

## MODULE AGR2140: NURSERY/GREENHOUSE CROPS 1 (MATERIALS & PROCESSES)

**Level:** Intermediate

**Theme:** Technology and Applications

**Prerequisite:** None

**Module Description:** Students apply knowledge of materials and processes in growing a nursery or greenhouse crop, focusing attention on plant anatomy and identification, growth requirements, physical structures and equipment, and practical production tasks; and they identify related career opportunities.

**Module Parameters:** Access to a land laboratory and/or controlled growing environment.

Facilities and equipment should permit students to perform practical skills in **three** or more areas of nursery or greenhouse crop production; e.g., soil preparation, propagation, transplanting, cultivation, watering and fertilizing, pest and disease control.

Instructor training in the use of pesticides is recommended; e.g., Pesticide Applicator/Dispenser Certificate.

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 Landscape Gardener Apprenticeship Program (Alberta Advanced Education and Career Development). 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.



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(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 practical skills in growing a nursery or greenhouse crop</li> </ul>	<p><i>Assessment of student achievement should be based on:</i></p> <ul style="list-style-type: none"> <li>performing practical skills within <u>three</u> of the following areas of plant production:               <ul style="list-style-type: none"> <li>preparation of the growing medium/seed bed</li> <li>propagation</li> <li>transplanting</li> <li>crop cultivation</li> <li>watering and fertilizing</li> <li>control of plant pests and diseases involving the use of nontoxic and safe materials.</li> </ul>               Plant production tasks will involve the application of appropriate safety guidelines for using hand and power equipment and supplies.             </li> </ul> <p><i>Assessment Tool</i>  <i>Task Checklist: Nursery/Greenhouse Crops 1, AGR2140-1</i>  <i>Lab Assessment: Plant Production, AGRLAB-PLT</i></p> <p><i>Standard</i>  <i>Achieve a minimum performance rating of:</i>  <i>- 1 in applicable areas of plant production</i>  <i>- 3 in the safe use of equipment and supplies</i></p> <ul style="list-style-type: none"> <li>maintaining an anecdotal record of all production tasks completed.</li> </ul> <p><i>Assessment Tool</i>  <i>Log/Record of Production Tasks: Plants, AGRLOG-PLT</i></p> <p><i>Standard</i>  <i>Completing all sections of the log/record for each production task performed</i></p>	<p>60</p>
<ul style="list-style-type: none"> <li>describe career opportunities relevant to nursery or greenhouse crop production</li> </ul>	<ul style="list-style-type: none"> <li>given career information relevant to nursery or greenhouse crop production, completing a research project on one or more career opportunities within the industry.</li> </ul> <p><i>Assessment Tool</i>  <i>Career Search: Intermediate Level, AGRCAR-2</i></p> <p><i>Standard</i>  <i>Research must be conducted to a standard of 2 on the rating scale</i></p>	<p>10</p>

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(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>describe the structure, function and growth habits of plants; 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 nursery or greenhouse plants; e.g.:               <ul style="list-style-type: none"> <li>using common names</li> <li>using botanical nomenclature</li> </ul> </li> <li>identify plants that are suited to specific applications; e.g.:               <ul style="list-style-type: none"> <li>potted and bench-grown greenhouse crops</li> <li>vegetable and fruit crops</li> <li>field and container-grown nursery crops</li> <li>specialty crops.</li> </ul> </li> </ul>	<p>Draw, label and list functions of specific plant structures.</p> <p>Prepare models and/or mounts.</p> <p>Research how solar energy is stored in plants.</p> <p>Gather, label and display collections of plants.</p> <p>Prepare/examine microscope slides of plant parts/cross-sections.</p>

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(continued)

Concept	Specific Learner Expectations	Notes
Structures, Equipment and Supplies	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• describe criteria relevant to the selection of structures, equipment and supplies; e.g.:               <ul style="list-style-type: none"> <li>– ease of operation/maintenance</li> <li>– safety</li> <li>– cost</li> <li>– environmental impact</li> </ul> </li> <li>• use appropriate structures in producing nursery or greenhouse crops; e.g.:               <ul style="list-style-type: none"> <li>– fences and cold frames</li> <li>– greenhouses</li> </ul> </li> <li>• use in a safe manner appropriate hand and power equipment and related supplies at each stage of production</li> <li>• identify policy, legislation and safe practices relevant to the use of structures, equipment and supplies.</li> </ul>	<p>Design/construct models of effective structures.</p> <p>Potential linkages exist with modules on agri-structures in the Construction Technologies strand.</p>
Production Skills	<ul style="list-style-type: none"> <li>• identify basic physical requirements for producing a nursery or greenhouse crop; 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>• demonstrate methods used to propagate nursery or greenhouse plants; e.g.:               <ul style="list-style-type: none"> <li>– sexual methods</li> <li>– asexual methods</li> </ul> </li> </ul>	<p>Design/conduct experiments that monitor the effect of environmental factors on growth.</p> <p>Calculate germination rates.</p>

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(continued)

Concept	Specific Learner Expectations	Notes
Production Skills (continued)	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• apply 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>• implement appropriate strategies for the 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>Recognize nutrient deficiencies.</p> <p>Grow plants suitable for sale.</p> <p>Use <u>nontoxic and safe</u> materials for controlling plant pests and diseases.</p>
Career Opportunities	<ul style="list-style-type: none"> <li>• research careers and the range of occupational opportunities related to producing nursery or greenhouse 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 nursery or greenhouse 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>