THE 3 PRINCIPLES OF CONSERVATION AGRICULTURE

1. Minimum tillage and soil structure

Direct planting involves growing crops with minimum soil disturbance since the harvest of the previous crop. Direct planting can be used with all annual and perennial crops and vegetables. Conservation agriculture can be done manually (i.e., by hand) or mechanically (i.e., animal or tractors drawn conservation agriculture planters).

Advantages of minimum tillage

- Protects the soil against erosion by water and wind
- Cost savings: fuel, time and labour costs in the long term
- Improves soil organic matter
- Increases yield per unit of fertilizer or manure applied. Long-term decreases the amount of fertilizer per hectare.

2. Permanent soil cover with crop residues and live mulches

Mulch is any organic material (such as decayed leaves, bark, or compost) spread over the soil and surrounds a crop to enrich and insulate the soil. Live mulches are crops intercropped for purposes of providing soil cover. Crop residue or live cover protect the soil from direct impact of erosive raindrops; conserves the soil by reducing evaporation and suppresses weed growth.

Advantages of permanent cover

- Protects the soil from erosion by water or wind
- Suppresses weed germination and growth
- Improves recycling of nutrients
- Improves organic matter accumulation and carbon sequestration

3. Crop rotation and intercropping

Crop rotation means that different crops are alternated in the same field, preferably cereals (maize and wheat) followed by legumes (beans).

Advantages of crop rotation and intercropping

- Improvement of water use: crops with different rooting systems also utilize soil water at different soil depths.
- Reduction of pests and diseases: different crops are susceptible to different diseases and pests agents. Crop rotation will reduce the incidence of diseases and pests with no cost.
- Improve fertility and production: plants have different nutrient requirements at different soil depths. Rotations help to utilize all nutrients more efficiently. In addition, legumes fix nitrogen in the soil for the benefit of successive cereal crops in a rotation.

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