

Adding Sustainability

REPRODUCIBLE MASTER

There's a lot to do on a dairy farm in addition to taking care of the cows. For one thing, dairy farmers try to follow sustainability practices. That means finding ways to conserve resources like water and energy. Do the math to help Duane and Marilyn Hershey of Ar-Joy Farm in Cochranville, Pa., achieve their farm's sustainability goals.

1. Water is an important resource on a dairy farm. To conserve water, dairy farmers use a special recycling system. Cow's milk starts at a temperature of 101°. A plate cooler uses cold water to cool the milk to the optimal temperature of 35°. The water gets warm in the process. Dairy farmers reuse this warm water to water their cows. With the help of the cold water and plate cooler, what is the difference between the milk's starting and ending temperatures?

degrees

2. Dairy farmers know that each cow will drink about 35 gallons of water each day. That's enough to fill a bathtub! They need to be sure water is always on hand. How many gallons of water will 50 cows drink in one day?

gallons

3. A cow must drink about 4 gallons of water to produce one gallon of milk. How many gallons of water does it take to produce 5 gallons of milk?

gallons

4. Dairy farmers reuse water in many other ways. When it's hot, they use water to cool off their cows. They also use it to clean the barn, and to water their crops. Dairy farmers are experts at reusing water! If the farm uses a total of 5,000 gallons of water each day, and the cows drink 1,050 gallons of water, how much water does that leave for other uses?

gallons



5. Now it's time for the dairy farmers to check the farm's methane digester. This is a system that recycles the methane gas in cow manure to create energy. The liquid part of the manure is used as fertilizer for crops. The solid part is recycled and dried to make cow bedding. You've just learned the ways that water is used on the farm. Now list the ways manure is used. Together, these practices help dairy farmers achieve sustainability.

- _____
- _____
- _____

6. These sustainability practices and others have allowed dairy farmers to produce more milk with fewer cows. For example, in 1944 it took 26 million cows to produce the same amount of milk as 9 million cows do today. How many more cows were needed in 1944 to produce milk than are needed today?

cows

Cows are the ultimate recyclers!

Their feed creates byproducts from manure and their milk creates delicious dairy products.



Local milk is available 365 days a year.



AMERICAN DAIRY
ASSOCIATION
NORTH
EAST

