

Our Agricultural Practices and Lessons

Agriculture - cultivation of plants, and other life forms for food, fiber, biofuel, medicinal and other products used to sustain and enhance human life

- Yield from cultivation is increased by Modern agronomy, plant breeding, pesticides and fertilizers. It has also caused widespread ecological damage and negative human health effects
- Success depends on the available resources and constraints; geography and climate; government policy; economic, social and political pressures. Farmers philosophy of decision making is utmost important.
- Land parcels are used continuously for: Multiple cropping - several crops are grown sequentially in a year; intercropping - several crops are grown at the same time for economic consideration
- In semi-arid and arid environments, the timing and extent of agriculture is limited by rainfall or irrigation requirement .

Practices

Tillage - ploughing of soil cover to prepare for planting or nutrient addition or pest control. It leads soil prone to erosion, triggers decomposition of organic matter releasing CO₂, and reduces the abundance and diversity of organisms.

Pest control - keep pest populations below the number and do not cause economic loss. Chemical (pesticides), biological (biocontrol), mechanical (tillage), and cultural practices are used.

Nutrient management - nutrient inputs (chemical inorganic fertilizers, manure, green manure, compost and mined minerals) for crop and livestock production

Water management - insufficient or variable (spatial & Quantity) rainfall regions require supplementary irrigation 70% of freshwater use is from agriculture at an unsustainable rate. Increasing pressure is being placed on water resources by industry and urban areas as reallocation

Land transformation (conversion of one land cover to another use), by humans vary from 39 to 50%.
Degradation - deforestation, desertification, soil erosion, mineral depletion, or chemical degradation (acidification and salinization).

Excess fertilizer application to cropland caused nutrient (nitrogen and phosphorus) runoff and leaching from agricultural land. nonpoint pollutants contributing to eutrophication This (algal blooms & anoxia) of aquatic ecosystems resulting in fish kill, biodiversity & unsuitable water quality for drinking and industrial uses.

water scarcity is increasing and agriculture is facing the challenge of producing more food with reduced water resources.

Poor irrigation management lead to destruction of natural wetlands, water-borne diseases, and salinization and waterlogging.

- Self-sufficiency in food and secured food is our goal. Irrigation has contributed in boosting India's food production and creating grain surpluses used as buffer during drought.
- Net areas under cultivation and area of food grains remain more or less saturated at the macro level (GOI 2002)
- Water security for poor farmers to grow food for subsistence. Incentives offers is needed to maximise the production from the available land and water with least environmental consequences.
- Supply from irrigation commands decline due to the increasing reallocation of water to other sectors,
- Efficiency of the use of irrigation water in growing food crops and minimize/prevent degradation of water sources that affect food security

- Groundwater depletion encountered in alluvial areas (shallow aquifer) and hard rock (deep aquifers) areas
- As groundwater level decreases/deplete, the cost of source well augmentation increases and pumping cost per unit volume of water increases.
- Cultivated areas are shrinking due to a variety of reasons
- Crops are highly vulnerable due to issues related to monsoon and very high incidence of failure during droughts.
- Irrigation induced (canal) Waterlogging and salinity leads to salinity of groundwater and soils, causing permanent degradation of land and sharp productivity declines.
- Farmers have to apply more water to maintain yield rates and use technologies to increase crop per drop

- Irrespective of increased Pesticide use, crop has remained relatively constant. plant aromas to repel or push away pests while pulling in or attracting the right insects.
- Current farming methods have resulted in - over-stretched water resources, high levels of erosion and reduced soil fertility.

Modern or industrialized agriculture is dependent on fossil fuels:

- direct consumption on the farm to operate farm vehicles and machinery; and use of gasoline, liquid propane, and electricity to power dryers, pumps, lights, heaters, and coolers.
- indirect consumption to is mainly oil and natural gas used to manufacture fertilizers and pesticides

Lessons learnt

- High potential production zones use increasing input of fertilizer, improved seeds, irrigation
- Increased productivity activity has limited potential for expansion
- Challenges are – lower potential production zones, higher rates of volatility in markets/climate change, environmental damage from overuse of inputs, rising energy cost

The said practices have lead to certain unexpected impacts on our resources and environment.