

CHAPTER FIVE

Growing Economically

Investment

The capital investment needed on-farm is determined by the commitment that producers must make to planting stock, tractors and related cultivation and harvest equipment, irrigation machinery, and buildings. What is often not so apparent is the off-farm investment in packing and grading equipment, packaging supplies, storage facilities, processing plants, and specialised transport.

Where horticultural product is processed, such as with wine grapes or frozen and canned vegetables, the off-farm investment can be considerably higher than the on-farm investment. For wine production, an estimate of off-vineyard investment is three times on-vineyard investment.

In most other fruit and vegetable operations, investment off-farm closely matches that on-farm. This has led to specialised provision of high investment facilities such as packing houses and coolstores that may be owned and operated as cooperatives in order to achieve economies of scale.

Viable horticultural production, especially at large scale, can therefore have very large impacts on local economies from the need for large capital investment; the supply of goods such as fertilisers, fencing, and machinery; services such as financial, insurances, and information, the employment of people, all of which are needed both on- and off-farm. These activities are critical and are often

the basis for retaining essential infrastructure and services such as the provision of health services and schooling in rural locations.

In New Zealand, where horticultural industries occupy approximately 130,000 hectares, the on-farm investment is estimated to be NZ\$14.2 billion and the off-farm investment NZ\$24 billion.

During the last decades, economic growth in horticulture globally has far exceeded that of most agricultural commodities. Annual growth rates for vegetable supplies have surpassed cereals by 200% to 600%, with much of this acceleration occurring in the 1990s.

The growth rates for horticulture currently exceed all other major commodities. At a global level the value of all fruit and vegetables traded is more than double the value of all cereals traded.

Farmers engaged in high-value horticultural crop production can earn much higher net farm incomes than those growing staple crops.

Two examples are:

- Fruit and vegetable producers in India generate five to eight times more in profits than cereal farmers
- In Kenya, farmers producing fruit, vegetables or flowers for export can earn six to twenty times more than maize growers.



Investment in horticultural enterprises, both on- and off-farm, can be very considerable. Above: Grape growing and wine production. PHOTOS: UNIVERSITY OF CALIFORNIA, DAVIS

Developing nations, notably Chile, Mexico, Kenya and Egypt, have been able to maintain growth and profitability by developing the research, training, infrastructure and technologies critical to sustaining this success. Few low and middle-income countries have managed to sustain long-term growth in horticulture without such commitment in professional development and infrastructural support along the entire supply chain. Countries that failed to invest in research and human capacity building have experienced short-term growth or growth in a limited number of highly targeted crops, but have not achieved sustained growth and development in this sector.

Wealth generation

Horticultural industries generate considerable wealth for producers, suppliers, local communities and countries. In many countries, horticultural production can define whole regions that become internationally renowned for the quality and value of the products that are produced and sold. Examples include the Salinas Valley in California for vegetable production, the Hood River and Yakama regions in the USA for pears and apples, New Zealand for kiwifruit, Bordeaux for wines, Turkey for dried fruit products such as apricots, Ecuador for bananas, the Philippines for pineapples, and Queensland for macadamia nuts.

In each of these cases, the scale and complexity of the industries is enormous. The wealth generation is such that these horticultural activities have significant impacts on the gross domestic product of the country concerned, having significant export volumes and values. For example, of all fresh and processed vegetables produced in the USA, California produces 44% of the harvested area, 49% of the production and 52% of the value. From Spain, around 10 million tonnes of fruit and vegetables are exported annually (primarily to other European countries) with a total value of about Euro 8 billion. The top categories are tomatoes (900,000 tonnes), lettuces (500,000 tonnes), cucumbers (450,000 tonnes), citrus (3.8 million tonnes), stone fruit (600,000 tonnes) and melons (380,000 tonnes).

Horticultural crops are invaluable for agricultural development in the developing world. They have high economic and nutritive value. They offer opportunities for agricultural and economic diversification especially for smallholders who

Despite the clear benefits of horticultural crop production for developing nations, horticulture has received vastly less development and research investment than cereal grains. Between 1968 and 1996 for instance USAID, a major provider of funds for agricultural research, focused on cereal crops such as rice, wheat and maize. Tropical fruit and vegetables received less than one-tenth of the amount invested in the staple crop centres. Investment in the sector is still inadequate if its full potential is to be realised.

Nevertheless, horticulture has recently become an explicit priority in the development agendas of many donor, research and implementing agencies.



Horticultural crops can provide higher incomes and generate higher employment than staple crops. Export activities, however, require investment in appropriate infrastructure.

can gear production to specific local, regional or export markets.

Initially the focus for developing countries was geared towards feeding the local population. In recent years it has become increasingly important for wealth creation with increasing emphasis on exporting horticultural products to sophisticated consumers in developed countries.

For example, Kenyan producers of green beans for the European export market benefit from a favourable confluence of ideal growing conditions, technically supported growers, excellent infrastructure and strong export market demand.

There are many opportunities for improvements in infrastructure and service provision, and the development and promotion of international markets, supply chain systems and supporting technologies. Horticulture has the proven potential to stimulate economic growth, reduce poverty, enhance health and address issues of inequity and environmental degradation in developing countries.



Successful exporting requires close attention to product handling, cool chain management and traceability.
PHOTOS: ZESPRI INTERNATIONAL LTD

Critical success factors for horticulture

Good governance

Knowledge-based horticulture needs good governance to ensure oversight of capital investment, company operations, market development and market access.

Intellectual property protection

Those who design, develop and provide better cultivars, better packaging, better sorting technology and other improvements, need development, application and enforcement of intellectual property rights agreements.

Land tenure and credit provision

All horticulturists, ranging from small producers

to giant agribusinesses, need secure land tenure and regulated credit markets.

Good agricultural practice

Horticultural standards have to be set and enforced to meet the stringent requirements of importers.

Research and development

While there is significant potential for horticulture to contribute to a variety of development goals, the conditions for success and sustainable growth are complex and not well articulated, underscoring the need for research investment.

The Eden Project

Located in Cornwall, England and described as the world's largest greenhouse, plants from around the world are grown inside two huge biomes constructed in a reclaimed quarry pit and prove that given an appropriate growing environment, virtually any plant can be grown away from its natural environment. One biome is for tropical plants (1.56 hectares) with fruiting trees such as banana and coffee and the second biome (0.65 hectares) creates a Mediterranean warm temperate environment that has plants including olives and grapes. Other plants are grown outside the two biomes.



The Eden Project's biomes, Cornwall, UK.

Thought Challenge #8

Only 10% of people in the United Kingdom and 18% in the USA live in rural communities. Nowadays, worldwide less than 50% of people live in rural communities. Rural votes mean less and less to elected officials.

Q. Who will represent the minority who are critical for production and security of food supplies to modern communities?

Production trends and viability

'Grow local' campaigns are commendable, but not realistic for all fruit, vegetables and flowers. There are limits on the volumes that people can grow locally and economically. Whilst a single tomato plant may produce several kilograms of tomatoes, the world production of tomatoes in 2009 was 153 million tonnes – and, for example, bananas cannot be grown economically in Sweden, nor tea or coffee in many temperate countries. Despite the huge volume of close to US\$180 billion of fruit and vegetables exported and imported worldwide, one estimate is that 93% of fruit and vegetables are produced and consumed locally.

Horticultural operations vary widely in size from family operations to very large-scale multi-national corporations. They also vary greatly in sophistication, complexity and investment.

Growing high value horticultural crops usually starts in locations where the climate and growing

conditions are most favourable, but where these are not present, horticulturalists modify the environment by the use of greenhouses and other practices that are economical and sustainable.

Crops such as banana and pineapple are normally grown commercially and on a large scale in warm subtropical and tropical climates. Crops like apples and cabbages, in contrast, are grown in cooler temperate climates.

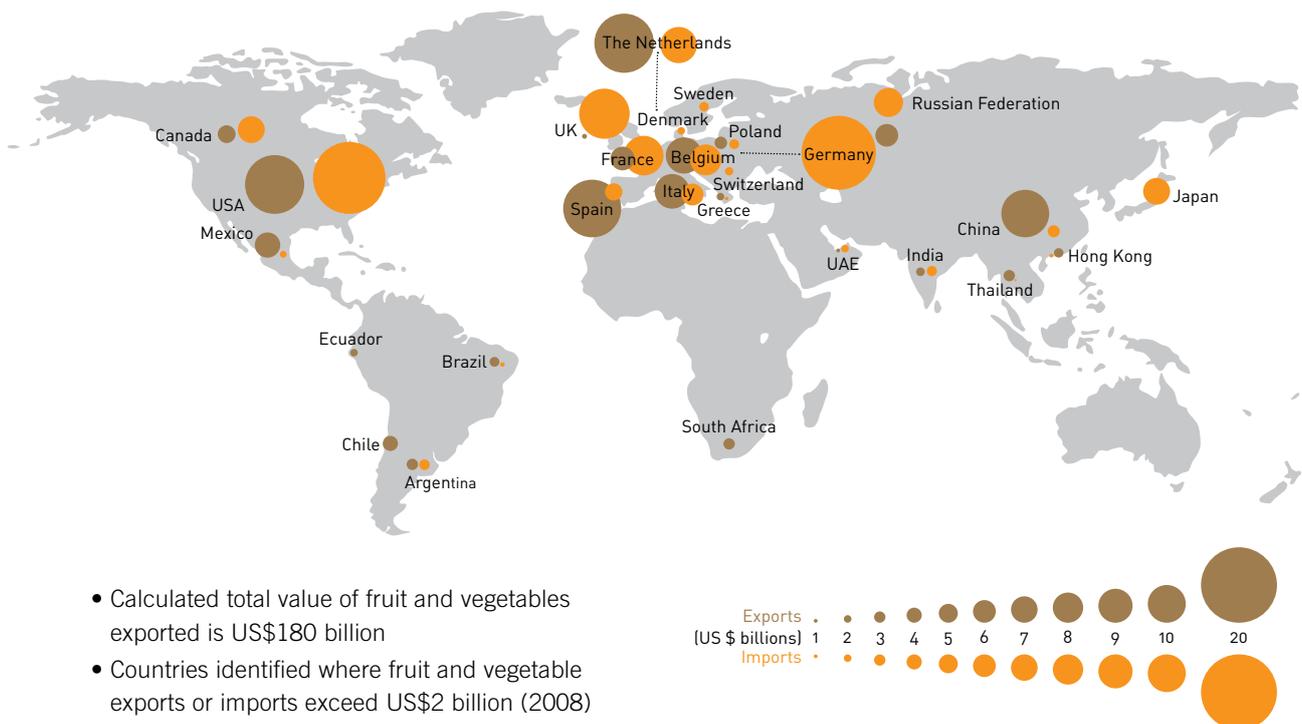
The result of different conditions being suited to vastly different horticultural crops is a massive global trade in these products from areas where they can be grown economically. Consumers in destination countries benefit from year-round supply and growers and others in originating countries benefit from sustainable incomes, higher living standards, improved health and access to better education.

World trade in fruit and vegetables

Which countries import and export the most fruit and vegetables?

World exports and imports of fruit and vegetables

SOURCE: FAOSTAT



- Calculated total value of fruit and vegetables exported is US\$180 billion
- Countries identified where fruit and vegetable exports or imports exceed US\$2 billion (2008)
- Despite huge volumes exported, one estimate is that 93% of fruit and vegetables are produced and consumed locally



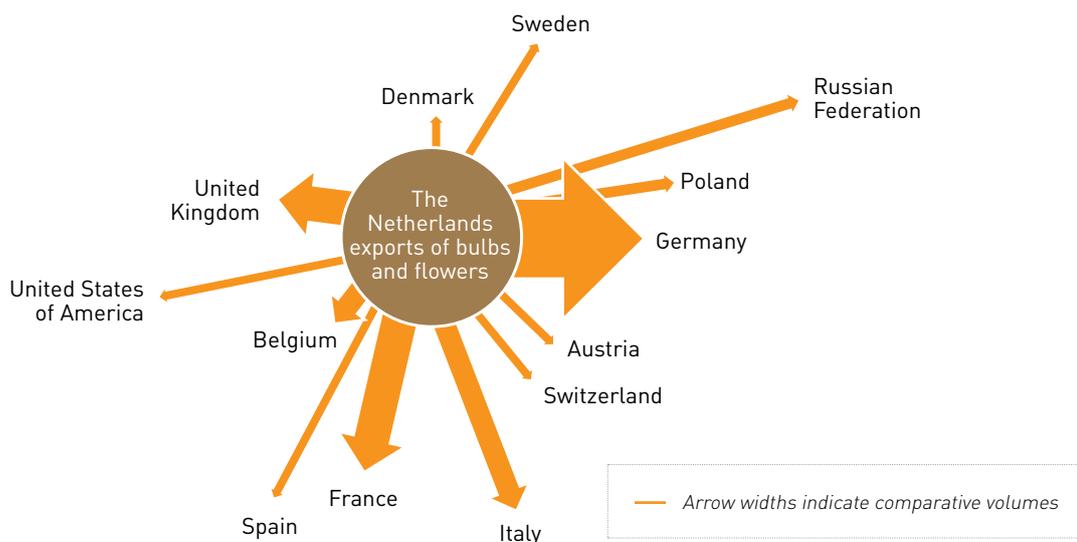
Tropical crops, such as bananas, are exported to consumers in colder climates; many other crops are produced globally for supply to countries where land and labour for horticulture are limited.

Some countries such as Japan, the Russian Federation, the United Kingdom, Germany and France are strongly dependent upon imports of fruit and vegetables for food supply, food security and variation within their diets. Others such as Chile, Spain, Italy, China and The Netherlands are strong net exporters of these products. In other instances, such as the USA and Argentina, imports approximately balance exports but the range of products in each category allow a much more diverse diet for local consumers, such as the import of tropical fruit into the USA.

The following diagrams show examples of large scale horticultural product exports that are important food and onamental plant supply sources for many countries and which deliver significant economic benefits to exporting countries.

Trade flows: THE NETHERLANDS exported over US\$10 billion in live plants, bulbs, cut flowers in 2010

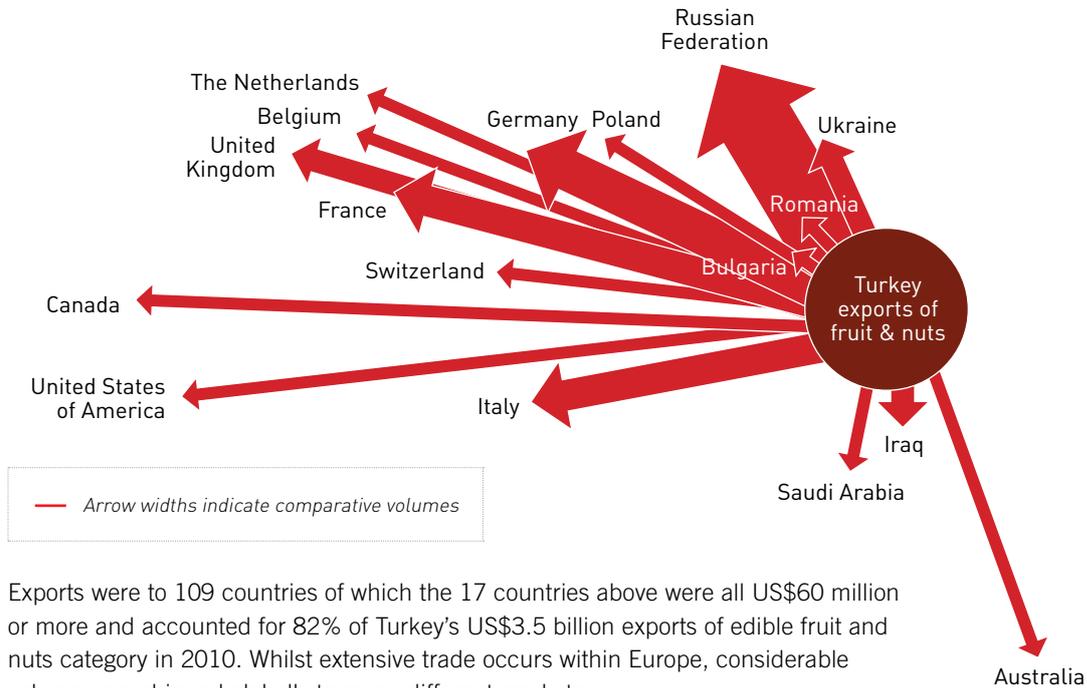
SOURCES : ITC CALCULATIONS BASED ON COMTRADE STATISTICS



Exports were to 148 countries of which the 13 countries above were all US\$200 million or more and accounted for 85% of The Netherlands US\$10.6 billion exports of flowers and bulbs category in 2010. The majority of this trade is in Europe.

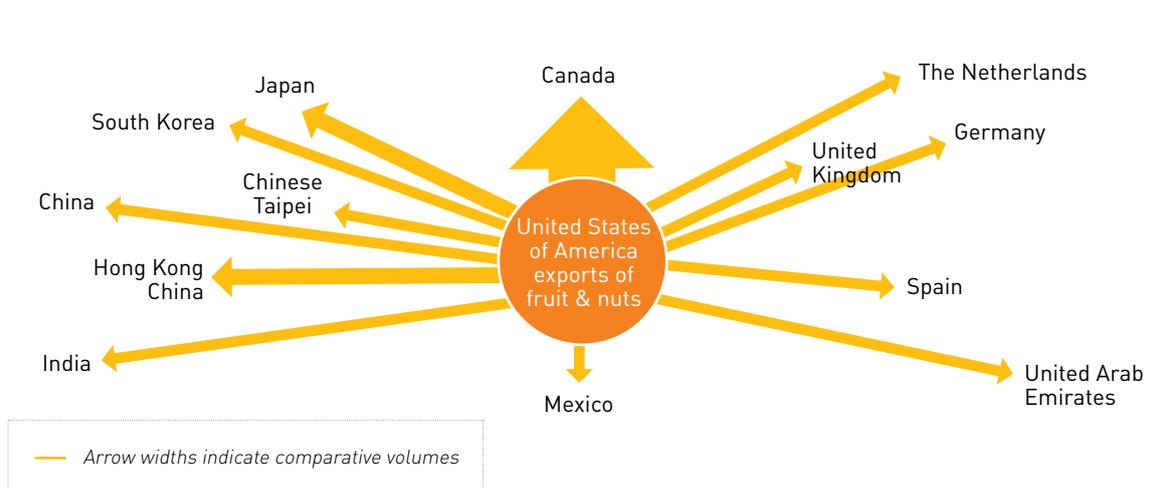
Trade flows: TURKEY exported US\$3.5 billion in fruit & nuts in 2010

SOURCES : ITC CALCULATIONS BASED ON COMTRADE STATISTICS



Trade flows: UNITED STATES OF AMERICA exported over US\$10 billion in fruit & nuts in 2010

SOURCES : ITC CALCULATIONS BASED ON COMTRADE STATISTICS



Thought Challenge #9

Buying locally grown food is very commendable.

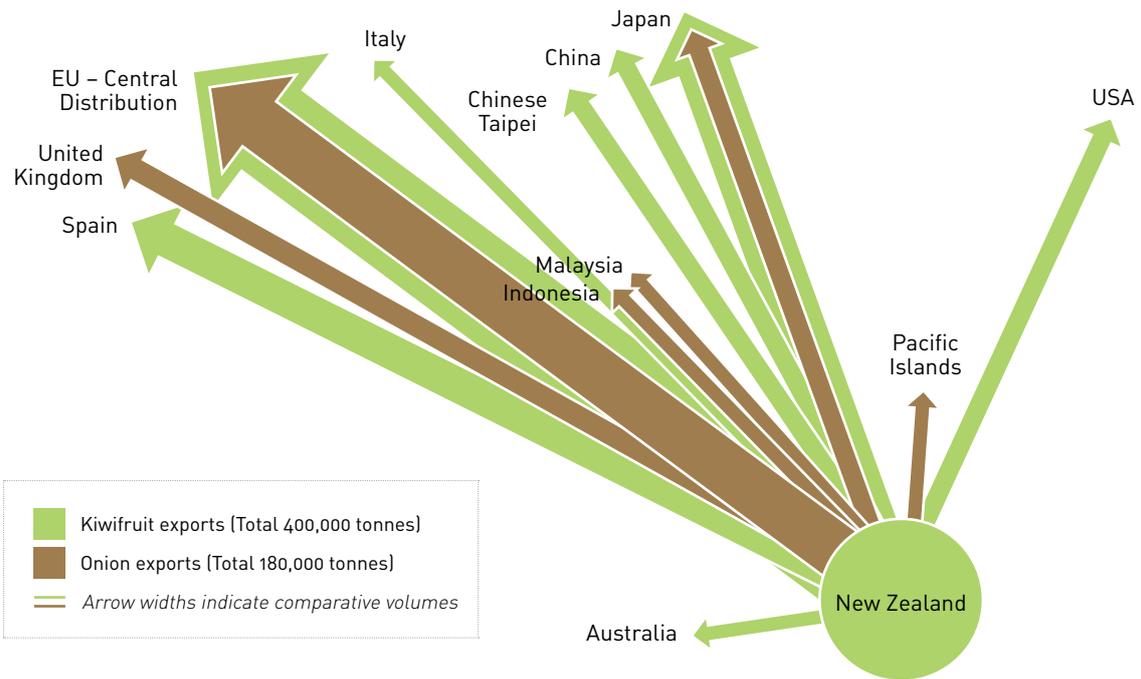
Q. Some commentators believe that we should all grow food locally – but how far are you prepared to go? For example, are you prepared to stop drinking coffee – or stop eating bananas and other tropical fruit – and not have rice?

The diagram below is an illustration of export trade flows of horticulture from a predominantly agricultural exporting country. In this example, New Zealand exported 400,000 tonnes of kiwifruit in 2010 to 59 countries of which 92% are represented

by the green arrows in the diagram. In the same year, New Zealand also exported 180,000 tonnes of onions to 47 countries, 85% of which are indicated by the brown arrows. In both examples the destinations are global.

Example of trade flows of an exporting country distant from its end markets: Kiwifruit and onions exported from NEW ZEALAND (year to 30 June 2010)

SOURCES : ITC CALCULATIONS BASED ON COMTRADE STATISTICS



Nut crops (left), bulb (right), flower, fruit and vegetable crops are traded globally in very large quantities.
 PHOTO (RIGHT): THE INTERNATIONAL BULB CENTRE



Attention to food-grade standards and cool-chain management are critical to ensuring food safety and the attainment of premium quality. Photos: (upper) bean packing, Morocco, (lower) packing for export, Kenya.

Impacts on crop viability

The strong growth in global markets for horticultural products in both the developed and developing world over the past 30 years has occurred during a period of rising land and labour costs.

The expanded presence of women in the workforce of the developed world has influenced the increase in demand for convenience foods such as prepared salads, fresh-cut fruits, and the increase in food consumed in restaurants. These trends are playing significant roles in future demands for high-value products.

Local and regional markets for horticultural products in the developing world can be expected to increase for many of the same reasons that they have burgeoned in the developed world; namely, education and recognition of health benefits, increased urbanization, improved production technologies and market capacity, and more sophisticated retailing.

The impact of labour costs

In the developed world increasing labour costs and scarcity of farm labour have significantly impacted the economic viability of some horticultural crops with the following being examples:

- o white asparagus in Germany
- o stone fruit in south-east Australia
- o fresh tomatoes and citrus in the USA
- o apples in the United Kingdom.

Escalating environmental constraints and competition for and from urban expansion are also constraining factors.

New exporting countries for horticultural crops

A consequence of changing labour costs has been the transfer of much horticultural production from the developed world to the developing world, resulting in a ten-fold net increase in imports of horticultural products into the developed world's markets.

The traditional pattern of production and trade is being challenged by new producers, such as cut flowers from Kenya, apples from China, and processed tomatoes from India. In some tropical countries, temperate crops are being grown at high altitudes – growing strawberries in Thailand is one such example.

The wide diversity within and between species grown in developing countries presents an opportunity for the export of indigenous vegetables to ex-patriots living overseas and for increased novelty and diversity in restaurants and food outlets in international markets.

Food losses and food waste

About one-third of the food produced in the world for human consumption every year, approximately 1.3 billion tonnes, is either not fit for consumption, or is wasted.

Industrialized and developing countries waste approximately the same quantities of food; 670 and 630 million tonnes, respectively. The amount of food lost or wasted every year is equivalent to more than half of the world's annual cereal crop (2.3 billion tonnes in 2009/2010). It is important to distinguish between loss and waste.

Food loss

Food loss occurs at the production stage of horticulture and happens mostly in developing countries. This loss results from a lack of infrastructure such as sealed roads, port facilities, coolstores and refrigerated trucks, as well as low investment in food production systems and often from a lack of basic food handling knowledge.

Food losses during harvest and in storage mean lost income for small farmers and leads to higher prices for low income consumers. Appropriate training and the application of scientific knowledge could reduce this loss and have an immediate and significant impact on livelihoods and food security.

Food waste

Food waste is more a problem in industrialized countries. Consumers in rich countries waste almost as much food (222 million tonnes per annum) as the entire net food production of sub-Saharan Africa (230 million tonnes). Per capita food wasted by consumers in Europe and North-America is 95-115 kg/year, while this figure in sub-Saharan Africa and South/Southeast Asia is only 6-11 kg/year.

At retail level, large quantities of food are also wasted due to quality standards that over-emphasize appearance. Additionally, most retailers have staff that are poorly trained and lack facilities to appropriately manage perishable produce.

Consumers in rich countries are generally encouraged to buy more food than they need. 'Buy three, pay two' promotions are one example, while the oversized ready-to-eat meals produced by the food industry are another. Restaurants frequently offer fixed-price buffets that encourage customers to heap their plates with the result that the customer does not eat all of what is taken – and the excess goes to waste.

Consumers also often fail to plan their food purchases properly leading them to throw food away when 'best-before' dates have expired.

Food losses and food waste – fruit & vegetables

SOURCE: DERIVED FROM GLOBAL FOOD LOSSES AND FOOD WASTE
ROBERT VAN OTTERDIJK AND ALEXANDRE MEYBECK. FAO ROME 2011

% of total production and imports

