

ii. Reduces Green House Gases (GHG) emissions: the CA practices have great potential to mitigate GHG emissions of Nitrogen and Carbon dioxide

iii. Allows diversification, giving farmers different food types, enhancing nutrition and revenues



CONSERVATION AGRICULTURE IN POTATO PRODUCTION

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Introduction

- Climate change negatively impacts agricultural production. It manifests itself in erratic rainfall patterns, increased temperatures, droughts, flooding and emerging weeds, pests and diseases.
- Conservation agriculture (CA), which is a climate smart farming practice, is recommended to mitigate challenges posed to farming by climate change.
- Practicing of CA sustainably conserves, improves and makes more efficient use of natural resources (land, soil, water and labour).

Why Conservation Agriculture?

- Because traditional methods of farming are not able to cope with the increasing needs of the ever expanding human and livestock populations, in the face of changing climate
- Conservation actions can stop and eventually reverse land degradation
- It boosts productivity and contributes to reducing land degradation and increasing food security

Principles of Conservation Agriculture

Conservation Agriculture is based on three main principles:

- Minimum soil disturbance
- Permanent soil cover
- Crop rotations or diversification

1. Minimum soil disturbance

- Encompasses minimum till, no-till or zero-tillage practice
- Use hand tools, oxen or tractor drawn equipment for ripping, sub-soiling, ridging or just digging planting holes

- Ridge the soil to open a furrow at the points of placing potato seeds and fertilizer/manure
- Leave the other soil surface undisturbed

Benefits of minimum soil disturbance

- Enhanced soil fertility
- Improved crop nutrient use efficiency
- Reduced compaction and soil erosion
- The practice is labour saving

2. Permanent soil cover

- Once established, potato plants covers the soil completely
- After harvest, cover the soil with mulch/ residues



Mulching for moisture retention and weeds control

Benefits of permanent soil cover

- Reduces soil erosion
- Reduces evaporation
- Suppresses weeds, hence reduces cost on weeding
- It reduces use of inorganic fertilizers

3. Crop Rotation/ diversification

- Alternate crops of different species from one season to the other or cover crop that are not of the potato family (tomato, pepper, night shade, tree tomato)

Benefits of crop rotation

- Replenishes soil fertility, when nitrogen-fixing legumes are rotated with potatoes
- Reduces pests/diseases build up
- Provides residues for use in the farm
- Provides different food types, and therefore nutrition and revenues (diversification)

Guidelines for a productive CA system

- Do not burn residues (unless diseased) in the farm: retain them as mulch on the soil surface
- Do not plough the land: the process takes time, money and destroys the soil structure: do minimal tillage
- Plant certified seed and apply recommended fertilizers
- Control weeds using appropriate biological, cultural or chemical methods
- Use crop rotation to break the cycle of potato pests and diseases

Benefits of adopting CA options

i. Enhances resilience or adaptation of livelihoods and ecosystems towards extremes of climatic conditions