Conservation Agriculture

CONSERVING RESOURCES ABOVE – AND BELOW – THE GROUND

Conservation agriculture offers a powerful option for meeting future food demands while also contributing to sustainable agriculture and rural development. CA methods can improve the efficiency of input, increase farm income, improve or sustain crop yields, and protect and revitalize soil, biodiversity and the natural resource base.

Conservation agriculture provides knowledge and tools to enable farmers to achieve acceptable profits from high and sustained crop production levels while, at the same time, conserving resources and protecting the environment. CA methods enhance natural biological processes above and below the ground by reducing interventions such as mechanical soil tillage to an absolute minimum. They also ensure that application of external inputs, such as agrochemicals and mineral or organic nutrients, does not interfere with, or disrupt, biological processes.

CONSERVATION AGRICULTURE ADDRESSES DEVELOPMENT

- **Agricultural production:** CA has tremendous potential for achieving sustainable yield increases by improving the growth conditions for crops and the efficiency of input.
- **Natural resource base:** CA reverses soil degradation processes and builds up soil fertility by facilitating better infiltration of rainwater and enabling the recharge of groundwater which reduces erosion and leaching and, in turn, water pollution.
- **Biodiversity:** CA conserves and enhances biodiversity in the field.
- **Labour shortage:** CA eliminates power-intensive soil tillage, thus reducing the drudgery and labour required for crop production by more than 50 percent for small-scale farmers. For mechanized farms, it reduces fuel requirements by 70 percent and the need for machinery by 50 percent. This is especially important for households affected by HIV/AIDS, where children or the elderly have responsibility for farm labour.

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- **Climate change:** CA reduces crop vulnerability to extreme climatic events. In drought conditions, it reduces crop water requirements by 30 percent, makes better use of soil water and facilitates deeper rooting of crops. In extremely wet conditions, CA facilitates rain water infiltration, reducing the danger of soil erosion and downstream flooding.
- **Livelihoods:** CA gives farm families opportunities to improve their livelihoods. Farmers who adopt CA no longer need to spend time tilling and can use that time in other ways, such as on-farm processing, which adds value to their production. In southern Brazil, the income-generating opportunities of CA have reversed rural-urban migration.

The Principles of Conservation Agriculture

CA offers farmers an array of practices, but at its core are three interlinked principles that can be applied in a variety of combinations to meet the needs of resource-poor farmers:

- **continuous minimal mechanical soil disturbance,**
- **permanent organic soil cover,**
- **diversified crop rotations of annual crops and plant associations of perennial crops.**

Conservation agriculture is more than a zero-tillage-based cropping system. Farmers following the CA principles use low-cost tools and equipment and traditional crop varieties without herbicides or herbicide-tolerant varieties.

CONSERVATION AGRICULTURE AND FAO – LOOKING AHEAD

Recognizing that adopting CA makes farmers less vulnerable, FAO is involved in bringing together researchers, developers and policy-makers to share information and advance CA to new frontiers. The continuing expansion of CA depends on having support of policy-makers who can ensure appropriate support mechanisms are in place.

Increase investments in sustainable agricultural practices

Public and private investments are needed for practices and technologies that sustain the natural resource base, enhance economic productivity and reduce the risks for poor farmers. This is particularly urgent in areas with widespread degradation of soil resources, especially Africa. At the same time, policies and regulations that secure farmers' rights to land over multiple seasons are needed as a precondition for farmers to invest in soil resources that may not yield returns for several years.

Enhance research, learning and knowledge sharing

Research is needed to identify practices and technologies that adhere to the three principles of CA and are affordable to small-scale farmers who have limited income and market access and cannot afford inputs. Research can provide insight into socio-economic issues, local knowledge-sharing networks and participatory learning approaches, such as farmer field schools, for dealing with agro-ecological issues such as pests, weeds, soil and organic matter.

Diversify agricultural mechanization and improve access to inputs

CA offers an alternative to plough-based agriculture and the drudgery of relying on the hand hoe but, to be successful, farmers need a regular supply of reduced-tillage equipment and seed stock for cover crops. Thus, policy should encourage local private-sector entrepreneurs to manufacture and maintain CA equipment, and to identify and market multifunctional seed stock.

Establish new market opportunities

CA has the potential to bring higher prices in emerging niche and "green" markets because of the quality and safety of its production and the environmental services generated by its production processes. Establishing GAP or organic certification processes or setting up carbon sequestration compensation mechanisms encourages farmers to shift to CA and other sustainable agriculture practices.

Global commitments

CA AND THE MILLENNIUM DEVELOPMENT GOALS (MDGS)

Through better productivity, higher profitability and reduced drudgery, CA systems have a part to play in achieving the MDGs as well as the goals of the CSD. CA's contribution to:

- **improved food security and livelihoods supports MDG-1 – to reduce hunger and poverty;**
- **enhanced quality of life for women supports MDG-3 – to support gender equity and women's empowerment;**
- **sustainable resource management and environmental services supports MDG-7 – to increase environmental protection.**

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FOR MORE INFORMATION:

Plant Production and Protection Division

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