



The System of Rice Intensification (SRI)... ... is climate-smart rice production

SRI creates a *triple-win* situation for agriculture, climate security, and food security because it:

1. Sustainably increases rice production and farmer incomes (greater crop *productivity*)
2. Strengthens crops' resilience to climate change and variability (facilitates *adaptation*)
3. Reduces rice production's contribution to climate change (helps promote *mitigation*)

1. Productivity

**Rice yields are increased by 20-50%
– sometimes >100-200%**

*SRI methods work for hybrids, HYVs,
local and indigenous varieties*

- Higher water productivity gives 'more crop per drop'
 - **Reductions in irrigation water requirements** – by 30-50% per hectare; and
 - **Higher water productivity** – more output of grain per unit of water input – by 30-100% [1]
- Higher nutrient-use efficiency
 - **Less fertilizer and agrochemical inputs** needed by 30-50%, and by 100% with organic SRI when relying on organic fertilization; higher nutrient uptake by larger root systems [2]
- Higher seed productivity and better quality
 - **Seed multiplication rate** can be >1000 times, compared to 90x with standard methods
- Greater factor productivity
 - **Labor productivity** – higher rice yield per day of labor [4]
 - **Benefit-cost ratio** higher due to higher yields with similar or lower production costs [4, 7]

2. Adaptation

SRI plants show improved resistance to drought, floods, storms, pests, diseases

- Improved drought resistance
 - SRI plants thrive with 30-50% less irrigation water per land area, due to deeper, larger, less-senescent root systems [5,7]
 - Reduced competition among plants creates stronger plants above and below ground
 - Organic matter-enriched soils able to store more water and furnish nutrients
- Higher pest and disease resistance [6,8]
 - Stronger and healthier plants
 - Less humidity in the plant canopy
- Greater resistance toward rain and wind damage from storms
 - Thicker tillers, deeper roots, wider spacing
 - Increased uptake of silicon into leaves and tillers from soil that has aerobic conditions
 - Reduced lodging – 10% lodging vs. 55% under conventional cultivation methods [6]



Vietnamese farmer shows the difference between SRI-managed rice (left) and conventional rice (right) after a typhoon.



An Indian farmer shows healthy SRI-managed rice plants during a drought.

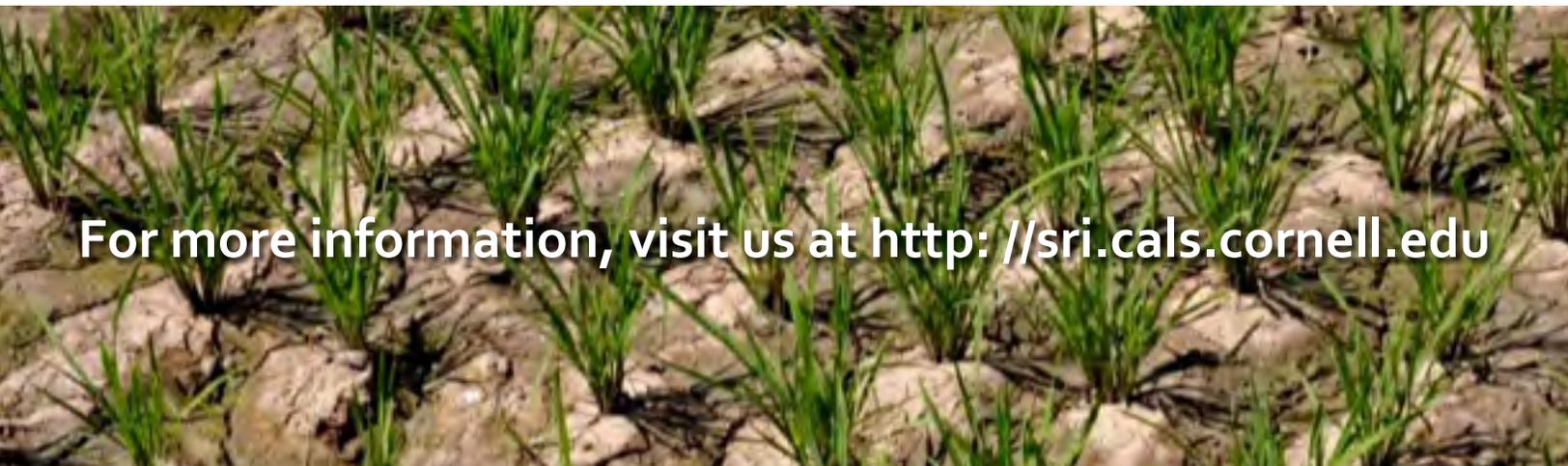
3. Mitigation

SRI enhances carbon sinks and lowers emissions that contribute to GWP

- **Expansion of carbon sinks**
 - **SRI rice plants sequester more carbon** – higher grain and straw yield, and more root biomass
 - **Increased soil organic matter** through SRI practices that improve the soil with more organic matter application and increased root exudates
 - **Associated agro-ecological practices sequester carbon**, such as green manure production, integration with agroforestry, surface mulch applications, etc.
 - **Reduced carbon footprint** due to less use of agrochemicals (including the manufacturing, and shipping of fertilizer)
- **Reduced greenhouse gas (GHG) emissions from paddy soils**
 - **Methane (CH₄) is reduced** by between 22% and 64%, as soils are maintained under mostly aerobic conditions [10,11,3]
 - **Nitrous oxide (N₂O) is only slightly increased or sometimes reduced** as use of N fertilizers is reduced; N₂O increases do not offset CH₄ reductions, so GWP is reduced [9,10,11,12]
 - **Total global warming potential (GWP) from flooded rice paddies is reduced** 20-30% [10,12,3], even up to 73% [11]

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