UNIT IV - IDENTIFYING AND SELECTING CROPS AND SEEDS

Lesson 2: Crop Selection

*Competency/Objective:* Identify factors that determine crop selection.

**Study Questions**

1. What factors affect crop selection?
2. How does the growing region affect crop selection?
3. What are the maturity groups for selected crops?
4. What economic factors influence crop selection?

**References**

1. *Advanced Crop Science* (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 2000, Unit IV.

2. Transparency Masters
   a) TM 2.1: Spring Frost Dates
   b) TM 2.2: Fall Frost Dates
   c) TM 2.3: Average Annual Rainfall
   d) TM 2.4: Soybean Maturity Zones

3. Activity Sheet
   a) AS 2.1: Crop Selection Factors
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TEACHING PROCEDURES

A. **Review**

   Lesson 1 taught what characteristics to look for when identifying plants. This lesson will expand on that information to include growth characteristics to aid the producer in selecting a specific crop.

B. **Motivation**

   Ask the students to survey the grain producers in their area, listing not only what crops are grown, but also what varieties are planted. Share this information with the class to draw conclusions on a consensus of producer preferences.

C. **Assignment**

D. **Supervised Study**

E. **Discussion**

1. Discuss with the class various factors that affect crop selection.

   **What factors affect crop selection?**

   a) Climate
      1) Rainfall
      2) Temperature
   b) Soil conditions
      1) Soil type
      2) Soil fertility
         (a) Existing nutrient supplies
         (b) Fertilizer recommendations
   c) Field history
      1) Past rotations
      2) Current cropping options
      3) Current cultural and biological conditions
   d) Equipment resources
   e) Economics
      1) Input costs
      2) Crop value
   f) Market access

2. Ask students to identify how the growing region affects crop selection. Display TM 2.1 and 2.2 and discuss the average spring and fall frost dates of the United States. TM 2.3 shows the average annual rainfall amounts in Missouri. Also refer to Table 2.1 in the Student Reference to review annual water usage for crops grown in Missouri.

   **How does the growing region affect crop selection?**

   a) Temperature
1) Cool- and warm-season grasses
2) Planting dates to avoid frost damage

b) Rainfall
1) Annual water usage of crops
2) Availability of water

c) Soil characteristics

3. Ask students to identify maturity groups for selected crops. Refer to TM 2.4 as an example of maturity groups for soybeans in Missouri.

What are the maturity groups for selected crops?

a) Corn
1) Full season
2) Mid-season
3) Late season

b) Soybeans
1) Maturity groups for Missouri include II through VI.
2) May use an earlier maturing seed if double-cropping.

c) Wheat
1) Hard red winter
2) Hard red spring
3) Soft red winter

d) Sorghum
1) Similar to corn in planting dates
2) Four basic maturity groups

e) Cotton
1) New World cotton
   (a) Upland
   (b) Pima
2) Old World cotton
   (a) Tree
   (b) Levant

f) Rice
1) Very early maturing
2) Early maturing
3) Intermediate or late maturing

g) Forages
1) Cool season
   (a) Grasses - fescue, orchard grass, ryegrass, timothy
   (b) Legumes - bird’s-foot trefoil, alsike clover, ladino clover
   (c) Thrive when moisture is adequate and temperatures are between 65 and 75°F
   (d) Exhibit vigorous growth in the spring and fall months
2) Warm season
   (a) Initiate growth during late April or early May
   (b) Produce 65 to 75% growth from mid-June to mid-August
   (c) Soils with low moisture-holding capacity, low pH, low phosphorus levels
   (d) Grasses - big bluestem, indiangrass, switchgrass
   (e) Legumes - alfalfa, crownvetch, lespedeza

4. Discuss economic factors that influence crop selection. Emphasize the importance of developing a marketing plan.

What economic factors influence crop selection?
a) Land  
b) Labor  
c) Capital  
d) Management  

F. **Other Activity**

Have a crop production specialist from a local seed supplier visit the class and discuss what seeds are sold to producers in that area.

G. **Conclusion**

A grain producer has several factors to consider before selecting a specific crop and the variety of the crop planted. These factors include the climate, soil conditions, length of growing season, and economic factors. A relatively new problem has developed for producers with the advent of certain crop weeds that have developed an immunity to herbicides. This is leading producers to consider different methods of weed control.

H. **Answers to Activity Sheet**

1. e 
2. j 
3. b 
4. i 
5. f 
6. a 
7. l 
8. k 
9. g 
10. d 
11. h  
12. c

I. **Answers to Evaluation**

1. a  
2. b  
3. b  
4. Any four of the following: climate, soil conditions, field history, equipment resources, economic demands, or market access  
5. Temperature, rainfall, soil characteristics  
6. Different maturity groups may reduce the damage of diseases and environmental stress while also spreading out the harvest time and workload.  
7. Land, labor, capital, management
EVALUATION

Circle the letter that corresponds to the best answer.

1. Which of the following crops are not considered a “cool-season” plant?
   a. Corn
   b. Wheat
   c. Fescue
   d. Oats

2. Which type of wheat is predominately grown in Missouri?
   a. Hard red spring
   b. Hard red winter
   c. Soft red winter
   d. Soft red summer

3. Rice is grown in the _________ part of Missouri.
   a. Northeast
   b. Southeast
   c. Northwest
   d. Southwest

Complete the following short answer questions.

4. List four of the six major factors that must be considered when making the selection of a specific crop.
   a. 
   b. 
   c. 
   d. 

5. What three factors determine growing regions for specific crops?
   a. 
   b. 
   c. 

6. Explain why a corn producer might plant two different maturity groups of corn.
7. List the four major economic factors that may influence a crop selection.

a.

b.

c.

d.
Spring Frost Dates

Mar. 25-30
Mar. 30 - Apr. 5
Apr. 5-15
Apr. 5-15

Before Mar. 15

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Fall Frost Dates

Map showing fall frost dates in Missouri, with different dates indicated for different counties. The dates range from October 22-30 to November 10-20.
Average Annual Rainfall
Soybean Maturity Zones
Crop Selection Factors

Objective: Students will demonstrate a knowledge of factors used to select certain crops.

Directions: Match the definition in the right column to the correct crop selection factor in the left column.

1. _____ Input costs  
   a. Determined by length of its growing season
2. _____ Growing region  
   b. Wheat, oats, barley, fescue
3. _____ Cool season crops  
   c. Past planting of crops and their rotation
4. _____ Warm season crops  
   d. Land, labor, capital, and management
5. _____ Soil condition  
   e. Fuel, seed, chemicals, and fertilizer
6. _____ Maturity group  
   f. Determined by soil test to find its nutritive value
7. _____ Capital  
   g. Type of cotton grown in the United States
8. _____ Weed control strategies  
   h. Planting more than one maturity group of a crop to spread out the harvest times
9. _____ Upland  
   i. Corn, soybeans, cotton, grain sorghum
10. _____ Inventory of resources  
    j. Determined by temperature, rainfall, and soil condition
11. _____ Calendarizing a crop  
    k. Plowing, burning, grazing animals, crop rotation
12. _____ Field history  
    l. Money required to purchase fuel, seed and fertilizer