

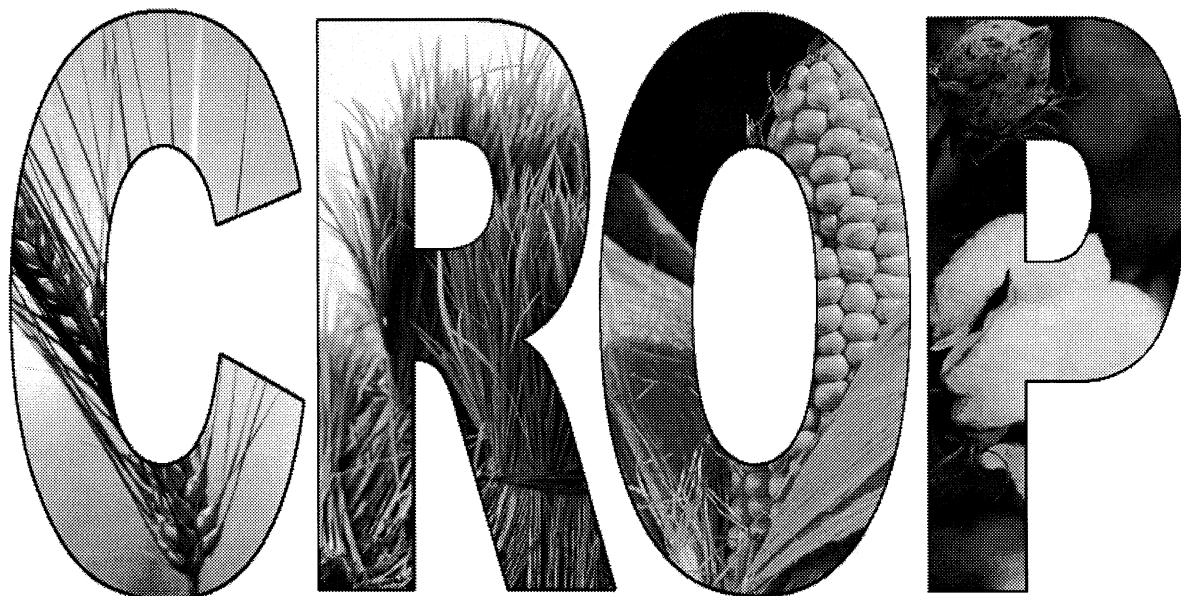


INSTRUCTIONAL MATERIALS LABORATORY
UNIVERSITY OF MISSOURI - COLUMBIA



10-1002-I

ADVANCED



SCIENCE

INSTRUCTOR GUIDE



In cooperation with Agricultural Education Department • College of Agriculture, Food and Natural Resources
University of Missouri-Columbia

In cooperation with Agricultural Education Section • Division of Vocational and Adult Education
Elementary and Secondary Education • Jefferson City, Missouri

Advanced Crop Science

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Produced by:

Instructional Materials Laboratory

Volume 32
Number 3

Catalog Number 10-1002-I
June 2000



Produced by, and available from:
Instructional Materials Laboratory
College of Education
University of Missouri - Columbia
1400 Rock Quarry Center
Columbia, MO 65211-3280
1-800-669-2465
www.iml.coe.missouri.edu

The activity that is the subject of this report was supported in whole or in part by funds from the Department of Elementary and Secondary Education, Division of Vocational and Adult Education. However, the opinions expressed herein do not necessarily reflect the position or policies of the Missouri Department of Elementary and Secondary Education or the Division of Vocational and Adult Education, and no official endorsement should be inferred.

Acknowledgments

Recognition is given to advisory committee members for providing their valuable time and suggestions in developing this agribusiness sales, marketing, and management curriculum. The committee consisted of Nancy Alford, Richard Arnett, Frank Becker, Melisa Bertz, Terry Heiman, Stephanie Gable, Roger Martin, Bob McNary, Matt Biddle, Harold Bossaller, David Cook, Wes Miller, Jim Russell, and Bob Stewart.

Appreciation is expressed to the following staff members of the Instructional Materials Laboratory for their efforts in producing this material: Dana Tannehill, Director; Marie Korte, Editor; Susan Rhyne, Editor; Chris Casey and Kim Freese, Graphic Designers; Jamie Keith, Word Processor III; Amy Surber, Jill Clark, and Alexandria Ravenelle, Editorial Assistants.

Credit is also given to Susan Rhyne for writing the Rice Production unit, Brad O. King for writing the Cotton Production unit, and Jim Graham for contributing to the Forage Production unit. Other contributing writers include Marcus Comer and Bonnie Painter. For technical expertise, additional thanks are extended to Bruce Beck, Agronomy Specialist/Rice from the University of Missouri Outreach and Extension, and Gene Stevens, Agronomist, from the University of Missouri-Delta Center. Special thanks is also given to Vicki Bean, Wayne Korte, and others who provided artwork and technical information.

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Foreword

The development of the *Advanced Crop Science* curriculum guide is the result of suggestions by the MVATA Teaching Aids Committee. The *Advanced Crop Science* advisory committee suggested the topics to be included and reviewed the materials.

This curriculum contains 11 units. The instructor guide includes objectives, competencies, motivational techniques, teaching procedures, other activities, activity sheets, transparency masters, evaluations, answers to evaluations and activity sheets, references and teaching aids, and materials and equipment. Topics include an overview of crop production, plant biology, soil fertility and management, identifying and selecting crops and seeds, safety environment, and legal issues, corn and grain sorghum production, soybean production, wheat and small grain production, forage production, cotton production, and rice production. One copy of the student reference is packaged with the instructor guide. Additional copies of the student reference can be purchased separately.

This guide incorporates the needed components to aid agriculture teachers in the implementation of VIMS. For ease of use, objectives and competencies have been included at the beginning of the guide as well as incorporated within each lesson. A competency profile has been provided in the front of the guide for convenient record keeping. A table is included to show how the competencies in *Advanced Crop Science* relate to the Show-Me Standards and Missouri's Frameworks for Curriculum Development. A suggested teaching calendar is also included. *Advanced Crop Science* is primarily oriented toward students in the Natural Resources career path; however, several concepts would be valuable for students interested in other career pathways.

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Advanced Crop Science

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COMPETENCIES/OBJECTIVES

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1. Identify the major Missouri crops and their uses.
2. Explain the economic importance of crop production.
3. Identify career opportunities in crop science or crop-related agribusiness.
4. Explain government influence and identify current trends in crop production.

UNIT II – PLANT BIOLOGY

1. Compare and contrast the parts and functions of monocot and dicot seeds and plants.
2. Describe how growth stages affect crop management practices.

UNIT III – SOIL FERTILITY AND MANAGEMENT

1. Identify how the composition of the soil affects fertility.
2. Identify how soil morphology affects cropping options.
3. Use soil test results to improve soil fertility and crop production.
4. Identify fertilizers and the applications needed to obtain optimal crop performance.
5. Identify how tillage and planting methods affect soil fertility.
6. Identify the conservation practices that affect crop production.

UNIT IV – IDENTIFYING AND SELECTING CROPS AND SEEDS

1. Identify crop and weed seeds and plants.
2. Identify factors that determine crop selection.
3. Utilize seed tag information to select quality seed.

UNIT V – SAFETY, ENVIRONMENT AND LEGAL ISSUES

1. Identify potential crop production hazards to operators/producers.
2. Identify the environmental and governmental issues that affect crop production.
3. Identify the legal issues involved with crop production.

UNIT VI – CORN AND GRAIN SORGHUM PRODUCTION

1. Evaluate local growing conditions and determine fertilizer needs for corn and grain sorghum production.
2. Select a corn and/or grain sorghum variety.
3. Determine tillage or planting methods for corn and grain sorghum.
4. Select a pest control program.
5. Evaluate the growing crop and determine appropriate solutions.
6. Identify factors to determine harvesting and postharvesting management.
7. Describe marketing opportunities and how grade requirements affect grain prices.
8. Calculate cost per acre.

UNIT VII – SOYBEAN PRODUCTION

1. Evaluate local growing conditions and determine fertilizer needs for soybean production.
2. Select a soybean variety suitable for your area.
3. Determine tillage and/or planting method.
4. Select a weed control program.
5. Evaluate the growing crop and determine appropriate solutions.
6. Identify factors to determine harvesting and postharvesting management.
7. Describe marketing opportunities.
8. Calculate cost per acre.

UNIT VIII – WHEAT AND SMALL GRAIN PRODUCTION

1. Evaluate local growing conditions and determine fertilizer needs for wheat and small grain production.
2. Select wheat and other small grain varieties.
3. Determine tillage or planting methods.
4. Select a pest control program.
5. Evaluate the growing crop and determine appropriate solutions.
6. Identify factors to determine harvesting and postharvesting management.
7. Describe marketing opportunities.
8. Calculate cost per acre.

UNIT IX – FORAGE PRODUCTION

1. Evaluate local growing conditions for forage production.
2. Identify the different types of forages and select forages appropriate for intended use.
3. Identify the principles for establishing forages.
4. Identify the principles for managing and maintaining forages.
5. Identify various forage grazing methods.
6. Identify the principles for producing forage seed.
7. Identify the principles for harvesting and storing forages for feed.
8. Describe marketing opportunities and calculate cost per acre.

UNIT X – COTTON PRODUCTION

1. Evaluate local growing conditions.
2. Select cotton variety with a local cotton consultant.
3. Describe the tillage and planting method for cotton.
4. Select a weed control program.
5. Evaluate the growing crop and determine appropriate solutions.
6. Identify factors to determine harvesting and postharvesting management.
7. Describe marketing opportunities.
8. Calculate cost per acre.

UNIT XI – RICE PRODUCTION

1. Evaluate local growing conditions and determine fertilizer needs for rice production.
2. Select rice variety and grade to be planted with a local rice consultant.
3. Describe the seedbed preparation.
4. Evaluate the growing crop and determine appropriate solutions.

5. Identify factors to determine harvesting and postharvesting management.
6. Describe marketing opportunities.
7. Calculate cost per acre.

EVALUATION

1. Give short, objective tests following each lesson and a more in-depth objective test at the conclusion of the unit.
2. Observe the changes in behavior as evidence of the improved ability of students to deal with problems in this unit using background information acquired from earlier units.
3. Observe students' attempts to solve similar problems in their supervised agricultural experience programs.

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Advanced Crop Science - Competency Crosswalk

Duty Band and Task Statement	SHOW-ME STANDARDS		CURRICULUM FRAMEWORKS For Grades 9-12, For All Disciplines					
	Knowledge (Content)	Performance (Goals)	Communication Arts	Health/ Physical Education	Fine Arts	Math	Science	Social Studies
A-1	CA 3, SC 4, SS 2, SS 4, SS 5	1.8, 1.10	I/2a				VIII.A/3a, b	III.D/1c, g, j; III.E/4h; IV.E/3j; IV.E/4g
A-2	CA 3, CA 4, MA 1, SC 5, SS 4, SS 5, SS 6	1.1, 1.2, 1.6, 1.8, 1.10, 2.1, 2.2, 3.1, 3.7, 3.8, 4.3	I/2a, II/6a			V/2a, V/3a	VI.A/2a; VIII.A/3a, b	I.D/2a-c; II.D/3f, II.D/9f, II.D/8k; III.D/7g; IV.D/3g
A-3	CA 1, CA 2, CA 3, HP 2, SS 6	1.4, 1.10, 2.1, 2.3, 2.6, 4.8	I/2e, II/3c, IV/3a					
A-4	CA 3, SS 3, SS 4	1.6, 1.10, 3.1, 3.6, 3.8	I/3f					III.D/6g; IV.D/3e,k
B-1	SC 3	1.3, 1.4, 1.8					VII.A/4a	
B-2	SC 3	1.3, 1.4, 1.8					VII.B/1a, VII.B/2a; VIII.B/a	
C-1	SC 6	1.1, 1.2, 1.3, 1.6					VI.A/1a, VI.A/3a	
C-2	MA 3, SC 2, SC 3, SC 5	1.2, 1.3, 1.4, 1.6, 1.8				I/4b, III/2c, III/5d, IV/1c		
C-3	MA 1, SC 3, SC 5	1.2, 1.3, 1.4, 1.5, 1.6, 1.8					III.A/3a	
C-4	MA 1, SC 5	1.1, 1.3, 1.8				I/4d, V/1a	VIII.B/2a, b, c	
C-5	SC 5	1.2, 1.4, 1.6					VIII.B/1a	
C-6	SC 2, SC 4, SC 8, SS 2, SS 4, SS 6, SS 7	1.4, 1.6, 3.1, 3.2, 3.5, 3.7					VI.A/1a; VI.A/3a; VI.B/4a; VIII.A/2a, b; VIII.A/3a, b; VIII.B/1a	
D-1	SC 3, SC 4, SS 5	1.2, 1.3, 1.6, 1.7, 1.8, 4.1					VII.A/4a	III.E/3b, III.E/5a
D-2	CA 3, CA 4, MA 1, MA 3, SC 3, SC 4, SS 4, SS 5; SS 6, SS 7	1.2, 1.4, 3.3, 3.5, 3.8, 4.1, 4.5	I/2c, I/3f, I/6c				VII.D/2a	II.D/3f
D-3	CA 3, CA 4, SC 3, SS 5	3.1, 4.1	I/2c, I/3f, I/6c				VII.D/2a	II.D/3f

Duty Band and Task Statement	SHOW-ME STANDARDS		CURRICULUM FRAMEWORKS For Grades 9-12, For All Disciplines					
	Knowledge (Content)	Performance (Goals)	Communication Arts	Health/ Physical Education	Fine Arts	Math	Science	Social Studies
D-4	MA 1, SC 3	1.1, 1.6				V/4a	VII.D/2a, VII.D/5a	
E-1	HP 2, HP 3, SC 4, SC 8, SS 3, SS 4, SS 5, SS 6,	1.2, 1.4, 2.3, 3.1, 3.2, 3.8, 4.3, 4.6, 4.7		III.D/1a; III.D/2a			II.A/1a; VIII.A/2a; VIII.A/3a, b; VIII.B/1a	I.E/3h, k, m, o; I.E/5c, m; IV.A/6k, j; IV.B/3a, b
E-2	SC 3, SC 4, SC 8, SS 3, SS 4, SS 5, SS 6	1.2, 1.4, 2.3, 3.1, 3.2, 3.8, 4.3, 4.6, 4.7					II.A/1a; VIII.A/2a; VIII.A/3a; VIII.B/1a	I.E/3h, k, m, o; I.E/5c, m; IV.A/6k, j; IV.B/3a, b
E-3	CA 3, CA 4, SC 8, SS 1, SS 3, SS 6	3.2, 3.4, 3.6, 4.2, 4.6, 4.7	I/2a, c, d; I/3a, d, f; II/1d; II/2a; II/3b, c; III/1a	III.D/1a; III.D/2a			VIII.A/2a; VIII.B/1a	I.E/3g; I.E/4h; I.E/5g, l, o; I.E/6g, l, o; II.E/5d, j, k; III.E/4g, l, n; IV.E/1d, g, i, l, m; IV.E/2d, g, i, l, m; IV.E/3d, g, i, l, m; IV.E/4d, g, i, l, m; IV.E/5d, g, i, l, m
F-1	SC 3, SC 4, SC 8, SS 5	1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 3.3					I.A/3a; II.A/2a; VI.A/1a; VI.A/3a; VIII.B/1a; VIII.B/2a, b, c	III.E/4f, l; III.E/5c
F-2	SC 3, SC 4, SS 5	1.2, 1.4, 1.5, 1.6, 1.10, 3.3					VII.D/2a	III.E/4f, l; III.E/5c
F-3	CA 3, MA 1, SC 3, SC 4, SC 5, SC 8	1.2, 1.3, 1.6, 1.8, 4.1	I/3b			V/4a	VI.A/1a; VI.A/3a; VI.B/1a	
F-4	CA 3, CA 4, SC 3, SC 4, SS 4	1.1, 1.2, 3.5, 3.8, 4.7	I/2e				VIII.B/1a; VIII.B/2a, b, c	II.D/3a, b, c, f; II.E/5j, k
F-5	CA 3, CA 4, SC 3, SC 4, SS 5	1.1, 1.2, 1.3, 3.1, 3.6, 3.7, 3.8	I/2a				VII.A/1a; VII.A/2a	IV.D/2b, c, k, l; IV.E/5b, j
F-6	SC 8, SS 4	1.1, 1.2, 1.6, 1.7, 4.1					II.A/2a	II.D/3f; II.D/4k
F-7	MA 3, SS 4, SS 5, SS 6	1.1, 1.8, 4.6				VII/4a		II.D/2c; II.D/9b, j; III.D/6j, g; III.D/7k

Duty Band and Task Statement	SHOW-ME STANDARDS		CURRICULUM FRAMEWORKS For Grades 9-12, For All Disciplines					
	Knowledge (Content)	Performance (Goals)	Communication Arts	Health/Physical Education	Fine Arts	Math	Science	Social Studies
F-8	MA 1, MA 3, SS 4	1.4, 1.6, 1.8, 3.2, 3.5, 4.1				I/4d, e; II/4h; V/4a; VII/4b		II.D/3c; II.D/4g
G-1	SC 3, SC 4, SC 8, SS 5	1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 3.3					I.A/3a; II.A/2a; VI.A/1a; VI.A/3a; VIII.B/1a; VIII.B/2a, b, c	III.E/4f, I; III.E/5c, f
G-2	SC 3, SC 4, SS 5	1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 3.3					VII.D/2a	III.E/4f, I; III.E/5c, f
G-3	CA 3, MA 1, SC 3, SC 4, SC 5, SC 8	1.2, 1.3, 1.6, 1.8, 4.1	I/3b			V/4a	VI.A/1a; VI.A/3a; VIII.B/1a	
G-4	CA 3, CA 4, SC 3, SC 4, SS 4	1.1, 1.2, 3.5, 3.8, 4.7	I/2e				VIII.B/1a; VIII.B/2a, b, c	II.D/3a, b, c, f; II.E/5j, k
G-5	CA 3, CA 4, SC 3, SC 4, SS 5	1.1, 1.2, 1.3, 3.1, 3.6, 3.7, 3.8	I/2a				VII.A/1a, VII.A/2a	IV.D/2b, c, k, I; IV.E/5b, j
G-6	SC 8, SS4	1.1, 1.2, 1.6, 1.7, 4.1					II.A/2a	II.D/3f, II.D/4k
G-7	MA 3, SS 4, SS 5, SS 6	1.1, 1.8					VIII/4a	II.D/2c, j; II.D/9b, j, I; III.D/6g, j, I; III.D/7k
G-8	MA 1, MA 3, SS 4	1.4, 1.6, 1.8, 3.2, 3.5, 4.1				1/4d, e; II/4h; V/4a; VII/4b		II.D/3c, II.D/4g
H-1	SC 3, SC 4, SC 8, SS 5	1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 3.3					I.A/3a; II.A/2a; VI.A/1a; VI.A/3a; VIII.B/1a; VIII.B/2a, b, c	III.E/4f, I; III.E/5c, f
H-2	SC 3, SC 4, SS 5	1.2, 1.4, 1.5, 1.6, 1.10, 3.3					VII.D/2a	III.E/4f, I; III.E/5c, f
H-3	CA 3, MA 1, SC 3, SC 4, SC 5, SC 8	1.2, 1.3, 1.6, 1.8, 4.1	I/3b			V/4a	VI.A/1a, VI.A/3a, VIII.B/1a	
H-4	CA 3, CA 4, SC 3, SC 4, SS 4	1.1, 1.2, 3.5, 3.8, 4.7	I/2e				VIII.B/1a; VIII.B/2a, b, c	II.D/3a, b, c, f; II.E/5j, k
H-5	CA 3, CA 4, SC 3, SC 4, SS 5	1.1, 1.2, 3.1, 3.6, 3.7, 3.81.3	I/2a				VII.A/1a, VII.A/2a	IV.D/2b, c, k, I; IV.E/5b, j
H-6	SC 8, SS4	1.1, 1.2, 1.6, 1.7, 4.1					II.A/2a	II.D/3f, II.D/4k

Duty Band and Task Statement	SHOW-ME STANDARDS		CURRICULUM FRAMEWORKS For Grades 9-12, For All Disciplines					
	Knowledge (Content)	Performance (Goals)	Communication Arts	Health/Physical Education	Fine Arts	Math	Science	Social Studies
H-7	MA 3, SS 4, SS 5, SS 6	1.1, 1.8, 4.6				VII/4a		II.D/2c; II.D/9b, j; III.D/6g, j; III.D/7k
H-8	MA 1, MA 3, SS 4	1.4, 1.6, 1.8, 3.2, 3.5, 4.1				I/4d, e; II/4h; V/4a; VII/4b		II.D/3c, II.D/4g
I-1	SC 3, SC 4, SC 8	1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 3.3					I.A/3a; II.A/2a; VI.A/1a; VI.A/3a; VIII.B/1a; VIII.B/2a, b, c	III.E/4f, i; III.E/5c, f
I-2	SC 3, SC 4, SS 5	1.2, 1.4, 1.5, 1.6, 1.10, 3.3					VII.D/2a	III.E/4f, i; III.E/5c, f
I-3	CA 3, MA 1, SC 3, SC 4, SC 5, SC 8	1.2, 1.3, 1.6, 1.8, 4.1	I/3b			V/4a	VI.A/1a, VI.A/3a, VIII.B/1a	
I-4	CA 3, MA 1, SC 3, SC 4, SC 5, SC 8	1.1, 1.2, 3.5, 3.8, 4.7	I/2e			V/4a	VIII.B/1a; VIII.B/2a, b, c	II.D/3a, b, c, f; II.E/5j, k
I-5	CA 3, CA 4, SC 3, SC 4, SC 8	1.1, 1.2, 1.3; 1.6, 1.7, 3.1, 4.1	I/2a, I/3a				II.A/2a; VI.A/1a; VI.A/3a; VIII.A/2a; VIII.B/1a; VIII.B/2a, b, c	
I-6	SC 8, SS 4	1.1, 1.2, 1.6, 1.7, 4.1					II.A/2a	II.D/3f, II.D/4k
I-7	SC 8, SS 4	1.1, 1.2, 1.6, 1.7, 4.1					II.A/2a	II.D/3f, II.D/4k
I-8	MA 3, SS 4, SS 5, SS 6	1.1, 1.8, 4.6				VII/4a		II.D/2c; II.D/9b, j
J-1	SC 3, SC 4, SS 5	1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 3.3					I.A/3a, II.A/2a, VI.A/1a; VI.A/3a; VIII.B/1a; VIII.B/2a, B, c	III.E/4f, i; III.E/5c, f
J-2	SC 3, SC 4, SS 5	1.2, 1.4, 1.5, 1.6, 1.10, 3.3					VII.D/2a	III.E/4f, i; III.E/5c, f
J-3	CA 3, MA 1, SC 3, SC 4, SC 5, SC 8	1.2, 1.3, 1.6, 1.8, 4.1	I/3b				VI.A/1a, VI.A/3a, VIII.B/1a	II.D/3a, b, c, f; II.E/5j, k
J-4	CA 3, CA 4, SC 3, SC 4, SS 4	1.1, 1.2, 3.5, 3.8, 4.7	I/2e				VIII.B/1a; VIII.B/2a, b, c	II.D/3a, b, c, f; II.E/5j, k

Duty Band and Task Statement	SHOW-ME STANDARDS		CURRICULUM FRAMEWORKS For Grades 9-12, For All Disciplines					
	Knowledge (Content)	Performance (Goals)	Communication Arts	Health/Physical Education	Fine Arts	Math	Science	Social Studies
J-5	CA 3, CA 4, SC 3, SC 4, SS 5	1.1, 1.2, 1.3, 3.1, 3.6, 3.7, 3.8					VIII.A/1a, VII.A/2a	III.D/6g, j; III.D/7k; IV.E/5j
J-6	SC 8, SS 4	1.1, 1.2, 1.6, 1.7, 4.1					II.A/2a	II.D/3f, II.D/4k
J-7	MA 3, SS 4, SS 5, SS 6	1.1, 1.8				VII/4a		II.D/2c; II.D/9b, j; III.D/6g, j; III.D/7k
J-8	MA 1, MA 3, SS 4	1.4, 1.6, 1.8, 3.2, 3.5, 4.1				I/4d, e; II/4h; V/4a; VII/4b		II.D/3c, II.D/4g
K-1	SC 3, SC 4, SC 8, SS 5	1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 3.3					I.A/3a; II.A/2a; VI.A/1a; VI.A/3a; VIII.B/1a; VIII.B/2a, b, c	III.E/4f, i; III.E/5c, f
K-2	SC 3, SC 4, SS 5	1.2, 1.4, 1.5, 1.6, 1.10, 3.3					VII.D/2a	III.E/4f, i; III.E/5c, f
K-3	CA 3, MA 1, SC 3, SC 4, SC 5, SC 8	1.2, 1.3, 1.6, 1.8, 4.1	I/3b			V/4a	VI.A/1a, VI.A/3a, VIII.B/1a	
K-4	CA 3, CA 4, SC 3, SC 4, SS 4	1.1, 1.2, 3.5, 3.8, 4.7	I/2e				VIII.B/1a; VIII.B/2a, b, c	II.D/3a, b, c, f; II.E/5j, k
K-5	CA 3, CA 4, SC 3, SC 4, SS 5	1.1, 1.2, 1.3, 3.1, 3.6, 3.7, 3.8	I/2a				VII.A/1a, VII.A/2a	IV.E/5b, j
K-6	SC 8, SS 4	1.1, 1.2, 1.6, 1.7, 4.1					II.A/2a	II.D/3f, II.D/4k
K-7	MA 3, SS 4, SS 5, SS 6	1.1, 1.8, 4.6				VII/4a		II.D/2c; II.D/9b, j; III.D/6g, j; III.D/7k

Advanced Crop Science

Teaching Calendar

	Periods for Classroom Instruction/Activities	Length for Activity Sheets (AS)
Unit I, Lesson 1	2-3 days	AS 1.1 1 class period
		AS 1.2 1 class period
Unit I, Lesson 2	2-3 days	AS 2.1 1 class period
Unit I, Lesson 3	1-2 days	AS 3.1 1 class period
Unit I, Lesson 4	1-2 days	AS 4.1 1 class period
Unit II, Lesson 1	2-3 days	
Unit II, Lesson 2	2-3 days	AS 2.1 1 class period
Unit III, Lesson 1	2-3 days	AS 1.1 1 class period
Unit III, Lesson 2	2-3 days	AS 2.1 1 class period
Unit III, Lesson 3	3-4 days	AS 3.1 1 class period
		AS 3.2 1 class period
Unit III, Lesson 4	2-3 days	AS 4.1 1 class period
Unit III, Lesson 5	3-4 days	AS 5.1 1 class period
		AS 5.2 1 class period
		AS 5.3 1 class period
Unit III, Lesson 6	3-4 days	AS 6.1 1 class period
		AS 6.2 1 class period
		AS 6.2A 1 class period
Unit IV, Lesson 1	3-4 days	AS 1.1 1 class period
Unit IV, Lesson 2	2-3 days	AS 2.1 1 class period
Unit IV, Lesson 3	3-4 days	AS 3.1 1 class period
		AS 3.2 1 class period
Unit V, Lesson 1	3-4 days	AS 1.1 1 class period
Unit V, Lesson 2	2-3 days	AS 2.1 1 class period
Unit V, Lesson 3	3-4 days	AS 3.1 1 class period
Unit VI, Lesson 1	2-3 days	AS 1.1 1 class period
Unit VI, Lesson 2	3-4 days	AS 2.1 1 class period
Unit VI, Lesson 3	3-4 days	AS 3.1 1 class period
Unit VI, Lesson 4	3-4 days	AS 4.1 1 class period

	Periods for Classroom Instruction/Activities	Length for Activity Sheets (AS)
Unit VI, Lesson 5	3-4 days	AS 5.1 1 class period
Unit VI, Lesson 6	4-5 days	AS 6.1 1 class period
Unit VI, Lesson 7	3-4 days	AS 7.1 1 class period
Unit VI, Lesson 8	2-3 days	AS 8.1 1 class period
Unit VII, Lesson 1	2-3 days	
Unit VII, Lesson 2	3-4 days	AS 2.1 1 class period
		AS 2.2 1 class period
Unit VII, Lesson 3	2-3 days	AS 3.1 1 class period
Unit VII, Lesson 4	3-4 days	AS 4.1 1 class period
Unit VII, Lesson 5	3-4 days	AS 5.1 1 class period
Unit VII, Lesson 6	3-4 days	AS 6.1 1 class period
Unit VII, Lesson 7	2-3 days	AS 7.1 1 class period
Unit VII, Lesson 8	2-3 days	AS 8.1 1 class period
Unit VIII, Lesson 1	2-3 days	
Unit VIII, Lesson 2	4-5 days	AS 2.1 1 class period
		AS 2.2 1 class period
		AS 2.3 1 class period
Unit VIII, Lesson 3	3-4 days	AS 3.1 1 class period
Unit VIII, Lesson 4	2-3 days	AS 4.1 1 class period
Unit VIII, Lesson 5	3-4 days	AS 5.1 1 class period
Unit VIII, Lesson 6	3-4 days	AS 6.1 1 class period
Unit VIII, Lesson 7	2-3 days	AS 7.1 1 class period
Unit VIII, Lesson 8	2-3 days	AS 8.1 1 class period
Unit IX, Lesson 1	2-3 days	AS 1.1 1 class period
Unit IX, Lesson 2	3-4 days	AS 2.1 1 class period
Unit IX, Lesson 3	2-3 days	AS 3.1 1 class period
Unit IX, Lesson 4	2-3 days	
Unit IX, Lesson 5	3-4 days	AS 5.1 1 class period
Unit IX, Lesson 6	2-3 days	AS 6.1 1 class period
Unit IX, Lesson 7	3-4 days	AS 7.1 1 class period
Unit IX, Lesson 8	2-3 days	AS 8.1 1 class period
Unit X, Lesson 1	2-3 days	AS 1.1 1 class period
Unit X, Lesson 2	2-3 days	AS 2.1 1 class period

	Periods for Classroom Instruction/Activities	Length for Activity Sheets (AS)
Unit X, Lesson 3	2-3 days	AS 3.1 1 class period
Unit X, Lesson 4	2-3 days	
Unit X, Lesson 5	2-3 days	AS 5.1 1 class period
Unit X, Lesson 6	3-4 days	AS 6.1 1 class period
Unit X, Lesson 7	2-3 days	AS 7.1 1 class period
Unit X, Lesson 8	3-4 days	AS 8.1 1 class period
Unit XI, Lesson 1	2-3 days	AS 1.1 1 class period
Unit XI, Lesson 2	3-4 days	AS 2.1 1 class period
Unit XI, Lesson 3	3-4 days	AS 3.1 1 class period
Unit XI, Lesson 4	2-3 days	AS 4.1 1 class period
Unit XI, Lesson 5	3-4 days	AS 5.1 1 class period
		AS 5.2 1 class period
Unit XI, Lesson 6	2-3 days	AS 6.1 1 class period
Unit XI, Lesson 7	3-4 days	AS 7.1 1 class period

Advanced Crop Science Competency Profile

Directions: Evaluate the student by checking the appropriate number or letter to indicate the degree of competency. The rating for each task should reflect **employability readiness** rather than the grades given in class.

Rating Scale: **3 Mastered** - can work independently with no supervision
2 Requires Supervision - can perform job completely with limited supervision
1 Not Mastered - requires instruction and close supervision
N No Exposure - no experience or knowledge in this area

3	2	1	N

A. Overview

1. Identify the major Missouri crops and their uses.
 2. Explain the economic importance of crop production.
 3. Identify career opportunities in crop science or crop-related agribusiness.
 4. Explain government influence and identify current trends in crop production.
- Other _____

3	2	1	N

B. Plant Biology

1. Compare and contrast the parts and functions of monocot and dicot seeds and plants.
 2. Describe how growth stages affect crop management practices.
- Other _____

3	2	1	N

C. Soil Fertility and Management (continued)

5. Identify how tillage and planting methods affect soil fertility.
 6. Identify the conservation practices that affect crop production.
- Other _____

3	2	1	N

D. Identifying and Selecting Crops and Seeds

1. Identify crop and weed seeds and plants.
 2. Identify factors that determine crop selection.
 3. Utilize seed tag information to select quality seed.
- Other _____

3	2	1	N

E. Safety, Environment, and Legal Issues

1. Identify potential crop production hazards to operators/producers.
 2. Identify the environmental and governmental issues that affect crop production.
 3. Identify the legal issues involved with crop production.
- Other _____

3	2	1	N

F. Corn & Grain Sorghum Production

1. Evaluate local growing conditions and determine fertilizer needs for corn and grain sorghum production.
 2. Select a corn and/or grain sorghum variety.
 3. Determine tillage or planting methods for corn and grain sorghum.
 4. Select a pest control program.
 5. Evaluate the growing crop and determine appropriate solutions.
 6. Identify factors to determine harvesting and postharvesting management.
 7. Describe marketing opportunities and how grade requirements affect grain prices.
 8. Calculate cost per acre.
- Other _____

3	2	1	N

G. Soybean Production

1. Evaluate local growing conditions and determine fertilizer needs for soybean production.
2. Select a soybean variety suitable for your area.
3. Determine tillage and/or planting method.
4. Select a weed control program.
5. Evaluate the growing crop and determine appropriate solutions.

3	2	1	N

G. Soybean Production (continued)

- Identify factors to determine harvesting and postharvesting management.
- Describe marketing opportunities.
- Calculate cost per acre.

Other _____

3	2	1	N

H. Wheat and Small Grain Production

- Evaluate local growing conditions and determine fertilizer needs for wheat and small grain production.
- Select wheat and other small grain varieties.
- Determine tillage or planting methods.
- Select a pest control program.
- Evaluate the growing crop and determine appropriate solutions.
- Identify factors to determine harvesting and postharvesting management.
- Describe marketing opportunities.
- Calculate cost per acre.

Other _____

3	2	1	N

I. Forage Production

- Evaluate local growing conditions for forage production.
- Identify the different types of forages and select forages appropriate for intended use.
- Identify the principles for establishing forages.
- Identify the principles for managing and maintaining forages.
- Identify various forage grazing methods.
- Identify the principles for producing forage seed.
- Identify the principles for harvesting and storing forages for feed.
- Describe marketing opportunities and calculate cost per acre.

Other _____

3	2	1	N

J. Cotton Production

- Evaluate local growing conditions.
- Select cotton variety with a local cotton consultant.
- Describe the tillage and planting method for cotton.
- Select a weed control program.

3	2	1	N

J. Cotton Production (continued)

- Evaluate the growing crop and determine appropriate solutions.
- Identify factors to determine harvesting and postharvesting management.
- Describe marketing opportunities.
- Calculate cost per acre.

Other _____

3	2	1	N

K. Rice Production

- Evaluate local growing conditions and determine fertilizer needs for rice production.
- Select rice variety and grade to be planted with a local rice consultant.
- Describe the seedbed preparation.
- Evaluate the growing crop and determine appropriate solution.
- Identify factors to determine harvesting and postharvesting management.
- Describe marketing opportunities.
- Calculate cost per acre.

Other _____

ADVANCED CROP SCIENCE

[illegible]

UNIT I – OVERVIEW

1. Identify crops and their major uses.
2. Explain the economic importance of crop production.
3. Identify career opportunities in crop science and crop-related agribusiness.
4. Explain government influence and identify current trends in crop production.

UNIT II – PLANT BIOLOGY

1. Compare and contrast the parts and functions of monocot and dicot seeds and plants.
2. Describe how growth stages affect crop management practices.

UNIT III – SOIL FERTILITY AND MANAGEMENT

1. Identify how the composition of the soil affects fertility.
2. Identify how soil morphology affects cropping options.
3. Use soil test results to improve soil fertility and crop production.
4. Identify fertilizers and the applications needed to obtain optimal crop performance.
5. Identify how tillage and planting methods affect soil fertility.
6. Identify the conservation practices that affect crop production.

UNIT IV – IDENTIFYING AND SELECTING CROPS AND SEEDS

1. Identify crop and weed plants.
2. Identify factors that determine crop selection.
3. Utilize seed tag information to select quality seed.

Student Names

1. Identify potential crop production hazards to operators/producers.
2. Identify the environmental and governmental issues that affect crop production.
3. Identify potential crop production hazards to operators/producers.

1. Evaluate local growing conditions and determine fertilizer needs for corn and grain sorghum production.
2. Select a corn and grain sorghum variety.
3. Determine tillage and/or planting method used with corn and grain sorghum.
4. Select a pest control program.
5. Evaluate the growing crop and determine appropriate solutions.
6. Identify factors to determine harvesting and postharvesting management.
7. Describe marketing opportunities and how grade requirements affect grain prices.
8. Calculate cost per acre.

1. Evaluate local growing conditions and determine fertilizer needs for soybean production.
2. Select a soybean variety suitable for your area.
3. Determine tillage and/or planting method.
4. Select a weed control program.
5. Evaluate the growing crop and determine appropriate solutions.

[illegible]**UNIT VII – SOYBEAN PRODUCTION**
(continued)

6. Identify factors that determine harvesting and postharvesting management techniques.
7. Describe marketing opportunities.
8. Calculate cost per acre.

UNIT VIII - WHEAT AND SMALL GRAIN PRODUCTION

1. Evaluate local growing conditions for forage production.
2. Select wheat and other small grain varieties.
3. Determine tillage or planting methods.
4. Select a pest control program.
5. Evaluate the growing crop and determine appropriate solution.
6. Identify factors to determine harvesting and postharvesting management.
7. Describe marketing opportunities.
8. Calculate cost per acre.

UNIT IX - FORAGE PRODUCTION

1. Evaluate local growing conditions.
2. Identify the different kinds of forages and select species appropriate for intended use.
3. Identify the principles for establishing forages.
4. Identify the principles for maintaining and managing forages.
5. Identify various forage grazing methods.
6. Identify the principles for producing forage seed.
7. Identify the principles for harvesting and storing forages for feed.
8. Describe marketing opportunities and calculate cost per acre.

[illegible]

UNIT X – COTTON PRODUCTION

1. Evaluate local growing conditions.
2. Select cotton variety with a local cotton consultant.
3. Describe the tillage and planting method for cotton.
4. Select a weed control program.
5. Evaluate the growing crop and determine appropriate solutions.
6. Identify factors to determine harvesting and postharvesting management.
7. Describe marketing opportunities.
8. Calculate cost per acre.

UNIT XI – RICE PRODUCTION

1. Evaluate local growing conditions and determine fertilizer needs for rice production.
2. Select rice variety and grade to be planted with a local rice consultant.
3. Describe the seedbed preparation.
4. Evaluate the growing crop and determine appropriate solution.
5. Identify factors to determine harvesting and postharvesting management.
6. Describe marketing opportunities.
7. Calculate cost per acre.