



به نام خدا



# تولید فرآورده‌های غذایی پروبیوتیک: تهدیدها و فرصت‌ها

ارائه دهنده:

حمید عزت پناه

آذر ۱۳۹۱

# Human Health and Probiotics

wellbeing  
**Health**  
Quality

- ?
- **Probiotics and Prebiotics**
- **Nutritional Q.**, Keepability, Organoleptic Q., ...

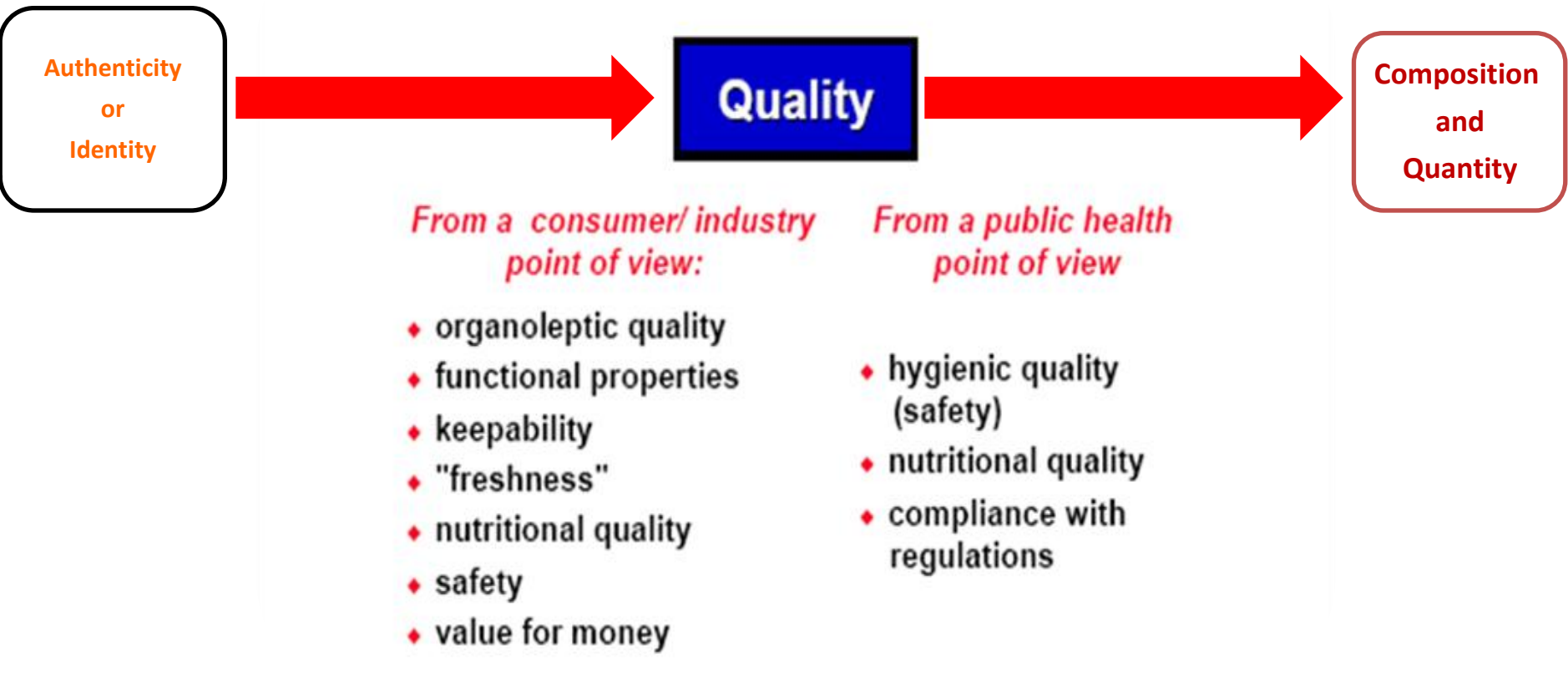
Feed Safety  
and  
Food safety

- Risk Analysis?
- Traceability and Lot Identification?
- Target Groups?
- Feed and Food safety objectives?

Food supply?

- Adulteration
- Hunger

# تقدم ارزیابی و ویژگی های مواد غذایی



# Probiotics in food

Health and nutritional properties  
and guidelines for evaluation

FAO  
FOOD AND  
NUTRITION  
PAPER

**85**

**Report of a Joint FAO/WHO Expert Consultation  
on Evaluation of Health and Nutritional Properties  
of Probiotics in Food including Powder Milk with Live  
Lactic Acid Bacteria**

Cordoba, Argentina, 1–4 October 2001

**Report of a Joint FAO/WHO Working Group on Drafting  
Guidelines for the Evaluation of Probiotics in Food**

London, Ontario, Canada, 30 April–1 May 2002

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# **7. Safety Considerations**

*7.1 Antimicrobial resistance profiles of probiotics*

*7.2 Safety of probiotics in humans*

## **8. Probiotic Product Specifications, Quality Assurance and Regulatory Issues**

***8.1 Regulatory issues***

***8.2 Appropriate labelling***

***8.3 Manufacturing and handling procedures***

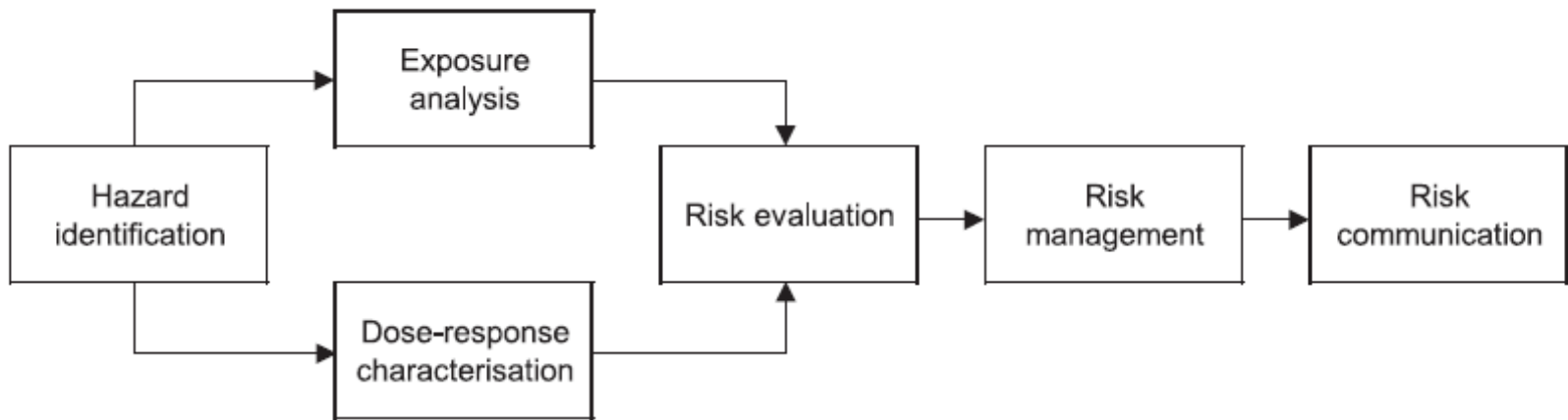
# 8.1 *Regulatory issues*

- A 'health claim' is defined as “a statement, which characterizes the relationship of any substance to a disease or health-related condition, and these should be based upon well-established, generally accepted knowledge from evidence in the scientific literature and/or recommendations from national or international public health bodies. Examples include 'protects against cancer'.



# 8.1 *Regulatory issues*

The new paradigm of risk analysis is making its way into regulatory food safety and focuses on a functional separation of the science-based risk assessment and risk management. However, the issue of communication is now also considered an important integrated part of risk analysis. Communication includes exchange between assessors and managers and two-way interaction with other interested parties. Within this concept, the transparency of the decision making process for food safety regulatory action is emphasized, as well as the importance of providing a vehicle for consumers and others to participate in the development process. Therefore communication efforts relative to the use of probiotics should be considered as an integrated part of the development of regulatory initiatives.



## Risk Analysis

## 8.2 *Appropriate labelling*

To clarify the identity of a probiotic present in the food, the Consultation recommends that the microbial species be stated on the label. If a selection process has been undertaken at the strain level, the identity of the strain should also be included, since the probiotic effect seems to be strain specific.

## 8.2 *Appropriate labelling*

There is a need to accurately enumerate the probiotic bacteria in food products in order to include them on the label. The label should state the viable concentration of each probiotic present at the end of shelf life (Reid et al., 2001c).

## 8.3 *Manufacturing and handling procedures*

To ensure that any given culture maintains the beneficial properties, the stock culture should be maintained under appropriate conditions and be checked periodically for strain identity and probiotic properties. Furthermore, viability and probiotic activity must be maintained throughout processing, handling and storage of the food product containing the probiotic, and verified at the end of shelf-life.

## **8.3 *Manufacturing and handling procedures***

Adequate quality assurance programmes should be in place. Good manufacturing practices should be followed in the manufacture of probiotic foods. The Consultation recommends that the Codex General Principles of Food Hygiene and Guidelines for Application of HACCP (CAC, 1997) be followed.

# Quality assurance

All planned and systematic actions  
necessary to provide  
adequate confidence that a  
product or service will satisfy  
given requirements for quality

*(ISO/UNCTAD/GATT)*

# GHP and GMP?

- **GMP**
- is the overall management of
- (that is, organizing, implementing and adhering to)
- **procedures,**
- **processes,**
- **control and**
- **other precaution** that: excludes, prevents, minimize and inhibits
- product failures in the broadest sense,
- and
- consistently yields safe,
- suitable foods of uniform quality,
- according to their intended use.
- **GHP**
- is similar, but only concerned with hygienic matters.

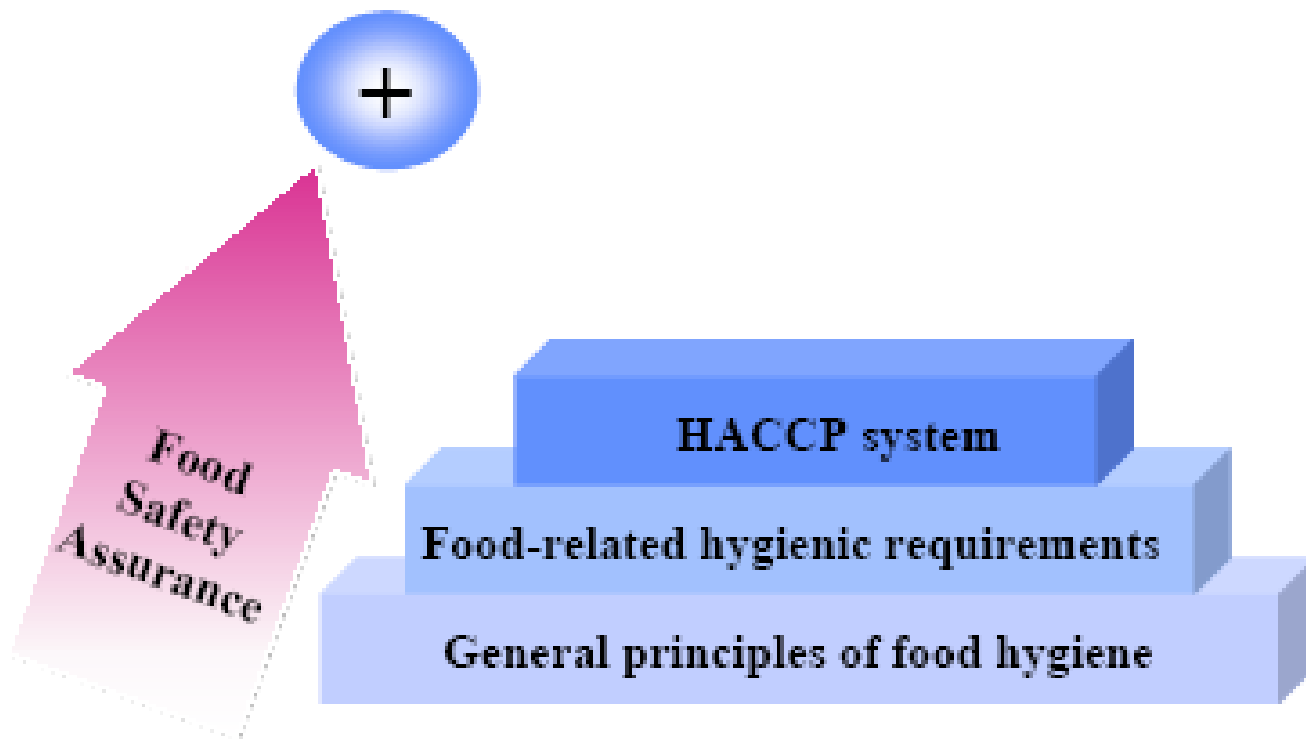


# GHP and GMP?

- **GMP**
- is concerned with the precautions
- needed to ensure adherence to
- all quality requirements and included
- food safety aspects,
- suitability aspects
- and
- other quality matters

## Key messages

- **Safe food is obtained by applying HACCP "from farm to fork"**
- **Hazards are all kinds of agents when present at unacceptable levels**
- **Control means "having things under control"**
- **Good Manufacturing Practice (GMP) and Good Hygienic Practice (GHP) are the basis of HACCP**
- **Anticipating hazards is the key to their prevention**



**Total Quality  
Management**

**HACCP**

**Food Quality  
Assurance**

**Food Hygiene**

# موارد مهم جهت دستیابی به ایمنی و کیفیت شیر خام

**Dairy Facilities, Pesticides and Nutrient Management**

**Feed**

**Animal Health & Biosecurity**

**Medicines and Chemicals Used on Livestock**

**Milking Management**

**Cooling and Storage of Milk**

**Facility and Equipment Sanitation**

**Shipping Animals**

**Staff Training and Communication**

**Milk and Meat Quality and Safety Troubleshooting Guides**

# Hygiene Scoring Card

Score: 1

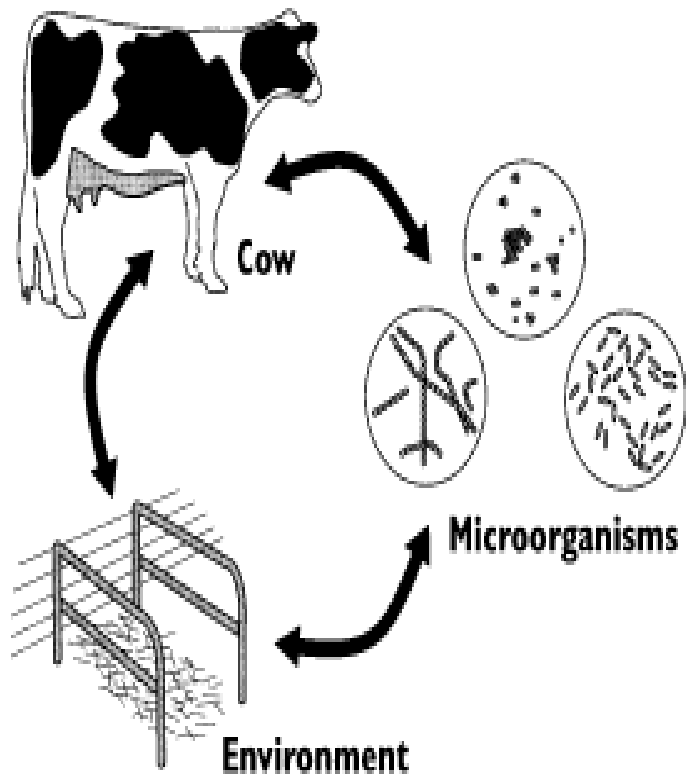
2

3

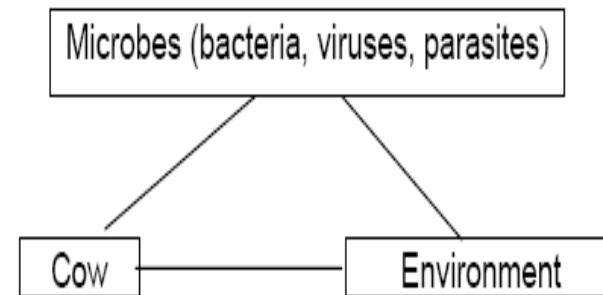
4

Udder





Relationship between disease, animals, infectious agents and the environment



**Animal + Infectious Agent + Environment = Disease**







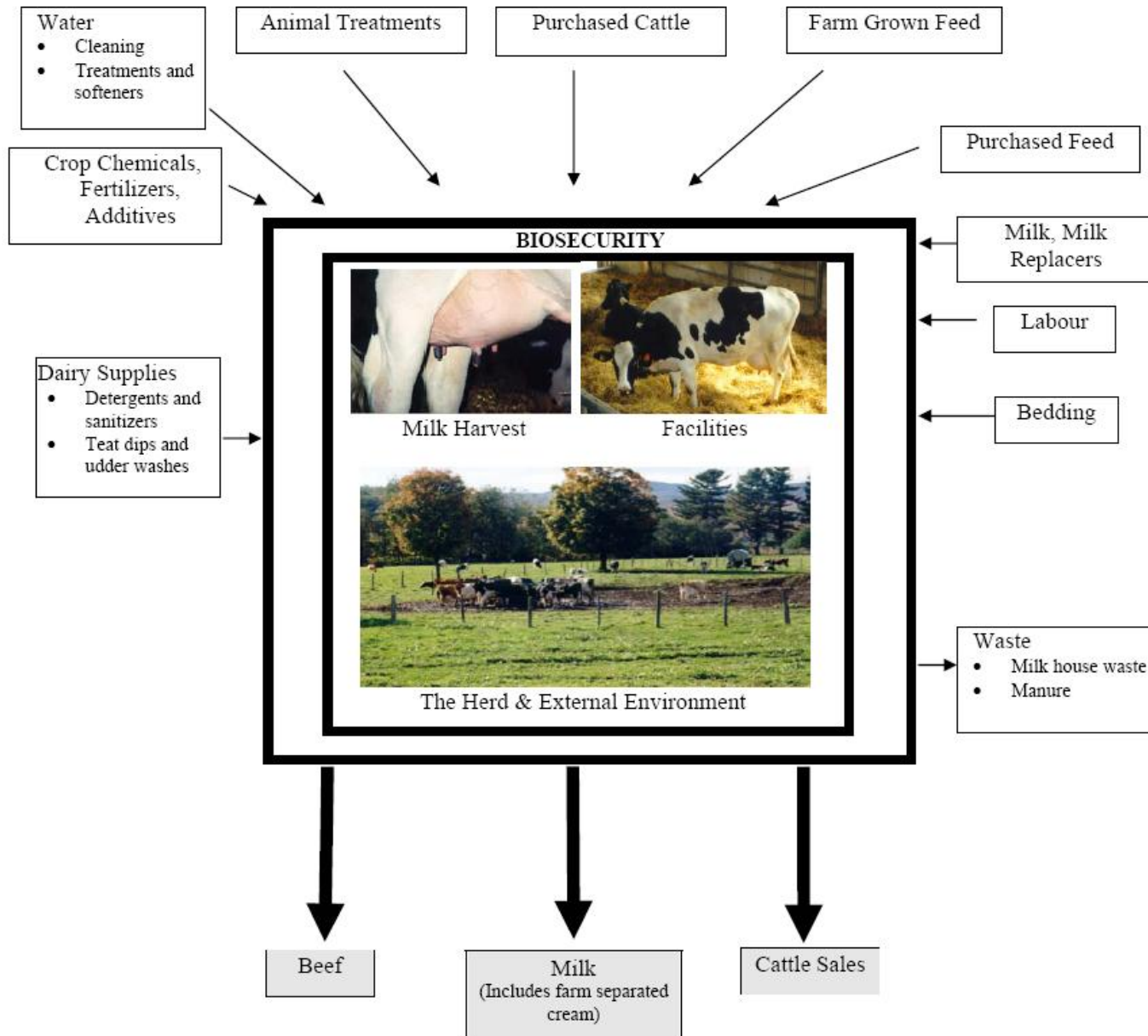






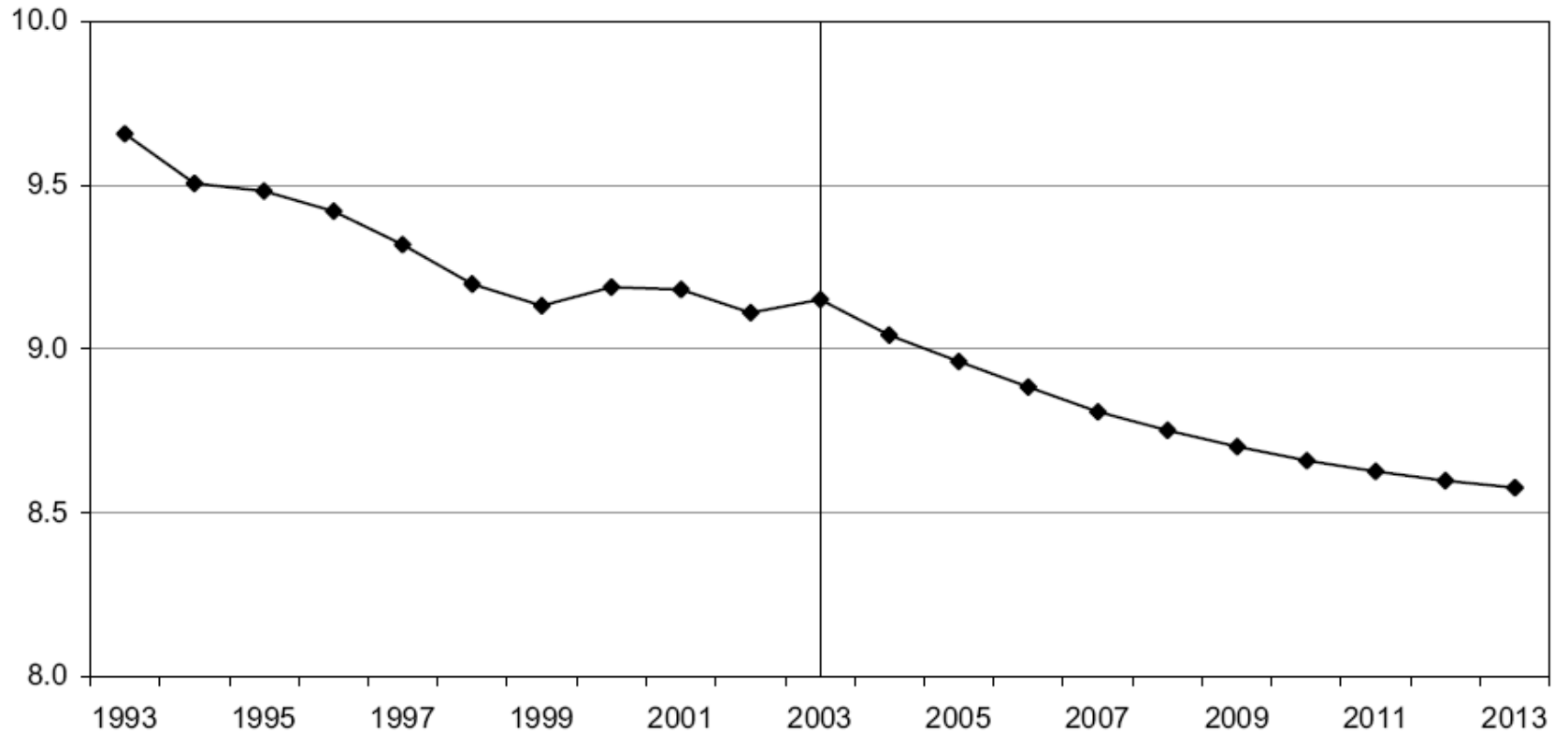






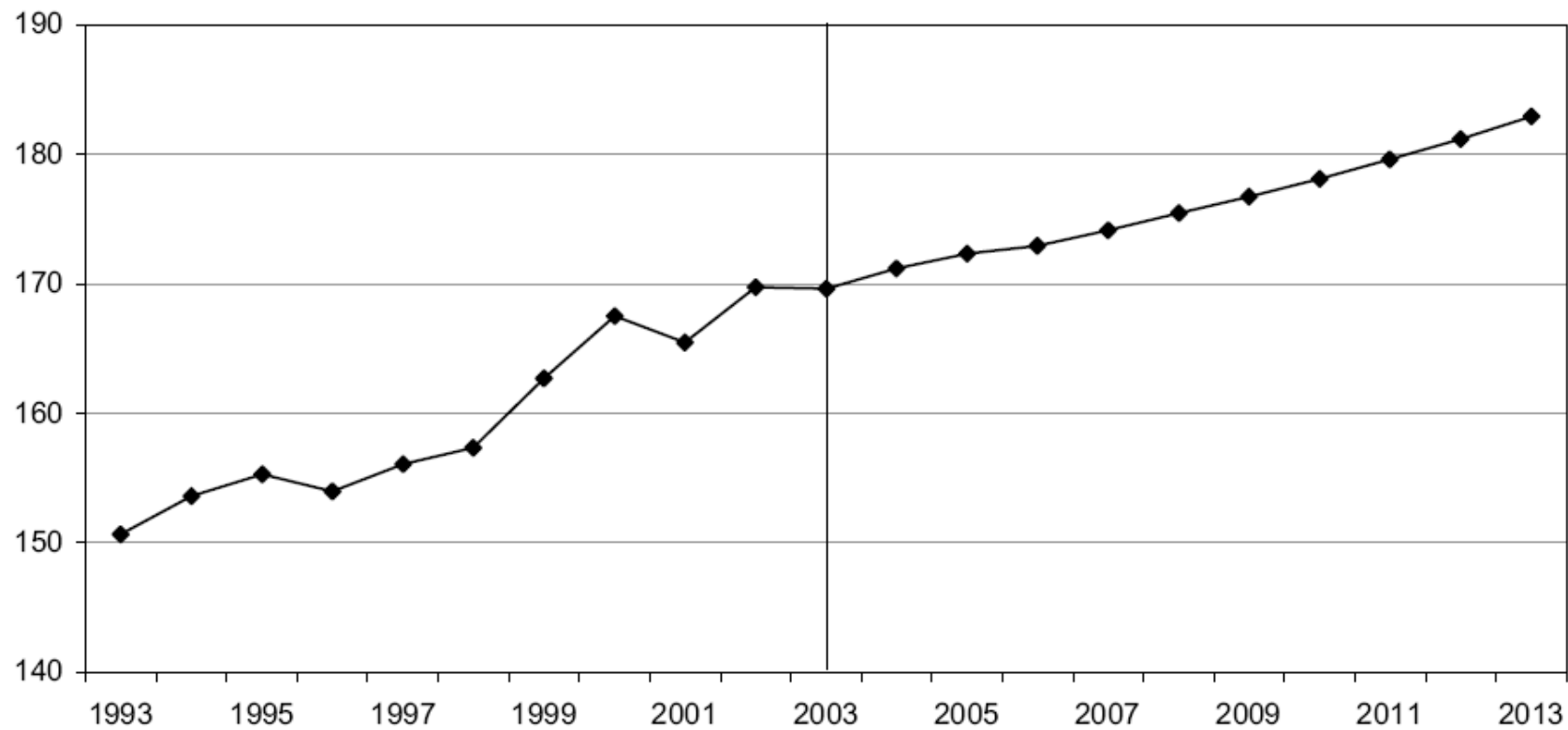
## U.S. Dairy Cows

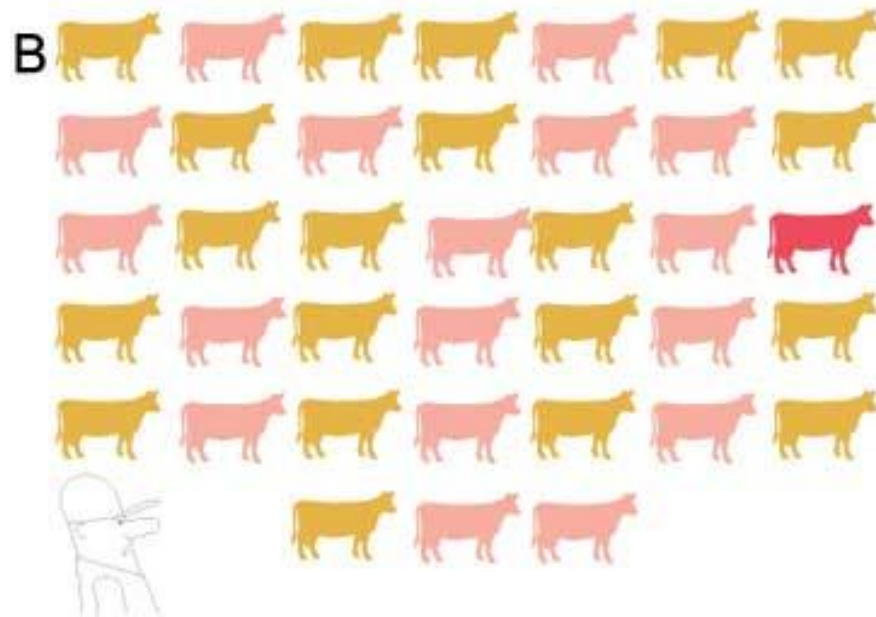
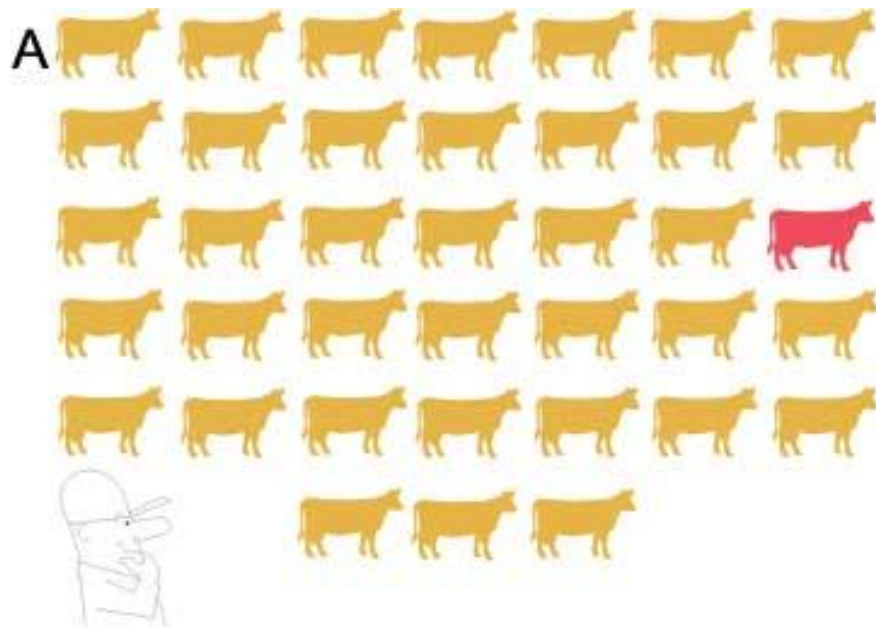
Million Head



## U.S. Milk Production

Billion Pounds











پرداخت بهای شکر خام دریافتی در کارخانه بر اساس شمار سلول های سوماتیک

• انگلیس ← بیش از ۱۰۰۰۰۰ سلول در میلی لیتر

• آمریکا (پنسیلوانیا) ← بر اساس قیمت پنیر (قیمت پایه شیر = ۲۶۰ تومان)

• کمتر از ۳۵۰۰۰۰ ← پاداش (مثال تعداد ۲۰۰۰۰۰) ۸۴ تومان پاداش

• بیش از ۳۵۰۰۰۰ ← جریمه (مثال تعداد ۱۴۵۰۰۰۰) ۵۶ تومان جریمه

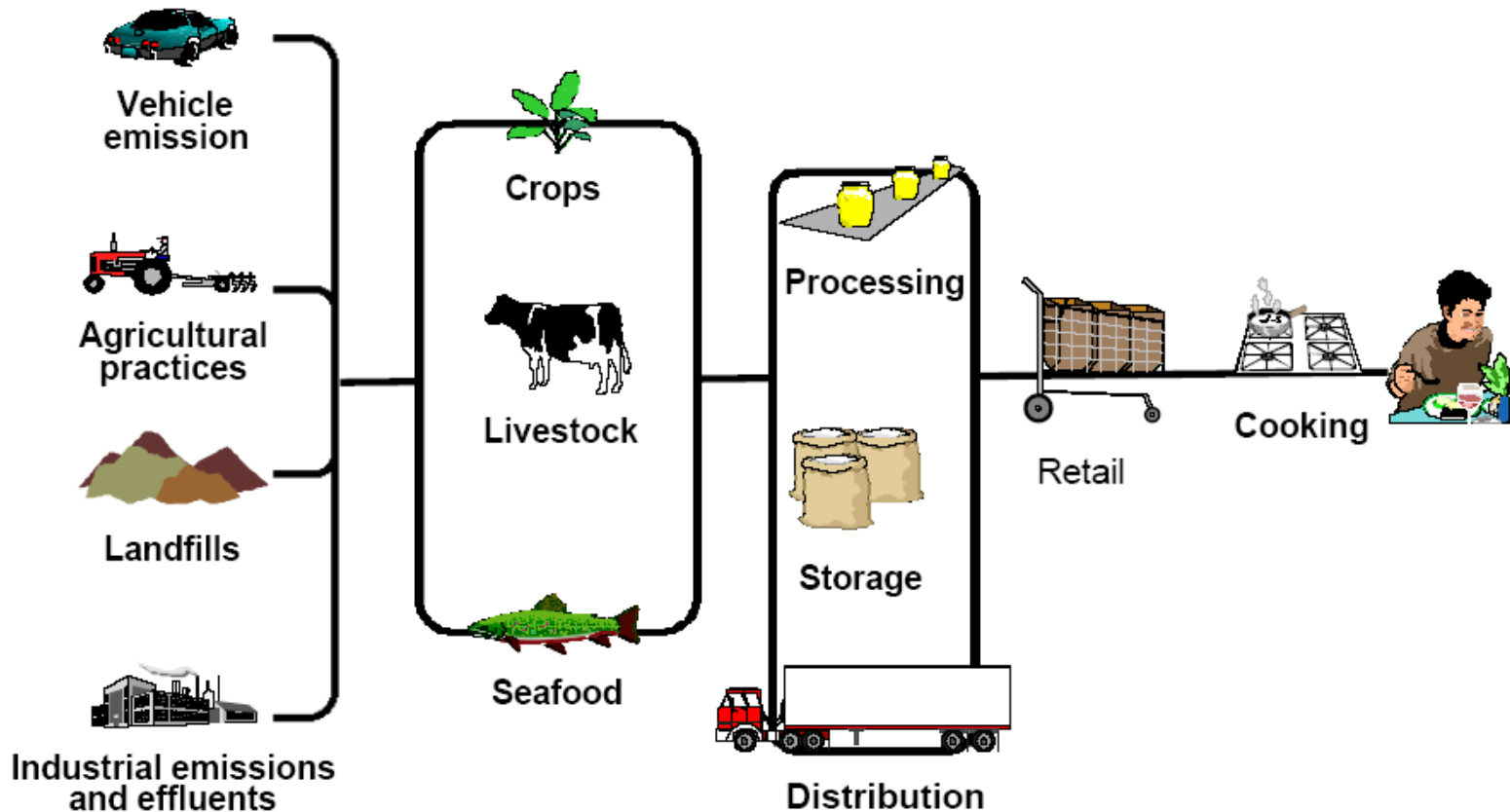
• ایران (قیمت پایه شیر = ۲۸۰ تومان)



جایزه پرداختی	تعداد سلولهای سوماتیک	درجه بندی شیر
۳۰ ریال به ازای هر لیتر شیر	کمتر از ۲۰۰۰۰۰ سلول در میلی لیتر	درجه ۱
۱۰ ریال به ازای هر لیتر شیر	بین ۲۰۰۰۰۰-۵۰۰۰۰۰ سلول در میلی لیتر	درجه ۲
-	۵۰۰۰۰۰-۱۰۰۰۰۰۰ سلول در میلی لیتر	درجه ۳

# Total Food Chain Approach

## Process Approach vs. Product Approach



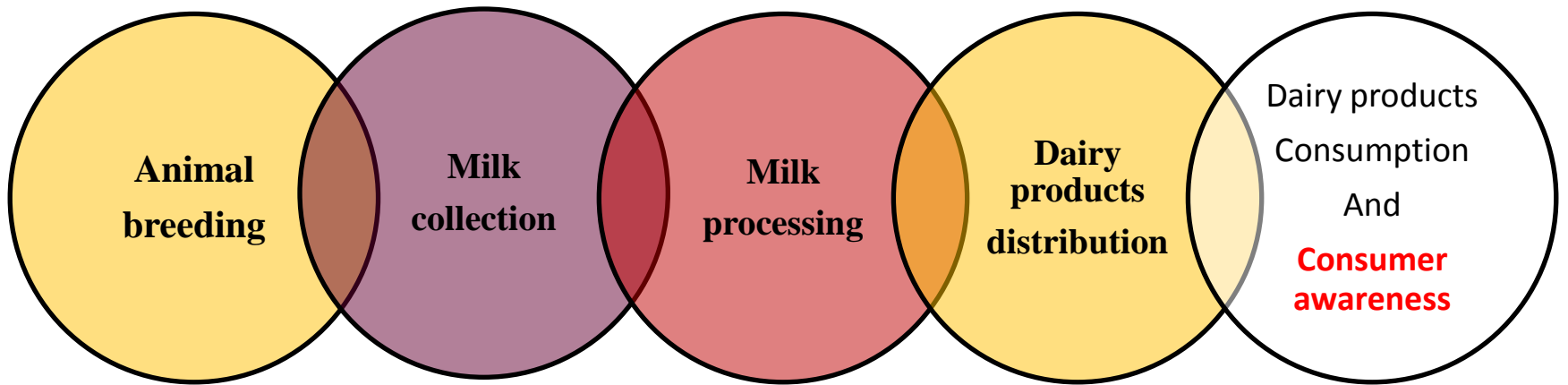
# GENERAL PRINCIPLES OF FOOD HYGIENE

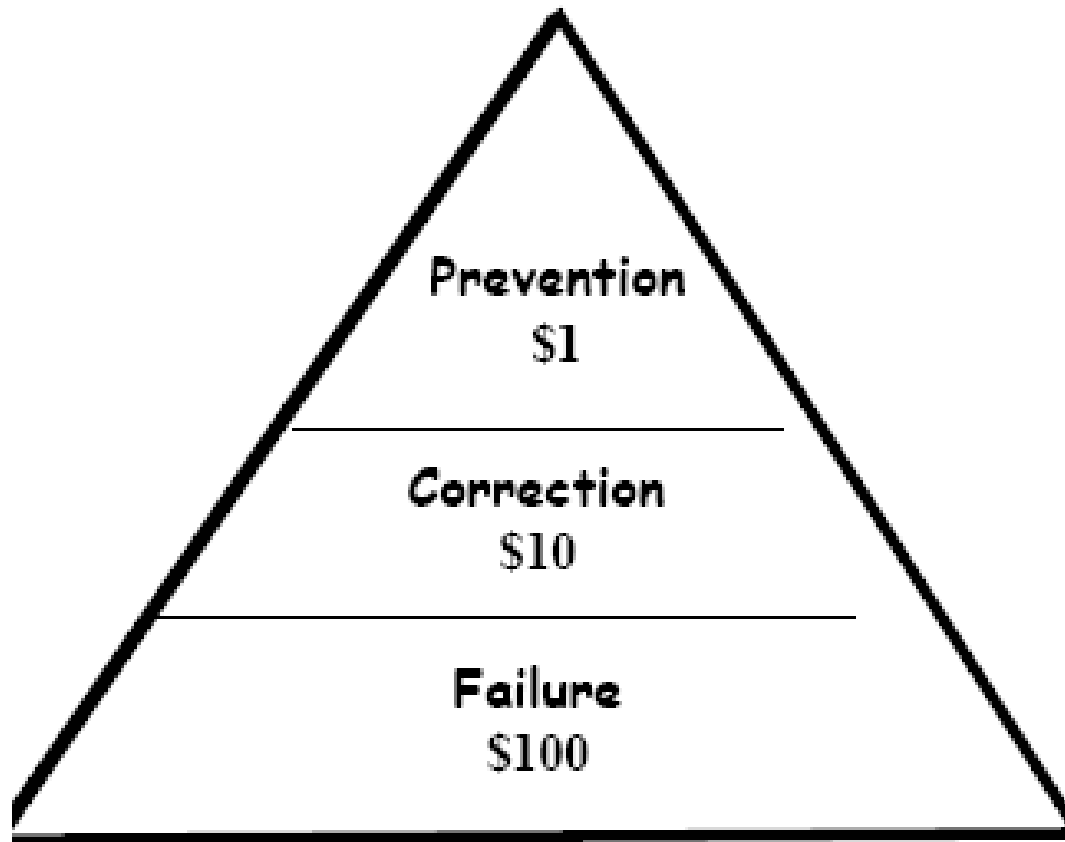
*CAC/RCP 1-1969*

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# 2.3 DEFINITIONS

*Primary production* - those steps in the food chain up to and including, for example, harvesting, slaughter, milking, fishing.





**Figure 1: Prevention Savings**

**\$1 spent on prevention will save \$10 on product correction and \$100 to deal with product failure.**



**Iranian Top Brand**

**National Standards**

**CAC Standards**

**Quality Management System**

**Food Safety Management System**

**HACCP**

**GHP**

**GMP**



# Food for children Children for happiness



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