



Unit I

VETERINARY PUBLIC HEALTH AND FOOD SAFETY

(Credit Hours 3+1=4)



FOOD

ANIMALS

Food Animals

ANIMAL



meat



chicken



fish



cheese

Meat is normally regarded as the edible parts (muscle & offal) of the food animals which consumes mainly grass & other arable crops, viz. cattle, sheep, goats, pigs, horses, deer, reindeer, buffalo, musk oxan, moose, yak, camel, ILama, guanaco, vicuna, etc.

- **Several species** : Meat animals
- **Only few** : Regularly used as meat animals
- **Herbivores** preferred over carnivores
- **Levitical law of old testament:** Animals that chew cud and part hoof are fit for consumption
- **Pigs /carnivores** not allowed
- Fish with fins and scales were wholesome

Cattle

- First domestication in : Europe and Asia during stone age

- Two ancestors of species

Bos primigenius

- *Bos taurus*

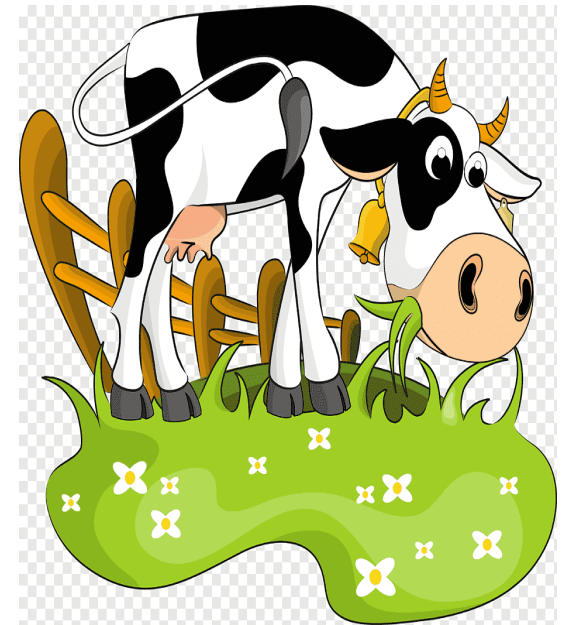
Temperate zone

Bos indicus

Tropical areas

humped cattle

Zebu (Brahman)



- Early evidences : Mohanjodaro excavations (2100-400 B.C.)

Cattle

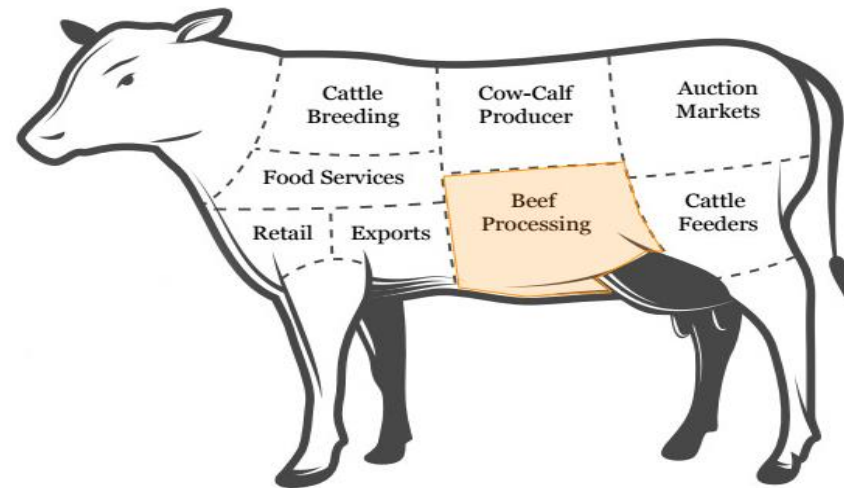
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- World over classification of breeds

- Beef
- Dairy
- Dual purpose

- India classified as

- Draught
- Dairy
- Dual purpose



- Some important Indian breeds are

Red Sindhi, Tharparkar, Sahiwal, Haryana, Ongole, Deoni etc.:

Dairy or Draught purpose

- Not reared for meat purpose : at the end of productive cycle slaughtered



- **Ban on cow slaughter** : Except Kerala and W.B
 - **Slaughter permitted for unproductive cows**
- **Some states : No legislation**
 - **Meghalaya, Nagaland, Tripura, UT of Lakshdweep**
- **Bull/bullock slaughter permitted except : Delhi, H.P., J&K. with restriction on age of 14 and above**
- **Recently in Maharashtra : Age restriction increased to 16**

Bihar

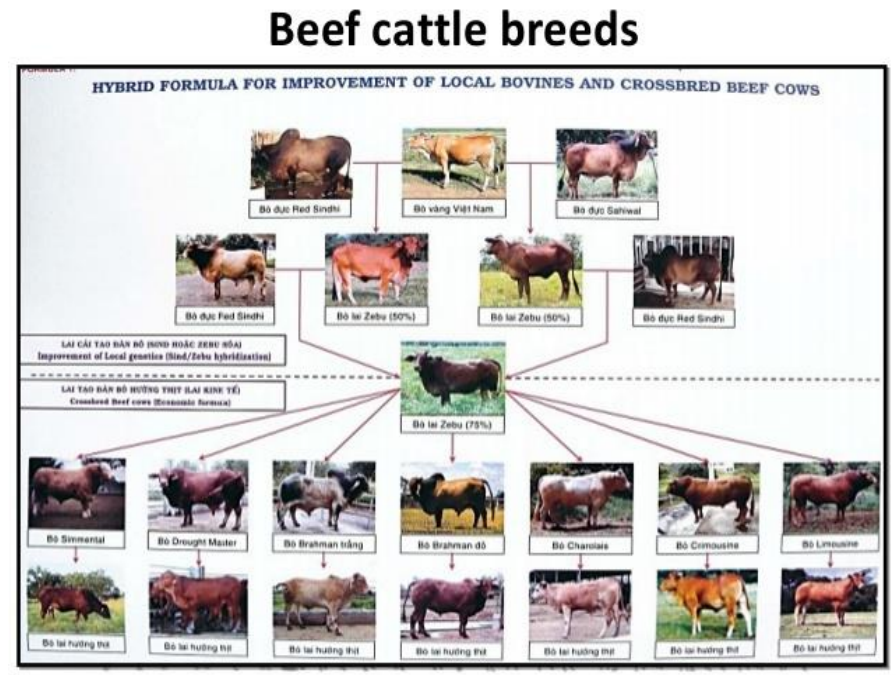
- The *Bihar Preservation and Improvement of Animals Act, 1955* governs the slaughter of cattle in the state
 - Slaughter of **cow and calf is totally prohibited**
 - Slaughter of **bulls or bullocks of over 25 years of age** or permanently incapacitated for work or breeding due to injury, deformity or any incurable disease is **permitted**
 - The law also **bans the export** of cows, calves, bulls and bullocks from Bihar, for any purpose
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- The law defines
 - a bull as "an uncastrated male of above 3 years",
 - a bullock as "castrated male of above 3 years",
 - a calf as "male or female below 3 years"
 - a cow as "female above 3 years".
 - Anyone violating the law can be punished with imprisonment up to maximum of 6 months or fine of up to ₹ 1,000 or both. The crime is treated as a cognizable offence

Beef breeds in world

- Hereford
- Aberdeen-angus
- French Charolais
- Simental
- Draughtmaster (*Bos taurindicus*)

Bos taurus x *Bos indicus*

More resistant and early maturity



Beef production systems

Most economic systems : cattle slaughter age is 15-24 months

1. Barley beef system

- Calves weaned at early age
- Fed on concentrates : *adlib.*
- Slaughtered at **11 months of age**
- Body Wt. 400 Kg

3. Intermediate system: more popular

- Autumn-borne calves fed through the winter
- Kept on grass from 6-12 months of age
- Finished on hay, silage and food grains (second winter)
- Slaughtered at 18 months

2. High utilization of grass :

- Reared on **grass**
- Slaughtered at **2 or more years of age**
- Body wt. **499 Kg or more**

Beef production systems

4. Bobby calves

- Slaughtered within few days of birth
- Low muscle to bone ratio
- Oedematous appearance
- Little value for consumer

5. Veal calves

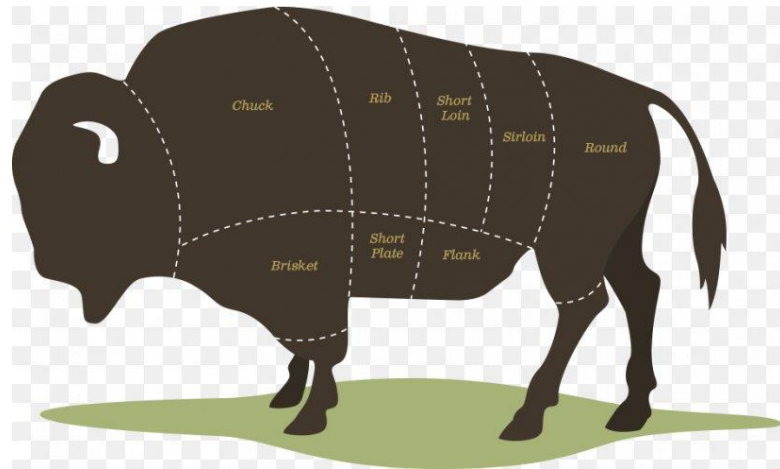
- Reared on milk and milk substitutes
- Weaned at 5 wks
- Fed *adlib* concentrates and hay
- 115-135 kg

Cattle breeds in India: Body weight at maturity

Breeds	Weight (Kg) at maturity	
	M	F
Haryana	363- 544	356
Ongole	544-612	431-454
Gir	544	386
Red sindhi	318-454	249-340
Sahiwal	454-590	272-408
Tharparkar	363-454	227-340

Buffalo

- *Bubalus bubalis*
- Domesticated 5000 years ago in Indus valley
- India → china → other countries
- Found in 30 countries
- More than 50% in India



Buffalo breeds in India

Murrah, Mehsana, Jaffrabadi, NiliRavi, Surti, Bhadawari, Tarai, Nagpuri, Pandhapuri etc.

- Mainly Dairy and draught purpose
- As meat producing animal : **recent years**
- Increasing buffalo meat export : **95% of total meat export**
- Meat comparable to beef



Murrah



Nagpuri



Surti



Bhadavari



Mehsana



Jaffrabadi

Buffalo breeds in India: Body weight at maturity

Breeds	Wt (Kg) Male	Wt (Kg) Female
Murrah	550	450
Jaffrabadi	600	460
Nagpuri	525	425

Sheep



- ✓ 1st animal domesticated by man
- ✓ Carcass yield: 50%
- ✓ Sheep carcass wt.: take 50% of animal's live wt. and deduct or add 56-113g

Pig



- **Important meat animal world over**
- **40 % total world meat production**
- **Domesticated 5000 years ago**
- ***Sus scrofa* : Eurasian wild boar : Main ancestor of domestic pigs**

Sub species in India

- ***S. scrofa davidi* : western India**
- ***S. scrofa cristatus* : Eastern India**
- ***S. scrofa affines* : Southern India**

Pig as a food animal

- **China : 80 % of total meat is pork**
- **Pigs most efficient in feed conversion**
- **Rearing : Undertaken by weaker section**
 - : **Scavenging type rearing**
 - : **Source of income**
 - : **choice of meat consumption**
- **Systematic rearing restricted to North East India**

Pig carcass yield : 70-78 %

(Average is 75%)

Class	Age at slaughter (Wks)	Live wt. (Kg)	Dead wt. (kg)	Dressing %
Pork Pigs	14-18	45-63	39-45	70
Cutter Pigs	18-24	63-82	45-63	72-75
Bacon Pigs	22-28	84-93	61-70	75
Heavy pigs	26-34	100-114	75-88	78-80

Wt. of carcass= Head & kidney –Viscera

Wt. of pig carcass: Remove the head and weight it
(weight in pounds ~carcass wt in stones*

*1 stone=6.35kg

1pound= 0.453592 kg

Animals and their meats' name

Animals	Meat Name
Cattle (cow or bull)	Beef
Calf (young cow)	Veal
Pig	Pork
Deer	Venison
Sheep (Ram or Ewe)	Mutton
Pigeon	Squab
Water Buffalo	Carabeef
Goat	Chevon
Chicken	Chicken
Turkey	Turkey
Horse	chevaline or cheval (France)