Salmonella

Case Report

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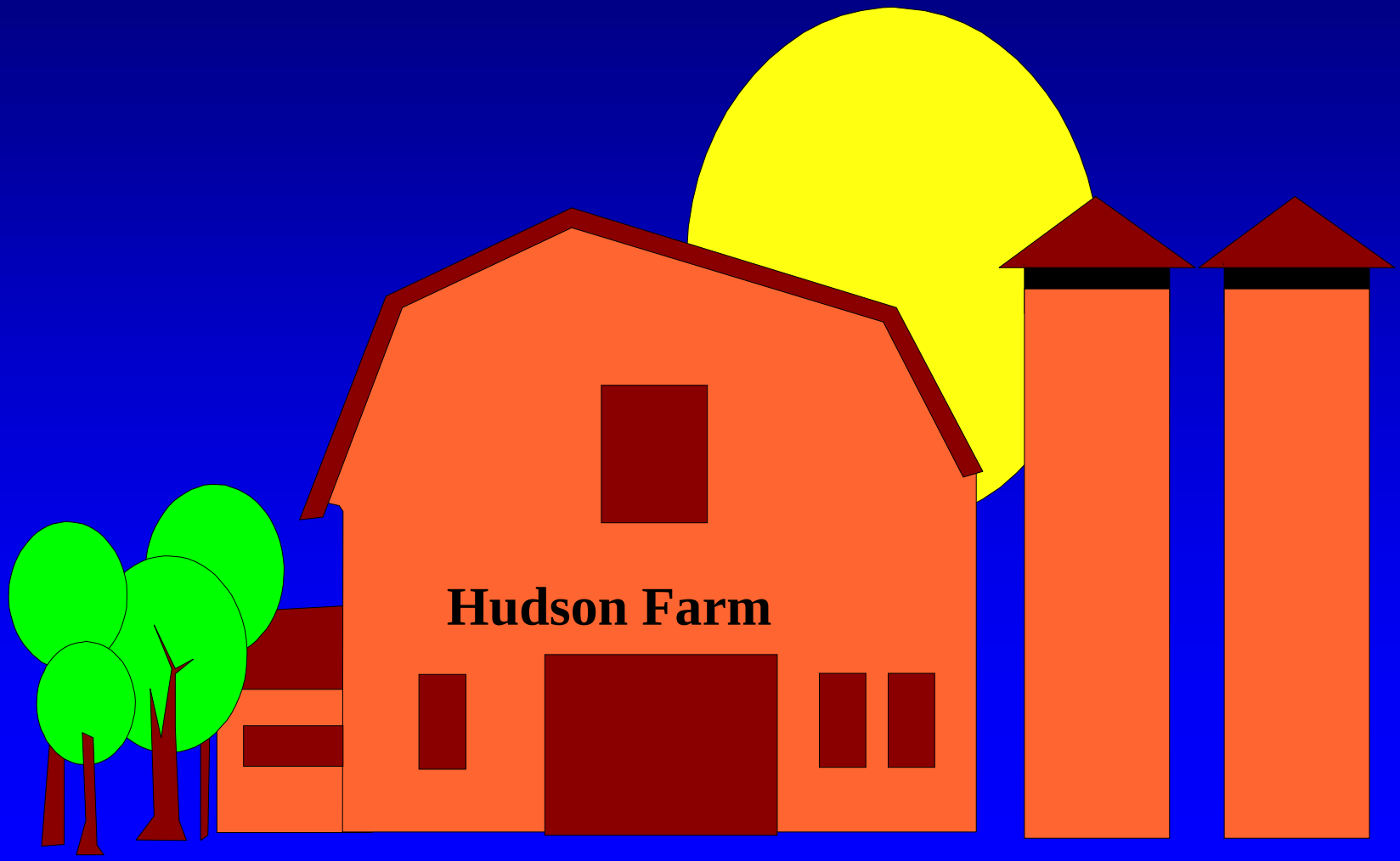
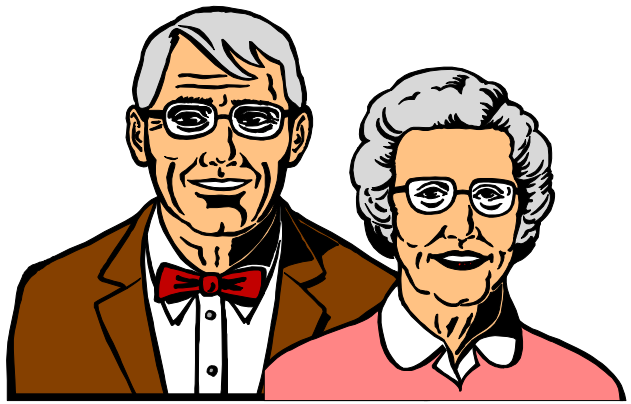
PART ONE

Hudson Farm: a Case Study

The Hudson Farm

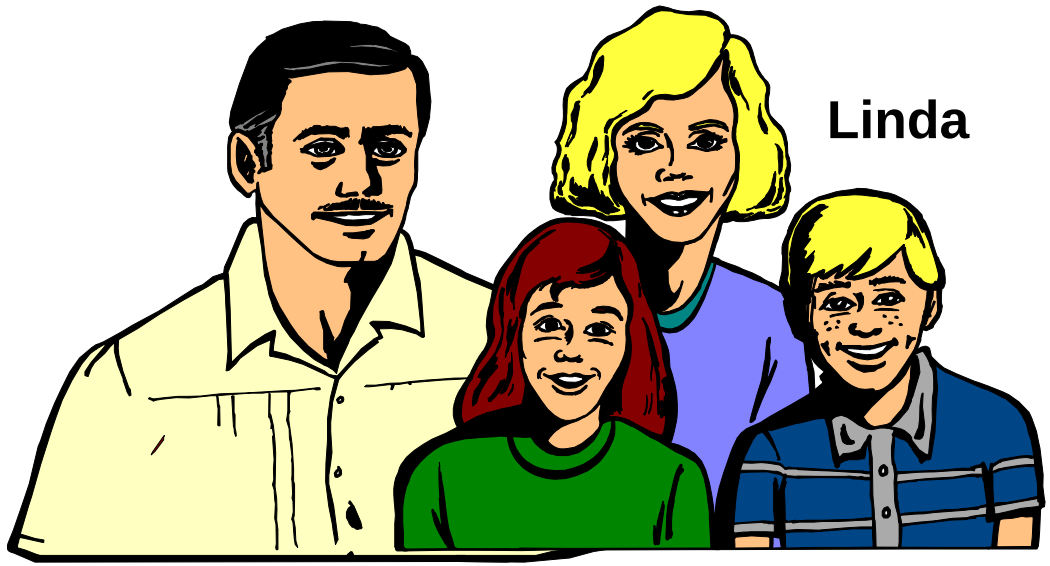


Meet the Hudsons !



Fred Mary

Dave



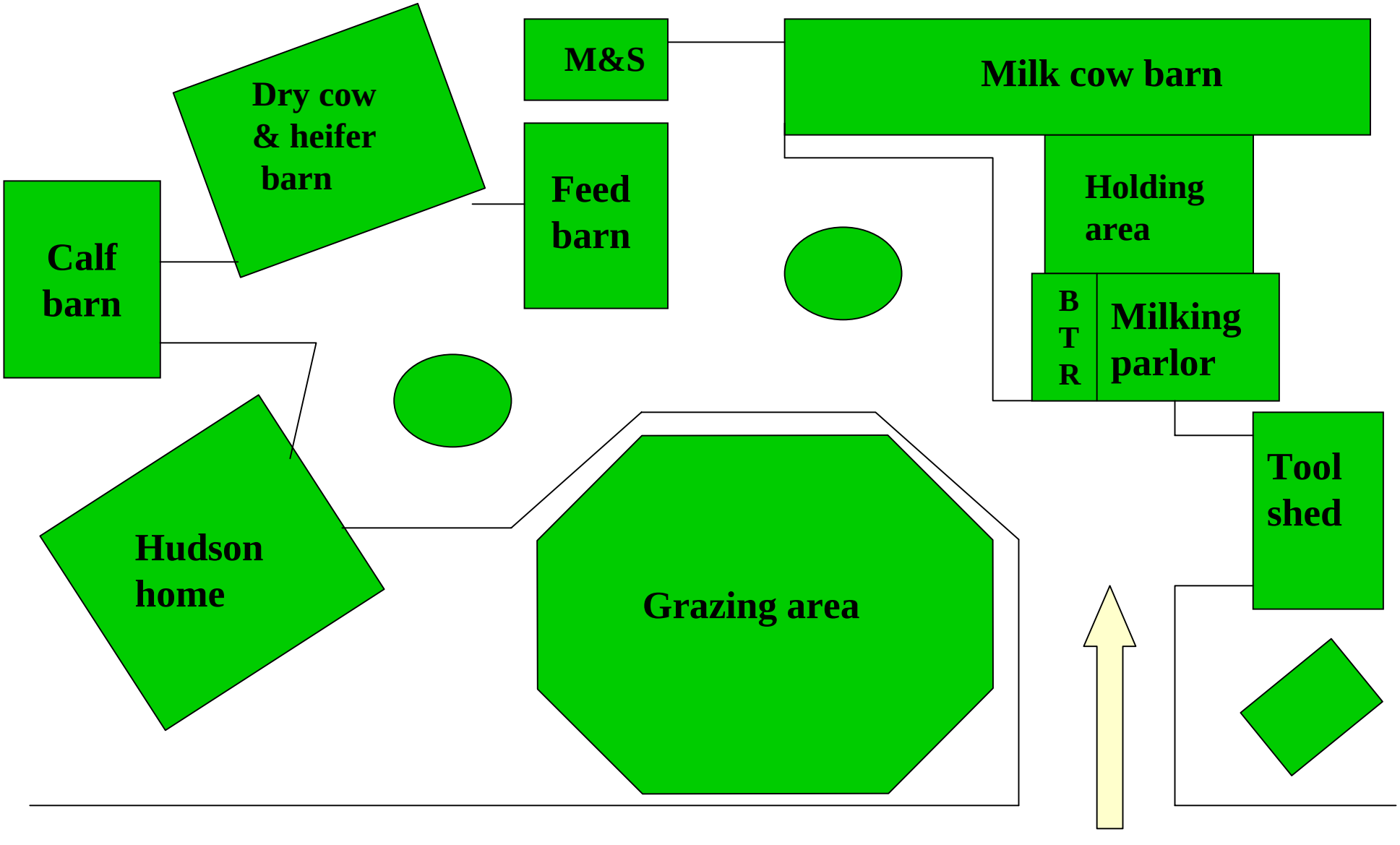
Linda

Jeff Susan John

The Hudson Dairy Farm

- **History**
  - **1920 - Established**
  - **1956 - Upgraded**
  - **1981 - New structures & equipment**
- **Employees**
  - **Jeff Hudson, owner**
  - **1 farm worker**
  - **1 milker**
  - **Dave, Linda, Fred**
  - **Susan & John feed the calves**

Jeff Hudson
Owner Since 1982



Hudson dairy farm layout

Dairy Herd Statistics

- **HERD PERFORMANCE**
  - Grade A milk
  - 4600- 4800 lbs of milk per day
  - No antibiotic residue violations
  - BTMSCC: 200,000 - 500,000 last year.

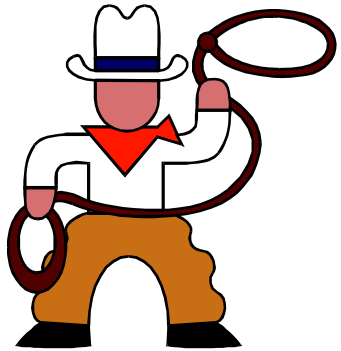
- **DAIRY CATTLE**
  - 12 calves
  - 19 dry cows
  - 20 heifers
  - 87 cows in milk

- **OTHER ANIMALS**
  - 4 stray cats
    2 dogs
    1 pony
    3 ducks and
    8 chickens

People with whom Jeff interacts .....

Milk Agent

Farm Worker



Cull Cow Dealer

Farm Credit Agent

Banker

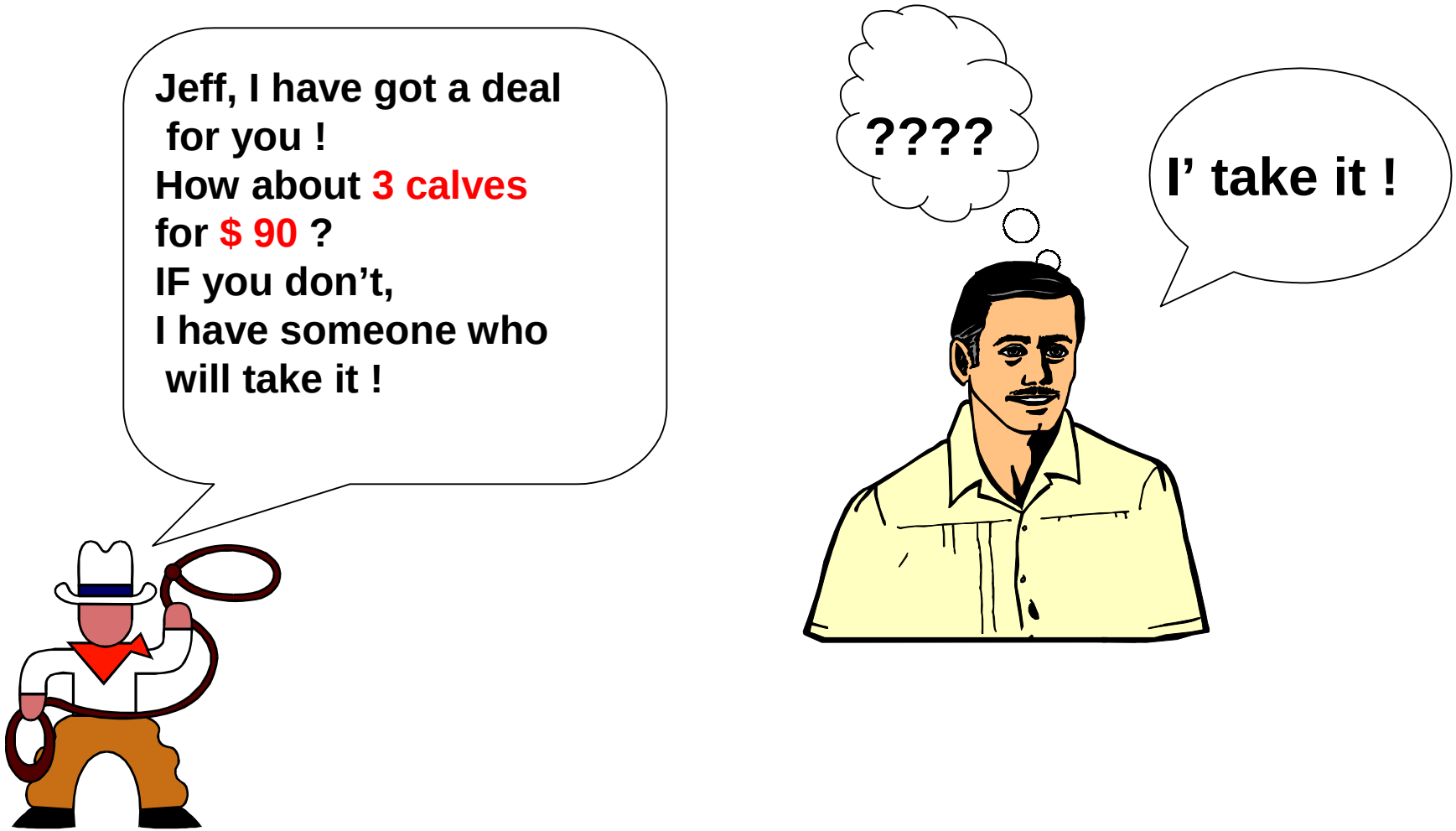
Salesmen

County Ext. Agent

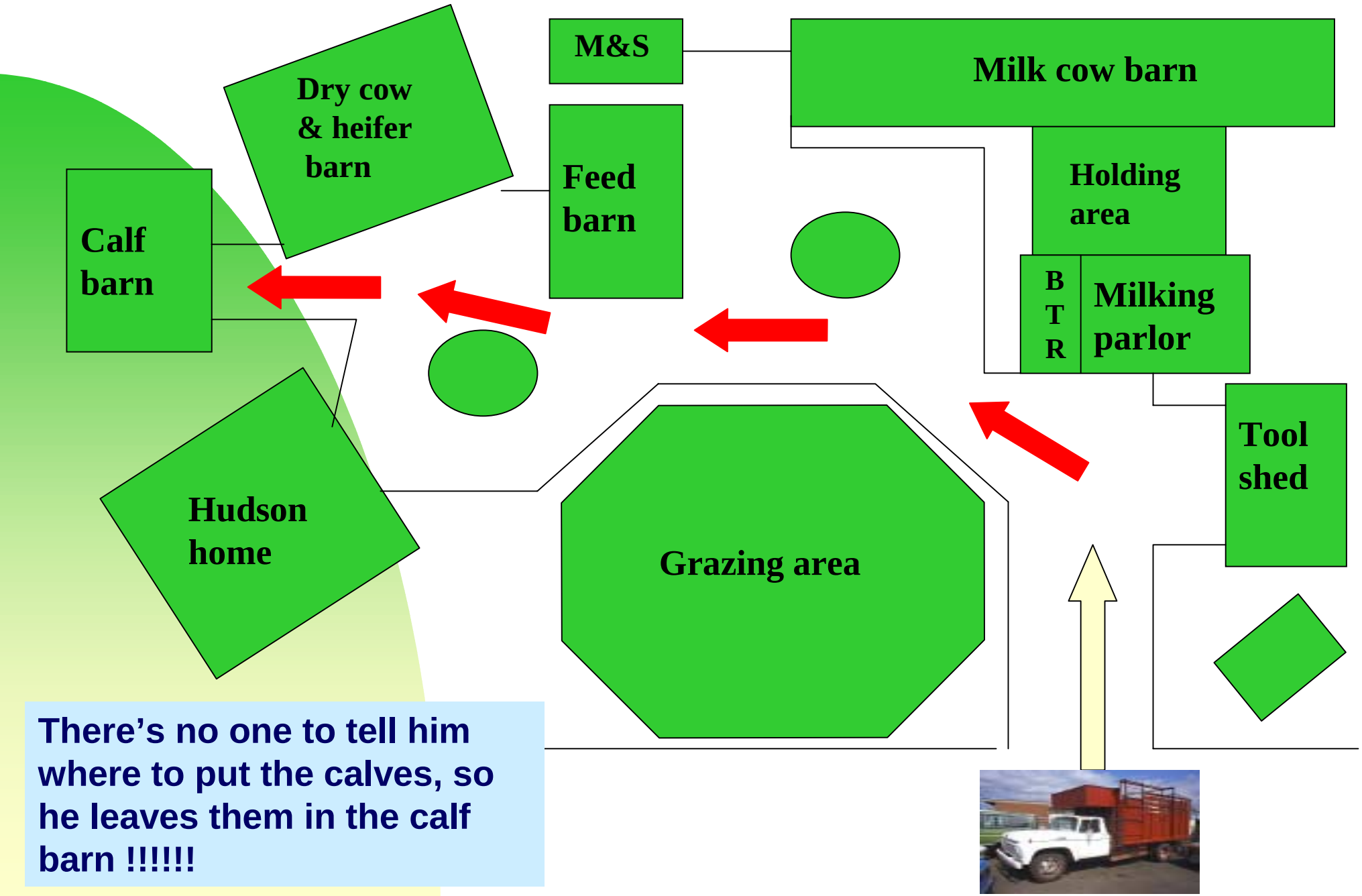
Veterinarian

So goes the story !

October 1, 7.00 am



October 1, 10.00 am



There's no one to tell him where to put the calves, so he leaves them in the calf barn !!!!!!

October 4

5.00 am

3 new calves, and 2 other calves have high temp. and bloody diarrhea …!

8.00 am

The Vet examines the herd.

He also takes a swab sample for lab testing.

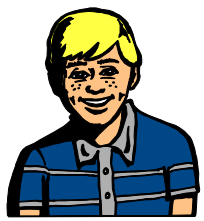
He then treats the calves, and then tells Jeff …”You might have a serious problem”

October 4

8.00 p.m.

A total 7 out of 15 calves are now sick. He treats the sick calves.

11.00 PM

Jeff, has to take both **and**  **to the County Hospital emergency room --- abdominal cramps and high temperature.**

This has not been a good day for Jeff !

October 5

4.00 am

Children admitted.

Dave volunteers to help

5.00 am

8 dead calves

Dave loads the dead calves on the skidsteer and takes them to the pit.

6.00 am

The cows have just returned from milking, he quickly TURNS AROUND hoses down the bucket, and pushes up feed for the cows

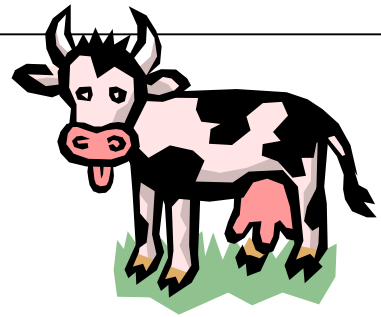
October 8

- **Nothing much happening on the farm.**
- **The remaining sick calves nursed back to health.**
- **On October 8th, the children return home.**
  Diagnosis: Salmonellosis.

October 10

- **The veterinarian calls to tell that *Salmonella* from his calves is a new type of *Salmonella* called DT104.**

October 12



- **4.00 am**
  - **18 cows in milk are scouring !**
- **9.00 am**
  - **Sick cows are moved from the milk barn to the maternity /sick pen.**
- **11.00 am**
  - **The Vet examines the cows.**

    Verdict: Salmonellosis.

- **12.00 noon**
  - **Mr. Smith a neighbor, who buys raw milk from the farm tells Jeff that they are going to host 24 Boy Scouts over the weekend on his game farm.**

October 14

- **9.00 am**
  - **Jeff learns, 18 of 24 boy scouts are hospitalized & 2 in serious condition.**
- **11.00 am**
  - **The County Health Officer, the State Regulatory Veterinarian, The Milk Agent, his Veterinarian, FDA and USDA officials come to the farm.**
- **11.30 am**
  - **Herd is to be quarantined, till further notice.**

All newspapers carry the outbreak story !

Milk makes kids sick ……..

SALMONELLA OUTBREAK TRACED TO DAIRY FARM ……..

Milk contains bugs that makes people sick ……..

Scientists say …….. Dairy farming ……

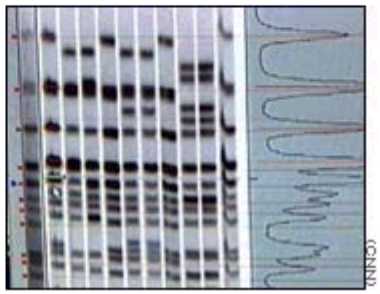
Dairy cows ….. All infected with dangerous bugs

Killer bug on the loose …… dairy cows responsible

Outbreaks make the news!

Salmonella outbreak sickens 100 in 7 states

May 29, 1998
Web posted at: 9:33 p.m. EDT (0133 GMT)



ATLANTA (CNN) -- About 100 people in at least seven states have become ill recently with an unusual form of salmonella, according to the Centers for Disease Control and Prevention.

Researchers find new, drug-resistant strain of salmonella

In this story:

- DT104 emerged in past 10 years
- Antibiotics in animal feed blamed
- Strain resistant to 7 European antibiotics

Doctors at the Centers for Disease Control and Prevention are worried about a strain of salmonella that resists all but one antibiotic

May 6, 1998
Web posted at: 6:30 p.m. EDT (2230 GMT)

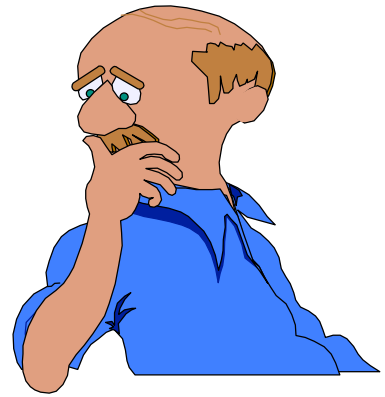
Study confirms tainted ice cream sickened 200,000

May 16, 1996
Web posted at: 7:15 p.m. EDT

From Correspondent Carolyn O'Neil

(CNN) -- Contaminated ice cream was to blame for a 1994 outbreak of food poisoning that sickened more than 200,000 people, a nationwide study confirms. The findings, published in the New England Journal of Medicine, followed an outbreak of salmonella originally traced to Schwan's Ice Cream, a nationally distributed brand made in Marshall, Minnesota. It was the largest single case of poisoning in the United States from a single food source.

How did *Salmonella typhimurium* DT104 get into raw milk ?



	Date	Event
	October 1	Apparently healthy calves brought
		Apparently clean looking truck
	mixed with	New calves other calves

Date	Event
October 1- 3	Incubation period for *Salmonella* (Children probably infected)
October 4	Clinical symptoms in calves & children

Date	Event
October 5 *SALMONELLA*	**Dead calves loaded onto uniloader** **SKIDSTEER IS CONTAMINATED WITH *SALMONELLA* !** **Bucket is hosed down with water !!!!!** **Picks up feed---** **FEED IS CONTAMINATED WITH *SALMONELLA* !**

Date	Event
October 5	**Cows infected with *Salmonella Typhimurium* DT104**
October 10	***Salmonella Typhimurium* DT 104** **Multiple antibiotic resistance:** **Ampicillin** **Chloramphenicol** **Streptomycin** **Sulfonamides** **Tetracycline** **Incidence increasing in the US** **3 human outbreaks reported !**

Date	Event
October 5-12	**Cows infected with *Salmonella***

Date	Event
October 12-	**Infected cows contaminate milking stall, parlor and milk in bulk tank**

Putting it all together !