

# Horticulture Value Chain & Market Systems Case Study

Food safety hazards can be broadly classified into three categories: physical, chemical and biological.

**Physical hazards** include any contaminant other than the commodity such as weeds, metals, glass, stones or any non-edible substance harmful to a consumer.

**Chemical hazards** include pesticide residues that exceed allowable limits, mycotoxins (aflatoxins, fumonisin, or ochratoxins) due to fungal infection or other chemical contamination such as heavy metals (lead, mercury, iron, or cadmium) that may occur in the field, storage or processing facility.

**Biological hazards** are caused by bacteria, viruses and other microorganisms.

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The United Nations estimates that the food market in Africa will triple by 2030, when it is expected to represent more than \$1,000 billion of the continent's population who are calling for more diversified products (more vegetables, fruits, dairy products, meat and fish).<sup>1</sup> Over the last 25 years, value of horticulture exports from Southern and Eastern Africa has increased by over 50% and currently contributes 18% of the agricultural exports. Furthermore, experiences of countries like Kenya show how critical the sector has been in providing market linkages and related income earnings to small scale producers.<sup>2</sup> However, with the increased demand for horticultural products comes increased risk to food safety.

## Chemicals

The use of chemicals for plant protection is an increasingly common practice across Africa. However, chemicals used are rarely monitored in how and to what they are applied, including product efficacy, quality (including counterfeit products), and toxicity to farmers and consumers. There remains an obligation on Governments to consider long-term policies which could be adopted to regulate the use of the rapidly increasing range of horticultural chemicals available to farmers. While the accumulation of chemical residues in plants used for human consumption is becoming a serious hazard to health, few countries have legislation which effectively regulates the sale of highly-toxic chemicals or monitors chemical residues on edible crops.

## Storage

Most vegetable crops grown in the tropics are subject to rapid deterioration and spoilage, resulting in microbial contamination. Thus, rapid transfer from the field to the market is essential. Little attention has been paid to the provision of cool storage facilities for produce intended for consumption on the domestic market, but the growth of some urban market centers makes cool storage facilities an increasingly urgent need. Small-scale producers in Africa are largely dependent upon the immediate sale of their perishable produce and are likely to limit their production based on the foreseeable demand, since unsold produce is wasted at the end of the day.<sup>3</sup>

## Sanitation

About 1.2 million people in developing countries live in water scarce areas and by 2025, the number is expected to increase to 1.8 million due to the lack of dependable policies or suitable management strategies for reuse of improperly-treated wastewater in crop production. In areas of high scarcity, the increasing need for water has resulted in the emergence of wastewater application in agriculture to reduce the demand on freshwater resources. The use of improperly-treated wastewater for irrigation purposes can have detrimental environmental and health effects, including transmission of intestinal nematode, pathogenic bacteria and diseases, such as diarrhea, dysentery, typhoid and cholera. Farmers working in the wastewater-irrigated fields and/or vegetable consumers are at highest risk resulting from the use of improperly-treated wastewater.<sup>4</sup>

As illustrated above, horticulture value chains are at risk for a variety of food safety hazards. These hazards can lead to low-quality or contaminated food products, resulting in compromised food safety in domestic

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<sup>1</sup> <http://www.un.org/en/africa/osaa/pdf/pubs/2013africanagricultures.pdf>

<sup>2</sup> <http://fpeak.org/index.php/horticulture-council-of-africa-h-c-a/>

<sup>3</sup> <file:///usdcxwashiu099/home/margaret.mcdaniel/My%20Documents/hort.pdf>

<sup>4</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4705318/>

and international markets. Some intersections between horticulture value chain activities and food safety risks include:

- Inappropriate and/or excessive use of low quality pesticides and fertilizers.
- Poor and/or unsanitary storage practices that permit fungal growth, rodent contamination, etc.
- Use of contaminated water for irrigation, washing, and/or processing.