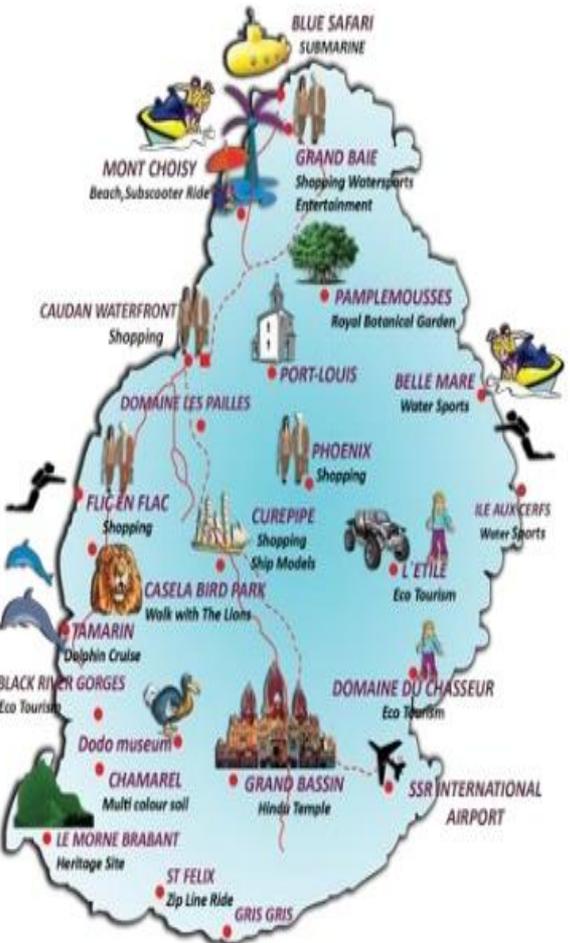




UNIVERSITY OF MAURITIUS

# CONSUMERS TRUST & FOOD SAFETY

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University of Mauritius



# Our Festivals

Our population coming from three continents has brought traditions and beliefs from their ancestral countries. Religious festivals are celebrated in a spirit of peace and harmony throughout the year.

**"God created Mauritius first, and then made a copy which he called Heaven."**  
- Mark Twain



Easter



Eid Ul Fitr



Holi



Cavadee



Diwali



Spring Festival



WHERE DO WE EAT?



# THE FOOD INDUSTRY

## WHOM ARE WE TALKING ABOUT?

LOCAL PRODUCTION

IMPORTED PRODUCTS

PRIMARY  
PRODUCERS

LARGE, MEDIUM,  
SMALL, HOME-BASED  
FOOD BUSINESSES

REGULATORS

STREET  
FOODS

DISTRIBUTORS

RESTAURANTS/  
HOTELS

FOOD  
SCIENTISTS

RETAILERS

SOCIAL  
MEDIA

SERVICES

C O N S U M E R S

# WHAT ARE WE TALKING ABOUT?

## The Well-Traveled Salad. Do You Know Where Your Food Has Been?

As consumers, many of us fail to recognize that even our domestic and local food supplies are part of a global network. The daily activity of consuming food directly links our health as humans to the health of crops and produce, food animals, and the environments in which they are produced.



### LETTUCE

Canada, Chile, Dominican Republic, Mexico, Peru, USA



### CUCUMBERS

Canada, Honduras, India, Mexico, Spain, USA



### FETA CHEESE

Canada, Denmark, Egypt, Germany, Greece, Israel, Italy, Turkey, UK, USA



### VINAIGRETTE

Argentina, Brazil, Canada, Chile, China, France, Germany, Greece, India, Indonesia, Italy, Mexico, Morocco, Peru, Portugal, Spain, Thailand, Tunisia, Turkey, USA, Vietnam



### OLIVES

Greece, Israel, Mexico, Spain, USA



### SPROUTS

Argentina, Australia, Bangladesh, Canada, China, Egypt, France, India, Morocco, Nepal, Pakistan, South Africa, Spain, Turkey, USA



### CROUTONS

Argentina, Australia, Brazil, Canada, China, France, India, Mexico, Netherlands, Poland, Russia, Switzerland, Uruguay, USA, Vietnam



### TOMATOES

Canada, Dominican Republic, Holland, Israel, Italy, Mexico, USA



### ONIONS

Canada, China, Germany, India, USA



### MANDARIN ORANGES

Israel, Mexico, Morocco, South Africa, Spain



A "One Health" approach to food safety—bringing together expertise and resources from the clinical, veterinary, wildlife health, and ecology communities—has the potential to reveal the sources, pathways, and factors driving the outbreaks of foodborne illness and possibly prevent them from occurring in the first place.

NOTE: Countries are listed in alphabetical order and not by volume of export.



# CONSUMERS' CONCERN

- Quality & particularly **SAFETY** of foods
- Pathogens
- Pesticides
- Antibiotics and hormones in foods
- Allergens
- Heavy metals
- GMO
- Environmental contaminants
- Migration from packaging materials

# INCREASED CONSUMER FOCUS ON FOOD SAFETY-WHY?

BESIDES MORE FAMILIAR SOURCES OF RISK

-GLOBALISATION OF FOOD TRADE

-INCREASINGLY COMPLEX SUPPLY CHAINS (AN AGGREGATION OF MULTIPLE SUPPLY CHAINS)

-CHANGES IN FOOD PRODUCTION METHODS

-CHANGES IN CONSUMER BEHAVIOUR

## NEW RISKS

-MAD COW DISEASE

-DIOXIN IN CHICKEN

-AVIAN INFLUENZA

-*NEW STRAINS OF E. COLI*

-*L. MONOCYTOGENES*,

-*VIBRIO VULNIFICUS*

-*FOOD FRAUD*

# DWINDLING CONSUMER TRUST IN FOOD

## HIGH PROFILE SCANDALS HAVE ROCKED PUBLIC TRUST

- **Food fraud** -Horse meat scandal
- **Food adulteration**- synthetic vanilla for natural; honey; milk, Red Sudan dye in food; Melamine in milk
- **Food borne outbreaks**

People want to know more about the food they and their families are eating

**FOOD SAFETY  
INCIDENTS**

Increasing role &  
influence of media

**HIGH PROFILE/DAMAGING  
SCANDALS**

**DWINDLING CONSUMER  
TRUST IN FOOD**



# CONSUMERS NEED INFORMATION

- **Method of food production-** selection of products based on production practices (use of modern biotechnology, GM, Organic farming)
- **Conditions** in which the animals have been slaughtered and handled?-halal foods
- **Origin** of the food
- **Composition** of the food-What is in the food?

Explosion of social  
networking

New media

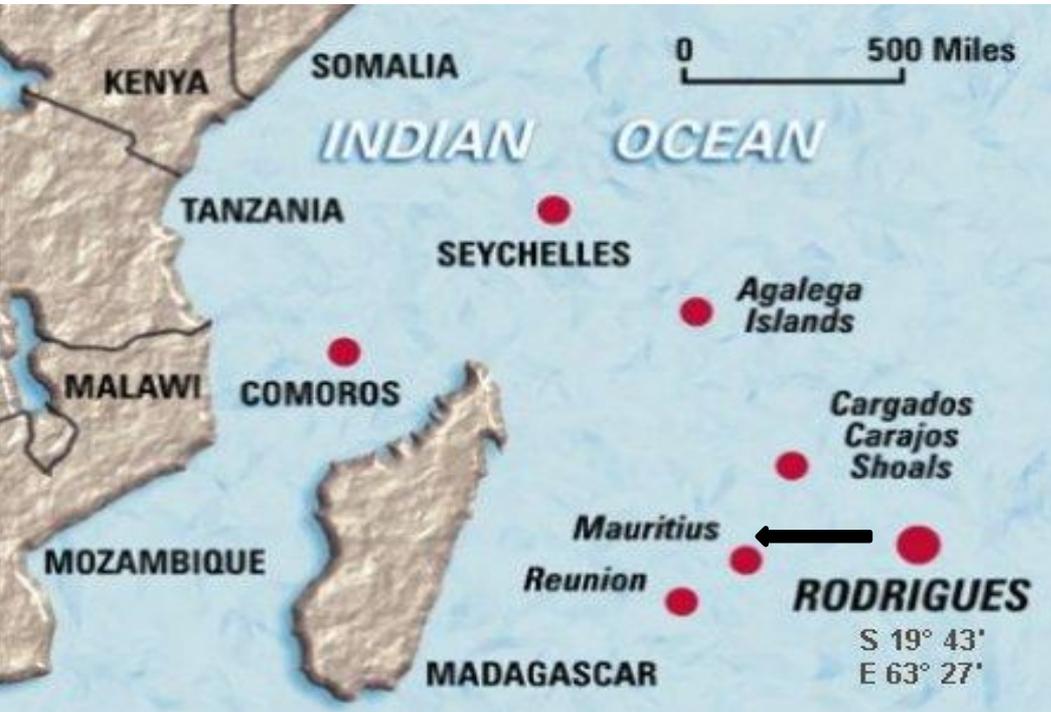
Changing structure  
of our food system

Increasing influence  
of global brands

CREATES NOVEL ENVIRONMENT

Food industry should develop new  
approaches to build consumer trust

# FOOT AND MOUTH DISEASE IN MAURITIUS



Mauritius imports live cattle , goat from Rodrigues, a dependency of Mauritius, situated at 350 miles on the North-East coast of Mauritius



Animal infected	No.slaughtered
Cattle	527
Sheep / goats	1068
Swine	190
Goats	12

*“6 cattle imported in 15 July 2016 were introduced into the local herd including sheep and goats. They showed first signs 14 days after introduction into this herd. This infection spread to neighbouring farms and affected local herds”*

# CONSEQUENCES

- Temporary ban on the import of animals and of meat from Rodrigues
- The whole of the island was declared as quarantine zone
- EU ban on the importation of meat (beef, mutton, pork, wild boar and goat) and related products from Mauritius, Rodrigues, Madagascar, Seychelles and Comoros

# EFFECT ON BREEDERS

*Cattle Farmer : Traumatized: slaughtering of 37 cattle*

*- Never witnessed this in his 30 years of experience*

*- Compensation of Rs 35000 (1000 USD per cattle )*

*“was not enough -already paid for vaccines done earlier)*

Sheep farmer could not save his 50 sheep despite vaccines

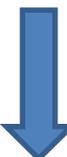
Compensation of Rs6000 (172 USD)for goat, sheep, pigs

In just a few days: farmer lost around 66 cattle and 66 sheep

Mental stress- Everything was finished in a few days

- TRUST IN REGULATORY CONTROL WAS SHAKEN; "

# EFFECTS ON FOOD BUSINESSES



## BUSINESS

Supermarket : drop in sale of beef, mutton and **pork** by 25%

Beef trader: business dropped **by 90%**

More dreadful situation for cattle importers , especially that the Eid Ul Adha festival was close

Importers who had already taken deposits had to refund buyers since no more import was allowed from Rodrigues

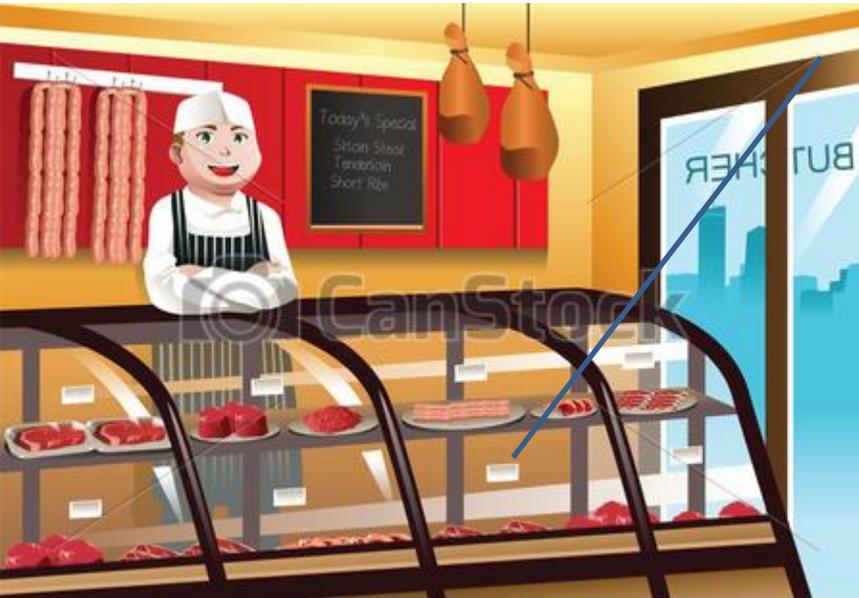
# RESPONSE OF CONSUMERS I

- General director of chain of supermarkets: “Consumers are preferring imported meat compared to local, fresh meat”  
*“People are afraid to buy local cattle”*
- Consumer org. :

## SHIFT OF CONSUMPTION

- 1) fish: ↑ by 25 %
- 2) seafood products - ↑ by 10-15%
- 3) vegetables- ↑ in sale by 8-12%
- 4) Canned food products(sardine): ↑ in sale by 10-15%.
- 5) Paneer(cottage cheese): ↑ in sale by 20-25%

# RESPONSE OF CONSUMERS II



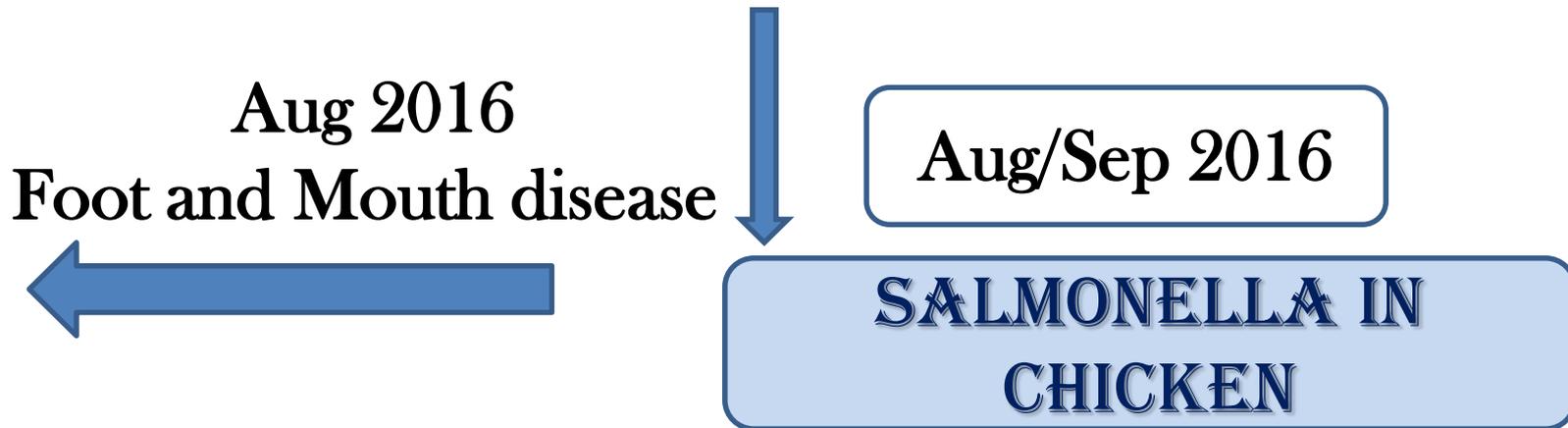
© Can Stock Photo - csp18434062

*Association des  
consommateurs de l'île  
Maurice*

Customers are barely coming to the shops. ...People are afraid of buying meat thinking that it could be infected

Mauritians have been refraining from consuming meat, and have, instead, turned to chicken???? to a greater extent

# SALMONELLA IN MAURITIUS



65,000 chickens consumed daily in Mauritius

# **SALMONELLA IN MAURITIUS I**



- **65 000 chicks and 50 000 eggs destroyed**
- **161 farms affected**
- **Farms were inspected & separation of sick chicks**
- **Buried or burnt**



# Large farms - Assure consumers that their meat are safe for consumption

## AVIS AUX CONSOMMATEURS

# PAS DE SALMONELLE DANS NOS POULETS

Nous voulons rassurer nos consommateurs que nous n'avons pas de problème sanitaire chez Avipro et que **TOUS les produits Chantefrais sont propres à la consommation**. Nous n'avons enregistré aucun cas de salmonelle.

Chez Avipro, nous pouvons garantir que nos volailles sont saines car :

- 1. Nous vaccinons contre la salmonelle les parents de nos poulets**  
Ce qui signifie que les poulets que nous consommons sont naturellement immunisés contre la bactérie.
- 2. Nous effectuons des contrôles à toutes les étapes**  
Chaque maillon de la chaîne est contrôlé et tout ce qui entre sur nos fermes (humains, matériaux...) est systématiquement désinfecté. Des prélèvements réguliers sont effectués et testés dans notre laboratoire pour assurer que les normes d'hygiène sont parfaitement respectées. Notre équipe est composée de vétérinaires, techniciens et contrôleurs qualité.
- 3. Nous pouvons suivre chaque lot individuellement**  
Nous veillons à l'alimentation et la santé de nos volailles sur chacune de nos fermes. Pour accéder à l'abattoir, chaque lot doit obtenir l'approbation sanitaire du vétérinaire qui certifie que le lot est sain. Notre système de traçabilité nous permet de répondre aux questions des consommateurs sur tous nos produits aux différentes étapes de production.
- 4. Notre système de biosécurité est audité par des instances internationales externes**  
Toute notre chaîne de production est certifiée ISO 9001 et notre abattoir HACCP.

La Direction

POUR TOUTE INFORMATION COMPLÉMENTAIRE

# SALMONELLA -CONSEQUENCES

- ↓ in sale of meat & poultry in Meat shops & supermarkets
- 4 out of 10 consumers did not consume chicken
- ↑ in the sale of
  - Fish by 25%
  - Seafoods by 10-15%
  - “*A blessing in disguised*” - Hassen Taher Seafood
- fruits and vegetables by 10-15%
- canned foods - 10-15%
- vegetarian cheese (paneer) - 20-25%



Pathogens *Salmonella* &  
*Campylobacter jejuni* in  
manure

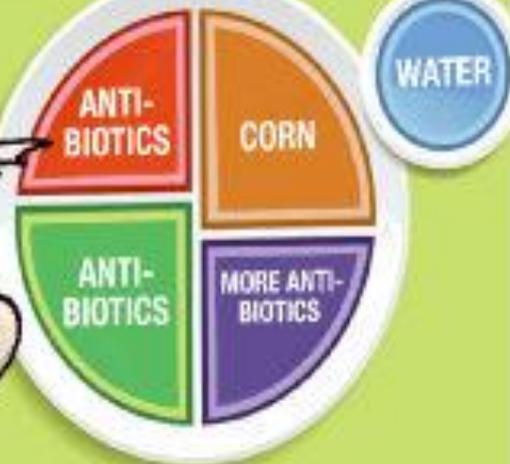
Can the veggies be contaminated????

Concerns  
beyond chicken



PITY THE POOR HUMANS WHO HAVE TO EAT US!

FDA FOOD ANIMAL PLATE



DRUG RESISTANT

E. COLI

SALMONELLA

ChooseMYFEED.gov

# LESSONS LEARNT

**Not just small or family businesses  
Even the MOST REPUTABLE COMPANIES are susceptible**

**Food industries/  
food producers  
realized the need for**

**for greater  
*integrity,*  
*transparency &*  
*traceability*  
throughout the  
supply chains**

**To increase  
customers  
trust in  
their  
products**

# FOOD SAFETY INCIDENT

```
graph TD; A[FOOD SAFETY INCIDENT] --> B[Most probably unintentional-non existing or non functional control]; A --> C[Rarely criminal intentions]; B --> D[Need to respond quickly and communicate more effectively with consumers and other partners]; C --> D;
```

Most probably  
unintentional-non  
existing or non  
functional control

Rarely criminal  
intentions

Need to respond quickly  
and communicate more effectively with consumers  
and other partners

# WHOM DO WE TRUST TO REGULATE THE SAFETY OF SOME OF THE MOST BASIC FOODS WE CONSUME ?

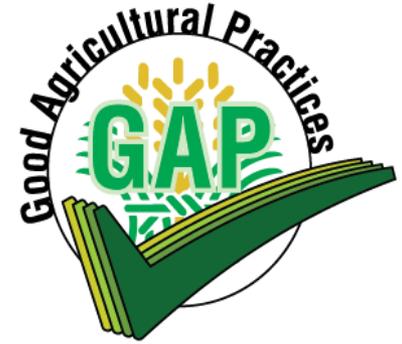
An independent expert

or the industry for whom food business should be a profitable business

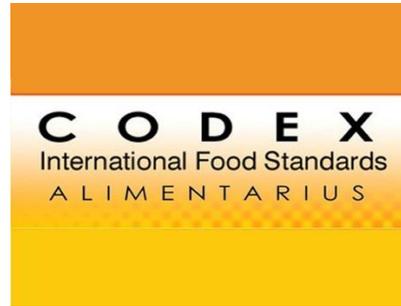
Third-party verification and certification to food safety standards have become a wide and growing trend in the food industry



**CERTIFICATION**



dreamstime.com



**Can Standards build trust in the foods we eat?**

# TRENDS –PROLIFERATION OF STANDARDS FOR FOOD SAFETY

	Public standards	Private standards
MANDATORY	Regulations	Legally-mandated private standards
VOLUNTARY	Public voluntary standards	Voluntary private standards

# TYPES OF STANDARDS



## **PROCESS STANDARDS**

specify how the product should be produced



## **PRODUCT STANDARDS**

specify the features and characteristics of the food product



## **INFORMATION STANDARDS**

concerned with labelling & other communications that go with the product

# IMPORTANCE OF FOOD STANDARDS

- Allow international trade
- Protect the health of consumers
- CREATE CONFIDENCE OF CONSUMERS IN THE FOOD SYSTEMS (FROM FARM TO TABLE)
- Help consumers to make informed decisions during food purchase
- A competitive strategy to enhance product marketing
- Food product differentiation
- MEANS TO COMMUNICATE PRODUCT QUALITY AND SAFETY TO CONSUMERS
- Do consumers however understand these signs?

# CODEx INTERNATIONAL FOOD STANDARDS-

- Benchmark standards for food safety
- More than 200 food standards
- More than 100 guidelines and codes of practice for food production and processing
- Maximum permissible levels have been established for thousands of food additives, contaminants, pesticides and veterinary drug residues

# ISO FOOD STANDARDS

Out of more than 21000 ISO International Standards, about 1 000 are specifically dedicated to all aspects of food

MANUFACTURING

AGRICULTURAL  
MACHINERY

SAFETY

PACKAGING

LOGISTICS

STORAGE

TRANSPORTATION

LABELLING

# The ISO 22000 family focuses on different aspects of food safety management

[ISO 22000:2005](#)- the overall guidelines for food safety management.

[ISO 22004:2014](#) provides generic advice on the application of ISO 22000

[ISO 22005:2007](#) focuses on traceability in the feed and food chain

[ISO/TS 22002-1:2009](#) contains specific prerequisites for food manufacturing

[ISO/TS 22002-2:2013](#) contains specific prerequisites for catering

[ISO/TS 22002-3:2011](#) contains specific prerequisites for farming

[ISO/TS 22002-4:2013](#) contains specific prerequisites for food packaging manufacturing

[ISO/TS 22003:2013](#) provides guidelines for audit and certification bodies

## From farm to plate

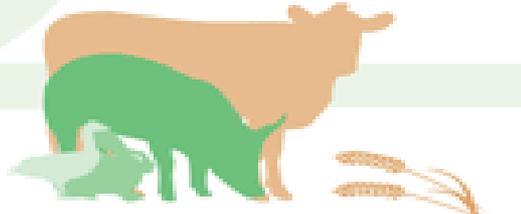
Make food safe with **ISO 22000** for food safety management!

### 5 TIPS:

- Keep food **clean**
- **Separate** raw and cooked food
- **Cook** food thoroughly
- Keep food at **safe temperatures**
- Use **safe water** and **raw materials**

#safefood

## 2



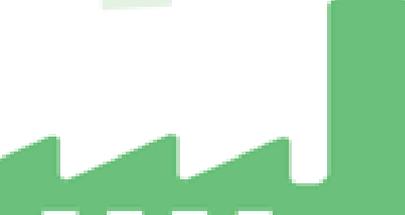
- Safe farming **ISO/TS 22002-3**
- Safe feed production **ISO 22002-6**  
(in development)

## 3



- Safe transport and storage **ISO 22002-5**  
(in development)

## 4



- Safe packaging **ISO 23560**
- Traceability **ISO 22005**

## Safe cooking



- Detection of salmonella
  - in food **ISO 6579**
  - in water **ISO 19250**
- Detection of listeria **ISO 11290-2**

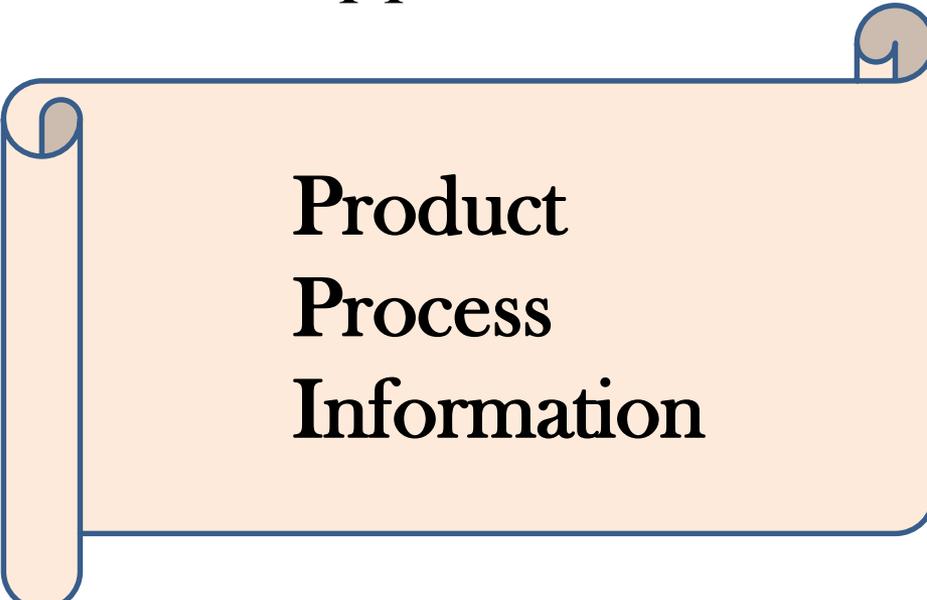
## 6



- Safe catering **ISO 22002-2**

# MAURITIAN FOOD STANDARDS

The MSB has worked with all stakeholders of the food industry to develop new standards/ adopt several ISO deliverables, Codex documents, as well as foreign standards to support the “Farm-to-Fork” concept



**Product  
Process  
Information**

**standards**

<b>REFERENCE Number</b>	<b>TITLE</b>	<b>BASIS OF STANDARD</b>
<b>MS ISO 22000</b>	<b>Food safety management systems -- Requirements for any organization in the food chain</b>	<b>ISO 22000</b>
<b>MS ISO TS 22002-5</b>	<b>Prerequisite programmes on food safety -- Part 5: Transport and storage</b>	<b>ISO TS 22002-5</b>

REFERENCE NUMBER	TITLE	BASIS OF STANDARD
<b>MS ISO TS 22002-6</b>	<b>Prerequisite programmes on food safety -- Part 6: Feed production</b>	<b>ISO TS 22002-6</b>
<b>MS ISO TS 34700</b>	<b>Animal welfare management -- General requirements and guidance for organizations in the food supply chain</b>	<b>ISO/WD TS 34700</b>
<b>MS ISO TS 22002-6</b>	<b>Prerequisite programmes on food safety -- Part 6: Feed production</b>	<b>ISO TS 22002-6</b>
<b>MS ISO TS 34700</b>	<b>Animal welfare management -- General requirements and guidance for organizations in the food supply chain</b>	<b>ISO/WD TS 34700</b>

REFERENC E NUMBER	TITLE	BASIS OF STANDARD
MS 184 - 2	Specification for Good Agricultural Practices for Crop Production - MauriGAP- Part 2-Advanced requirements	LOCAL GAP
MS 184 - 3	Specification for Good Agricultural Practices for Crop Production - MauriGAP - Part 3-GlobalGAP	Local GAP
MS 195	Good Aquaculture Practice	CAC RCP 52

# BUILDING TRUST IN FOOD

Multidimensional



complex issue

- Need for a **MORE COORDINATED** and **HOLISTIC** approach to
  - identify
  - monitor &
  - eliminateweak links in the supply chain from farm to fork
- Need to be **PROACTIVE** in understanding, planning and responding to food trust concerns
- Create and consolidate that trust by educating the public

# CONSUMER EDUCATION

- CONSUMER EDUCATION - A PILLAR IN TRUST
- People learn about their food from a number of growing varied sources-how reliable?
- **Increased Communication is Key to Building Consumer Trust:** Industries should TALK MORE to consumers to build trust in the food system, before, during and after a food incident
- Use social media campaigns, blogging large scale promotional events, or simple face-to-face interactions with consumers



# BUILDING TRUST

Consumers

Food  
industry

Regulatory  
body

JOINT  
MULTI-  
SECTORAL  
EFFORTS

Media

University

*“They don’t care how much you know until they know how much you care!”*

Theodore Roosevelt

*Thank You*



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