

A close-up photograph of several green rice panicles, showing the individual grains in detail. The panicles are arranged in a diagonal line from the top left towards the bottom right. The background is a soft, out-of-focus green.

# Introduction to SRI

**Anochao Potjanathamrongpong  
Hanni Opperl**



## Rice is the...

Most widely consumed staple food for over  $\frac{1}{2}$  of the world's population...

Agricultural commodity with the 3rd highest worldwide production...

Most important food crop providing more than  $\frac{1}{5}$  of the calories consumed worldwide.



# Rice & Its Byproducts

**1. Rice**—the dominant dietary energy source in 31 countries

**2. Rice Hulls**—used as a building material, animal bedding, fertilizer or soil amendment, insulation material or fuel

# Rice & Its Byproducts

**3. Rice Bran**—rich in fiber and fatty acids and can be processed into healthy oil or used in livestock feed

**4. Rice Straw**—used as animal feed, mulch, a medium for mushroom production, and a building and insulation material



**Rice matters!**



# Global Rice Challenges

Slowed yield growth =  
insufficient production

Rising temperatures

Urbanization

Increased Pest Pressures

Decreased Water Availability

Increased Salinity

Rising Farm Debts/Falling Income





## The Rice Situation in Thailand

In 2017, the value of Thai rice traded was 174.5 billion baht.

In 2020, Thailand was the world's third largest rice exporter.

Fully half of Thailand's agricultural land is devoted to rice.



## Rice Challenges in Thailand

Competition

Commodity Prices

Severe Drought & Temperate Increase

Farmer Debt & Landownership Decline

Low Yields

High Production Costs





**What can be  
done?**



The **System of Rice Intensification (SRI)** is a method of rice production that seeks to address **yield** and **water** issues.

Developed in 1983 by  
Father Henri de  
Laulanie, it has now  
been validated in 41  
countries worldwide.

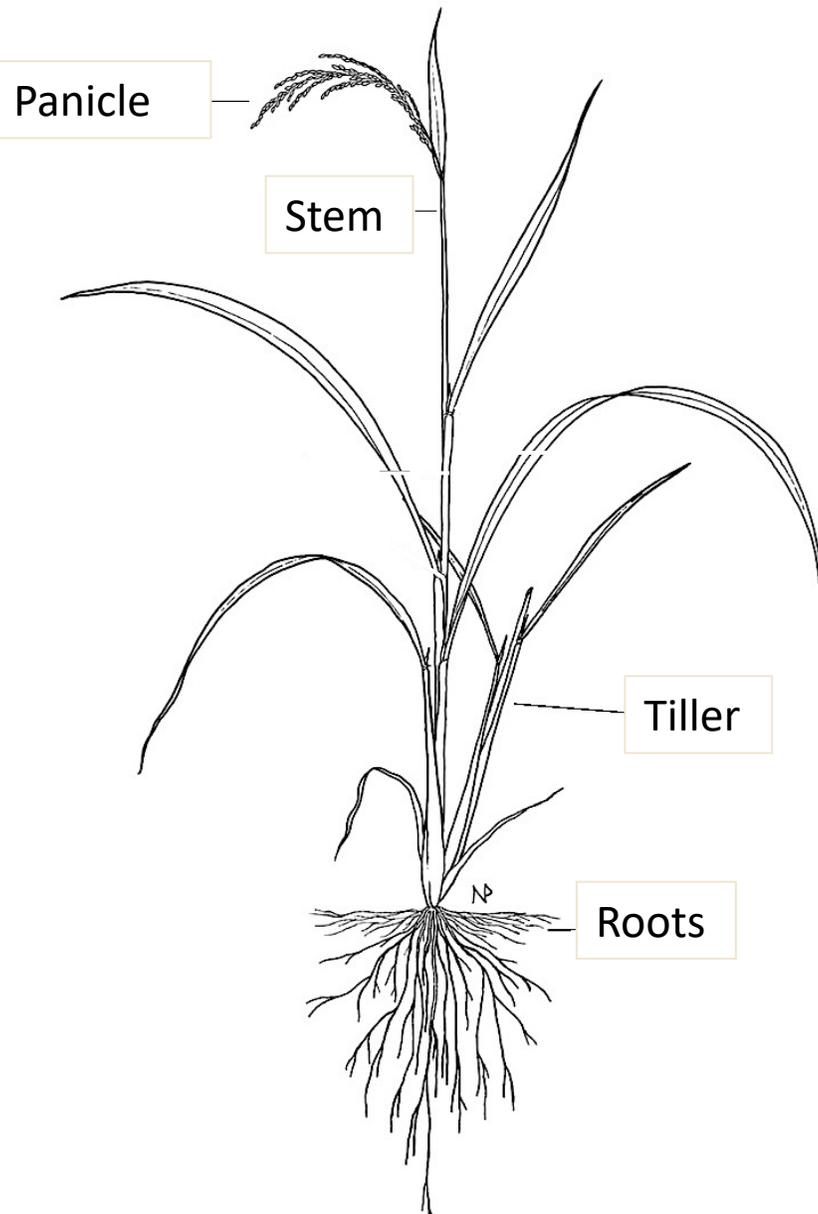




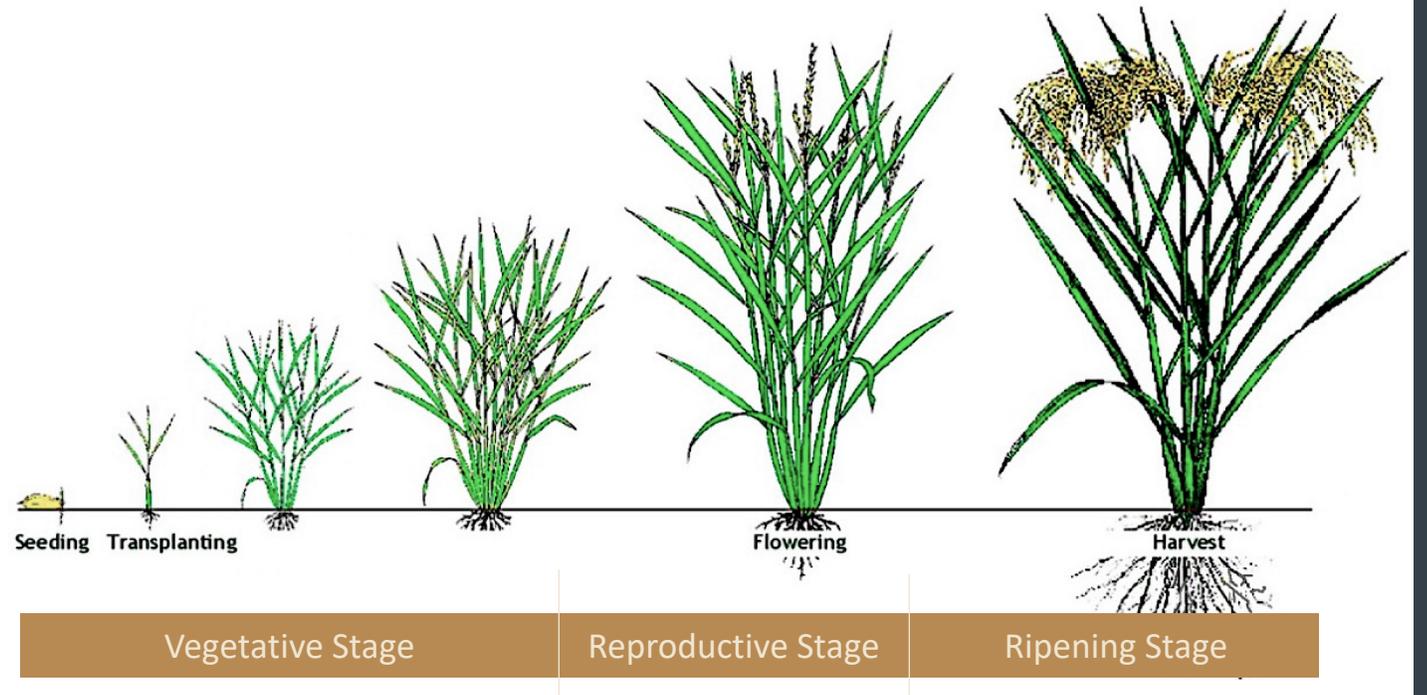
# Key Principles of SRI

1. Early plant establishment
2. Reduced plant density
3. Alternation of wet and dry periods
4. Improved soil conditions

*Oryza sativa*—Rice



# The parts of a rice plant...



# Early Plant Establishment

Transplant at 8-12 days.

Plant shallowly and quickly.

Less root system damage and quicker recovery time.



# Early Plant Establishment— Preparing a Seedbed

Soak to identify viable seeds.

Seed shallowly and non-densely.

Cover with 1 cm of soil.



# Early Plant Establishment– Preparing the Rice Paddies

Level paddies, clear  
drainage trenches,  
strengthen ridges, and  
plow.

Release water prior to  
planting.





## Reduced Plant Density

Plant 1 seedling per hill.  
Space in 25 x 25 cm grid.

Up to 20-30 tillers per  
plant.

Greater resistance to  
disease, drought, wind  
and storms.



## Reduced Plant Density–Creating a Grid

Grid spacings of 25 x 25 cm.  
Efficient planting and easier weeding.  
A variety of tool options.



## Reduced Plant Density–Transplanting Tips

Plant seedlings at grid intersections.  
Plant with seed sac and soil attached.  
Do not invert roots.



# Alternation of Wet & Dry Periods

Improves root growth.  
Promotes aerobic soil  
organism populations.

Flood then dry  
completely.  
Allow soil surface to crack.

# Alternation of Wet & Dry Periods–Weeding

Weed 2-3 times per season.

Many tools options.

Rotary weeders incorporate  
weeds into the soil and  
aerate the root system.





## **Soil Enrichment**

Improve nutrient  
and water holding  
capacity.

Increase microbial  
life.

Support root  
growth.

# Soil Enrichment –Cover Crops

Build soil fertility.  
Break disease and pest  
cycles.

Suppress weeds.  
Lessen erosion/runoff.  
Regulate soil  
temperature.



So, what are the  
benefits of the  
**System of Rice  
Intensification  
(SRI) ?**





## Benefits of SRI

- 80-90% less seed
- 50% less water
- 20-50% more yield
- 10% more milling outturn

# Benefits of SRI

- 70% increase in farmer net returns
- 66% increase in farmer productivity
- 46% increase in fertilizer use efficiency
- 30% decrease in energy output
- 17% decrease in greenhouse gas emissions









# SRI & Seed Saving

Genetically uniform seeds.

Ease of identification and saving of high quality seeds.



# Potential Constraints to SRI Adoption

- Negative perceptions
- Labor Increase/Access
  - Water Level Management
- Access to organic inputs





## Conclusion

SRI's potential to increase yields, while decreasing inputs, make it a valuable option for rice farmers.

While failed field trials also exist, it is a methodology that can, and should, be adopted to local conditions and traditions.

# Thank you!

[echoasia@echocommunity.org](mailto:echoasia@echocommunity.org)  
[echocommunity.org](http://echocommunity.org)



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