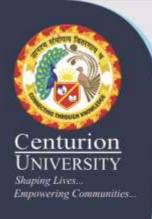


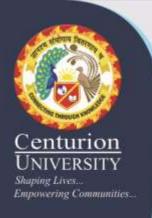
Lecture -12

HEIA, LEIA and LEISA and its techniques for sustainability



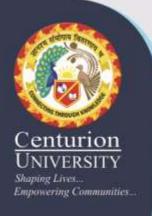
Why sustainability?

- Man entered farming with the advancement of civilization
- He learned to cultivate through trial and error and accumulated lots of traditional knowledge
- This knowledge was transferred from generation to generation
- When he realized that the land he cultivated had become unfertile after several years of repeated cultivation he shifted to new land
- Now, with limited land availability such shifting was not possible



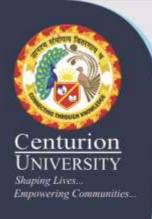
High External Input Agriculture (HEIA)

- Limitation in per capita land availability is due to increasing population
- To confront this pressure of world population explosion we are compelled to join a revolution "Green revolution"
- This revolution aims at
 - More harvest per unit area
 - Intensification of number of cultivation seasons



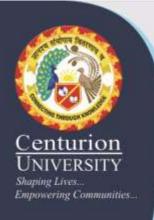
Green revolution practices

- Use High yielding hybrid seeds
- Susceptible to pests and diseases
- Increased use of synthetic pesticides and herbicides
- More use of nutrients
- Improved irrigation facilities
- Labour intensive
- Mechanization of Agriculture



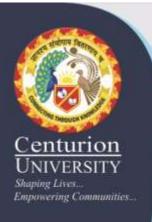
Advantages of HEIA

- Agricultural production could be rapidly increased to meet the demand for food for increasing population
- Malnutrition problem was efficiently managed
- New improved varieties gave yields within a short period of time
- Mechanization solves the problem of labour shortage
- Income and profit margins of the products were increased
- Productivity of land increased
- Increased market facilities for production



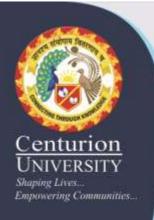
Disadvantages of HEIA

- Collapse of environmental balance due to lack of bio-diversity by planting a few cash crops
- Increase in soil erosion due to constant furrowing by machinery
- Dependence on imported machinery, chemical fertilizer, pesticides, hybrid seeds and other inputs
- Extensive use of pesticides disturbed the natural mechanism of controlling pest and diseases as the artificial pesticides kill both pests and their natural enemies
- Although the need for high capital investment, large scale farmers benefited while small scale farmers who were short of capital ran into debt.
- Use of artificial agro-chemicals adversely affected the soil pH, CEC, soil structure, soil texture and soil organisms
- Traditional varieties of seeds and their genetic resources faced extinction due to introduction of hybrid varieties.



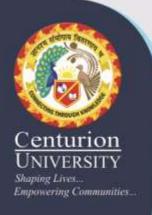
Low External Input Agriculture (LEIA)

- It is defined as a production activity that uses synthetic fertilizers or other agro-chemicals below rates commonly recommended
- It does not mean elimination of these materials but yields are maintained by greater emphasis on cultural practices, IPM and utilization of on-farm resources
- It includes maximum utilization of local resource with less dependency on external inputs for agricultural production



Low External Input and Sustainable Agriculture (LEISA)

- It relies mostly on the inputs from local farm, village or region and deliberate action is taken to ensure sustainability
- The objective of LEISA is to maintain the agricultural production at an optimum level using less external inputs in eco-friendly environment



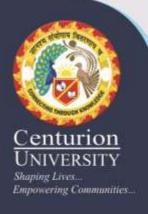
Factors affecting LEISA

- Maintaining a living soil
- Creating Bio-diversity
- Recycling of resources
- Natural pest management



Differences between HEIA and LEIA

HEIA	LEIA
Farming pattern depends heavily on external and chemical inputs	It relies on the optimal use of natural processes.
Focus of agricultural development & research.	Focus is on the sustainability of farming system.
There is a great damage to the environment.	Environmentally sound
The rising costs of agricultural inputs have made farming increasingly unprofitable	Greater emphasis ids on the long term sustenance & balance between the profit & livelihood.
HEIA depends on the higher production & profit.	Sustainable ecological practices depends on local agro –ecological conditions.
Lack of diversity in the farming practices.	Maintaining diversity.
Under HEIA system soil quality deteriorates.	LEIA maintains a healthy soil.
There is a lack of use of indigenous technologies.	Best use of indigenous technologies



THANK YOU