



ANIMAL SCIENCE

STEAK SCIENCE

UNIVERSITY OF NEBRASKA

YOUTH MEAT SCIENCE CURRICULUM
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EXTENSION Everything but the Moo

Quick overview: When an animal is harvested, the head, hide, hooves, viscera (internal organs), and blood are removed. Further into fabrication, bones and excess fat are removed. Although those products are not all edible, they are still usable. In this lesson, students will learn about the byproducts that come from meat production. Many of these products are things that are used daily.

Materials Needed:

- Images or actual examples of byproducts
- Signs/labels of product the byproducts are made from (ex. Bone)

Directions:

- Provide students a background of the harvest and fabrication process. Explain that although there are products that are removed during these processes, they are not wasted. Many of these byproducts are used in everyday life. Familiarize students with the term byproduct.
- Virtual: Using breakout rooms, divide the students into groups of 3-4 students (can be adjusted based on group size). For each round, provide students a list of items that come from the same by product (ex. Items such as a football, leather wallet, and baseball glove all come from the hide). Give students 3 minutes to discuss as a team what product the item came from (hide, fat, wool, blood, bone, or other). Teams get 1 point for naming the correct product and can receive a bonus point if they were able to find that product around their house and show it on the screen. Discuss the products with the students and how they relate back to the animal. Share additional items that may come from that product. Repeat for multiple rounds.
- In-Person: Have students match the product to the animal and/or portion (bone, blood, hair, etc.) it was derived from. This can be done by matching photos or having students move to a designated area of the classroom. Discuss the students' reasoning behind their choice and where the product actually came from.

PRIOR TO:

Delivery Type: Virtual or In-person

Prep Work: Have examples of byproducts (actual product or pictures) from beef, pork and lamb to demonstrate. Set up virtual meeting room and assign breakout rooms.

4-H ADAPTATION

Presentations/Poster: Students could prepare an oral presentation or poster about the topic promoting agricultural literacy.



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The Science:

A byproduct is a secondary product that is made during a production process. For example, when corn is used to produce ethanol, distillers' grains are leftover as a byproduct. These can then be sold to farmers to be fed to livestock. Often times, byproducts from food production are able to be fed to livestock. Fruit pumice, a byproduct of making fruit juices, can be used as a feed product. Even byproducts from sugar production can be fed to livestock. It truly is remarkable how livestock production is able to utilize these resources that could be seen as a throwaway product and turn them into a high quality protein source.

When an animal is harvested, the head, hide, viscera (internal organs), hooves and blood are removed. During fabrication, or cutting of retail products, bones and excess fat are removed. Some of the variety meats, such as the tongue, kidneys, and sweetbreads (thymus gland), are not commonly consumed in the United States. These products are often exported to other countries where they are in high demand. Other products may not all be edible, but they are not wasted. In fact, much of the value of market animals comes from the byproducts they provide. Some of these products that are made from byproducts of the meat industry include:

Beef:

- Hide/Hair: Paint Brushes, baseballs, leather products (furniture, car seats, clothing, footballs, basketballs, baseball gloves, wallets, and saddles).
- Fat: Also known as tallow. Used in production of biodiesel, cosmetics, soaps, deodorant, crayons, chewing gum, OLEO margarine/shortening, rubber products, and tires.

Pork:

- Skin/Hair: Pork rinds, paint brushes, insulation, upholstery, and leather products.
- Fat: Insecticide, weed killers, lubricants, oil polishes, rubber, cosmetics, antifreeze, plastics, cellophane, floor wax/waterproofing agents, cement, fabric softener, crayons, chalk, and linoleum.

Lamb:

- Wool/Skin: Textiles (wool socks, blankets, coats, chamois cloth, leather, etc.), insulation, lanolin products (lotions, shampoo and conditioner, cosmetics, adhesive tape, printing ink, motor oils, and auto lubrication). Lanolin is the oil within the wool and is used in many skin care products.

One cowhide can produce **12** basketballs, **12** baseball gloves, **20** footballs or **144** baseballs!





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The Science Continued:

All Species:

- Blood: Sticking agents (tape, post it notes), leather treating agents, plywood adhesive, fabric printing and dying, and blood meal (livestock feed)
- Bones: Gelatin (in gummy bears and gelatin desserts), marshmallows, nail polish, buttons, adhesives, bandage strips, porcelain, glass, enamel, and bone meal (livestock feed).
- Intestines: Cleaned and sanitized and used for casings for sausages and other processed products, surgical sutures, instrument strings, and tennis racquet strings.
- Additional Products: Medical Equipment (insulin, heart valves, estrogens, progesterone, melatonin, oxytocin, burn dressings, and many more), sheetrock, glue, pet food, and fertilizer.

All of these things and more can be produced using byproducts from meat production that is often considered a “waste” product. By harvesting animals for meat, supplies are produced to be used in industries across the spectrum. Nothing is wasted, and many people benefit daily from the byproducts provided. We can truly use everything but the moo!

ADDITIONAL INFORMATION

If done virtually, use photos on a PowerPoint to show just how many products come from livestock.

If done in person, use a lot of hands-on, visual products for students to see, feel, and interact with.

LEARNING OUTCOMES

Through this lesson, students develop critical thinking skills as they make connections between everyday products and the livestock industry.



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