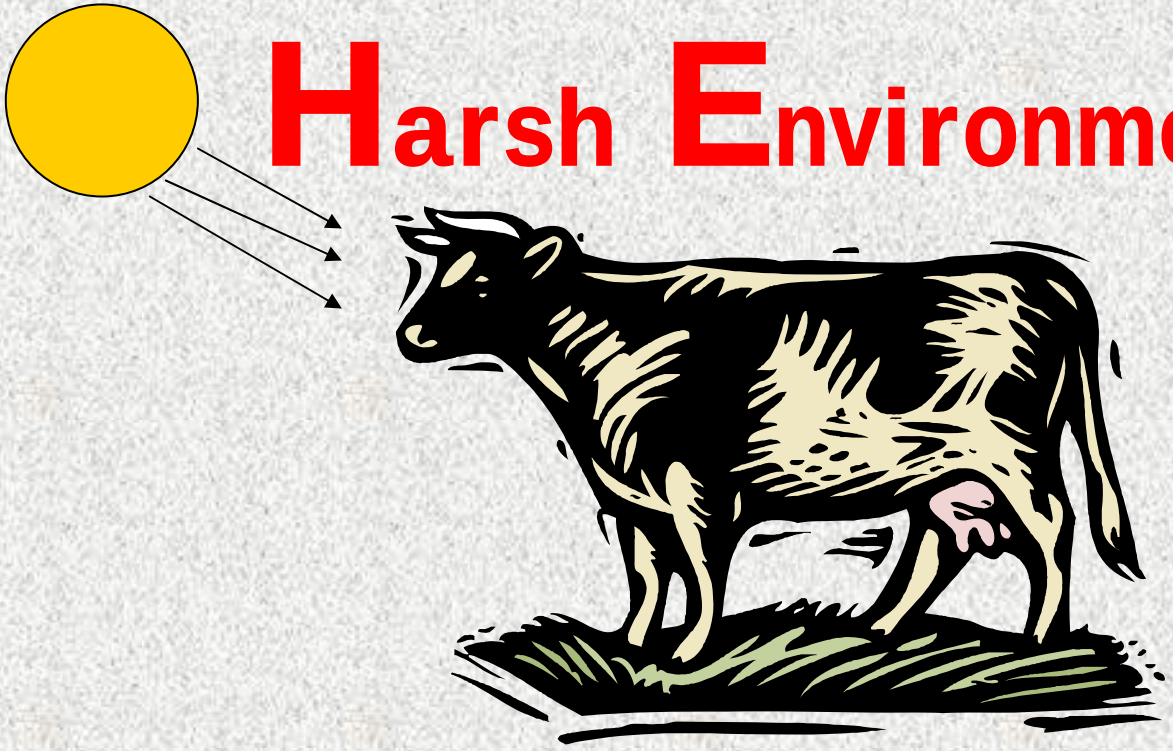
Managing Dairy Cows in Harsh Environment



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Harsh Environment

Unpleasant or jerrying environment that can cause stress to living organisms.

Stress

- “Adverse effects in the environment or management system which force changes in an animals physiology or behaviour to avoid physiology malfunctioning and assists the animal in coping with its environment”

Stressors and Stress Modifiers

Stressors
1-Thermal extremes
2- Crowding
3- Physiological perceptions
4- Sounds
5- Infectious agents
6- Pollutants
7- Diet
8- Drugs

Modifiers
1- Severity
2- Duration
3- Genetic variability between and within species
- Immune state of host

Two Ways
1- SA (Flight/fight)
2- HPA Axis (Passive

Endocrine Changes in Heat Stress

Increase in

1- Prolactin

(Inr. WI and Elect. Met.

2- Aldosteron

3- GC

Decrease in

1- Thyroxin

2- GH

Milk Composition (Dec):

1- Fat

2- Pro

3- SNF

4- TS

5- Lact

THI Index

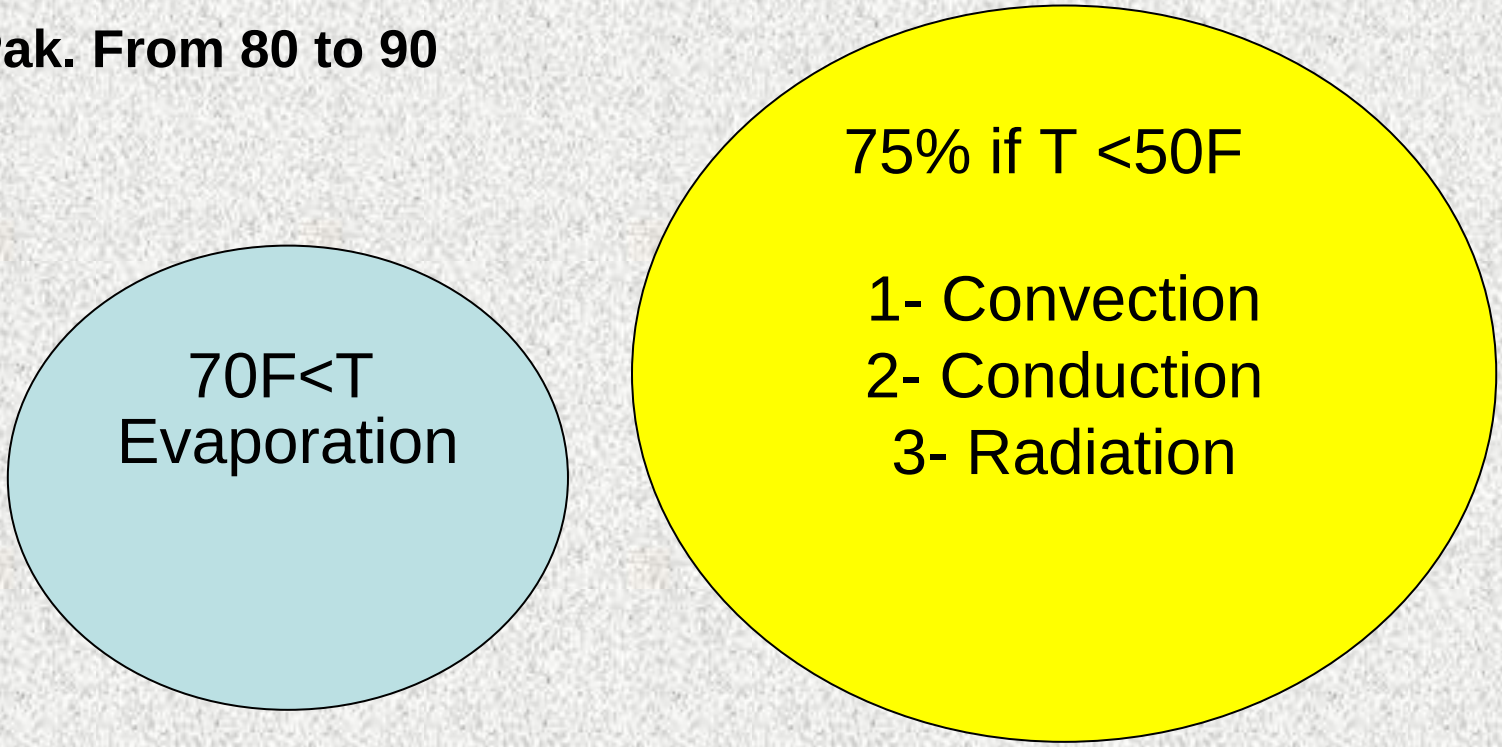
THI for Exotic Cattle

F	40	45	50	55	60	65	70	75	80	85	90	95	100	Stress level
75	No Stress					72	72	73	73	74	74	75	75	Mild
80	73	73	74	74	75	76	76	77	78	78	79	79	80	Medium
85	76	77	78	78	79	80	81	81	82	83	84	84	85	
90	79	80	81	82	83	84	85	86	86	87	88	89	90	Sever
95	83	84	85	86	87	88	89	90	91	92	93	94	95	
100	86	87	88	90	91	92	93	94	95	97	98	99	Death	

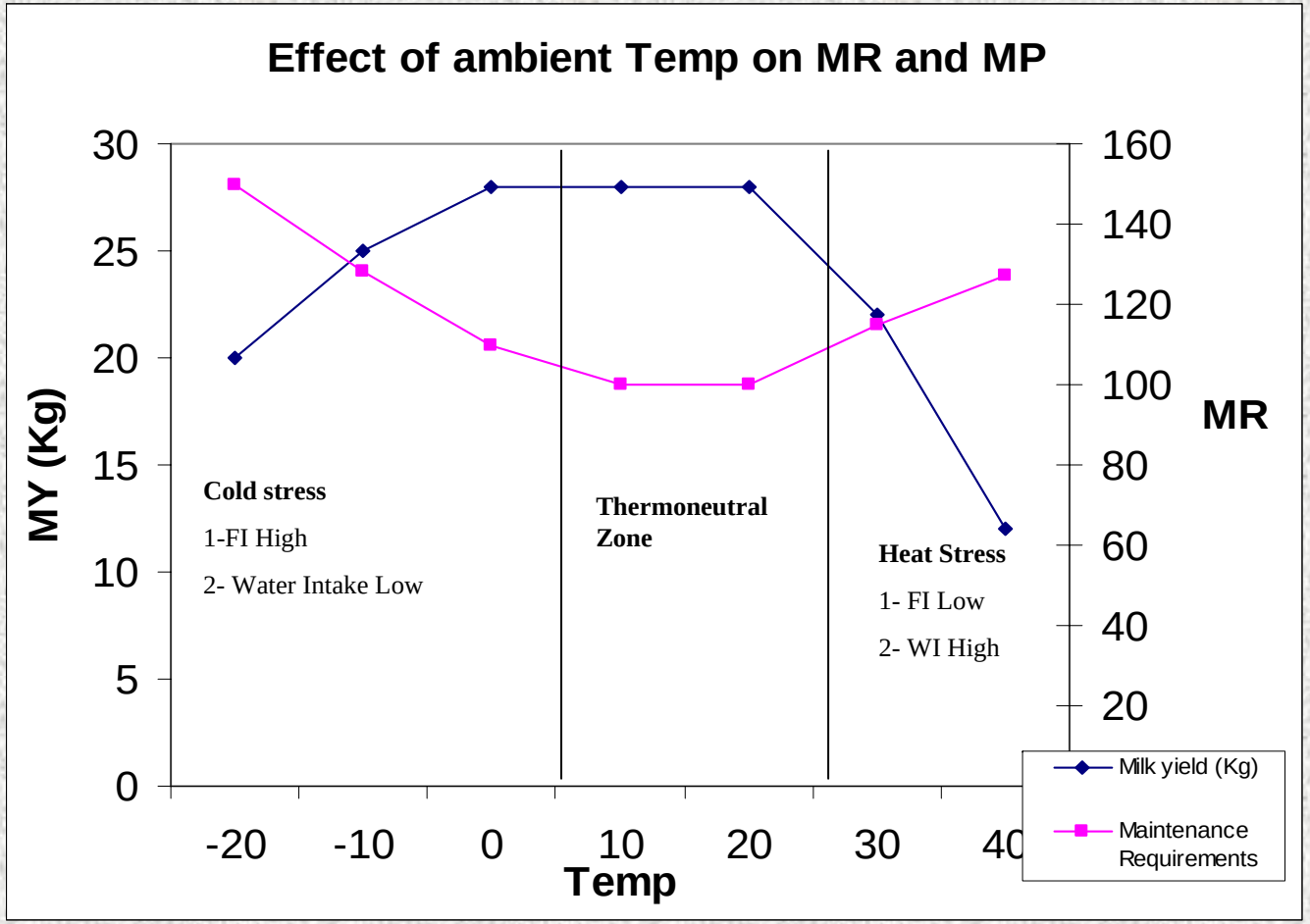
Methods of Heat Loss

HS starts from 72 THI

IN Pak. From 80 to 90



Heat Stress and Animal



Effect of Heat stress

- Production (milk, calf crop and weight gain)
- Reproduction
- Feed Intake
- General Health (Mastitis and general health)
- Welfare of animals
- Economic losses

Any defense against HS?

Remedies

- a- Housing Management
- b- Feed Management
- c- Milking barn management
- d- Water provision
- e- Reproduction management
- f- Health management (mastitis and general health control)

Feed Management

1- Encourage FI

A- Cut down metabolic loss

change in feed type and dairy animal requirement

B- Ration energy management

C- Feeding frequency

D- Feeding timings

E- Feeding management (bunk cleaning etc)

F- Provision of shade

G- Summer time feed formulation

(Digestible, palatable and promote FI)

H- Potassium feeding

Feed Management

i- Electrolytes and Vit.s and digestive aid

J- Add buffer, monensin

K- Protein quality UDP/RDP ratio

L- Feed energy density

M- High quality roughages

N- If TMR moisture 40-45%

Water Intake

1- Plenty of water (clean, cool, sufficient)

2- Water at the time leaving parlor

3- Sufficient space and troughs for drinking (No overcrowding and hierarchy)

4- Shade for water

5- Trough cleaning (sedimentation, algae)

6- Water quality

7- Chilled water

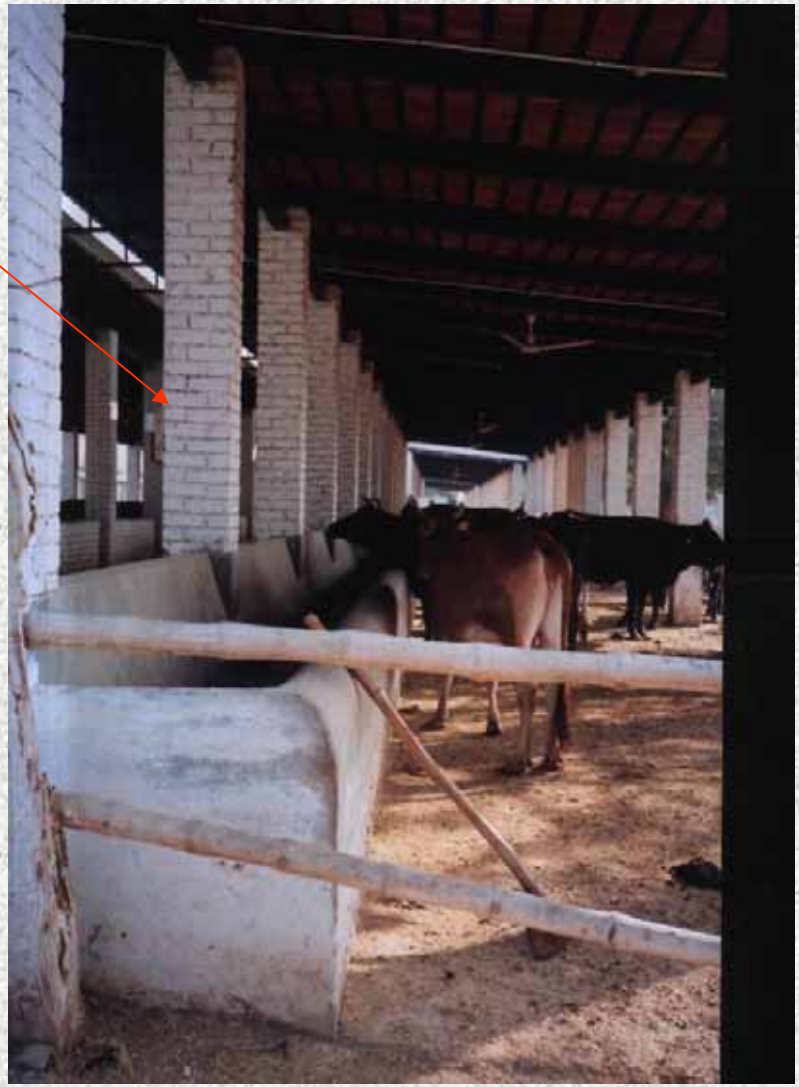
Housing Management

1- 30 MJ more heat
2- Protection from wind, cold, heat and sun
3- Roof Insulation and slope
4- Ventilation
5- Tree shades
6- Direction
7- Showers, mist, foggers, fans
8- Maintain THI record
9- Free stalls, space and floor slope

Space problem causes Stress

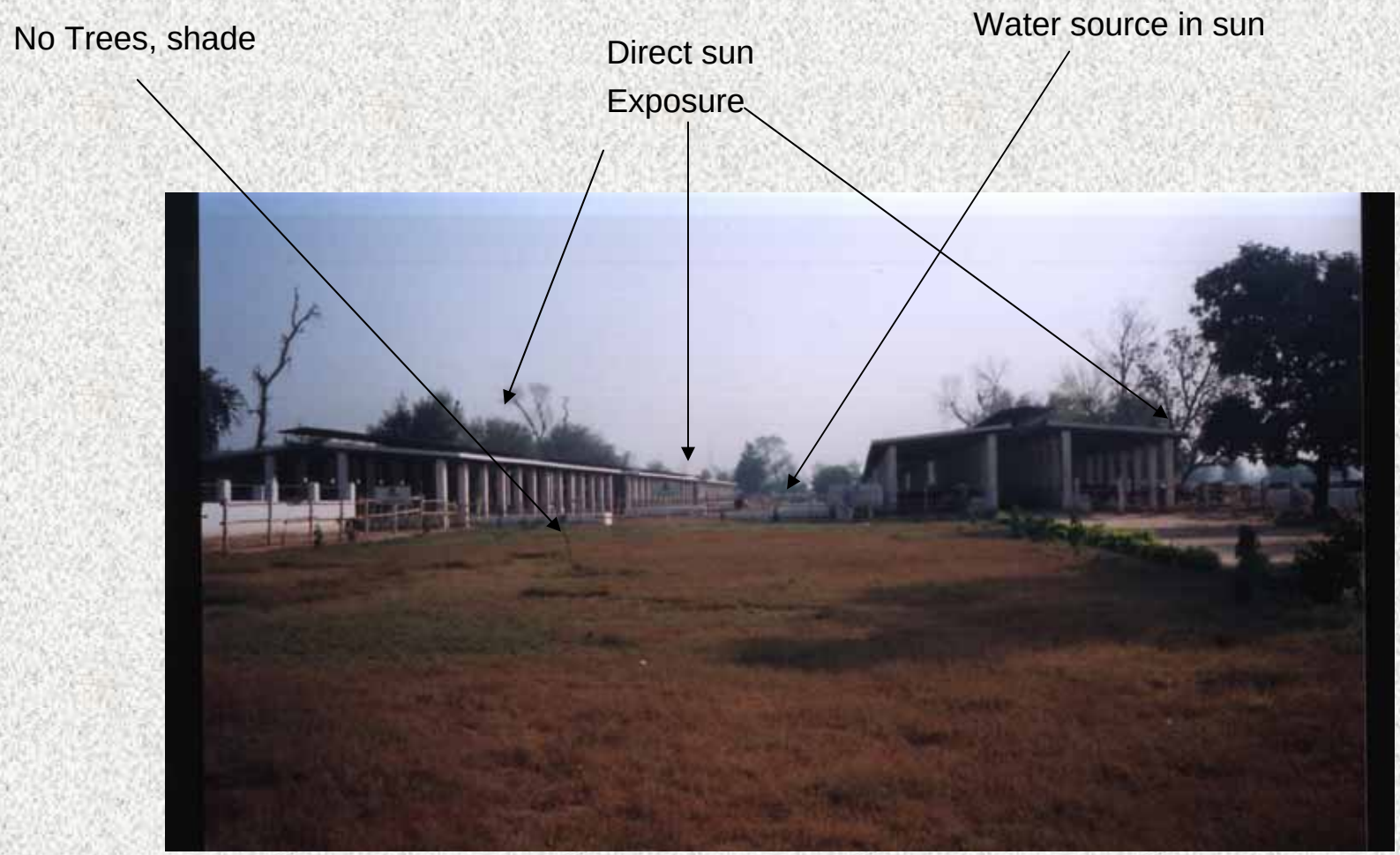
Building Design Selection

No use shaded area



Sun exposure

Shade Position


No Trees, shade
Direct sun
Exposure
Water source in sun

Holding Area Management

1-No Shade

2- Small area for animal holding

3-Singlr way for in/out

1-Sprinklers, mister

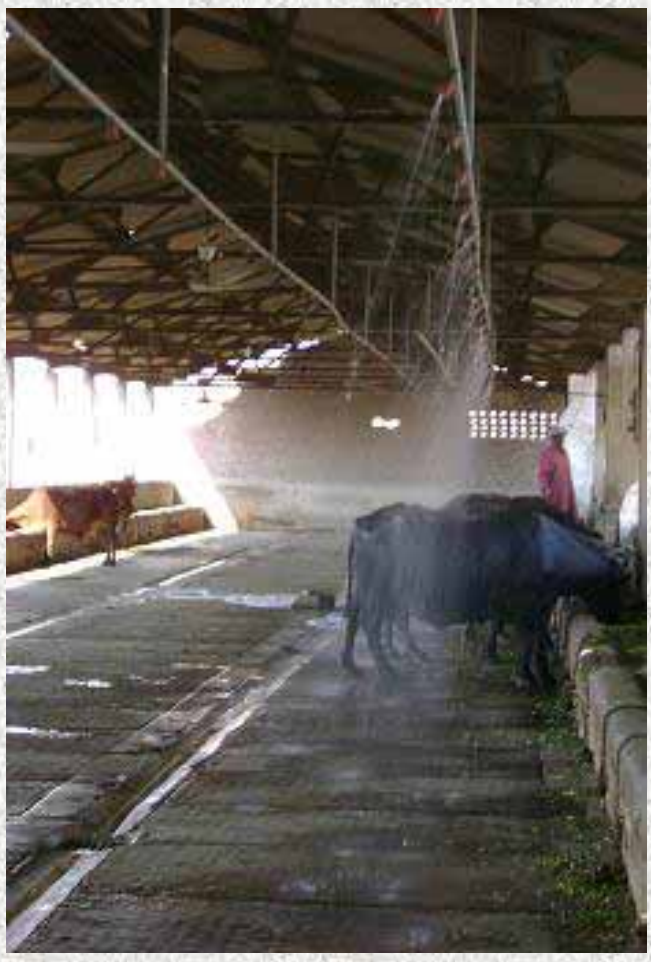
2- Shade

3- Fans

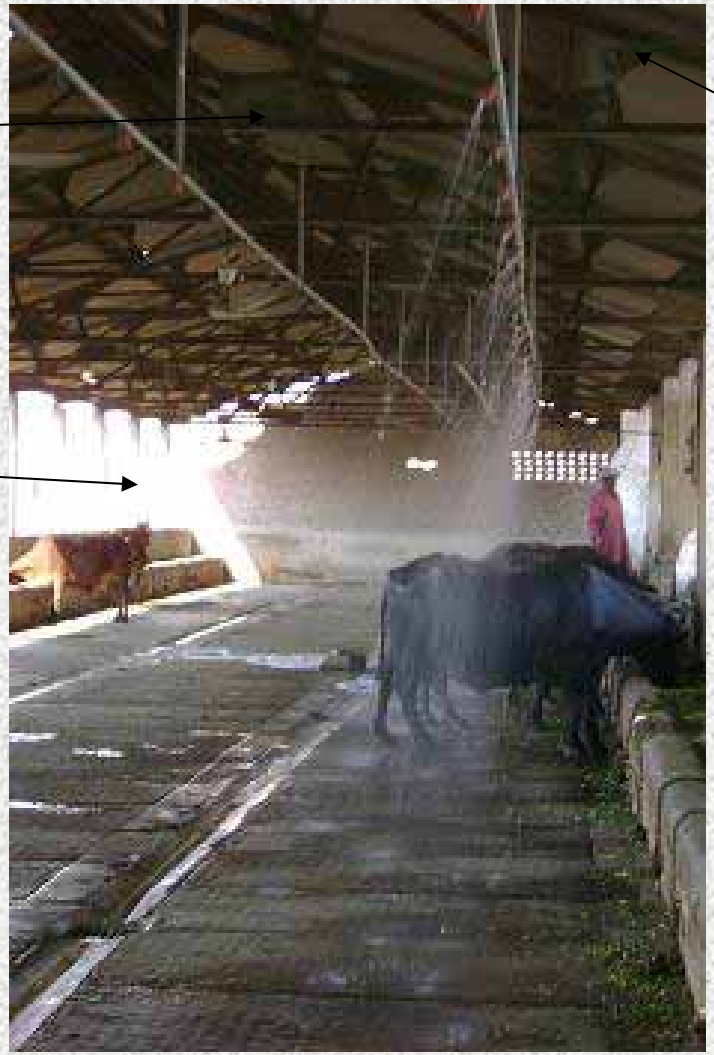
4- Separate in/exit ways with cooling devices

Animals are like furnaces

Mist and Showers



Mist and Showers



Housing Management

Cooling Systems

1- Efficiency

2- Cost

3- Maintenance

EC Housing

Cost effective

Maintenance

Reproductive Management

1- May fail to come in heat, low Fertility

2- Less sexual active and standing heat

3- Carried over effects of HS

4- Conception rate and Birth weight less

5- Stunted Growth and breeding program

How to Coop:

1- Cool environment and encourage FI

2- Synchronization

3- HS more affects early and late embryo development, (Stress is risky, no transportation and unnecessary movement)

Stress and Health

1. Long HPA will cause

   a- Diseases

   b- Pathological changes in animals

   Proteolyses

   Lipolysis

   Catabolic condition, hypertension, excessive immuno suppression, infertility, inhibition of growth, mineral deficiencies

   ROM, peroxides (cell damage) give anti oxidents (Vit E)

2- SSC and clinical mastitis more in summer (less immunity, more Bact. Load) Cows coming from Disease free zone and expose to disease full Envt.

Stress and Health Management of Exotic Animals

3- Facts:

- More susceptible to diseases
- Sever Symptoms and higher mortality to prevalent diseases
- Short duration of immunity after vaccination
- Simple wounds do not heal readily, may result in fistula and septicemia (Jersy more susceptible)

Stress and Health Management of Exotic Animals

Recommendations

- Vaccinate against FMD (O,A, Asia-1), HS and Black Quarter (In hilly and sub hilly areas)
- Booster vaccination is must
- Respondents-Vaccine 2-3 months earlier than local cattle
- An effective tick control is must (Very Important)
- Internal and external parasites control
- Treat wounds immediately and vigorously
- An effective mastitis control program

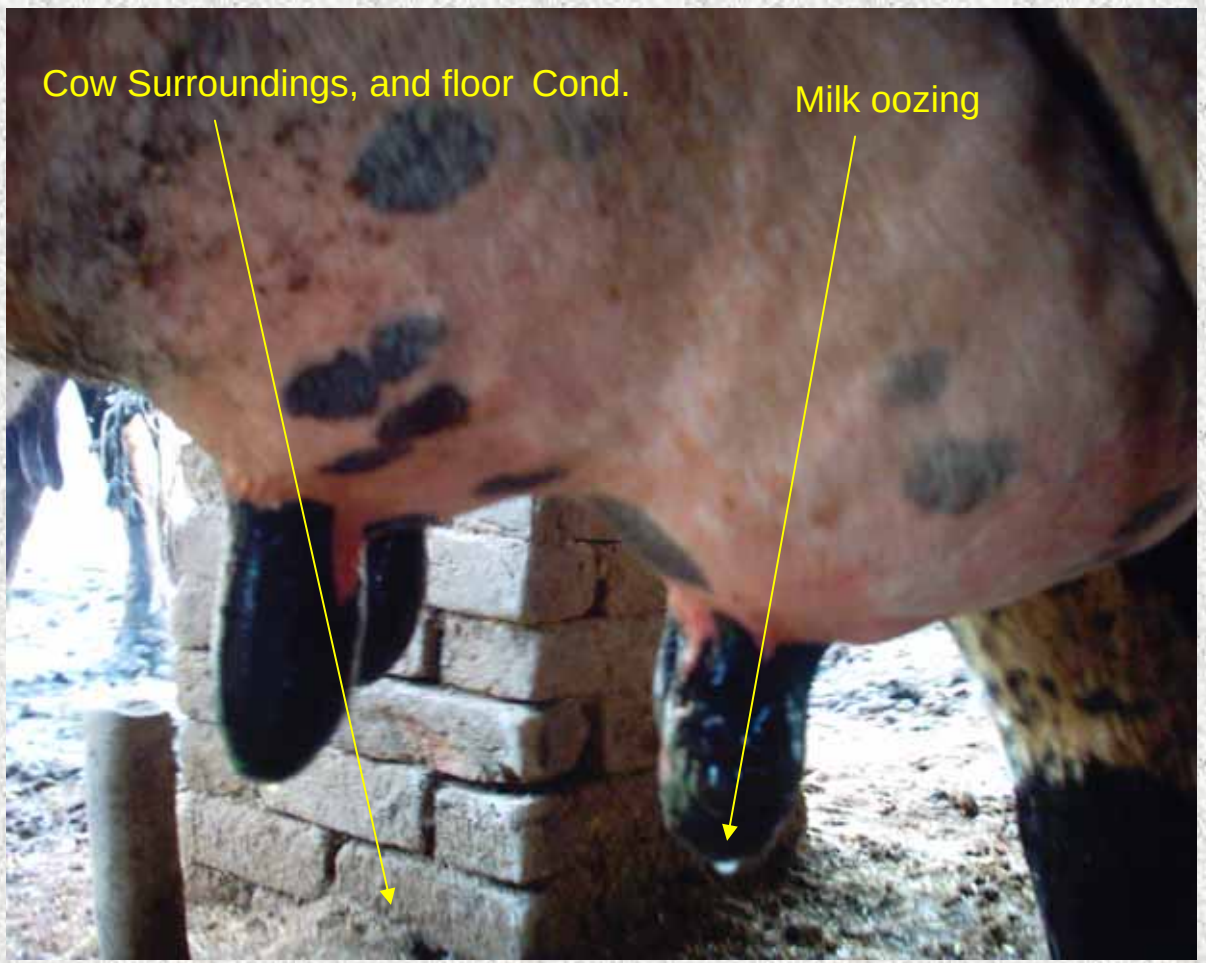
Stress and Health Management of Exotic Animals

- Jaundice, HS, White scouring, watery diarrhea
- Provide proper bedding
- Proper milking procedure during HS
- Dipping and stripping
- Vit A for healthy epithelial tissue of udder
- Machine milking verses hand milking

General Management

1- Less time in holding areas and cooling system at exit lane
2- Dry cow therapy and last trimester management
3- Gentle movement and soft handling
4- Transportation care
   a- Stress
   b- Use of tranquilizers
   c- Special vehicles
   d- Water and fodder provision
   e- Time/season of journey
   f- Journey break (long travel; Shipping fever)
   g- Physiological condition of animals

Criminal Management



Criminal Management

General Management

H- Avoid managemental stress

- Roping
- Chasing
- Isolation for breeding
- Hot time vaccination and handling

J- Trained man power as farm managers

K – Trained Farm labor and supervisors

L- Consultation with production experts

M- Dairy farm building experts/architectures

THANK YOU

Animals are invisible Family Members and Need equally Better Environment for the Best Performance