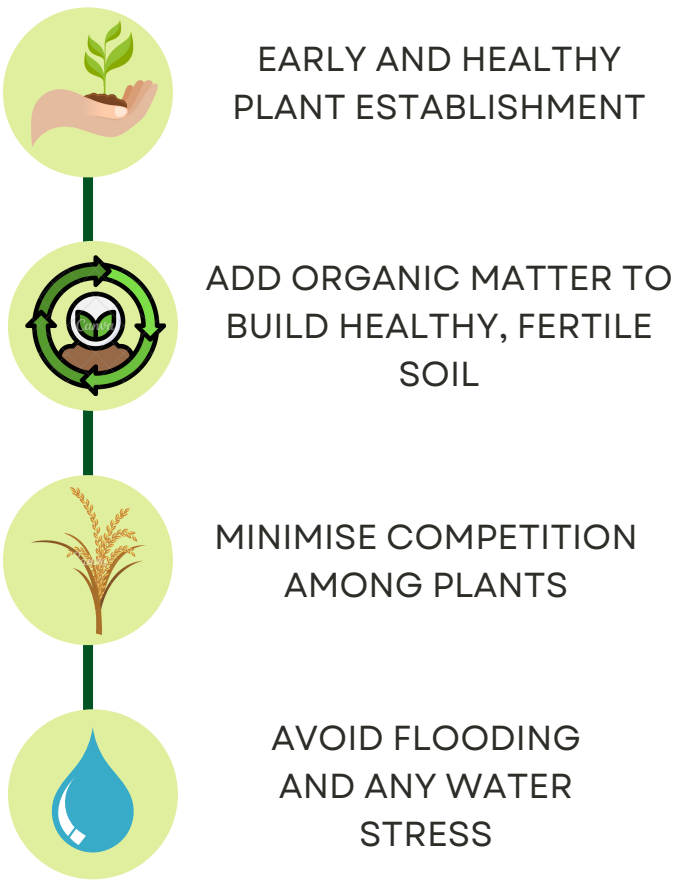


Sustainable Intensification of Rice Farming

The System of Rice Intensification (SRI) + Conservation Agriculture (CA)

What is SRI?
SRI is an **agroecological approach to growing rice**, which allows farmers to **increase yields**, while at the same time **decrease inputs** such as water, chemical fertilizers, herbicides and pesticides. SRI can be applied to all varieties of rice.



MINIMUM SOIL DISTURBANCE

PERMANENT SOIL COVER

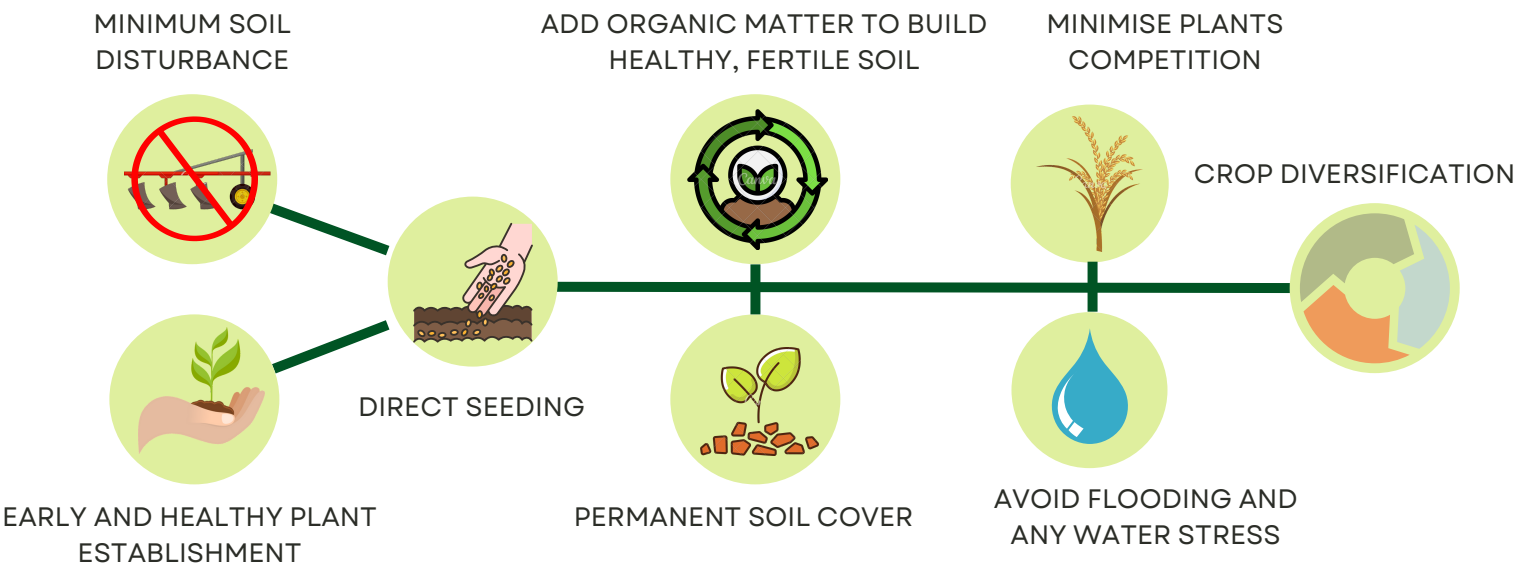
CROP DIVERSIFICATION



What is CA?
CA is a **farming system approach** that **increases available soil water**, **reduces** heat and drought **stress**, and **builds up** long-term **soil health**. CA conserves natural resources, biodiversity and labor.

How is SRI + CA possible?

The principles of SRI and CA can be merged for sustainably intensify rice farming. Minimum soil disturbance and early plant establishment are combined through direct seeding of rice (or by transplanting young seedlings into non-tilled fields). Soil cover as prescribed by CA is reinforced by the SRI mandate to add organic matter to build healthy soil. Avoiding flooded conditions and widely-spaced rice plants under SRI methods allows for intercropping. Crop rotation is another strategy to ensure crop diversification in the farming system.



Why SRI+CA?

CA and SRI are both resource-conserving and sustainable farming methods meaning synergies arise from the combination of their practices.

SRI enhances plants' phenotype from any given rice genotype while reducing water usage and building fertile soil. CA increases the sustainability of the whole agricultural system by improving soil structure and boosting biological activities

Enhanced Water Efficiency

SRI typically reduces water usage by 25-50% with an average of 3.3 million litres of water saved per hectare. CA increases soil water-holding-capacity and reduces evaporation, further lessening the need of water.

Enhanced Soil Biodiversity and Resilience

Avoiding continuous flooding allows aerobic soil biota to thrive. Permanent organic mulch, crop diversity and undisturbed soil through no-till result in enhanced soil biodiversity that ensures a balanced nutrient cycle in the soil and improves the resilience of the whole farming system. The organisms in the soil food web are also directly responsible for the augmented carbon transformation and the subsequent sequestration into the soil.

Enhanced Yields

SRI increases grain yield by at least 20-50% with some studies reporting increases up to 100% or more. CA applied to rice farming increases yield by 12% while also improving soil quality. Combining the two methods allows positive synergies for increased yields.

Reduced GHG emissions

SRI water management results in a drastic reduction of methane (CH₄) emissions from paddies ranging from 50% up to 80%. Both SRI and CA discourage the use of chemical inputs while relying on the enhancement of ecosystem services (nutrient cycle, natural nitrogen fixation, natural pest management through enhanced biodiversity etc.). Minimizing with the aim of avoiding the use of synthetic inputs highly reduces the emission of GHG like nitrous oxide (N₂O).

Why do we need Sustainable Intensification?

To increase agriculture yields without adverse impacts on the environment by taking the whole ecosystem into consideration.

A paradigm shift is needed to ensure food security and high-quality nutrition while fighting climate change. Given the relevance of rice production (9-19% of global CH₄ emissions, source of livelihood for 1 billion people and staple food for 3 billion) the sustainable intensification of rice farming is a priority for ensuring a livable future.

SRI and CA agro-ecological principles lead to and enable sustainable intensification of rice farming, integrating their practices allows for positive synergies.