

## Lesson C11–5

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# The Business of Food Science

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**Unit C.** Basic Principles of Agricultural/Horticultural Science

**Problem Area II.** Understanding Food Science Technology

**Lesson 5.** The Business of Food Science

### **New Mexico Content Standard:**

**Pathway Strand:** Food Products and Processing Systems

**Standard: II:** Apply principles of food science to the food industry.

**Benchmark: II-A:** Apply food science principles to enhance product development.

**Performance Standard:** 1. Conduct research. 2. Apply the use of chemistry. 3. Comply and apply USDA/FDA standards. 4. Use product development (e.g., consumer opinion, taste testing). 5. Conduct nutritional analysis (e.g., biochemistry). 6. Compare and contrast the nutritive values of food groups. 7. Identify and compare various food constituents.

**Student Learning Objectives.** Instruction in this lesson should result in students achieving the following objectives:

1. Explain food product development.
2. Describe the process of food product development.
3. Define and discuss the marketing of food products.
4. Describe the four P's of marketing.

**List of Resources.** The following resources may be useful in teaching this lesson:

**Recommended Resources.** One of the following resources should be selected to accompany the lesson:

Seperich, George J., *Food Science and Safety*. Danville, Illinois: Interstate Publishers, Inc., 1998. (Textbook, Chapters 16 and 17)

**Other Resources.** The following resources will be useful to students and teachers:

Cooper, Elmer E., *AgriScience Fundamentals and Applications*. Albany, New York: Delmar Publishers, 1997. (Textbook, Unit 34)

*Food Science, Safety, and Nutrition*. Alexandria, Virginia: The National Council for Agriculture Education. 1993. (Curriculum Binder)

Lee, Jasper S., et al. *AgriMarketing Technology*. Danville, Illinois: Interstate Publishers, Inc., 1994. (Textbook, Chapters 11 and 12)

Morgan, Elizabeth M., et al. *AgriScience Explorations*, Second Edition. Danville, Illinois: Interstate Publishers, Inc., 2000. (Textbook, Chapters 13 and 15)

## List of Equipment, Tools, Supplies, and Facilities

Writing surface  
Overhead projector  
Transparencies from attached masters

**Terms.** The following terms are presented in this lesson (shown in bold italics):

Advertising  
Bench-top formulation  
Focus group  
Food marketing  
Food product development  
Law of demand  
Law of supply  
Merchandising  
Need  
New product strategy  
Pilot-plant formulation  
Place  
Price  
Process  
Product  
Product demand

Product feasibility  
Product mix  
Product rollout  
Promotion  
Prototype  
Sensory evaluation  
Target market  
Test market  
Want

**Interest Approach.** Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

*Ask students to list ideas for a totally new food product. Encourage them to be creative in identifying revolutionary new products that are not currently available in food stores. List the ideas on the classroom writing surface. Ask the class to consider the questions a company needs to answer before it can offer the new product to consumers. Use the discussion to lead into an overview of the lesson and its learning objectives.*

## Summary of Content and Teaching Strategies

**Objective I:** Explain food product development.

**Anticipated Problem:** What is food product development?

- I. **Food product development** is the process of creating a new food product. New products generate consumer demand. They add to the number of products a company sells. **Product mix** is the variety of products that the same manufacturer offers for sale.

Food product development covers the entire period from when a product is just an idea through when it is produced in final form. It involves the disciplines of science, art, and business:

- A. Science in food product development—science is used in determining nutritional value and preservation techniques for the new product.
- B. Art in food product development—food product development involves creativity and spontaneity. Creative employees are depended upon to decide on product color and form, and packaging styles.
- C. Business in food product development—as a new product goes through development, financial and accounting experts are depended upon. They must determine if the product will be purchased at a given price. It does the company no good to produce a product that will not be bought by consumers.

A variety of techniques may be used to help students understand this concept. Use TM:C11–5A to help reinforce the disciplines involved in food product development. Discuss the fact that it is of no use for a company to produce a product that no one will buy. Students also need text materials to fully understand this objective. Have the class read the Product Development Section in Chapter 17 of the recommended reference. Lead the class in the discussion of new product development in the food industry. Use the discussion as a basis for reinforcing concepts that are not clear.

**Objective 2:** Describe the process of food product development.

**Anticipated Problem:** What process occurs when a new product is developed?

- II. Food product development is the process of inventing and creating a new food product. In food product development, a **process** is an ongoing method involving a number of stages from conceptualization of the product through its production. Successful food product development involves 11 stages:
  - A. Develop clear corporate objectives—this involves basic decisions by the company as to what business it is in and who will buy its products.
  - B. Develop plans to meet objectives—once a company has established its objectives, it must develop a new product strategy. A **new product strategy** is a detailed plan for meeting objectives.
  - C. Generate new product ideas—most companies depend on groups of employees to generate new ideas. These employees are also responsible for product feasibility. **Product feasibility** is the measurement of how practical the food item will be.
  - D. Screen, rank, and test new idea—once a new idea is generated, its market potential must be determined. This is often done by a focus group. A **focus group** is made up of potential customers who evaluate the product idea.
  - E. Translate the ideas into product types. This is accomplished in three phases:
    1. **Prototype**—is the period of time when the first physical model of the new product is constructed.
    2. **Bench-top formulation**—is the phase where a small number of models are made in order to formulate ingredients. Enough of the product is made so that it can be tested.
    3. **Pilot-plant formulation**—involves a number larger than a bench-top formulation but smaller than the final manufacturing level. It helps to identify potential problems within the manufacturing plant.
  - F. **Sensory evaluation** is the measurement of the smell, appearance, taste, and texture of a product. It is usually first done by people within the company. It then is evaluated by potential customers outside the company.
  - G. Prepare for commercial product—At this stage, the company brings the product into the manufacturing plant where it will be produced. It is at this stage where the actual making of the product is tested.

- H. **Test Market**—is the place where the product is introduced in a store. It is usually done on a limited basis. This is the phase where customers can actually buy the product.
- I. Market simulations—at this stage, the new product is evaluated against competing brands. This includes studies of the pricing, packaging, and marketing campaigns of competitors.
- J. Product Refinement—in this phase, the company makes changes to the product based on the findings in the preceding phases. It is usually at this stage where the United States Food and Drug Administration approves the labeling of the product’s package.
- K. **Product rollout** is the point when the new product is introduced on a broad scale to all consumers. The product that is introduced has successfully passed through the preceding phases.

*A number of techniques may be used to help students understand this learning objective. Use TM:C11–5B to reinforce the eleven stages of food product development. Discuss the fact that these stages are a process. Students also need text materials to gain mastery of this objective. Have the class read the suggested chapter in the recommended reference. Lead a discussion on new product development. Analyze the class comments to judge which items need to be reinforced.*

**Objective 3:** Define and discuss the marketing of food products.

**Anticipated Problem:** What is food marketing? What are its basic principles?

- III. **Food marketing** is providing the food items and associated services that people need and want. Food marketing is guided by these principles:
  - A. Identifying needs and wants.
    - 1. A **need** is something that is necessary for humans to exist. The same needs exist for all humans.
    - 2. A **want** is something that is desired for convenience. It is created and does not simply exist. Different people have different wants.
  - B. Identifying methods for fulfilling wants and needs. Once wants and needs are established, possible ways of meeting them must be identified.
  - C. **Product Demand** is the evaluation as to the number of people who will fill their needs and wants based on the manner in which a producer supplies it. Product demand depends on the laws of supply and demand.
    - 1. **Law of Supply** states that as the price of a product increases, producers will supply more of the product. It is represented graphically by the supply curve.
    - 2. **Law of Demand** states that consumers will buy more of a good as the price decreases, and less of a good as its price increases. It is graphically represented by the demand curve.

*A variety of techniques are available to help students gain an understanding of this objective. Use TM:C11–5C to reinforce the laws of supply and demand and their graphic representations. Students also need text materials to gain mastery of this objective. Have them read the Basic Principles of Food Mar-*

keting section in the suggested chapter of the recommended reference. Lead the class in a discussion of food marketing principles. Use questions from the class to form the basis for reteaching any concepts.

**Objective 4:** Describe the four P's of marketing.

**Anticipated Problem:** What are the four P's of marketing? How do they apply to the food industry?

- IV. The four P's of marketing are aspects that need to be considered regardless of the product or market. The four P's are:
- A. **Product** is the good or service provided that is valued by the consumer. It fulfills the wants or needs of a target market. A **target market** is an identifiable group of consumers with unmet needs or wants. Much of the work in the food industry relates to supplying foods in forms that consumers will buy.
  - B. **Place** is the point where products are made available to customers. Place is actually a series of points or locations. It includes the entire system for moving a product from production to the market. Snack food manufacturers are not only concerned with the locations where their product is sold; they are also concerned with where the ingredients for product can be obtained.
  - C. **Promotion** is the process of informing consumers about how and where a want or need may be met. It involves advertising and merchandising:
    - 1. **Advertising** is the use of the media to publicize a product. When a snack food manufacturer releases a new type of corn chip, it will promote its availability on radio, television, and in magazines and newspapers.
    - 1. **Merchandising** is the promotion of a product through samples or in-store displays. When the manufacturer introduces the new corn chip, it may send free samples in the mail or give them away in stores.
  - D. **Price** is the value placed on a product or service. It is the amount needed for the seller and buyer to exchange ownership. Price is based on the producer's costs and the value of the product placed upon it by the buyer. Price can be graphically represented by the supply and demand curves. The point where the two curves intersect is amount for which a given product will be sold by the producer and bought by the consumer.

*A variety of techniques may be used to help students master this objective. Use TM:C11-5D to reinforce an understanding of the four P's of marketing. Use TM:C11-5E to illustrate price determination through the intersection of the supply and demand curves. Students also need text materials for a full understanding of this objective. Have students read the Four P's of Marketing section in Chapter 16 of the recommended reference. Lead the class in a discussion of the objective. Use student comments to form the basis for any reteaching of the content.*

**Review/Summary.** Concentrate the review and summary of the lesson around the student learning objectives. Use the Reviewing Section at the end of the chapters in the recommended reference. Call on students to explain the content associated with each objective.

**Application.** Application can involve the Applying The Concepts activities at the end of the chapters in the recommended reference.

**Evaluation.** Evaluation should focus on student understanding of the learning objectives. Class discussion will form the basis for concepts that need to be retaught. A sample written test is also attached.

## Answers to Sample Test:

### Part One: Matching

1 = d, 2 = g, 3 = i, 4 = b, 5 = m, 6 = c, 7 = o, 8 = k, 9 = n, 10 = f, 11 = h, 12 = a,  
13 = j, 14 = e, 15 = l

### Part Two: Completion

1 = science/art/business  
2 = process  
3 = focus group  
4 = Law of Demand  
5 = Law of Supply

### Part Three: Short Answer

1. *Answers may include, in any order, four of the following:*
  1. Develop clear corporate objectives.
  2. Develop plans to meet objectives.
  3. Generate new product ideas.
  4. Screen, rank, and test new idea.
  5. Translate the ideas into product types.
  6. Sensory evaluation.
  7. Prepare for commercial product.
  8. Test market.
  9. Market simulations.
  10. Product refinement.
  11. Product rollout.
2.
  - identifying needs and wants
  - identifying methods for fulfilling wants and needs
  - product demand

3. - Product is the good or service provided that is valued by the consumer. It fulfills the wants or needs of a target market.
- Place is the point where products are made available to customers.
- Promotion is the process of informing consumers about how and where a want or need may be met. It involves advertising and merchandising.
- Price is the value placed on the product or service.

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# Test

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## Lesson C11–5: The Business of Food Science

### Part One: Matching

*Instructions.* Match the term with the correct response. Write the letter of the term by the definition.

- |                       |                             |
|-----------------------|-----------------------------|
| a. product rollout    | i. merchandising            |
| b. need               | j. advertising              |
| c. place              | k. new product strategy     |
| d. food marketing     | l. price                    |
| e. product            | m. product demand           |
| f. sensory evaluation | n. promotion                |
| g. want               | o. food product development |
| h. test market        |                             |

- \_\_\_\_\_ 1. Providing the food items and associated services that people need and want.
- \_\_\_\_\_ 2. Something that is desired for convenience.
- \_\_\_\_\_ 3. The promotion of a product through samples or in-store displays.
- \_\_\_\_\_ 4. Something that is necessary for humans to exist.
- \_\_\_\_\_ 5. The evaluation as to the number of people who will fill their wants and needs based on the manner in which a producer supplies its products.
- \_\_\_\_\_ 6. The point where products are made available to customers.
- \_\_\_\_\_ 7. The process of creating a new food product.
- \_\_\_\_\_ 8. A detailed plan for meeting objectives.
- \_\_\_\_\_ 9. The process of informing consumers about how and where a want or need may be met.
- \_\_\_\_\_ 10. The measurement of the smell, appearance, taste, and texture of a product.
- \_\_\_\_\_ 11. The place where the product is introduced in a store.
- \_\_\_\_\_ 12. The point when the new product is introduced on a broad scale to all consumers.
- \_\_\_\_\_ 13. The use of the media to publicize a product.
- \_\_\_\_\_ 14. The good or service provided that is valued by the consumer.
- \_\_\_\_\_ 15. The value placed on a product or service.



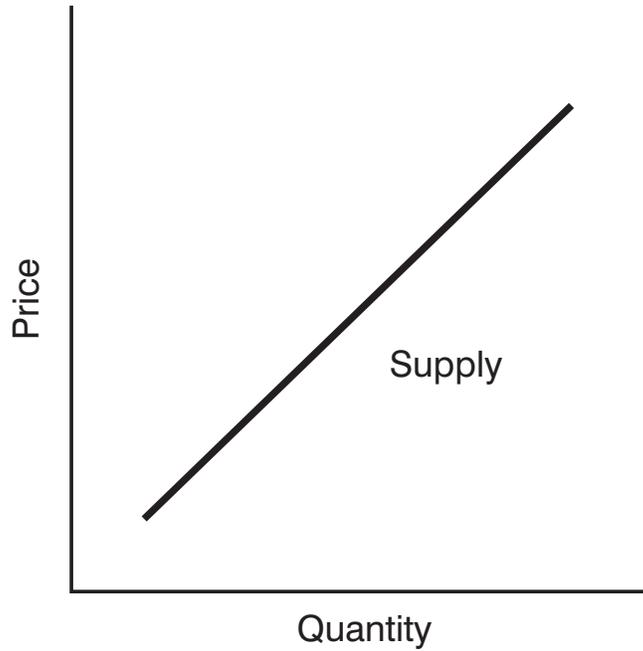
# **The Three Disciplines Involved in Food Product Development**

- 1. Science—Nutritional Value and Preservation Techniques**
- 2. Art—Creativity and Spontaneity**
- 3. Business—Financial Analysis**

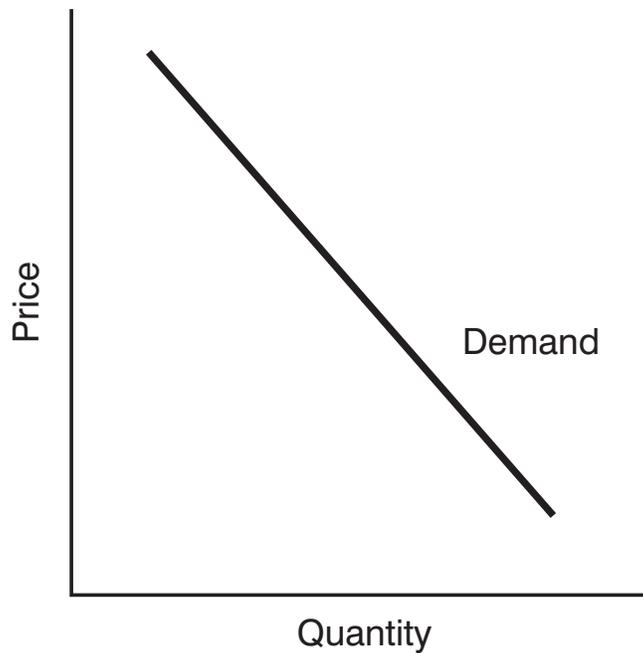
# **The 11 Stages of Food Product Development**

- 1. Develop Clear Corporate Objectives**
- 2. Develop Plans for Meeting Objectives**
- 3. Generate New Product Ideas**
- 4. Screen, Rank, and Test Ideas**
- 5. Translate Ideas into Product Types**
- 6. Sensory Evaluation**
- 7. Prepare for Commercial Product**
- 8. Test Market**
- 9. Simulate Market**
- 10. Refine Product**
- 11. Product Rollout**

# Law of Supply



# Law of Demand



# **The Four P's of Marketing**

- 1. Product—The Good or Service Provided.**
- 2. Place—The Point Where Products Are Made Available to Customers**
- 3. Promotion—Informing Customers About the Product**
- 4. Price—The Value Placed on a Product**

# Price Determination

