



Concept Note

Expert Consultation Workshop on Conservation Agriculture (CA) for Formulation of CA Policy and Strategy for Asia

20-22 November 2013

Beijing, China

Background

In Asia and the Pacific region, the rate of increase in crop yields has slowed and yield gains are becoming difficult to maintain because of the degradation of land and water resources upon which agriculture is depends. In the region, agriculture in general has been changing from traditional subsistence farming to ‘modern’ commercial farming at different rates in different nations. This has led to specialization in commercialized farming with mechanization, intensive tillage and increased agrochemical use, leading to destruction of soil health and soil ecosystem functions. The use of high levels of external inputs and labour-saving technologies has resulted, in some cases, to abandoning some of the important ecologically-based practices such as crop rotation and diversified cropping.

Soil erosion, loss of soil organic matter and soil structure, and soil health resulting from soil tillage and exposed soils compels us to look for alternatives to reverse the process of soil degradation and decreasing productivity. The natural approach to this is no or minimum mechanical soil disturbance and maintaining soil cover in a diversified cropping system. This produces many benefits, and has led to movements promoting what has become generally known as Conservation Agriculture (CA). This involves no tillage and direct seeding, protection of the soil with an organic mulch cover, and crop diversification through crop rotations or associations or sequences. Practices such as the precise placement of agrochemicals, and application of animal manure, crop residues and green manure crops, can enhance the positive effects of CA. With the controlled movement of farm vehicles or permanent tracks, CA also reduces soil compaction from excessive use of heavy machinery for field operations.

Conservation Agriculture aims to conserve, improve, and make more effective use of natural resources through the integrated management of available soil, water, and biological resources, combined with purchased external inputs. It contributes to environmental conservation and enhances and sustains agricultural production. It can also be referred to as resource-efficient /resource-effective type of agriculture.

Natural ecosystems, in their altered states, have always been relied upon to support continuity of agriculture production and ecosystem services such as flood and erosion control, mediation of water quality, streamflow regulation, microclimate regulation, and biodiversity in its various forms. Improper agricultural practices can reduce the ability of ecosystems to provide food and other services. But efforts to promote food security and environmental sustainability can often reinforce each other and enable all farmers to adapt to and mitigate the impact of climate change and other stresses. Some of these efforts would be based on appropriate technologies such as CA and practices that restore natural ecosystems and improve the resilience of farming systems, thus enhancing food security. This is why CA is considered to be an ecologically suitable basis for sustainable production intensification.

Issues and challenges

Agricultural practices can reduce the ability of ecosystems to provide goods and services (also known as ecosystem services). For example, high applications of fertilizers and agrochemicals can increase nutrients and toxins in groundwater and surface water, resulting in health and water purification costs, and decreasing fishery and recreational values. Agricultural practices that degrade soil quality contribute to eutrophication of aquatic habitats and higher costs for increased fertilization, irrigation, and energy to maintain the productivity of degraded soils. Practices that change species composition or reduce biodiversity in non-agricultural systems may also diminish ecosystem goods and services, because the ability of ecosystems to provide some services depends both on the number and type of species in an ecosystem.

Conservation Agriculture is based on the principles of rebuilding the soil and maintaining its productive health, optimizing crop production inputs and labour as well as productivity and profit gains. It advocates that the social and economic benefits gained from combining production targets and protecting the environment, including reduced input and labour costs, are greater than those derived from targeting production alone. CA involves the integration of ecological management of the natural resource base with scientifically modern agricultural production.

Conservation Agriculture has been practiced for more than three decades now in different locations worldwide. Field results show that the introduction of no-tillage, mulch cover and crop rotation is economically and environmentally viable, and that CA has the ability to control weeds and retain soil moisture, providing better conditions for crop development.

Despite the obvious benefits of CA, it does not spread automatically unless it is promoted for wide adoption. The constraints that hinder adoption must be understood and addressed for specific situations. These can include a combination of intellectual, social, financial, biophysical, technical, infrastructure constraints, or policy related support. Knowing what the bottlenecks are is important in developing strategies to overcome them. Crisis situations that are likely to become more frequent as a result of climate change, and the political pressure for

more sustainable use of natural resources and environment protection, provide opportunities to harness international, national and local support for Conservation Agriculture.

CA is still a relatively new and unknown concept in Asia whereas the majority of the world's farmers practice conventional tillage-based farming. The primary constraints are intellectual - the CA concept can appear to be counterintuitive and contradicting the culture of the common tillage-based farming experience. There can also be a lack of locally generated experimental data on CA but this constraint is now not as severe as it used to be a decade or two ago because some 10% of the global cropland is now being managed using CA systems and successful experiences are now available from most agro-ecologies across all continents.

CA practice must always be developed locally, depending on the specific farming and agro-ecological conditions. Long-term experience with CA globally has shown that it does not give more or fewer problems for the farmer, but different ones like, for example, the completely new dynamics of CA systems that require a different set of management skills and learning by doing process for the farmer. Nevertheless, it should be noted that such needs can be facilitated. . For instance, in order to adopt CA, a farmer would need access to a zero-tillage direct seeder, which may be unavailable in the neighbourhood. Buying one without knowing the system or without even having seen the system is a risk that few farmers will take. Machinery dealers might not wish to promote CA, if not supported by extension trials, and also because the technology will reduce machinery sales, particularly of large tractors that would not be needed with CA.

Before a significant number of small farmers can adopt CA practices, they will need access to competent technical assistance and long-term credit at affordable rates to purchase or share a minimum set of equipment and machinery. However, CA can be practised successfully as a manual system as well as with simple and affordable animal-drawn equipment. In mechanized situation on smallholdings, CA can be practiced using CA equipment mounted on two wheel tractors.

FAO's Vision, Mission and Goal on CA

Vision

A world free of hunger and malnutrition where increased access to food and increased productivity of agriculture contribute to improving the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner

Mission

To help build a food-secure Asia for present and future generations

Goal

Increased and sustained agricultural productivity, production and profitability in Asia

Outcome

Conservation Agriculture scaled up and mainstreamed in national and regional policies and programmes.

Objectives

The objectives of organizing an Expert Consultation Workshop on Conservation Agriculture (CA) for formulation of CA policy and strategy for Asia are to:

- 1) promote awareness of CA and its benefits;
- 2) share experiences and knowledge on CA based on cases in the region and from outside; and
- 3) promote the mainstreaming of CA as a basis for sustainable production intensification in agriculture development through formulation of CA policy and strategy for Asia.

Output

- 1) Awareness on CA programme raised and promoted.
- 2) CA experiences and knowledge shared with the regional member countries and partners.
- 3) CA policy and strategy for Asia formulated and shared.
- 4) Regional CA Network established

Expected participants

One or two participant/s from each country government, CA researchers, development agencies including NGOs, and farmers in the region as well as experts from global CA networks and private sectors.

Timing and venue

Date: 20-22 November 2013.

Venue: Beijing, China.