Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 01, Issue: 04 (SEP-OCT, 2021)
Available online at www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Conservation Agriculture

(*R.S. Bochalya, Swati Mehta, Deepak Kumar and Meenakshi Attri)
Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu-180009
*rbochalya651@gmail.com

Conservation agriculture (CA) refers to the system of raising crops without tilling the soil while retaining the crop residues on the soil surface. It can also be refers as resource efficient/resource effective agriculture. CA achieves sustainable and profitable agriculture and subsequently, improved livelihoods of farmers through the application of three CA principles; minimal soil disturbance, permanent soil cover, and crop rotation. CA aims to conserve, improve and make more efficient use of natural resources by practicing integrated management of available soil, water and biological resources combined with external inputs. It contributes to environmental conservation as well as to enhanced and sustained agricultural production. CA practices are precise land leveling by laser leveler to save water, direct sowing or drilling/no-tillage/reduced tillage for timely sowing, surface retention of crop residues and establishment of annual and perennial crops to add organic matter to the soil and avoid burning of straw, thus, pollution is reduced. The soil is thus protected from rainfall erosion and water runoff. The soil aggregates, organic matter and fertility level increase, soil compaction is reduced and use of fossil fuels and GHGs emissions are also reduced. CA allows for the management of soil and water for agricultural production without excessively disturbing them. The degradation of natural resources leading to increased cost of production, unsustainable resource use, environmental pollution and health of ecosystems. Therefore, it is very important that CA practices are adopted in different agro-ecological regions without delay. CA can be seen as a new way forward, for conserving resources and enhancing productivity to achieve goals of sustainable agriculture, which demands a strong knowledge base and a combination of institutional and technological innovation.

What is Conservation Agriculture?

It is also called as resource efficient or resource effective agriculture. Conservation agriculture is scientific practice of agriculture utilizing resource efficient/conservation technologies to save and conserve the natural resources, increase the production and productivity with concurrently conserving the environment (FAO).

Principles of Conservation Agriculture

The 3 principles of CA are:

- **Minimum tillage and soil disturbance:** 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. likoti) or mechanically (i.e. animal or tractors drawn conservation agriculture planters).

- **Permanent soil cover with crop residues and live mulches:** Mulch is any organic material (such as decaying leaves, bark, or compost) spread over the soil and around 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.
- **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 Conservation Agriculture

Conservation agriculture is generally a "win -win" situation for both farmers and the environment. Yet many people intimately involved with worldwide food production have been slow to recognize its many advantages and consider it to be a viable alternative to conventional agricultural practices that are having obvious negative impact on the environment. Much of this has to do with the fact that conservation agriculture requires a new way of thinking about agricultural production in order to understand how one could possibly attain higher yield with less labour, less water and fewer chemical inputs. In Spite of these challenges, conservation agriculture is spreading to farmers throughout the world as its benefits become more widely recognized by farmers, researchers, scientists and extensionists alike.

Conservation Agriculture helps in increase the productivity of:

- Land
- Labour
- Water
- Nutrients
- Soil biota
- Economic benefit
- Environmental benefit
- Equity considerations
- Active role of farmers

How and why conservation agriculture works

To better understand how and why the system works to enhance and sustain agricultural production while conserving natural resources, we should consider each of the essential features of agriculture one by one. These include:

- Maintaining permanent or semi-permanent soil cover.
- Minimum soil disturbance.
- Regular crop rotations.
- Utilization of green manures/cover crops.
- No burning of crops residues.
- Integrated disease and pest management.
- Reduction in fossil fuel use and greenhouse gas emissions. Controlled human and mechanical traffic over agricultural soils.

Conclusion

The agricultural sector is of vital importance for the region. It is undergoing a process of transition to a market economy, with substantial changes in the social, legal, structural, productive and supply set-ups, as is the case with all other sectors of the economy. These changes have been accompanied by a decline in agricultural production for most countries and have affected also the national seed supply sectors of the region. The region has had to face problems of food insecurity and some countries have needed food insecurity and some countries have needed food aid for IDPs and refugees.

References

1. FAO. 1996. Global Plan of Action. FAO, Rome Italy
2. FAOSTAT website (http://internal.fao.org)