

## **MODULE AGR3140: NURSERY/GREENHOUSE CROPS 2 (MANAGEMENT TECHNIQUES)**

**Level:** Advanced

**Theme:** Technology and Applications

**Prerequisite:** AGR2140 Nursery/Greenhouse Crops 1 (Materials & Processes)

**Module Description:** Students demonstrate techniques used to produce a nursery or greenhouse crop, focusing attention on enterprise selection, plant identification, genetics and reproduction, production skills and venture analysis.

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

Facilities and equipment should permit students to perform practical skills of plant production, as is required to produce a nursery or greenhouse crop; 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 Module:** CTR2210 Workplace Safety (Practices)

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 AGR3140: NURSERY/GREENHOUSE CROPS 2 (MANAGEMENT TECHNIQUES)**  
(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 producing 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>• completing a research project on applications of heredity principles and reproductive technology relevant to one nursery/greenhouse crop variety. Research to address:               <ul style="list-style-type: none"> <li>– desirable and undesirable plant traits</li> <li>– selection criteria</li> <li>– applications of hybridization.</li> </ul> </li> </ul> <p><i>Assessment Tool</i> <i>Research Process: Heredity Principles and Reproductive Technology, AGR3140–2</i></p> <p><i>Standard</i> <i>Conduct research to a standard of 3 on the rating scale</i></p> <ul style="list-style-type: none"> <li>• demonstrating practical skills as required to produce a nursery or greenhouse crop. Practical skills will involve:               <ul style="list-style-type: none"> <li>– preparing the growing medium/seed bed</li> <li>– propagation and transplanting</li> <li>– appropriate use of growing space</li> <li>– cultivating, watering and fertilizing the crop</li> <li>– controlling plant pests and diseases</li> <li>– packaging plant material</li> <li>– utilizing soil and water conservation practices.</li> </ul> </li> </ul> <p>Production tasks will involve the application of appropriate safety guidelines for using equipment and supplies.</p> <p><i>Assessment Tool</i> <i>Task Checklist: Nursery/Greenhouse Crops 2, AGR3140–3</i> <i>Lab Assessment: Plant Production, AGRLAB–PLT</i></p> <p><i>Standard</i> <i>Achieve a minimum performance rating of:</i> <ul style="list-style-type: none"> <li>– 2 in applicable areas of crop production</li> <li>– 3 in the safe use of equipment and supplies</li> </ul> </p>	<p>60</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>• develop and present a plan for future nursery or greenhouse crop production, based on the outcomes of current production practices</li> <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>• 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> <ul style="list-style-type: none"> <li>• a brief report on the results of nursery or greenhouse crop production, and recommendations regarding future production ventures. Report to address:               <ul style="list-style-type: none"> <li>– product quality and saleability</li> <li>– variables affecting production outcomes</li> <li>– new skills/learnings that were applied</li> <li>– recommendations regarding future production based on current accomplishments and challenges.</li> </ul> </li> </ul> <p><i>Assessment Tool</i> <i>Presentations/Reports: Advanced Level, AGRPRE–3</i></p> <p><i>Standard</i> <i>Complete report to a standard of 3 on the rating scale</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>10</p> <p>Integrated throughout</p>

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(continued)

Concept	Specific Learner Expectations	Notes
Enterprise Selection	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• explain how personal needs may influence crop selection; e.g.:               <ul style="list-style-type: none"> <li>– food for personal consumption</li> <li>– economic goals</li> <li>– interest in aesthetics</li> <li>– personal motivation and aptitude</li> </ul> </li> <li>• identify market factors that influence crop selection; e.g.:               <ul style="list-style-type: none"> <li>– market demands</li> <li>– market size, location and access</li> <li>– market competition</li> <li>– market trends</li> </ul> </li> <li>• describe financial opportunities related to crop production; e.g.:               <ul style="list-style-type: none"> <li>– fixed and variable costs</li> <li>– forecast of returns</li> <li>– risk factors</li> </ul> </li> <li>• describe land requirements and/or the suitability of soil and water conditions to production operations</li> <li>• describe the suitability of Alberta’s climate to potential crops; e.g.:               <ul style="list-style-type: none"> <li>– growing days</li> <li>– frost-free days</li> <li>– ambient temperature</li> <li>– soil temperature</li> </ul> </li> <li>• describe equipment needs at different stages of production; e.g.:               <ul style="list-style-type: none"> <li>– seeding/planting</li> <li>– cultivation</li> <li>– harvesting</li> </ul> </li> <li>• describe labour and transportation needs within the industry; e.g.:               <ul style="list-style-type: none"> <li>– availability</li> <li>– cost.</li> </ul> </li> </ul>	<p>Potential linkages exist with the Alberta Agriculture Green Certificate Farm Training Program:</p> <ul style="list-style-type: none"> <li>• crop production</li> <li>• irrigated crop production.</li> </ul> <p>For additional information, see Section H: Linkages/Transitions.</p> <p>Identify input costs and potential profits for a production venture.</p> <p>Invite a rural development specialist to discuss factors in enterprise selection.</p> <p>Consider advertising and promotional technologies used to access greenhouse and nursery markets.</p> <p>Identify determinants of regional commodity production.</p>

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(continued)

Concept	Specific Learner Expectations	Notes
Taxonomy and Genetics	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• classify nursery or greenhouse plants; e.g.:               <ul style="list-style-type: none"> <li>– according to growth habit</li> <li>– according to taxonomy</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>• research heredity principles and their application to plants that are grown; e.g.:               <ul style="list-style-type: none"> <li>– dominant and recessive traits</li> <li>– selection criteria and procedures</li> <li>– systems of breeding</li> </ul> </li> <li>• research reproduction technologies and their application to plants that are grown; e.g.:               <ul style="list-style-type: none"> <li>– propagation techniques</li> <li>– hybridization</li> </ul> </li> <li>• describe procedures used to maintain the quality of plants within the industry; e.g.:               <ul style="list-style-type: none"> <li>– selection criteria</li> <li>– applications of hybridization</li> <li>– showing and judging.</li> </ul> </li> </ul>	<p>Gather, label and mount plant collections.</p> <p>Use an identification key to identify previously unknown plants.</p> <p>Conduct breeding experiments with cucumbers, squash, pumpkins and/or gourds.</p>
Production Skills	<ul style="list-style-type: none"> <li>• apply knowledge of plant management practices in production activities; e.g.:               <ul style="list-style-type: none"> <li>– characteristics of plant health and disorders</li> <li>– remedial strategies for plant disorders</li> <li>– disease and pest control</li> </ul> </li> <li>• use appropriate techniques to propagate nursery or greenhouse plants</li> <li>• apply principles of nutrition to production practices; e.g.:               <ul style="list-style-type: none"> <li>– essential nutrients</li> <li>– fertilizer formulation</li> </ul> </li> <li>• demonstrate techniques for maintaining a sustainable production system; e.g.:               <ul style="list-style-type: none"> <li>– water and soil quality</li> <li>– organic and inorganic amendments</li> <li>– biological and chemical control measures</li> <li>– waste disposal.</li> </ul> </li> </ul>	<p>Consider strategies for managing a crop from seed to sale.</p> <p>Potential linkages exist with various pesticide applicator certificate courses (see Section H: Linkages/Transitions).</p> <p>Plan for individual research regarding relevant issues.</p> <p>Keep a daily log that details production activities.</p> <p>Discuss biological control agents.</p>

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(continued)

Concept	Specific Learner Expectations	Notes
Production Analysis	<p><i>The student should:</i></p> <ul style="list-style-type: none"> <li>• describe production venture outcomes based on:               <ul style="list-style-type: none"> <li>– product quality</li> <li>– product saleability</li> <li>– application of new skills/learnings</li> </ul> </li> <li>• describe the impact of economic, environmental and/or social factors on production practices and outcomes</li> <li>• make recommendations regarding future production ventures on the basis of current accomplishments and challenges in plant production.</li> </ul>	<p>Consider the impacts of local, national and global trends on venture outcomes.</p> <p>Plan for individual/group reports and presentations.</p>

