

FEEDING MANKIND

After World War Two (WW II) famines and malnutrition have been recurring issues along with the assertion of the Third World.

Today, it's a fact there is enough food to feed the whole world population but famines and malnutrition remain topical subjects

How to guarantee food security to the whole world population?

First, let's point out the need to feed the growing world population.

Then, let's see how some countries have tried to meet this difficult challenge

I/ The need to feed a growing world population

A/ A higher and higher population increase

From 1900 to 2000 the population went from 1.5 billion to 6 billion and it is 7.6 billion today. But in the past 20 years the growth has slowed down; the peak was 2.1% a year in 1962 and it's been lower and lower since. It is estimated to be 0.1% a year in 2100. The world population has quadrupled in the 20th century but it will not double in the 21st century. But the population will still grow: it will be 9 billion in 2050 and it is estimated at 11.2 in 2100. So it means there will be many more mouths to feed!

B/ Evolution of food production

Food production rose: it was index 4 in 1962 it was index 12 in 2010 so it doubled. However, if in 2010 food production was enough to feed the population (if only it was well distributed of course), it is estimated that in 2050 the population will grow faster than food production: so there will be food shortage. If technology improves it is possible to meet the world population food's needs.

C/ But still so many are undernourished

The number of undernourished people is very high in Asia, mostly India but it is also, very high in Africa. Food demand keeps increasing over time but it's very high in Sub Sahara Africa, in the Middle East and Asia whereas it is not high and almost stagnating in Latin America and China and slightly declining in Developed countries. So, food is very badly distributed I the world.

II/ Meeting the challenge of food security is hard

A/ Some modern solutions

1) Agribusiness

Agribusiness is a system which produces food an industrial way. It's often referred to as the "food industry". The system is based on machines, seeds, fertilizers/chemicals and services (banks, research) in order to produce food: either meat or vegetable food. Production is then transformed/processed to be sold in supermarkets or restaurants. It can be also stored or exported. It's very productive.

This system relies on chemicals and genetic modification. Today it is possible to spray some chemical to increase the content in starch of wheat! But there is currently a stagnation of crop yield in many places because it damages the environment and because pests and weeds adapt to the chemical and become resistant.

Food production is responsible for 29% of greenhouse gas emission. Cattle breeding (élevage) is also responsible for high pollution . And, the use of chemicals is also a threat for our health: allergies, antibiotic resistance can happen.

2) The green revolution: principles and drawbacks

The green revolution is a combination of research to create new species, technologies and mechanization to produce more food. It started in Mexico in the 1940's then spread worldwide, particularly in India. It developed new species called high yield varieties, irrigation and fertilizers.

But it has drawbacks: the number of species cultivated decreased. In India it led to a pollution of soils. Moreover not all farmers can benefit from this: in India the poorest could not buy the new seeds and Africa is too poor and unstable to experience a green revolution.

3) GM food

GM plants are organisms that have been genetically modified to resist herbicides and insects attacks so more is produced.

Some claim it is safe as there is a need of so many tests before it's on the market that it could not be harmful. It's been demonstrated that plants' genes cannot be transferred to human beings when the food is eaten.

But GMO can contaminate nearby field by the pollens so it is an issue. Indeed when you cultivate GM seeds you need to pay a patent (brevet). So you have to pay even if your field has been contaminated against you will !

Added to these countries don't all agree on how to label GM food. And some countries fear that in the future only some GM seeds will be used and other "natural seeds" will disappear.

In Africa, Zambian scientists have refused to use GM seed for all these reasons even if it could help to produce more.

B) Some current debates

1) The mad cow disease

The mad cow disease is called BSE. It's an acronym for Bovine Spongiform Encephalopathy. It can be transmitted to human beings when eating infected meat. Cow had been fed with other cows' carcasses transformed in powder in order to have protein. The epidemic reached a peak in England around 1992-1993 and 4 million cows were slaughtered. The reason to give bones to the cattle was that bone-meat contains protein and protein is good for muscle growth. So cows could grow bigger and it did not cost a penny !

2) Food waste

We throw 1.3 billion tons of food each year which represent 30% of what we grow! This waste is linked with the inability to store, refrigerate, and pack the crops. Transport conditions can play a part too. Waste is mainly due to production and retail (vente au detail) condition but in rich countries consumers waste more than in poor countries: in sub-Saharan Africa waste by consumers is only 30 kilos a year but waste from production and retail is 150 kilos !

The USA wastes 160 billion dollars of food a year and it's mainly dairy products (laitiers).

In France there is a recent law which forces retailers to donate the food to be thrown away : it's the first developed country to do this!

3/ Biofuels

Biofuel is ethanol made from plants. Brazil for example makes ethanol from sugar cane. Plants use carbon dioxide whereas ethanol releases low carbon dioxide when used as fuel.

But the debate is vivid as growing plants requires chemicals and turning them to fuel produces carbon dioxide. Transporting crops and ethanol requires oil. Moreover if you use plants for biofuel you can't use them as food.

Pros say: it's less expensive to use than oil; it's renewable; each nation can produce its own ethanol; it can create jobs; it will lower carbon emissions.

Cons say: It require higher quantity of plants to produce the same energy as oil; it might make food rare thus more expensive; it still produces carbon dioxide for growing plants and transporting ethanol; It requires massive amount of water to grow plants.

4) Is sustainable agriculture really possible to implement?

The ecosystem regulates itself: it is powered by the sun, water is supplied by the rain, and animal dung is food for plants... So, sustainable agriculture would be the closest form of agriculture to this system while allowing high production of food. Some advocate organic farming as being the form of sustainable agriculture. Some argue it's not productive enough to feed the planet. But studies have shown that organic farming is environment-friendly, it produces more nutritious food, it protects soils from erosion. Studies have shown that feeding mankind with organic farming is possible if people eat less meat. But there would be also a need to reduce our global waste and lower our consumption of processed food.. This is far from being easy !