

## MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES)

**Level:** Intermediate

**Theme:** Technology and Applications

**Prerequisite:** None

**Module Description:** Students apply knowledge of materials and processes in growing a field crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment and practical production tasks; and they identify related career opportunities. Potential areas of specialization include the production of cereals, forage, oil seeds, pulse crops, mushrooms, spices/herbs, vegetables, fruits, medicinal plants and exotic plants.

**Module Parameters:** Access to a land laboratory.

Facilities and equipment should permit students to perform practical skills in **two** or more areas of crop production; e.g., soil preparation, seeding/propagation, cultivation, irrigation, fertilizing, pest and disease control, harvesting.

Off-campus learning can support the development of practical skills in crop production; consultation with a work site supervisor ensures that relevant safety considerations are addressed and that student learning meets or exceeds the learner expectations in this module.

See the *Off-campus Education Guide for Administrators, Counsellors and Teachers* (Alberta Education, 1995) for further information regarding off-campus learning.

**Note:** This module can be combined with other modules from the Agriculture strand and/or from the Career Transitions strand to provide opportunities for students to develop technical competencies within the Alberta Green Certificate Training Program (Alberta Agriculture, Food and Rural Development). Opportunities may also exist for the completion of practical components of this module through projects undertaken with local youth groups; e.g., 4-H Clubs. See Section H (Linkages/Transitions) of this guide for further information.

**Supporting Modules:** CTR2210 Workplace Safety (Practices) [Career Transitions Strand]  
AGR1030 Production Basics

Because of the practical nature of this module, students need a general knowledge of accepted practices and potential hazards when performing tasks related to crop production. See Planning for Instruction in Section C for further information on student safety.





**MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)**

Module Learner Expectations	Assessment Criteria and Conditions	Suggested Emphasis
<p><i>The student will:</i></p> <ul style="list-style-type: none"> <li>demonstrate basic competencies.</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>observations of individual effort and interpersonal interaction during the learning process.</li> </ul> <p><i>Assessment Tool</i>  <i>Basic Competencies Reference Guide and any assessment tools noted above</i></p>	<p>Integrated throughout</p>

Concept	Specific Learner Expectations	Notes
<p>Plant Anatomy and Identification</p>	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>identify field crops grown in western Canada according to:               <ul style="list-style-type: none"> <li>common name</li> <li>general characteristics/growth habits</li> <li>basic structural parts</li> </ul> </li> <li>describe the structure, function and growth habits of field crop species, and their significance to the producer; e.g.:               <ul style="list-style-type: none"> <li>cells and tissues</li> <li>roots</li> <li>stems</li> <li>leaves</li> <li>flowers and fruits</li> </ul> </li> <li>explain basic plant processes and related terminology; e.g.:               <ul style="list-style-type: none"> <li>water and nutrient intake</li> <li>respiration</li> <li>photosynthesis</li> <li>transpiration</li> </ul> </li> <li>identify field crops that are suited to specific applications in Alberta; e.g.:               <ul style="list-style-type: none"> <li>vegetable and fruit crops</li> <li>pulse crops</li> <li>oil seeds</li> <li>specialty crops.</li> </ul> </li> </ul>	<p>Draw, label and list functions of specific plant structures.</p> <p>Prepare a seed display of different field crop species.</p> <p>Assembled displays of seed varieties can be obtained from:</p> <ul style="list-style-type: none"> <li>Canadian Wheat Board</li> <li>Canadian Grains Institute.</li> </ul> <p>Prepare/examine microscope slides of plant parts/cross-sections.</p> <p>Plant collections and displays.</p> <p>Prepare models and/or mounts.</p>

**MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)**

Concept	Specific Learner Expectations	Notes
Production Equipment	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• identify types of equipment that are used at each stage of production; e.g.:               <ul style="list-style-type: none"> <li>– hand and/or power equipment used in seeding/planting, tillage, water/fertilizer application and harvest</li> <li>– handling equipment, such as trucks, tractors, conveyors and augers</li> </ul> </li> <li>• identify and describe criteria relevant to the selection and/or design of production equipment; e.g.:               <ul style="list-style-type: none"> <li>– function, operation and maintenance</li> <li>– safety efficiency</li> <li>– ethical, legal and environmental factors</li> <li>– economics and cost</li> </ul> </li> <li>• identify policy, legislation and safe practices relevant to the use of equipment and crop inputs.</li> </ul>	
Production Skills	<ul style="list-style-type: none"> <li>• identify basic physical requirements for producing field crops; e.g.:               <ul style="list-style-type: none"> <li>– water</li> <li>– light (quantity, quality, duration)</li> <li>– temperature</li> <li>– air</li> <li>– space variables</li> <li>– nutrients</li> </ul> </li> <li>• describe how weather and climate may affect production activities</li> <li>• relate principles of nutrition to production practices; e.g.:               <ul style="list-style-type: none"> <li>– function and sources of essential nutrients</li> <li>– identifying excesses and deficiencies</li> <li>– fertilizer formulation</li> </ul> </li> <li>• describe the symptoms, treatment and prevention of major pests, diseases and ailments that affect the health of plants; e.g.:               <ul style="list-style-type: none"> <li>– identification, symptoms and treatment</li> <li>– cultural, mechanical, biological and chemical methods of control</li> </ul> </li> </ul>	<p>Design/conduct experiments that monitor the effect of environmental factors on growth.</p> <p>Calculate germination rates.</p> <p>Recognize nutrient deficiencies.</p> <p>Use <u>nontoxic and safe</u> materials for controlling plant pests and diseases.</p>

**MODULE AGR2030: FIELD CROPS 1 (MATERIALS & PROCESSES) (continued)**

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• perform basic field crop production activities; e.g.:               <ul style="list-style-type: none"> <li>– soil preparation</li> <li>– seeding/propagation</li> <li>– crop cultivation</li> <li>– irrigation/fertilization</li> <li>– pest/weed/disease control</li> <li>– harvesting.</li> </ul> </li> </ul>	<p>Compare “common” and “certified” seed systems.</p>
Career Opportunities	<ul style="list-style-type: none"> <li>• research careers and the range of occupational opportunities related to producing field crops; e.g.:               <ul style="list-style-type: none"> <li>– primary production</li> <li>– agriscience/production management</li> <li>– resource management</li> <li>– support services</li> </ul> </li> <li>• describe current employment opportunities based on employment statistics</li> <li>• outline trends in field crop production and future career opportunities.</li> </ul>	<p>Plan for individual/group research and presentations.</p> <p>Research information regarding:</p> <ul style="list-style-type: none"> <li>• job description</li> <li>• employment markets</li> <li>• education/training</li> <li>• wage expectations.</li> </ul> <p>Arrange/facilitate:</p> <ul style="list-style-type: none"> <li>• information interviews</li> <li>• work study/experience</li> <li>• job shadowing.</li> </ul> <p>Contact the “Career Hotline” (telephone: 1-800-661-3753).</p> <p>See the National Occupational Profiles (NOC) in Section H: Linkages/Transitions.</p>