Tennessee 4-H Dairy Project

Advanced

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UTEXTENSION
INSTITUTE OF AGRICULTURE
THE UNIVERSITY OF TENNESSEE

STATE OF THE INDUSTRY

Outcome: Identify a controversial dairy topic and explain its purpose to a nonagricultural audience.

EXPLORE: Step Out Activity

Create a presentation for young 4-H'ers about why dairy cattle are housed indoors.

Raising dairy cattle in confinement can be a controversial topic to audiences who may not understand how much this can improve cow comfort and milk production.

Different bedding types can greatly influence how comfortable and productive dairy cattle are able to be. Use this article from Penn State (or another reputable source) to develop a presentation for younger 4-H'ers about two different types of bedding materials and how they can affect cow comfort in the dairy industry.

Example materials include sawdust, sand, straw, mattresses, etc.

Use this space to brainstorm or plan your presentation:

EXPAND & APPLY

How does this relate to every day life? How can you use this knowledge in the future?

HEALTH & DISEASE

Outcome: Differentiate between environmental and contagious pathogens that cause mastitis.

EXPLORE: Step Out Activity

Mark each pathogen as either environmental or contagious.

Pathogen	Environmental	Contagious
Escherichia coli		
Klebsiella		
Staphylococcus aureus		
Streptococcus uberis		
Streptococcus agalactiae		
Coagulase-negative staphylococci (CNS)		
Streptococcus dysgalactiae		
Mycoplasma spp.		

EXPAND & APPLY

What skills did you learn? How does this relate to every day life? How can you use this knowledge in the future?

NUTRITION & FEEDING

Outcome: Calculate Feed Efficiency

EXPLORE: Step Out Activity

Understanding feed efficiency is an important step in making sure dairy cattle are producing milk relative to what they are eating. And while this is not the only calculation that should be studied in the dairy industry, it is an important step. Feed efficiency should range between 1.45 to 1.70.

The formulas are as follows:

lbs. of milk (3.75% milk fat) / Dry matter intake = Feed Efficiency

lbs. of feed consumed per head * % dry matter = Dry Matter Intake

(lbs. of feed (as feed) * lbs. of feed refused) / # of head = lbs. of feed consumed per head

Calculate Feed efficiency for the following scenario.

You have 48 Holstein cows that are fed 2,925 lbs. of feed twice per day with an average of 2.5% of feed refused. The dry matter is 43.24%. The cows average a production of 75 lbs. of milk produced per day.

EXPAND & APPLY

What skills did you learn? How does this relate to every day life? How can you use this knowledge in the future?

BREEDS

Outcome: Create an educational piece for younger 4-H'ers that describes the advantages and disadvantages of the breeds of dairy cattle.

EXPLORE: Step Out Activity

Create a poster to be displayed about the advantages and disadvantages of the six dairy breeds. Present your poster to younger 4-H'ers. Brainstorm in the box below, then record your observations of the younger members during your lesson.

Brainstorming Section:

My Observations:

EXPAND & APPLY

What skills did you learn? How does this relate to every day life? How can you use this knowledge in the future?

Activity 2 Answer Key

Pathogen	Environmental	Contagious
Escherichia coli	X	
Klebsiella	X	
Stahphylococcus aureus		X
Streptococcus uberis	X	
Streptociccus agalactiae		X
Coagulase-negative staphylococci (CNS)	X	
Streptococcus dysgalactiae		X
Mycoplasma spp.		X

Activity 3 Answer Key

2,925 lbs. of feed * 2 feedings = 5,850 lbs. as fed

5,850*.025 = 146 lbs. of refusal or 5,706 lbs. consumed

5,704*.4324/48 = 51.4 lb. Dry Matter Intake

80 lbs. milk produced / 51.4 lb. Dry matter Intake = 1.56 Feed Efficiency

References:

- https://extension.psu.edu/bedding-considerations-to-lower-somatic-cell-count
- https://extension.psu.edu/mastitis-causing-pathogens-and-how-they-get-on-your-farm#:~:text=Mastitis%20can%20occur%20when%20pathogens,direct%20contact%20with%20unhygienic%20environments.
- https://extension.psu.edu/dairy-sense-finding-the-best-feed-efficiency-balance
- https://extension.umn.edu/dairy-milking-cows/formulating-dairy-cow-rations#dry-matter-intake-1680460