational structures (e.g., to order ideas sequentially or chronologically, to compare and contrast, to discern cause and effect). (COM)

| Learning Objectives | Notes |
|---|---|
| 36.1 To understand the need for reliable information in all production sectors. | Using flow charts or concept webs identify where producers need reliable information. Have students consider the kind of information each requires. For example, producers need information on:<br>• commodity prices, markets and growing conditions<br>• transportation and input costs<br>• health problems and weed or insect infestations<br>• financial and banking information.<br><br>After identifying these information needs, have students consider how to gather information related to each need and the kind of communication regarding this information that is the most effective.<br><br>Have students consider the role of reliable information and effective communication on farms. |

| | Learning Objectives | Notes |
|---|---|---|
| 36.2 | To locate and sort useful information required on a farm. | Finding, sorting and using information are important skills on a farm.<br><br>In groups or as individuals, have students gather, sort and critique information about crop production.<br><br>Have students prepare a resource listing of information including the source and availability of the information and where and how it might be used. Try to make the listings as comprehensive as possible including transportation, storage, related services and so on.<br><br>Reinforce the value of reliable information and effective communication.<br><br>**Student Reference Manual:** Have students prepare a list of valuable resources. |
| 36.3 | To recognize the importance of effective communication. | All sectors in agriculture require effective communication skills in order to understand or be understood by employees, employers, suppliers, or customers. Some examples follow.<br><br>Producers need effective communication skills to:<br>• obtain and effectively use related goods and services<br>• market their products effectively.<br><br>Employees need effective communication skills to:<br>• analyze, organize and clarify information<br>• establish good will for their organizations<br>• communicate their ideas to both technical and non-technical colleagues<br>• better workplace and interpersonal relationships<br>• create positive first impressions.<br><br>Have students describe the communication needs for their particular farming operation. Have students describe and demonstrate the skills that are required as well as when and how they would be used. Some examples follow.<br><br>Writing and Publications packages such as:<br>• word processing systems<br>• desktop publishing packages - PowerPoint, PageMaker, Claris Works. |

Information Management systems such as:

- spreadsheets
- database Management
- teleconferencing.

Office tools such as:

- facsimile
- electronic mail
- voice mail.

## Module 37: Career Exploration (Core)

**Suggested Time:** 3-4 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module provides students with a more extensive career exploration. Having worked and participated in a particular production sector by this stage of the program, students should be able to describe a variety of career opportunities and post-secondary educational programs that are of interest.

**Foundational Objectives**
- To be able to describe and access careers and job opportunities in the production agriculture or other field.
- To observe, assist with or demonstrate skills and abilities related to career exploration and employability skills.

**Common Essential Learnings Foundational Objectives**
- To seek information through a steadily expanding network of options, including other libraries, databases, individuals and agencies. (IL)
- To recognize that learning is continuous from birth to death (e.g., life experiences). (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 37.1 | To identify career clusters and the range of occupational opportunities in crop production. | List and research careers or occupations relating to crop production and cluster them according to:<br>• primary production - professional science, management, operation<br>• marketing, distribution and retail services<br>• support services - production and processing inputs, financial, governmental<br>• resource management.<br><br>Have students consider job descriptions, employment market, educational requirements and wage expectations. If possible, assess current employment opportunities based on employment statistics. There are a number of web sites on agricultural careers for students to review.<br><br>If possible, work with other ATEC students and hold a career fair or make oral presentations on other sectors. |

## Module 38: Farm Planning (Core)

**Suggested Time:** 3-4 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
In this module students apply farm planning techniques to a particular production sector. This module is used to enhance students' skills in farm planning with particular attention to financial planning. As an alternative, students may wish to complete the Farm Accounting Module contained in the Accounting 10, 20, 30 curriculum.

**Foundational Objectives**
- To develop farm planning skills particularly financial planning skills.
- To observe, assist with or demonstrate farm planning skills.

**Common Essential Learnings Foundational Objectives**
- To distinguish between primary and secondary sources of information. (COM)
- To apply conclusions and generalizations to new situations. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 38.1 | To prepare a projected budget. | Have students prepare a projected budget of income and expenses for a year in a farming operation. Reinforce the usefulness of a recordkeeping system to verify and modify the budget.<br><br>**Student Reference Manual:** Have students develop a budget. |
| 38.2 | To select and use an accounting system. | Have students select and/or use an accounting system for farm business transactions. Be sure to reinforce the keeping of records to support the system. |
| 38.3 | To prepare a net worth statement. | Describe to students the concept of a net worth statement or have a representative from a financial institution talk to students about a net worth statement.<br><br>**Student Reference Manual:** Have students prepare a net worth statement. |
| 38.4 | To study the sources of credit and the credit rating system. | Invite a representative from a financial institution or Farm Credit Canada to talk to students about farm credit and the credit rating system. |

## Module 39: Farm Equipment Maintenance and Repair (Core)

**Suggested Time:** 5-7 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Farm equipment maintenance and repair have been introduced in Level 10 and reinforced in Level 20. At Level 30, students are expected to demonstrate the skills and procedures described at the 10 and 20 level.

Using the training plans from Farm Equipment Maintenance and Repair, Level 10, have students demonstrate all of the skills and procedures identified.

**Foundational Objective**
- To observe, assist with or demonstrate skills and procedures of farm equipment maintenance and repair.

**Common Essential Learnings Foundational Objectives**
- To develop and use point form notes. (COM)
- To analyze data to create hypotheses, predictions and estimates. (CCT)

| Learning Objectives | Notes |
|---|---|
| | Refer to Levels 10 and 20 as well as training plans. |

## Module 40: Transporting Farm Equipment (Core)

**Suggested Time:** 5-6 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
In this module, students are required to become familiar with the rules and regulations governing the transport of farm equipment. These regulations should be thoroughly investigated prior to moving any equipment.

**Foundational Objectives**
- To become familiar with the considerations that need to be made when transporting farm equipment.
- To observe, assist with or demonstrate the transporting of farm equipment.

**Common Essential Learnings Foundational Objective**
- To develop the ability to use a variety of resources to locate and interpret regulations. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 40.1 | To become familiar with the various pieces of legislation covering the transportation of cultivation equipment. | Various rules and regulations, including provincial legislation, govern how and when farm equipment is moved. Some of these transportation restrictions include:<br>• use of slow moving vehicle signs<br>• height and weight considerations<br>• speed considerations<br>• road obstructions<br>• road conditions.<br><br>**Student Reference Manual:** Have students investigate transportation regulations for various pieces of farm machinery. |
| 40.2 | To demonstrate the safe transport of farm equipment. | Demonstrate how to prepare and hook up the equipment for road transport.<br><br>Inform students of what to look for when preparing to transport equipment including:<br>• proper drawbar length and height<br>• proper drawpins<br>• hydraulic connections<br>• slow moving signs and proper lights installed. |

## Module 41: Environmental Regulations and Disposal of Farm Chemicals (Core)

**Suggested Time:** 6-8 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module is used to inform students of environmental regulations and disposal of various products and containers used in crop production.

**Foundational Objective**
- To understand the environmental regulations associated with the disposal of various products and containers used for crop production.

**Common Essential Learning Foundational Objectives**
- To examine moral issues related to disposal of farm chemicals through a framework which incorporates cultural understandings. (CCT)
- To recognize the reciprocal relationship between freedom and responsibility in relation to the use and disposal of farm chemicals. (PSVS)

| | Learning Objectives | Notes |
|---|---|---|
| 41.1 | To interpret the signs, symbols, and directions of the manufacturer's recommendations for safe handling of various products and containers used for crop production. (CCT, COM) | Various products such as crop protection products as well as oils, lubricants, and other products used for crop production can have harmful effects on the environment as well as on human health.<br><br>It is important that the manufacturer's recommendations for safe handling and disposal of containers or waste fuel, oil, or lubricants be followed carefully.<br><br>Manufacturers describe these procedures very carefully and they should be followed exactly. Have students interpret the signs, symbols and manufacturer's directions. Students should develop a working knowledge of the manufacturer's guidelines.<br><br>**Student Reference Manual:** Have students develop a log of all the symbols and their meanings. |
| 41.2 | To become familiar with environmental laws regarding the disposal of various farm chemicals, lubricants and containers. | The students should become familiar with environmental laws and the restrictions governing the disposal of various farm chemicals. Improper disposal can damage the environment and expose the farmer to issues of liability. |

| Learning Objectives | Notes |
| --- | --- |
| | Municipalities have different regulations on the use and disposal of all waste fuels, chemicals and other crop protection products. These regulations have a great impact on the grain farm. It is important that the farm operator knows the environmental impact that the chemicals have on the operation of the grain farm.<br><br>**Student Resource Manual:** Have students research and list the regulations from the municipality, province and/or other agencies regarding various crop production products, petroleum substances, containers and other substances.<br><br>Have students make a list of chemicals, powders, and petroleum substances used in the production of crops.<br><br>Students should identify the regulations and restrictions of each substance.<br><br>Students should also describe the precautions, regulations, and environmental impact that each substance has on the farm operation. |

## Module 42: Grain Marketing (Core)

**Suggested Time:** 6-8 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module familiarizes students with various aspects of grain marketing including transportation, grading and various marketing systems.

**Foundational Objective**
- To develop an understanding of the grain marketing including marketing systems, transportation options, and grading systems available to producers.

**Common Essential Learnings Foundational Objectives**
- To read and interpret quantitative information found in newspapers, magazines and government, political and business publications and evaluate the validity of arguments based on such information. (NUM)
- To propose generalizations that explain relationships. (CCT)

| | Learning Objectives | Notes |
|---|---|---|
| 42.1 | To describe grain marketing systems. | Producers need to make a number of decisions on when and where to market grain. Invite a number of experts to speak to students about grain marketing including various options available to producers.<br><br>Discuss with students the global nature of grain marketing.<br><br>Have students identify different ways of marketing grain. Encourage students to use technology as a tool to access information regarding grain marketing. |
| 42.2 | To describe transportation of grain. | When, how and where to transport grain are important decisions for producers. Grain transportation issues have taken on much greater significance in the last ten years.<br><br>Have students investigate the various grain transportation options available to producers. Discuss the various factors that producers need to consider when making decisions about grain transportation. |
| 42.3 | To develop a knowledge of grading. | Producers use different marketing strategies depending on the grade of grain that they produce. Growing conditions affect the grain quality. |

Developing the ability to identify the grade of crops can help producers make important marketing decisions. Discuss with students the kinds of decisions that farmers make based on the quality of the crops.

Invite an elevator manager or other knowledgeable person to discuss with students the grading of grains. Discuss the:

- grading system
- criteria for grades including quality, weight, and colour
- alternative markets for various types of grain.

Student should be able to grade various types of grain.

**Student Reference Manual:** Have students research and list various options for grain transportation.

Students should also research and list alternative markets for various quality of grain.

In addition, have students list grading criteria for various crops.

## Module 43: Developing and Using Financial Plans (Core)

**Suggested Time:** 6-8 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Every crop producer needs to develop and use a financial plan. This module is used to familiarize students with various aspects of financial plans.

**Foundational Objective**
- To develop an awareness of the development and use of financial plans.

**Common Essential Learnings Foundational Objectives**
- To synthesize ideas gleaned from current reading/discussion/viewing or oral presentations with prior knowledge and understanding. (COM)
- To organize information for reporting, discussing and sharing. (COM)
- To collect and organize quantitative information into a list, table, graph or chart and analyze this information to determine a conclusion. (NUM)

| | Learning Objectives | Notes |
|---|---|---|
| 43.1 | To identify the components of a financial plan. | All financial plans have common elements. Gather a variety of types of plans for students to examine. Ask what the common elements are and describe the meaning of the terms.<br><br>Have students identify the components of financial plans and compile a list for future reference. Students should be prepared to look at the different computer programs that are available for financial planning. |
| 43.2 | To develop a financial plan. | Have students prepare a financial plan using either manual writing skills or a computer version. The plan should include all aspects of a particular style of farming operation. |
| 43.3 | To prepare a records management system. | Producers need an effective records management system in order to help develop and maintain financial plans. Ask a farm business consultant or extension agrologist to help students develop a records management system.<br><br>**Student Reference Manual:** Have students develop a list of records that should be kept and prepare a financial plan. |

## Module 44: Grain Storage (Core)

**Suggested Time:** 5-6 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module is used to develop students' awareness of some of the factors that need to be considered when storing grain. For example, producers must take into consideration the moisture content of grain when deciding where, and for how long, grain is to be stored.

**Foundational Objectives**
- To identify factors which need to be considered when making decisions about grain storage.
- To observe, assist with or demonstrate the use of grain moisture testing equipment.

**Common Essential Learnings Foundational Objective**
- To read dials, meters and scales and understand how to interpret these readings. (NUM)

| | Learning Objectives | Notes |
|---|---|---|
| 44.1 | To develop the ability to operate grain moisture testing equipment. | Have students study manuals on grain moisture testing equipment. Students should perform the actual testing of the grain using equipment. |
| 44.2 | To analyze and recommend the proper storage. | Discuss the factors that need to be considered when recommending proper grain storage. These factors include weather, location of storage and other factors before making a final recommendation.<br><br>Have students research different types of devices for controlling the condition of grain in storage. Students should be familiar with the cost efficiency and practicality of the devices on the specific farm operations.<br><br>**Student Reference Manual:** Have students list different types of grain, climatic conditions, temperature and any other information that is required to make accurate recommendations for the proper storage of all types of grain crops.<br><br>Have students list bins, locations and storage capacity on the farm. |

## Module 45: Off Season Storage of Farm Equipment (Optional)

**Suggested Time:** 5-7 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Special precautions need to taken when storing farm equipment during the off season. With the rising cost of equipment and the smaller profit margins of farming operations, it is vital to store farm equipment properly. This will help maintain the value of the equipment.

**Foundational Objective**
- To observe, assist, and demonstrate skills and procedures used in storing farm equipment

**Common Essential Learnings Foundational Objectives**
- To seek out information from people who may be knowledgeable. (IL)
- To make and use point-form notes. (COM)

| | Learning Objectives | Notes |
|---|---|---|
| 45.1 | To demonstrate proper procedures for putting farm equipment into seasonal storage. | Demonstrate how to clean off any residues or foreign material from the machinery. Prior learning should enable students to identify basic maintenance and repairs. Students should be able to store the equipment in sheds in order of seasonal usage. If necessary, students should be prepared to observe, assist or demonstrate the removal of any hitches, PTOs, or other attachments.<br><br>Have students protect various machinery components using rust inhibitors and tarps. Students should also be able to demonstrate how to block equipment to relieve weight on tires or hydraulic pressures, and other examples of relieving stress on farm equipment. |
| 45.3 | To identify routine procedures to prepare equipment for storage. | Students should know how to prepare engines and drive trains for storage. For example, radiators should be drained, batteries disconnected, and belts loosened.<br><br>**Student Reference Manual:** Have students develop a checklist of routine procedures required to prepare equipment for storage. |

## Module 46: Operation of Air Seeding Equipment (Optional)

**Suggested Time:** 5-7 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
Crop producers have large capital investments in air seeding equipment. It is imperative that air seeding equipment be operated properly and safely. This module is used to provide students with specific skills needed for the operation of air seeding equipment.

**Foundational Objectives**
- To understand and use farm safety procedures in operating air seeding equipment.
- To observe, assist, or demonstrate skills and procedures used in operating air seeding equipment.

**Common Essential Learnings Foundational Objectives**
- To use questions as tools to further their own and others' understandings. (COM)
- To read dials, meters and scales and understand how to interpret these readings. (NUM)

| | Learning Objectives | Notes |
|---|---|---|
| 46.1 | To describe the basic operation, routine inspection, and maintenance of air seeding equipment. | Students should be able to identify the basic components and operation of an air seeding machine. Students should also be able to perform routing inspections and maintenance procedures.<br><br>Have a producer identify the specialized components of air seeding equipment. |
| 46.2 | To demonstrate the proper filling procedures for grain and fertilizer. | Demonstrate to students the proper procedures for:<br>• cleaning the air seeder<br>• filling the grain and fertilizer tanks.<br><br>Have the students demonstrate their ability to use the operator's manual index and table of contents, and interpret the information contained in the operator's manual. |
| 46.3 | To demonstrate the ability to operate an air seeder. | Demonstrate to students how to:<br>• monitor and maintain depth adjustments<br>• control speed<br>• determine and maintain a seeding pattern<br>• check for plugged hoses<br>• determine seeding rates.<br><br>**Student Reference Manual:** Have students list/describe the particular operating guidelines for various fields. |

## Module 47: Operation and Maintenance of Wheel Move Type Irrigation Systems (Optional)

**Suggested Time:** 5-10 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module prepares students to observe, assist, or demonstrate the operation and maintenance of a wheel move type irrigation system.

**Foundational Objective**
- To observe, assist, or demonstrate the operation and maintenance of wheel move type irrigation systems.

**Common Essential Learnings Foundational Objective**
- To relate learning outcomes to prior and future needs. (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 47.1 | To become familiar with how to move wheel move type irrigation pipe system. | Describe to students what precautions are needed when moving mainline and laterals from storage to the field location.<br><br>Students should be instructed to exercise care when loading, moving, and unloading pipe to ensure that there is no damage to heads, couplers, or pipe.<br><br>Demonstrate/indicate to students the proper sequence of unloading. |
| 47.2 | To develop the ability to prepare system for operation. | Demonstrate to students how to lay out and connect the pipe system. Indicate how to check that the mainline is placed correctly with respect to water supply and that the laterals are placed in correct relation to mainline.<br><br>When equipment is in place, demonstrate to students the items to be checked before, during and after pressurization or start-up.<br><br>**Student Reference Manual:** Have students make diagrams or notes as necessary. |

| | Learning Objectives | Notes |
|---|---|---|
| 47.3 | To monitor and maintain the wheel move type irrigation system during operation. | Demonstrate how to evaluate and monitor the water flow. Ensure that proper steps are followed and obstructions cleared.<br><br>During operation, look for:<br>• plugged nozzles or poor spray patterns<br>• leaking pipe couplers.<br><br>Show students how to repair problems. Remind students of the key points to monitor during field applications. |
| 47.4 | To identify areas to be checked for maintenance on the motor drive unit. | Identify areas to be checked for maintenance including lubrication points, chain tension and routine motor maintenance (i.e., air filter, spark plugs).<br><br>**Student Reference Manual:** Have students develop a checklist of maintenance points. |
| 47.5 | To develop the ability to shut down the irrigation system. | Indicate the correct procedures to shut down the system and drain, disconnect, move, and reconnect lateral connections.<br><br>Remind students of using farm safety practices at all times.<br><br>**Student Reference Manual:** Have students make notes necessary for the preparation, monitoring, maintenance, moving and shut down of the wheel move type irrigation system. |

## Module 48: Operation and Maintenance of Pivot Type Irrigation Systems (Optional)

**Suggested Time:** 5-10 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module prepares students to observe, assist, or demonstrate the operation and maintenance of a pivot type irrigation system.

**Foundational Objective**
- To observe, assist with or demonstrate the operation and maintenance of pivot type irrigation systems.

**Common Essential Learnings Foundational Objective**
- To seek information through a steadily expanding network of options including other libraries, databases, and individuals. (IL)

| | Learning Objectives | Notes |
|---|---|---|
| 48.1 | To become familiar with the main parts of pivot irrigation systems. | Identify the main parts of pivot irrigation systems and describe the function of each part. |
| 48.2 | To become familiar with the alignment of the unit. | Demonstrate to students how to align pivot irrigation systems according to the specifications of the manufacturer.<br><br>Show students how to align the unit and take corrective measures as required. |
| 48.3 | To develop the ability to prepare the system for operation. | When equipment is in place, demonstrate to students the items to be checked before, during and after pressurization or start-up.<br><br>Describe the pressure relief valve on the pivot system.<br><br>Show students how to repair problems. Remind students of the key points to monitor during field applications.<br><br>Students should be able to inspect sprinklers and perform routine service as required.<br><br>**Student Reference Manual:** Have students make diagrams or notes as necessary. |

| | Learning Objectives | Notes |
|---|---|---|
| 48.3 | To monitor and maintain the tires on a rubber tire pivot system. | Demonstrate how to carry out an inspection of the rubber tires and service as required. |
| 48.4 | To develop the ability to flush out the system. | Indicate the correct procedures to flush out the system and identify at what times of the year this should be done.<br><br>Remind students of using farm safety practices at all times.<br><br>**Student Reference Manual:** Have students make notes as necessary for the preparation, monitoring, maintenance, moving and shut down of the pivot type irrigation system. |
| 48.5 | To develop the ability to adjust the travel speed of the system. | Describe how to adjust the travel speed of the system to suit field conditions, crop conditions and/or directions from supervisors. |
| 48.6 | To identify the climatic conditions which prohibit the use of pivot irrigation systems. | With the assistance of experts or producers, discuss with students the climatic conditions that prohibit the operation of a pivot system.<br><br>**Student Reference Manual:** Have students make notes and diagrams as necessary. |

## Module 49: Techniques for Gathering Soil Samples (Optional)

**Suggested Time:** 5-10 hours **Level:** Advanced
**Prerequisite:** None

**Module Overview**
This module prepares students to observe, assist, or demonstrate techniques used to gather soil samples.

**Foundational Objective**
- To observe, assist, or demonstrate techniques used to gather soil samples.

**Common Essential Learnings Foundational Objectives**
- To acquire information at one level, then apply that knowledge to explore other areas. (IL)
- To understand the reciprocal relationships between the natural and constructed worlds. (TL)

| Learning Objectives | Notes |
|---|---|
| 49.1 To develop an understanding of soil sampling techniques. | Soil samples are used to determine the fertilizer requirements for a field.<br><br>Samples are taken in the fall or spring and sent to soil laboratories for analysis. Follow the directions from the soil laboratory or local chemical and fertilizer dealer.<br><br>Equipment needed includes:<br>• a sampling tool: soil probe, auger or shovel<br>• buckets labeled for each depth to be sampled<br>• soil bags with labels<br>• a pen and marker<br>• a measuring tape.<br><br>The following steps are used to take soil samples:<br>1. Determine a sampling pattern of at least 15 locations within each field.<br>2. Determine the various combinations of analysis and depths which are to be used.<br>3. Use a separate bucket for each soil depth.<br>4. Label bags. Then fill, discarding extra soil. Samples should be about 1 kg in weight.<br>5. Keep samples cool until they can be delivered.<br>6. Complete Soil Fertility Information Sheets and send along with soil samples.<br><br>**Student Reference Manual:** Have students maintain a file on the results of soil fertility tests. |

## Resources

Alberta Agriculture, Food and Rural Development. (1996). *Crop protection home study kit.* Edmonton AB: Author.

Alberta Agriculture, Food and Rural Development. (1996). *Field crop technician: Training curriculum, skill profile and performance standards.* Edmonton AB: Author.

Alberta Agriculture, Food and Rural Development. (1996). *Weed control home study course: basics for weed control.* Edmonton AB: Author.

Alberta Agriculture, Food and Rural Development. (1996). *Weed seedling identification (Agdex 640-3).* Edmonton AB: Author.

Canadian Rural Information Service. E-mail: cris@em.agr.ca. Web site: www.agr.ca/policy/cris. Telephone: 1-888-757-8725. Mailing address: 930 Carling Avenue, Ottawa ON K1A 0C5.

Newspapers: *Western Producer* and *Grainews*.

Rural Service Centres. Videos and other publications on field crop production.

Saskatchewan Agriculture, Food and Rural Revitalization. Web site: www.agr.gov.sk.ca/saf. Miscellaneous publications available from the Publication Distribution Centre Order Desk, by phone: (306) 721-4330, by fax: (306) 721-4626 or by e-mail: valb.pad@sk.sympatico.ca including:

*Agriculture Biotechnology Report*
*Alfalfa Production for the Dehydration Industry*
*Alternative Crops*
*Bertha Armyworm*
*Cereal Leaf Disease Directorate*
*Crop Planning Guide*
*Crop Protection Guide*
*Flea Beetle Management*
*Guide to Farm Practice*
*Principles and Practices of Crop Rotation*
*Saskatchewan Seed Guide*
*Pesticide Safety Handbook*
*Varieties of Grain Crops*.

Saskatchewan Labour, Prevention Services Branch. Telephone: (306) 787-8399 or 1-800-567-7233 for information and publications on farm safety.

# References

Alberta Agriculture, Food and Rural Development. (1996). *Field crop technician: Training curriculum, skill profile and performance standards.* Edmonton AB: Author.

Battle River Regional Division #31. (1997). *Green certificate program: Handbook for administrators and school coordinators.* Camrose AB.

Saskatchewan Education. (1991). *Instructional approaches: A framework for professional practice.* Regina SK: Author.

Saskatchewan Education. (1991). *Student evaluation: A teacher handbook.* Regina SK: Author.

# Appendix A: Training Plans for Field Crop Production 10

**Module 1: Farm Safety (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies the major types of potential farm hazards such as:<br>• moving vehicles<br>• speed and power of machines and moving parts<br>• center of gravity (roll over)<br>• working with groups of people around machinery<br>• clothing, gloves, and footwear<br>• rotation parts ( PTO, belts, chains, etc.)<br>• hot surfaces and fluids<br>• high pressure hydraulics<br>• other _____ | | | | | |
| Demonstrates personal safety habits when working around and operating farm machinery | | | | | |
| Identifies and describes situations which warrant:<br>• use of ear plugs<br>• eye protection<br>• dust protection for breathing<br>• location and accessibility of fire and First Aid equipment | | | | | |
| Maintains the tools and shop in a clean and safe condition | | | | | |
| Identifies safety guards, shields, safety devices and warning signs used on farm equipment | | | | | |

**Module 1: Farm Safety (Core)**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes proper clothing, and protective gear | | | | | |
| Demonstrates the safety hazards associated with small tools, jacks, winches, and other lifting equipment | | | | | |
| Describes three basic components of a fire<br>Describes the three classes or types of fire<br>Lists the classes of fire possible related to:<br>• a truck or tractor<br>• a farm shop<br>• other potential areas | | | | | |
| Reads and interprets the labels on a fire extinguisher | | | | | |
| Selects the proper extinguisher for the type of fire | | | | | |
| Performs basic emergency First Aid procedures to:<br>• restore breathing<br>• choking victims<br>• bleeding cases<br>• victims of shock<br>• other _____ | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 2: Communications (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates the following communication skills:<br>• reading and forwarding messages<br>• reading and interpreting charts<br>• calculating seed and chemical rates<br>• interpreting manuals<br>• other _____ | | | | | |
| Demonstrates effective communication through:<br>• choice of words<br>• simple instructions and answers<br>• concise, specific language | | | | | |
| Composes and passes on messages and information through:<br>• telephone messages on written notes<br>• messages left and retrieved through voice mail and answering machines<br>• messages delivered or received through faxes<br>• face to face messages and information | | | | | |
| Locates, sorts, and summarizes specific information from manuals and a variety of publications | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 3: Career Exploration (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Develops an individual career profile | | | | | |
| Identifies basic personal and employability skills | | | | | |
| Prepares a personal time management system | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 4: Planning for Field Crop Production (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the kinds of plans used in field crop production | | | | | |
| Develops a land management plan | | | | | |
| Develops a farm plan | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 5: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates preventative maintenance including:<br>• checking oil<br>• checking fuel levels<br>• cleaning radiators<br>• monitoring gauges<br>• removing dust build-up | | | | | |
| Interprets manuals of farm equipment | | | | | |
| Identifies and describes the operational procedure and safety hazards for:<br>• screwdrivers<br>• wrenches<br>• pliers and cutters<br>• hammers, mauls, chisels and punches<br>• other _____ | | | | | |
| Identifies and describes the characteristics of and the safety hazards associated with:<br>• mechanical jacks and winches<br>• hand jacks and winches<br>• hydraulic lifting equipment<br>• other lifting devices | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 5: Farm Equipment Maintenance and Repair (Core)**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies the transportation regulations for moving farm equipment on public roads in terms of:<br>• licensing<br>• insurance<br>• operator's qualifications<br>• types of roads<br>• other _____ | | | | | |
| Describes the transportation regulations for the equipment in terms of:<br>• width, height and length requirements<br>• lighting<br>• slow moving signs<br>• clear visibility<br>• seasonal restrictions<br>• other _____ | | | | | |
| Understands the need for emergency equipment | | | | | |
| Describes examples of tools and emergency equipment for farm equipment in transport | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 6: Marketing (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes and understands how the marketing system works for:<br>• grains<br>• oilseeds<br>• specialty crops<br>• contracts<br>• open markets<br>• the Canadian Wheat Board | | | | | |
| Locates and interprets current market information | | | | | |
| Identifies and describes the various kinds of markets used in crop production and lists the advantages and disadvantages of each | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 7: Field Crops in Saskatchewan (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies and describes the various crops grown in the local areas of Saskatchewan | | | | | |
| Describes the factors which influence crop selection in a given area including:<br>• soil types<br>• climatic conditions<br>• frost free days<br>• other | | | | | |
| | | | | | |

**ADDITIONAL COMMENTS:**

**Module 8: Field Crop Production Machinery (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the different types and functions of crop production machinery | | | | | |
| Describes the basic mechanical principles of crop production machinery | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 9: Basic Maintenance and Operation of Crop Production Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Lists the items to be checked in a pre-start walk-around inspection in terms of:<br>• fluids<br>• greases<br>• oil levels<br>• filters (air and fluid)<br>• lubrication<br>• engine start-up procedures<br>• other _____ | | | | | |
| Identifies and interprets various gauges and controls | | | | | |
| Demonstrates basic operating procedures of crop production equipment in terms of:<br>• starting equipment<br>• shifting, clutching and braking<br>• operating power take-offs<br>• using hydraulic systems<br>• other _____ | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 10: Basic Operation of Tillage Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the characteristics of various kinds of tillage equipment to indicate the function and use and advantages and disadvantages:<br>• cultivators<br>• discers<br>• harrows<br>• seeders<br>• other _____ | | | | | |
| Performs a pre-start check of tillage equipment | | | | | |
| Demonstrates basic skills in operating tillage equipment | | | | | |
| Anticipates and identifies problems which can occur when operating tillage equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 11: Basic Operation of Combine Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes major components and operating mechanisms of combine equipment | | | | | |
| Performs a pre-start check of combine equipment | | | | | |
| Demonstrate the operational procedures of combine equipment | | | | | |
| Interprets gauges and controls of combine equipment | | | | | |
| Anticipates and identifies problems which can occur when operating combine equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 12: Basic Operation of Swathers (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Describes the basic components and operating mechanisms of swather equipment | | | | | |
| Demonstrates a pre-start check of swather equipment | | | | | |
| Explains and demonstrates the operational procedures of swathing equipment | | | | | |
| Anticipates and identifies problems which can occur when operating swather equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 13: Basic Operation of Forage Equipment (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the basic characteristics and operating mechanisms of forage equipment | | | | | |
| Demonstrates a pre-start or field inspection of forage equipment | | | | | |
| Demonstrates basic skills in operating forage harvesting equipment | | | | | |
| Anticipates and identifies problems which can occur when operating forage harvesting equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 14: Developing a Crop Plan (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes local soil and climatic conditions in a pre-determined location | | | | | |
| Identifies various crop varieties suitable for the area | | | | | |
| Completes an analysis of machinery required for the particular crop(s) | | | | | |
| Analyses availability of markets and sale outlets | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 15: Land Leveling for Irrigation Equipment (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Understands the concept of leveling land for irrigation purposes | | | | | |
| Identifies the parts and function of land leveling equipment | | | | | |
| Demonstrates the operational procedures of land leveling equipment | | | | | |
| Identifies the safety hazards when using land leveling equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 16: Irrigation Pumping Equipment (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the components and junctions of irrigation pumping equipment | | | | | |
| Performs a pre-start inspection | | | | | |
| Demonstrates proper start-up procedures | | | | | |
| Describes and demonstrates proper procedures for:<br>• starting the pump<br>• pressurizing the system<br>• setting the pressure and speed | | | | | |
| Describes the corrective procedure for seized pumps | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

# Appendix B: Training Plans for Field Crop Production 20

**Module 19: Farm Safety (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies potential farm hazards<br><br>Explains why these areas need cautionary attention | | | | | |
| Describes the use of safety guards, shields and other safety devices used on farm equipment<br><br>Locates, reads, and comprehends warning messages on farm equipment | | | | | |
| Describes the kind of proper clothing and protective gear (footwear, gloves, glasses, breathing devices, hearing devices) necessary to observe farm safety<br><br>Identifies the farm jobs that require these cautionary equipment | | | | | |
| Demonstrates safe practice when using manual or power tools<br><br>Identifies safety precautions when using jacks and winches<br><br>Describes hazards associated with manual or power tool and other lifting equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 19: Farm Safety (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies various fire hazards in a farm environment<br><br>Describes fire prevention strategies on farms<br><br>Identifies the different types of fires that can occur on a farm | | | | | |
| Demonstrates basic First Aid skills required on a farm<br><br>Identifies the steps in handling emergency procedures that require police, ambulance and fire fighters | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 20: Communications (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Demonstrates effective oral and written communication skills when:<br>• reading and forwarding messages<br>• reading and interpreting farm products<br>• interpreting manuals<br>• interpreting other types of communication | | | | | |
| Demonstrates effective verbal and written communication by using:<br>• appropriate choice of words<br>• simple instructions and answers<br>• concise, specific language<br><br>Identifies the information and communication needs on the farm | | | | | |
| Receives and passes on messages accurately in the following ways:<br>• telephone messages with written notes<br>• messages left and retrieved through voice mail or answering machines<br>• messages delivered or received through faxes<br>• face to face messages and information<br>• e-mail or other computer generated messages | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 20: Communications (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Locates, sorts, and uses information contained in a variety of publications<br><br>Locates, sorts, and uses information retrieved from the Internet or other electronic sources | | | | | |

**ADDITIONAL COMMENTS:**

**Module 21: Career Exploration (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Develops an individual career profile by identifying:<br>• specific areas of interest<br>• life experiences<br>• areas of expertise<br>• relevant experiences<br>• strengths and abilities<br>• activities and interests<br>• dislikes or areas that need improvement<br>• academic and non-academic strengths<br>• other _____ | | | | | |
| Researches career clusters and the range of occupational opportunities related to field crop production | | | | | |
| Demonstrates use of time management skills<br><br>Prioritizes and prepares a personal time management system | | | | | |
| Identifies more advanced personal and employability skills | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 22: Planning for Crop Production (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies the kinds of plans used in a crop production operation<br><br>Develops the plans necessary to operate this type of farm | | | | | |
| Develops a:<br>• land management plan<br>• farm management plan | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 23: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates skills in machinery maintenance such as:<br>• checking oil<br>• checking fuel levels<br>• cleaning radiators<br>• cleaning filters<br>• monitoring gauges<br>• preventing dust build-up on screens or filters<br>• other _____ | | | | | |
| Identifies and describes a variety of different types of tools and their uses<br><br>Demonstrates correct selection and use of each tool<br><br>Distinguishes between a safe practice and an unsafe practice | | | | | |
| Identifies and describes the characteristics of the common farm mechanical, hydraulic, and hand jacks and winches<br><br>Compares and contrasts the uses and efficiencies of the direct vertical, automotive, floor type, and any other type of lifting device | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 23: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the dangers and hazards associated with common lifting equipment | | | | | |
| Describes the need for having emergency equipment which is required if the farm machinery has a crisis while in transport | | | | | |
| Describes the transportation regulations for farm equipment and crops on public roads<br><br>Identifies and explains licensing, insurance, operator's qualifications and the Dangerous Goods Transportation Act for handling all types of farm equipment on public roads | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 24: Marketing (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes how marketing information is used in producing agricultural commodities | | | | | |
| Describes the steps involved in marketing crops<br><br>Describes the various kinds of markets used in crop production | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 25: Cultivation and Seeding Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies the major components of seeding and cultivation equipment<br><br>Demonstrates a routine inspection and maintenance of cultivation and seeding equipment | | | | | |
| Identifies the types of working patterns for tillage including:<br>• back and forth<br>• round<br>• angled<br>• width of turn strips<br>• irregular shaped fields<br><br>Demonstrates how to minimize time wastage while achieving optimum coverage and care of the equipment | | | | | |
| Describes the proper operating speed, depth of shovels, angle of penetration, and wing and machinery levels when operating cultivation and seeding equipment | | | | | |
| Identifies and discusses the hazards with the operation of cultivation and seeding equipment | | | | | |
| Demonstrates the ability to turn cultivation and seeding equipment<br><br>Describes and demonstrates:<br>• turning radius<br>• tractor-implement clearance<br>• cornering methods | | | | | |

**Module 25: Cultivation and Seeding Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the ways in which cultivation and seeding equipment can become plugged<br><br>Identifies methods for unplugging equipment | | | | | |
| Describes and demonstrates filling and maintaining seeding equipment including:<br>• pre-fill procedures<br>• cleaning seed boxes<br>• clearing tubes<br>• preparing seed for filling<br>• using of proper hoists<br>• backing up and hooking up to seeding equipment | | | | | |
| Describes how to protect the seed and seeding equipment from climate conditions<br><br>Describes and demonstrates how to monitor and maintain the depth adjustment of seeding equipment | | | | | |
| Identifies and describes accurate seeding techniques<br><br>Describes some of the causes and effects of seeding problems | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 26: Fertilizer Storage, Handling and Application (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the reason for the different types of fertilizer<br><br>Describes the safety procedures for handling the different types of fertilizer<br><br>Demonstrates how to handle fertilizer with the correct protective clothing and gear | | | | | |
| Describes the storage requirements for the different types of fertilizer<br><br>Identifies the problems associated with storage | | | | | |
| Describes the hazards associated with handling fertilizer<br><br>Describes the first aid and treatment procedures for fertilizer accidents | | | | | |
| Describes the different types of fertilizer applicators<br><br>Identifies the safety measures for operating the applicators | | | | | |
| Describes and demonstrates how to service and maintain fertilizer applicators | | | | | |
| Demonstrates the ability to operate a fertilizer applicator | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 27: Harvesting Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the major components of swathers and combines<br><br>Performs basic routine inspections and maintenance procedures<br><br>Interprets the operating manuals | | | | | |
| Demonstrates the ability to operate a swather including:<br>• canvas speed<br>• cutting height<br>• operating of header<br>• machine speed | | | | | |
| Demonstrates the proper driving techniques for swathers including:<br>• steering<br>• speed<br>• other | | | | | |
| Describes why swathers become plugged<br><br>Demonstrates how to unplug swathers | | | | | |
| Describes the major components and gauges of combines | | | | | |
| Demonstrates the ability to operate a combine | | | | | |
| Identifies and describes the safety procedures when working a combine | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 28: Weed and Pest Control (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the early detection of weed infestation by describing the visual characteristics of newly emerged crop plants that distinguishes them from weeds | | | | | |
| Describes techniques that minimize the spread of weeds<br><br>Describes integrated pest management | | | | | |
| Identifies common insect pests found in crops<br><br>Describes the signs of damage and what to look for in monitoring crops | | | | | |
| Identifies the damage done by non-insect pests<br><br>Describes ways in which farm practices could be changed to prevent problems. | | | | | |
| Describes the environmental issues associated with the control of weeds and other pests | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 29: Operation and Maintenance of Gravity Type Irrigation Systems (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describe how to prepare gravity type irrigation systems for operation | | | | | |
| Describes and demonstrates how to use eye judgement or surveying techniques to ensure that field pattern of ditches is efficient | | | | | |
| Demonstrates how to make field ditches by adjusting the depth of the ditch for heavy or light soils | | | | | |
| Demonstrates how to evaluate and monitor the water flow and condition of the ditches | | | | | |
| Demonstrates the correct procedures to shut down the system and to operate a ditch filler | | | | | |
| | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 30: Operation and Maintenance of Pipe Type Irrigation Systems (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes pipe type irrigation systems using:<br>• appropriate implements<br>• placement and hook-up pumping equipment<br>• placing of pipe in field location | | | | | |
| Demonstrates how to apply and control water flow to ensure the irrigation is done effectively and efficiently | | | | | |
| Demonstrates how to evaluate and monitor the water flow | | | | | |
| Demonstrates the proper procedure to shut down the irrigation system | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 31: Operation and Maintenance of Hand Move Type Irrigation Systems (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates how to safely move irrigation pipe system | | | | | |
| Demonstrates how to lay out and connect the pipe system | | | | | |
| Demonstrates how to monitor and maintain the hand move type irrigation system during operation | | | | | |
| Demonstrates the proper procedures to shut down the system | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 32: Operating Tractors with Attachments (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the technology used in three-point hitches and front-end loaders<br><br>Describes and demonstrates the operation of hydraulics | | | | | |
| Describes the hazards associated with operating front-end loaders and three-point hitch equipment<br><br>Demonstrates the precautions to be taken when operating the equipment | | | | | |
| Demonstrates the start-up checks, maintenance and service of tractor attachments | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 33: Forage Production Equipment (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Interprets and uses the operator's manual for maintenance and repair of various components of forage production equipment | | | | | |
| Demonstrates the ability to operate forage production equipment<br><br>Describes the types of problems that can occur with forage production equipment | | | | | |
| Identifies the hazards of operation. Demonstrates safe operational practices | | | | | |
| Identifies the source of a plugging problem in forage equipment | | | | | |
| Demonstrates the proper procedures for transporting forage equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

# Appendix C: Training Plan for Field Crop Production 30

**Module 34: Causes and Prevention of Farm Accidents (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Identifies and is perceptive to farm hazards<br><br>Identifies farm safety groups, organizations, and regulations set out by Workers' Compensation and other groups | | | | | |
| Describes the use of safety guards, shields, and other safety devices used on farm equipment<br><br>Demonstrates a safety walk-around check on all the devices used for safety<br><br>Develops a personal safety audit of a farm environment | | | | | |
| Demonstrates safe practices when using lifting equipment<br><br>Identifies the safety hazards associated with use of:<br>• power or manual tools<br>• jacks, winches and other lifting equipment | | | | | |
| Identifies potential fire hazards in a farm environment<br><br>Describes types of fire fighting techniques needed for a farm setting<br><br>Describes the precautions necessary when dealing with the different types of fires | | | | | |

**Module 35: First Response for Farm Accidents (Core)**

**Student's Name _____ Farmer-Trainer_____**

| Learning Objectives | √ if Student: A - Assisted O - Observed D - Demonstrated | | | Completion Date | Comments |
|---|---|---|---|---|---|
| | A | O | D | | |
| Demonstrates the required skills to handle emergency situations | | | | | |
| Develops and creates a well-equipped First Aid kit | | | | | |
| Displays charts of emergency phone numbers (police, fire halls, ambulance, doctor, hospital, etc.) in appropriate places | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 36: Communications (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies where producers need reliable information such as:<br>• commodity prices, markets and growing conditions<br>• transportation and other input costs<br>• health problems and weed/insect infestations<br>• financial/banking information<br>• other _____ | | | | | |
| Demonstrates the ability to locate and sort useful information<br><br>Demonstrates the ability to critique information<br><br>Demonstrates the ability to communicate effectively reliable information | | | | | |
| Describes and demonstrates the communication needed for:<br>• writing and publications<br>• information management<br>• office tools | | | | | |
| Demonstrates effective communication skills to understand or be understood by employees, employers, suppliers, or customers | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 37: Career Exploration (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identify career cluster and the range of occupational opportunities in the type of farming that interests the student according to:<br>• primary production (professional science, management, etc.)<br>• marketing, distribution and retail services<br>• support services (production, financial, government) | | | | | |

**ADDITIONAL COMMENTS:**

**Module 38: Farm Planning (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Prepares a projected budget for the particular type of farm | | | | | |
| Selects and demonstrates use of an accounting system | | | | | |
| Describes a net worth statement<br><br>Prepares a net worth statement | | | | | |
| Investigates the sources of credit and a credit rating system | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 39: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Lists the components and the types of fluids that need to be checked:<br>• fuel, oil (engine, transmission, steering)<br>• water (radiator, battery)<br>• accessories (hydraulics) | | | | | |
| Demonstrates correct procedures to change:<br>• oil and oil filters for various kinds of the vehicles<br>• hydraulic, fuel, air, and water filters | | | | | |
| Describes the types of greases and oils for high/low speed, seasons and other factors | | | | | |
| Demonstrates the correct procedures to change:<br>• non-engine parts requiring lubrication<br>• air cleaners<br>• grease gun<br>• coolant<br>• battery<br>• other _____ | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 39: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates the correct procedures to service:<br>• drive train and transmission<br>• brake system<br>• tires and rims | | | | | |
| Demonstrates the standards illustrated in the operator's manual, use and operational procedure, and safety precautions required to use:<br>• wrenches<br>• screwdrivers<br>• hammers<br>• chisels<br>• punches<br>• files and rasps<br>• saws for wood and metal<br>• other tools | | | | | |
| Identifies and describes the characteristics of; knows the weight range, strength, and capacity of:<br>• hydraulic jacks and hoists<br>• hand jacks and hoists<br>• direct vertical lift<br>• floor type lift<br>• automotive type lift<br>• other power or manual jacks/winches | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 39: Farm Equipment Maintenance and Repair (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the dangers and hazards associated with lifting equipment<br><br>Identifies unsafe, worn, or defective parts on any lifting equipment | | | | | |
| Demonstrates the ability to repair any lifting equipment | | | | | |
| Identifies and explains:<br>• licensing<br>• insurance<br>• Dangerous Goods Transportation Act<br>• width, height and length requirements<br>• lighting<br>• use of slow moving signs<br>• clear visibility rules<br>• seasonal restrictions<br>• emergency equipment required in crisis when transporting machinery on public roads | | | | | |
| Obtains and knows the government and municipal guidelines for transporting farm equipment, trucks, or machinery on public roads | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 40: Transporting Farm Equipment (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes the various pieces of legislation covering transportation of farm equipment including:<br>• slow moving vehicle signs<br>• height and weight<br>• speed<br>• road obstructions/restrictions<br>• road conditions | | | | | |
| Demonstrates how to prepare and hook up the equipment for road transport including:<br>• proper drawbar length, height and position<br>• proper drawpins<br>• hydraulic connections<br>• proper placement of signs and lights<br><br>Demonstrates the safe transport of farm equipment | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 41: Environmental Regulations and Disposal of Farm Chemicals (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Interprets the signs, symbols, and directions of manufacturer's recommendations for:<br>• safe handling<br>• proper use<br>• mitigating harmful effects on the environment<br>• disposal | | | | | |
| Describes the environmental laws and the restrictions governing the use of and disposal of various farm chemicals<br><br>Identifies the different regulations from various municipalities for use and disposal of all farm chemicals (Attention should be focused on those municipalities where students will be operating.) | | | | | |

**ADDITIONAL COMMENTS:**

**Module 42: Grain Marketing (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes various grain marketing systems | | | | | |
| Describes when, how and where to transport grain | | | | | |
| Describes grading of grain and identifies<br>• categories of grades<br>• how and why the grade is assigned<br>• quality, weight, colour, and condition of an assigned grade | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 43: Developing and Using Financial Plans (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the components of a financial plan<br><br>Compiles information on the different manual types or computer programs available | | | | | |
| Develops a financial plan | | | | | |
| Prepares a records management system for crop production | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 44: Grain Storage (Core)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Operates grain moisture testing equipment | | | | | |
| Analyses and recommends proper grain storage | | | | | |
| Describes the different types of devices for controlling the condition of grain in storage | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 45: Off Season Storage of Farm Equipment (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes and demonstrates proper procedures for putting farm equipment into seasonal storage by considering the following:<br>• clean off residue<br>• identify repairs needed<br>• store in shed in order of use<br>• removal of hitch, PTO and other attachments<br>• other _____ | | | | | |
| Describes and applies the agents for protection of equipment during storage including:<br>• oil changes<br>• diesel fuel levels<br>• tarps, covers and other systems of protection<br>• block equipment to relieve weight on tires<br>• hydraulic pressures<br>• other _____ | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 46: Operation of Air Seeding Equipment (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes and demonstrates the basic routine inspection, maintenance, and operation of air seeding equipment | | | | | |
| Demonstrates proper filling procedures for grain and fertilizer<br><br>Interprets and demonstrates use of operator's manual for equipment related to the seeding process | | | | | |
| Demonstrates the ability to operate an air seeder or other seeding equipment according to:<br>• depth adjustment<br>• speed<br>• seeding patterns<br>• seeding rates<br>• other _____ | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 47: Operation and Maintenance of Wheel Move Type Irrigation Systems (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Demonstrates care when loading, moving, and unloading irrigation pipe system<br><br>Demonstrates precautions when moving mainline and laterals from storage to the field location | | | | | |
| Demonstrates how to lay out and connect the pipe system<br><br>Demonstrates the proper checking procedures before, during and after pressurization or start-up | | | | | |
| Demonstrates how to evaluate and monitor the water flow including looking for:<br>• plugged nozzles or poor spray patterns<br>• leaking pipe couplers<br>• other _____<br><br>Demonstrates how to repair problems | | | | | |
| Describes and demonstrates the ability to shut down the irrigation system<br><br>Demonstrates proper storage techniques | | | | | |
| Identifies and demonstrates maintenance on the motor drive units include:<br>• lubrication points<br>• chain tension<br>• air filter and other routine motor maintenance<br>• other _____ | | | | | |

**Module 48: Operation and Maintenance of Pivot Type Irrigation Systems (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Identifies the main parts of the pivot irrigation systems and describes function of each part | | | | | |
| Demonstrates how to align the unit and take corrective measures if required | | | | | |
| Demonstrates how to check before, during and after pressurization or start-up<br><br>Describes the pressure relief valve on the pivot system<br><br>Demonstrates how to repair problems<br><br>Demonstrates how to inspect sprinklers and perform routing service as required | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |

**Module 49: Techniques for Gathering Soil Samples (Optional)**

**Student's Name _____ Farmer-Trainer_____**

| **Learning Objectives** | **√ if Student:**<br>**A - Assisted**<br>**O - Observed**<br>**D - Demonstrated** | | | **Completion Date** | **Comments** |
|---|---|---|---|---|---|
| | **A** | **O** | **D** | | |
| Describes and demonstrates soil sample techniques as determined by laboratories or fertilizer dealers | | | | | |
| **ADDITIONAL COMMENTS:** | | | | | |