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# **AGRICULTURAL STRUCTURES AND ENVIRONMENTAL CONTROL BTAP3105**

## **LIVESTOCKS AND DESIGN OF FARM STRUCTURES**

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# INTRODUCTION

The FAO has defined

**CLIMATE-SMART AGRICULTURE** as one that :

Sustainably increases productivity,

Enhances resilience (adaptation),

Reduces/removes greenhouse gases (mitigation), and

Enhances achievement of national food security and development goals.



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# SECTOR TRENDS

Livestock production provides on average 17% of food calories and more than a third of protein to human diets. (Herrero et al., 2009).

Over 35% of overall cereal use with cattle consuming over 1 billion tons of grain each year.

Consuming almost 60% of the global biomass harvest (Krausmann et al., 2008) & dominating the agricultural nitrogen cycle.( Bouwman et al., 2013)

Accounts for 40% of global agricultural GDP .  
(FAO)

It occupies 30% of the world's land surface and 70% of all agricultural land.

It accounts for over 8% of global water use.

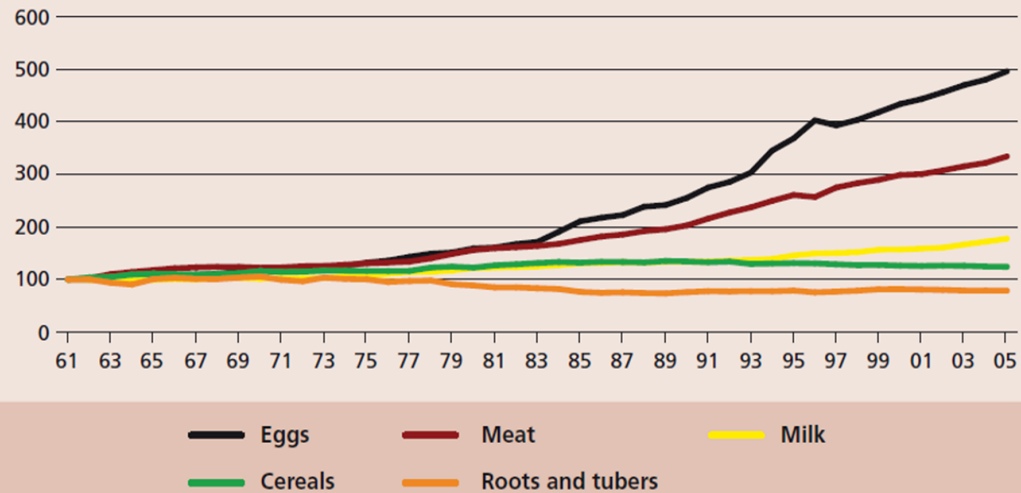


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### Per capita consumption of major food items in developing countries, 1961–2005

Index (1961 = 100)



Source: FAO, 2009b.

- Between 1960 and 2005 annual per capita consumption of
- Meat more than tripled;
- Milk almost doubled; and
- Eggs increased fivefold in the developing world.
  
- Rising incomes, population growth and urbanization have driven growth in livestock product demand in the developing world.



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Expected growth of the world population - from 7.2 billion to 9.6 billion in 2050.

Compared to consumption levels in 2000, it is projected that by 2030,

demand for pork and eggs will increase by 65-70%;

demand for beef, dairy products and mutton will increase by 80-100%;

demand for poultry meat may increase by 170%.

(Robinson and Pozzi , 2011)

Global production of meat is projected to more than double to 465 million tonnes in 2050.

Milk production is expected to increase by 80% to 1043 million tonnes.

(FAO, 2006)



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# The impact of climate change on livestock



- Global warming is the cause, climate change is the effect.
- Climate change directly affects the
- health, reproduction, nutrition etc. of animals resulting in:
- poor performance .
- inferior product quality.
- outbreak of novel diseases



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# DIRECT AND INDIRECT IMPACTS OF CLIMATE CHANGE ON LIVESTOCK PRODUCTION SYSTEMS

	Grazing system	Non-grazing system
<b><i>DIRECT</i></b> impacts	<ul style="list-style-type: none"> <li>•increased frequency of <b>extreme weather events</b></li> <li>•increased frequency and magnitude of <b>droughts and floods</b></li> <li>•<b>productivity losses</b> (physiological stress) due to temperature increase</li> <li>•<b>change in water availability</b> (may increase or decrease, according to region)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>change in water availability</b> (may increase or decrease, according to region)</li> <li>•increased frequency of <b>extreme weather events</b> (impact <b>less acute</b> than for extensive system)</li> </ul>
<b><i>INDIRECT</i></b> impacts	<p><b>Agro-ecological changes</b> and ecosystem shifts leading to:</p> <ul style="list-style-type: none"> <li>•<b>alteration in fodder quality and quantity</b></li> <li>•change in <b>host-pathogen interaction</b> resulting in an increased incidence of <b>emerging diseases</b></li> <li>• <b>disease epidemics</b></li> </ul>	<ul style="list-style-type: none"> <li>•<b>increased resource prices</b> (e.g. feed, water and energy)</li> <li>•<b>disease epidemics</b></li> <li>•increased <b>cost of animal housing</b> (e.g. cooling systems)</li> </ul>



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# IMPACTS ON PASTURES, FORAGE CROP PRODUCTION, QUALITY AND PRICE

Feed and fodder deficit in India

- Dry fodder- 22%
- Green fodder-62%
- Concentrate- 64%
- Pasture and grassland area- 3.4%

Fodder crop yield projected to fall by 10-20% in tropics and subtropics by 2050.

(Jones and Thornton, 2003)

Climate change affects the yield, quality and price of forage and concentrate crops.

(Laszlo Babinszky et al., 2011)

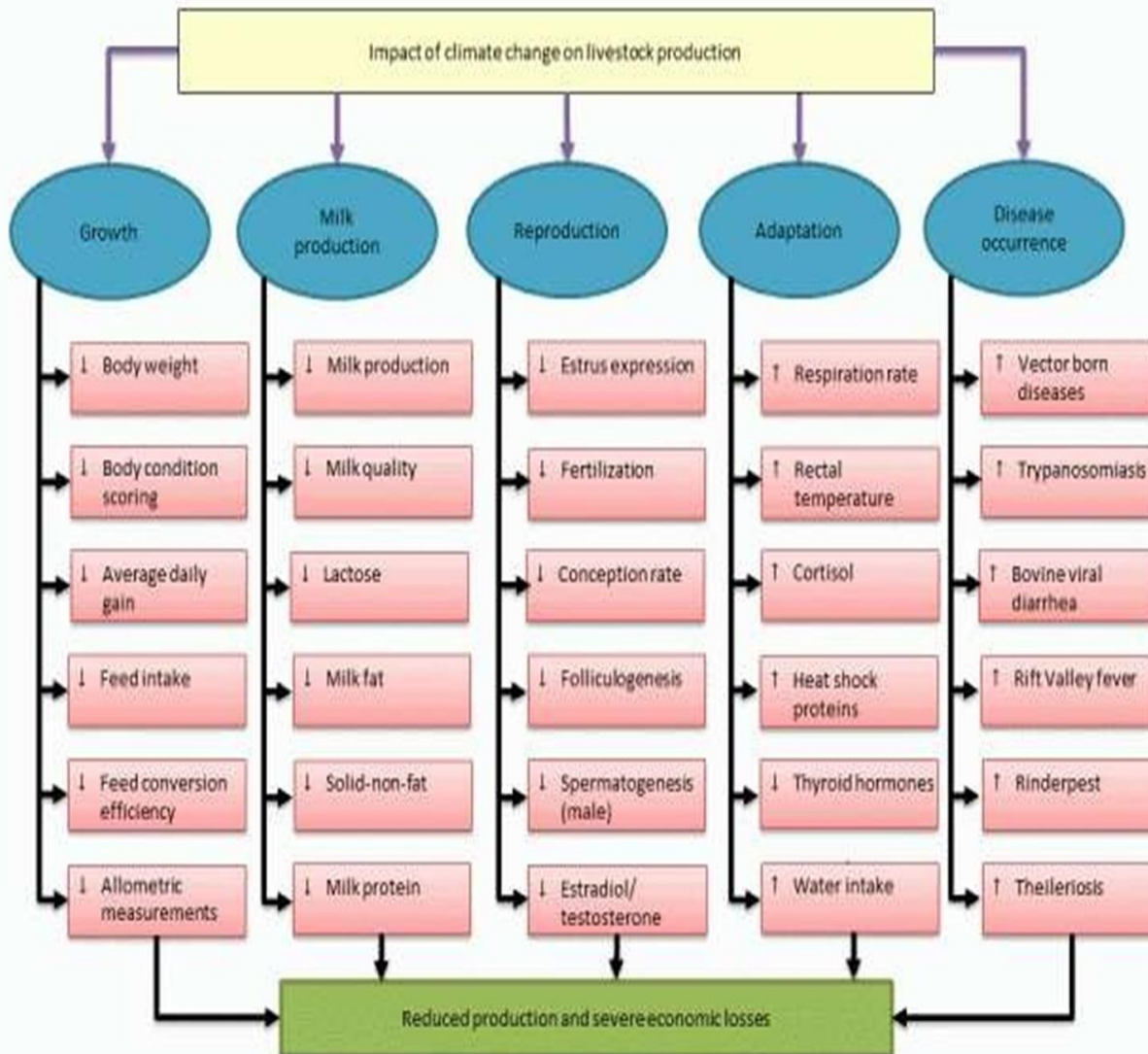


Fig. 1. Impact of climate change on livestock production



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## **Food Laws**

### **Bureau of Indian Standards (BIS)**

The Bureau of Indian Standards (BIS), the National Standards Body of India, resolves to be the leader in all matters concerning Standardization, Certification and Quality.

#### **Main Activities**

Harmonious development of standardization, marking and quality certification

To provide new thrust to standardization and quality control.

To evolve a national strategy for according recognition to standards and integrating them with growth and development of production and exports.



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# CONCLUSION

Livestock contribution to environmental problems is on a massive scale and its potential contribution to their solution is equally large.

The impact is so significant that it needs to be addressed with urgency.