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## **LECTURE 11**

# **Conservation agriculture strategies in agriculture**



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## Principles of conservation agriculture:

- Continuous minimum mechanical soil disturbance.
- Permanent organic soil cover.
- Diversified crop rotations in case of annual crops or plant associations in perennial crop.



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## **Concept of conservation agriculture:**

- Excessive tillage degrades soil in long run.
- If soil is not tilled for many years produce a layer of mulch.
- This favours biological tillage.
- This may increase weed and pest infestation.
- To break the chain of infection crop rotations are adopted in CA additionally helps as biological pumps.



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Conventional Agriculture	Conservation Agriculture
Excessive mechanical tillage and soil erosion	No-till or drastically reduced tillage
High wind and soil erosion	Low wind and soil erosion
Residue burning or removal	Surface retention of residues
Water infiltration is low	Infiltration rate of water is high
Kills established weeds, but stimulates more weed seeds to germinate	Weeds are a problem in the early stages of adoption but decrease with time
Mono-cropping, less efficient rotations	Diversified and more efficient rotations
Productivity of grains in long run are declining order	Productivity of grains in long run are in incremental order
Uses ex-situ FYM/Composts	Use in-situ organics/composts



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- **Advantages of Conservation Agriculture**
  - Time saving and thus reduction in labour requirement
  - Reduction in costs
  - More output per low input
  - Organic matter increases
  - In soil water conservation
  - Improvement in soil structure
  - Reduction soil erosion
  - Improves carbon sequestration



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## **Limitations of Conservation Agriculture**

- Lack of initial knowledge .
- Initial nervousness to switch from plough based farming.
- Misconception on herbicide usage.



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# Constraints for adopting

- Lack of appropriate seeders for small and medium scale farmers
- Wide spread use of crop residues for livestock, feed and fuel
- Burning of crop residues
- Lack of knowledge about the potential of CA to agricultural leaders, extension agents and farmers
- Skilled and scientific manpower