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-senescing 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 typhooon.

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 (CH_4) is reduced*** by between 22% and 64%, as soils are maintained under mostly aerobic conditions [10,11,3]
  - ***Nitrous oxide (N_2O) is only slightly increased*** or *sometimes reduced* as use of N fertilizers is reduced; N20 increases do not offset CH_4 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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