

Food Resource:

1. Food as a resource:

Food is the most important resource for sustenance. Given the FAO (2006) standard each individual in the world requires to consume atleast 1825 cal per day on an average. Also, food production provides livelihood supports for a large proportion of world population, agricultural population density being 1.7 persons per hectare. Current sources of food primarily incorporate agriculture, animal husbandry and fishery. But given the modern pattern of agricultural development, the most important question is "how sustainable this production process is?" Are we heading towards lowering of availability of food per head? Is the hunger increasing? Are we degrading our natural resource by practicing this unsustainable pattern of agriculture? These are the questions crucial to be answered without delay.

2. World food problem:

Food productions in 64 out of 105 developing countries are lagging behind their population growth rates. This immediately implies a decline in per capita food consumption in these countries where the current level of consumption is already below the minimum level that is required. The United Nations Food and Agricultural Organization (FAO) reports that the quantity of food produced per capita has been declining since 1984, based on available cereal grains, which make up about 80 percent of the world's food supply. Although grain yields per hectare in both developed and developing countries are still increasing,

the rate of increase is slowing. In India, for example, from 1993-95 to 2003-05 average annual rate of growth of population is 1.7% but the growth in food production was 1.6%. As a result, food per person declined by 0.1% (FAO, 2006). No wonder India is the home for 230 million of total 848 million malnourished people on earth. It accounted for 21% of India's total population.

3. Problem of food security:

According to the FAO, food security exists "when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life." But given the current scenario, the food security is affected in many ways. Rising population, rising demand for scarce water and other resources, ecological degradation all are posing serious threat.

4. Food security and environmental degradation:

Basically the relationship between food security and environmental degradation is circular. With an increase in population the need for food is increasing. As a result more and more forest and grasslands are brought under cultivation causing the serious problem of reduction in forest cover. In this way it is destroying carbon sinks and hence contributing to the increase in global mean temperature. This again reduces the productivity of agriculture leading to a paradoxical situation. Saseendran et al (2000) shows that for every one degree rise in temperature the decline in rice yield will be about 6% in India. Not only is that, with growing population per

capita availability of cropland is also decreasing. Globally, available per-capita cropland is now about 0.23 hectare. In China, per-capita cropland has declined to 0.08 hectare from 0.11 hectare 25 years ago, due to continued population growth as well as extreme soil erosion and degradation.

5. **Unsustainability of current agricultural:**

The FAO defines sustainable agriculture as that which conserves land, water and plant and animal genetic resources, does not degrade the environment and is economically viable and socially acceptable. Modern agricultural pattern pollutes environment with excessive use of pesticide and fertilizer. Monoculture (single crop) enhances the risk of production as if the single crop is hit by pest, the entire crop can be devastated, leaving the farmer with no income for that agricultural year. In this process soils are being exploited faster than they can recuperate excessive conversion of forests, grasslands and wetlands to agricultural land are adding to climate change problem. Not only that, fish resource, both marine and inland, also show evidence of exhaustion. While the supply of food from fisheries increased phenomenally between 1950 and 1990, in several parts of the world fish catch has since dropped due to over fishing. In 1995 FAO reported that 44% of the world's fisheries are fully or heavily exploited, 6% are depleted and only 3% are gradually recovering. Canada has virtually closed down cod fishing in the 1990s due to depletion of fish reserves.

6. **the gender aspect**

Overall, women are responsible for half the food production in developing countries (N. Sadik, 1989). The time and energy required of women for cultivation and harvesting, food processing and preparation as well as the fetching of fuel and water rarely figure in national labour statistics. As the cultivable land per acre is declining and resources such water needed for cultivation are declining, it could have a very strong implication for women's livelihood and time allocation.

Case study:

Israel began using drip irrigation system as it is short of water. with this technique, farmers have been able to improve the efficiency of irrigation by 95%. Over a 20 year period, Israel's food production doubled without an increase in the use of water for agriculture

In India, some traditional communities in urban and semi urban towns used to grow their own vegetables in backyards on waste water from their own homes. Calcutta releases its waste water into surrounding lagoons in which fish are reared and the water is used for growing vegetables.

7. **Issue of sustainability:**

Under such complexities the basic question remains whether the current trend is sustainable or not? If not, what is the way out? Many talk about the necessity of cropland management which should include water

management, agronomy and crop management, nutrient management, tillage/residue management, agro forestry and alternation of land use pattern. Still there remains several questions to be answered, several issues to be explored Can we remain self-sufficient in food despite global climatic changes and urbanization? How will enhanced climatic risks affect livelihoods of resource-poor farmers-hill, coastal, tribal? How should different farmers adapt to cope with climate change? (in the background of changing scenario of demand and markets).