Conservation Agriculture is a farming system that maintains a permanent soil cover to assure its protection, avoids soil tillage, and cultivates a diverse range of plant species to improve soil conditions, reduce land degradation and increase water and nutrient use efficiency.

It enhances biodiversity and natural biological processes above and below the ground surface for improved and sustained crop productivity.

What FAO does

Conservation Agriculture is a response to sustainable land management, environmental protection and climate change adaptation and mitigation. FAO promotes the adoption of Conservation Agriculture principles (minimal soil disturbance, permanent soil cover and crop rotations) that are universally applicable in all agricultural landscapes and cropping systems.

FAO provides member countries with technical support for:

1. Governments in designing, formulating and planning national strategies and policies that can provide required incentives for farmers to adopt Conservation Agriculture practices that are climate resilient and make investments in sustainable agricultural mechanization. Farmers - especially smallholders - can in turn move away from inefficient agronomic management practices, and shift from manual labour to levels of mechanization that offer higher returns.

2. Farmers, service providers and extension agents through training on Conservation Agriculture and sustainable mechanization. FAO also develops training materials and guides that can be used in programmes, introduced in agricultural universities’ curricula, and useful for awareness raising among researchers and policymakers.

3. Implementing location-specific practices and identifying suitable crops to improve production systems that are resilient within the social, economic and cultural context under current climate conditions, as well as under prospective climate scenarios, and identifying existing or potential markets for inputs and/or outputs.

4. Increasing agricultural production by implementing Conservation Agriculture practices to better respond to emergency food needs within a food self-sufficiency policy context.
Understanding the Context

In many countries, intensive crop production has depleted the soil, thus jeopardizing our ability to maintain future production in these areas. It is essential to move towards environmentally friendly farming systems that produce more from the same area of land while reducing negative environmental impacts and enhancing benefits people obtain from healthy ecosystems. Healthy soils maintain a diverse community of soil organisms that help to control plant disease, insect and weed populations; recycle soil nutrients; improve soil structure with positive effects on water holding capacity and nutrient retention and supply; and ultimately improve crop production. Conservation Agriculture can enhance productivity of farmland already in use and can regenerate land left in poor condition by past misuse. It also provides environmental benefits by reducing soil erosion, nutrient losses, and increasing the resilience of farmers against climate variability.

Conservation Agriculture is based on three main principles (which are adapted to local conditions and needs):

1. **Continuous minimum mechanical soil disturbance** with direct seeding (i.e. no-tillage). The disturbed area must be less than 15 cm wide or less than 25% of the cropped area (whichever is lower). Mechanical disturbance should be limited to the purpose of placing seed or fertilizer. This fights against soil erosion and preserves soil organisms.

2. **Permanent soil organic cover** with crop residues and/or cover crops to the extent allowed by water availability. Ground cover is measured immediately after the direct seeding operation, and the area should have over 30% cover. This allows the retention of a protective layer of vegetation on the soil surface to suppress weeds, protect the soil from the impact of weather and avoid soil compaction.

3. **Species diversification** through varied crop sequences and associations involving at least three different crops. A well-designed crop rotation promotes good soil structure, fosters a diverse range of soil flora and fauna that contribute to nutrient cycling and plant nutrition, and prevents phytosanitary diseases.

Conservation Agriculture can regenerate land left in poor condition by past misuse. It also provides environmental benefits by reducing soil erosion, nutrient losses, and increasing the resilience of farmers against climate variability. Conservation Agriculture, along with effective nutrient management, including nitrogen, phosphorus and sulphur, contributes to increasing the accumulation of soil organic carbon. Conservation Agriculture can contribute to reducing greenhouse gas emissions by reducing energy inputs (lower fuel consumption per unit area per unit output), improving nutrient use efficiency (reducing nitrous oxide emissions), and stabilizing and protecting soil aggregates from breaking down and releasing carbon to the atmosphere.