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*In
a
nutshell*

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Practicing Good Agriculture
...the vital link...
in the food safety chain

June 2003

Inter-American Institute for Cooperation on Agriculture



Access to knowledge and information is indispensable to making informed choices and decisions. The *In a Nutshell* series provides relevant information, in a reader friendly manner, on issues of importance to the sustainable development of Caribbean agriculture in the context of an increasingly dynamic open market environment.



Fresh fruits and vegetables are important to health and well being. Assuring consumers of the safety of these products is a major responsibility of the agriculture and food production system.

This issue provides information on Good Agricultural Practices (GAP) for fresh fruit and vegetable production in an attempt to enhance knowledge, improve farming techniques and contribute to the overall goal of producing high quality and safe food products. It is not intended as a manual to implement GAP. It is intended to introduce and educate all interested readers about good agricultural practices.

To learn more about GAP, readers are encouraged to:

- contact their national IICA Offices or IICA's Agricultural Health and Food Safety programme in the Trinidad & Tobago office,
- or visit the website of the Food and Agriculture Organisation (FAO) at www.fao.org to obtain a copy of the Framework for Good Agricultural Practices, developed in June 2002.

SO, ... if you are

**a farmer, and/or processor,
a retailer and/or distributor,
an agricultural planner/technician,
a scientist, or a health professional,
a consumer,
an educator and/or a student,
or simply an interested reader. . .**

. . . then keep on reading!

1. We ALL have a Right to Safe Food

- *fresh fruit and vegetable consumption is increasing!*

Consumers are becoming more health-conscious. They are demanding more and more health foods, including convenient, ready-to-eat salads, pre-cut vegetable & fruit packs from supermarkets and food retailers.

To meet this demand, food imports from all around the world are increasing to ensure a year-round supply. This has also exposed consumers to an increased number of safety hazards that can cause food borne diseases (FBDs).



- *concerns about food safety are increasing!*

Consumers will avoid buying and eating certain produce if the foods have been linked to a food borne disease or, if there is some concern about their safety.

Fresh fruit and vegetables are increasingly being associated with illnesses caused by FBDs which result in significant human suffering. Children, pregnant women, the sick, the poor and the elderly are particularly at risk.

• *cases of food borne illnesses are increasing!*

Almost 2 million children die each year from diarrhoeal diseases caused by contaminated food and water (World Health Organisation estimates).



Even countries with the best food safety systems, experience a high number of cases of food-borne illnesses:

- Everyday, in the United States, about 20,000 people are affected, 900 are hospitalized and 14 die;
- In March 2003, high levels of pesticide were found in samples of spinach taken from supermarket shelves in the United Kingdom;

While sporadic outbreaks in Latin America and Caribbean countries have not been as widely publicized, food borne illnesses have been reported. The effects of a highly publicized FBD outbreak are disastrous for the consumer, the affected product, the industry and the supplier country (see case study on page 13).

Tackling the FBD problem

FBDs cannot be entirely prevented. BUT many of the illnesses associated with them could have been avoided if certain precautions had been taken. Some FBDs can be traced back all the way to poor agricultural practices on the farm. Safer foods mean



- a lower incidence of FBDs, which in turn means:
- lower public health costs,
 - fewer barriers to trade,
 - lower productivity losses,
 - improved competitiveness.

2. Food Safety begins with GAP

Providing consumers with safe fruits and vegetables is now a major responsibility of the agriculture and food industry.

The quality and safety of fresh produce are affected by the growing, harvesting, washing, sorting, packing, storing and transportation practices used on the farm. Whether producing for the local or export market, farmers have a critical role in producing safer foods.

The most common action that negatively affects food safety is the lack of, or failure of farm workers to use effective sanitary and phytosanitary practices.

Good agricultural practices (GAP)

are the key to safer foods from the farm. GAP covers ALL activities that take place on the farm. GAP provides the systematic framework that allows farmers to identify, implement and manage appropriate prevention and control measures to minimize contamination of fresh produce at each stage of farm production.



There is no guarantee that everything grown on the farm is free from contamination.

Farmers and farm workers must be aware of all practices and conditions that may present risks to food safety and must take all precautions at all stages of farm operations to reduce these risks and enhance the safety of farm produce.

GAP is essential... It is important to:



YOU - the Farmer and Processor

Contaminated fresh produce and foods processed from them can lead to FBDs. Producers of safer foods stand a much better chance of getting their products sold in any market. Food safety begins with YOU!

YOU - the Consumer

Consumers will purchase produce grown under GAP systems and will avoid buying produce associated with a food safety risk. An outbreak of FBDs means loss of confidence in the food production system.



Agriculture and Food System

Loss of consumer confidence about the country's ability to produce safe food can lead to reduced purchases of the affected food and similar foods, loss of markets, and reduced trade opportunities for potentially all foods.



The Country

Concerns about a country's ability to produce safe foods will negatively affect the tourism industry, which is an important sector in all Caribbean economies. The country will not only lose revenue from local agricultural production but will spend more to import food from overseas to satisfy tourists demand for safe foods, spend more on the increased costs of public health and will have fewer resources to implement development projects.

3. Getting to the Source:

... Contamination on the farm

Fresh fruit and vegetables can be contaminated at any point along the production to consumption chain. GAP focuses on reducing, not eliminating risk of contamination at each stage of the production process on the farm. **Once produce becomes contaminated, it is very difficult to sanitize them!**

Main sources of contamination

- **Microbial-** ie, microorganisms (bacteria, molds, yeast, parasites and viruses) can be introduced at every stage of production. Bacteria, such as, *Salmonella*, *E.coli* O157:h7, *Campylobacter*, are the more common causes of food borne illnesses in Latin America and the Caribbean.



- **Chemical-** pesticides and fertilizers, that can be either of biological origin or artificially manufactured. These are introduced into the air, soil and water during the production to post-handling operations and can negatively affect the safety of both food and the environment.
- **Physical-** hazards, such as, glass, wood, stones, plastic, and other materials, that may mix with the produce after harvest and during post-harvest, are also a threat to public health. Since these can be isolated they are a lesser, but still important food safety risk.

Hazards and their risk reduction measures

Hazards	Specific Source of Hazard/Contamination	Production Cycle
Field location	<ul style="list-style-type: none"> • Old dump sites for hazardous materials • Vulnerable to up-stream run-offs 	Pre-planting
Soil	<ul style="list-style-type: none"> • Contaminated from prior use; • Contamination risk from nearby farms and other activities; 	Planting Growth
Water	<ul style="list-style-type: none"> • Contamination from run-offs due to up-stream uses • Stagnant water sources 	Pre-planting Planting Growth Harvest Post-harvest
Manure	<ul style="list-style-type: none"> • Raw, not properly composted • Poor storage facilities • Applying manure too close to harvest period 	Pre-planting Planting Growth Pre-harvest
Agro-Chemicals	<ul style="list-style-type: none"> • Expired and/or banned chemicals • Over-application • Pre-harvest intervals 	Pre-harvest
Animals	<ul style="list-style-type: none"> • Faeces/droppings (biological hazards) • Spread of garbage/physical hazards 	
Workers	<ul style="list-style-type: none"> • Sickness; • Unsanitary work conditions • Unhygienic practices • Poor husbandry practices 	Pre-planting Planting Growth Harvest Post-harvest
Equipment Vehicles	<ul style="list-style-type: none"> • Unsanitary practices • Unsanitary conditions 	Post-harvest

Measures by stage of production on the FARM

Action stage	Recommended Risk Reduction Measure
Planting growing growing	<ul style="list-style-type: none"> • Investigate prior use for suitability and to determine corrective measures • Treat soil, avoiding chemical fumigation as much as possible • Establish systems to minimize contamination from nearby farms
Planting growing growing at harvest	<ul style="list-style-type: none"> • Test and disinfect ground water with bleach every 3 months • Limit animal/bird movement in water sources • Select best irrigation method and use clean water for irrigation • Use clean potable water for spraying and for making ice for cooling • Chlorinate water used for washing and rinsing
Planting growing growing at harvest	<ul style="list-style-type: none"> • Compost 4- 6 weeks before using manure • Mix the manure into soil immediately after its application • Don't top-dress growing plants with fresh manure/slurry • Store far away from crop areas • Build barriers to prevent run-off & wind drift • Wait two weeks after applying manure before harvesting fruit
Planting growing growing at harvest	<ul style="list-style-type: none"> • Use only registered and approved chemicals • Follow prescribed safe application practices • Store in secure location away from fields • Keep domestic animals away from fields and preparation areas • Limit wild animal & bird movement in fields & preparation areas
Planting growing growing at harvest	<ul style="list-style-type: none"> • Keep sick workers away from fields and packing areas • Train workers in good hygiene • Provide on-site/nearby toilet/latrine and hand washing facilities and enforce their use • Keep fields clean of weeds and garbage
Planting growing growing at harvest	<ul style="list-style-type: none"> • Clean and disinfect all equipment used in ALL farm operations • Sanitise storage containers and preparation areas daily • Clean and sanitise transport containers and vehicles

Note that:

... choosing the right crop is important!

- If possible, select those varieties that have greater resistance to important pests and diseases to reduce use of pesticides and other chemicals and, in turn, reduce risks from harmful chemical residues.

... finding the best location may be impossible!

- Finding lands that are completely free of contamination from some prior use, or from nearby industrial and/or other agricultural activity may be impossible. Therefore, it is important that farmers **KNOW** what the risks are **BEFORE** planting and **TAKE REQUIRED ACTION** to reduce risks of contamination.



... GAP must be implemented in full!

- All farming practices must be reviewed to determine which GAP is the most appropriate for a particular situation. Regardless of the particular farm or commodity GAP must be fully implemented to be successful. No component should be left out or left unaddressed.

... Crop-specific Protocols should be developed!

- Specific crop protocols or guidelines should be developed to

satisfy the special and different needs since: . . .

- requirements may vary from country to country, field to field, season to season and crop to crop,
- farming practices used are determined by field location, soil type, climate and the choice of crop grown,

These crop protocols should be reviewed and updated periodically to keep up to date with new developments in production technologies

FOOD SAFETY BEGINS...

...but...

... **DOES NOT END** with GAP!



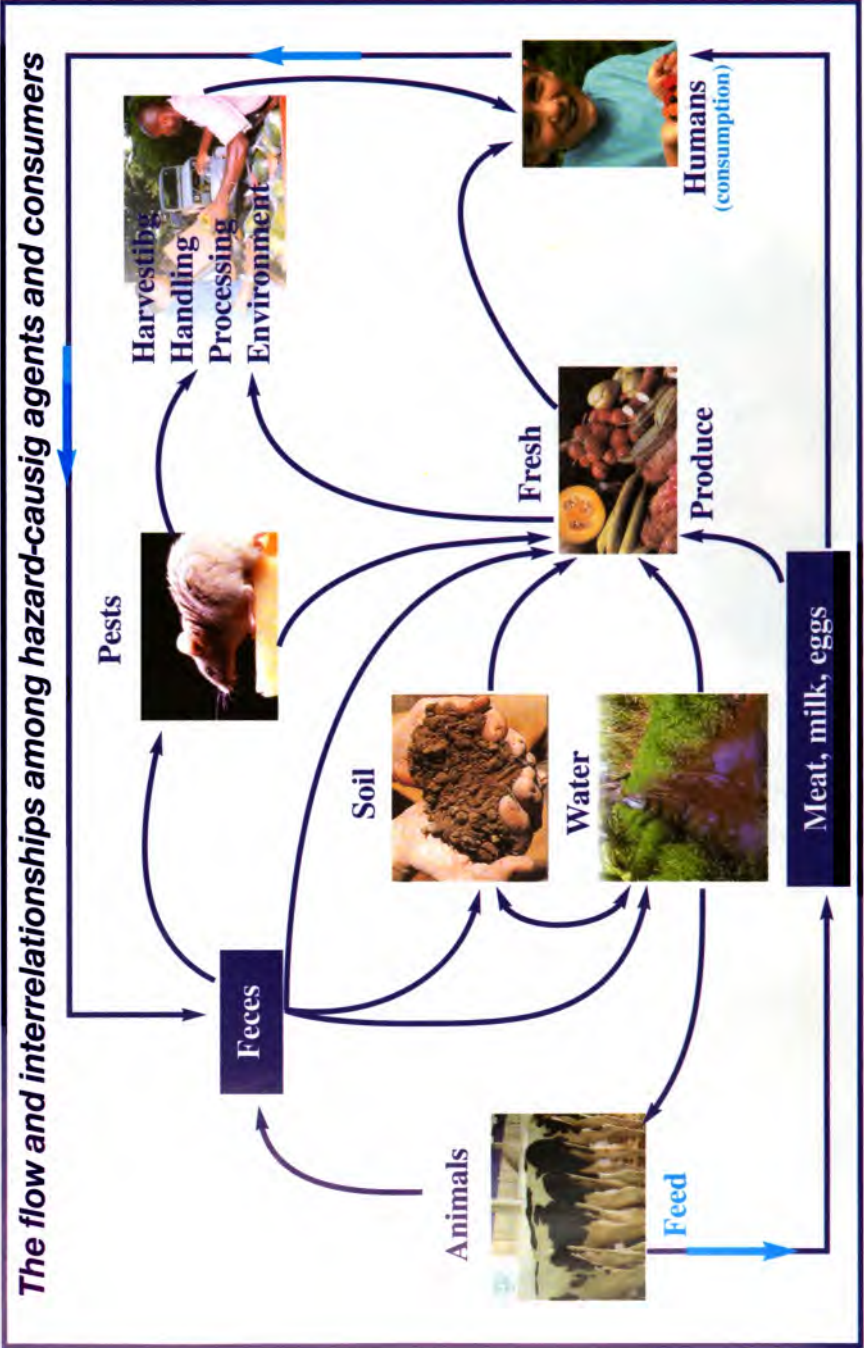
Foods processed from fresh fruit and vegetables must also incorporate good manufacturing practices (GMP) to ensure the continued safety of foods during and after processing. Contaminated processed foods can be traced back to the source. Make sure it is not YOUR ENTERPRISE!

TRACE BACK... is the ability to determine and document the distribution and the source of a food item implicated in a food safety problem. **Traceback requires the produce to be clearly identified along its pathway from the farmer to the consumer or problem site. To facilitate this, all activities must be recorded.**



The system cannot prevent the food safety problem but it serves to reinforce good agricultural and management practices. The information obtained from the investigative process may also be useful in identifying and eliminating a hazardous pathway.

In 2005, all food exports to Europe **MUST** incorporate a traceback system or they will not be allowed to enter the market!



4. Getting GAP-ready

Although GAP is not now in 2003...

- ... a mandatory regulation,
- ... a legal measure (i.e., does not have the force and effect of law),
- ... subject to enforcement, ...

GAP is becoming an important requirement for the marketing of fresh agricultural produce, both locally and abroad.

***OPPORTUNITIES ARE
KNOCKING!***

To **SURVIVE** in the 21st Century global market you **MUST BE GAP-COMPLIANT**. Concerns about the safety and quality of foods will continue to drive consumer behaviour. As a result, food providers - from the farmer to the processor - to the food retailer - must increasingly ensure that fresh fruit and vegetable production is GAP-friendly.

GAP's effectiveness depends on:

- workers' understanding and implementation of hygiene and safety practices;
- Implementation of the complete and integrated system, instead of its individual parts, such as, a 'pesticide GAP' or a 'worker hygiene GAP'.





GAP is essential to everyone!

Play your part!

Once unsafe or contaminated food enters the food chain, it is distributed more rapidly and a greater number of consumers are exposed to risk.

YOU: . . .

- *the Farmer*, by becoming a GAP farmer,
- *the Processor*, by becoming a GAP-conscious purchaser of fruit and vegetables from GAP-farmers.



. . . can help to:

- SAFEGUARD livelihoods;
- PROTECT consumer health;
- PRESERVE environmental integrity;
- MAINTAIN the safety of food products;
- IMPROVE market and trade opportunities.

. . . YOU - the Food Retailer and Consumer can help to . . .

- PROTECT consumer health;
- REDUCE the incidence of food borne illnesses;
- MAINTAIN worker productivity;
- REDUCE public health costs.

. . . by ensuring that the fresh fruit and vegetables prepared and consumed are supplied by GAP-compliant farms and that you follow basic safety procedures during food preparation and service.

Last Words . . . Food Safety is Everybody's Business!



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