

ANGRAU Initiatives for SRI and Lessons from Andhra Pradesh

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FACTS

- Water requirement for human and industrial needs is increasing
- Consequently, water availability for agriculture will become a scarcer commodity in future
- Demand for rice growing is increasing with increasing population
- Rice is a water-intensive crop
- Hence, any activity that can produce more rice with less water will be important for sustainable water and food security

Solution ?

- System of Rice Intensification (SRI) can improve the productivity of land, labour, capital and water simultaneously
- National goal: Bring 25% of irrigated area under SRI, to increase production by 20 million tons and reduce water requirement by 25%

6 KEY SRI PRINCIPLES

- ✓ Young seedlings
- ✓ Careful transplanting
- ✓ Wider spacing
- ✓ Water management
- ✓ Weeding
- ✓ Compost

ANGRAU in SRI promotion emphasizes the six key principles in SRI

- 1. Young Seedlings:**
Transplanting very young
seedlings, usually 8-12 days old





2. Careful

transplanting:

Seedlings are transplanted singly, and very carefully -- to cause minimum 'trauma' and 'shock' to the young plants

3. Wider Spacing: using marker



Transplanting seedlings with wide spacing and in a square pattern, at 25X25 cm.



4. Water Management:



The soil is kept moist but not inundated during the vegetative growth phase. A thin layer of water should be maintained during panicle initiation and grain filling stage.

5. Weeding:

3 - 4 weeding at 10-day intervals with modified conoweeder is essential



6. Compost:



Instead of chemical fertilizers alone, FYM or compost should be applied as a source of nutrients



Institutions involved on SRI work in AP:

- **ANGRAU**
 - **DRR/ICAR**
 - **AP State Department of Agriculture**
 - **WWF International- ICRISAT**
 - **WALAMTARI**
 - **CSA**
 - **WASSAN**
- } **NGO's**

ANGRAU Initiatives in SRI Promotion:

□ National-level training programme on SRI for Nodal Officers of DOA from various states in July 2004 with the support of Directorate of Rice Development, Patna, GOI



□ 250 FLDs on SRI technology were organized during Kharif 2004 in all the districts in collaboration with DRR, Hyderabad.



ANGRAU Initiatives in SRI Promotion:

□ Farmers' workshops on SRI were organised during 2004, 2005, 2006, 2007 & 2008 with 60 SRI cultivators under WWF-ICRISAT project (Contd.)

□ ANGRAU entered into MOU with WWF International-ICRISAT for an action research project: Dialogue with Farmers, Scientists and Private Firms to understand the role of SRI method of paddy cultivation in reducing water crisis during Rabi 2004-05 to Rabi 2007-08

□ Conducted farmers' workshops on SRI in East and West Godavari and Warangal districts in 2004-05

ANGRAU Initiatives in SRI Promotion:

☐ Scientists of DAATTCs and KVKs participated in *Rythu Chaitanya Yatras* during May 2005, 2006, 2007 & 2008

☐ WWF and ANGRAU jointly organised dialogue on SRI with Chief Minister, politicians, scientists, farmers and media in November 2005

☐ WWF SRI interaction meeting with scientists and farmers was organized in October 2006. Dr. Norman Uphoff shared his experiences with SRI farmers of AP



ANGRAU Initiatives in SRI Promotion:

- ❑ Several on-farm demonstrations conducted through DAATTCs & KVKs on SRI (Contd.)
- ❑ OFDs at 1,043 locations in AP: gave positive impact in terms of plant growth, yield and net returns – with an average yield advantage of 36%
- ❑ Capacity-building programmes and farmers' meetings were organized
- ❑ Hosted and helped organise 1st National Symposium on SRI in Hyderabad in November 2006
- ❑ Co-sponsored 2nd National Symposium on SRI in Tripura in October 2007

Working Committee on SRI

- Constituted of representatives from scientists, farmers, DOA and NGOs
- Purpose is to guide & monitor the SRI diffusion process
- Committee met twice so far
- Decided to publish an SRI Newsletter
- Members are educating as many farmers as possible on SRI



SRI Up-scaling – New approach

- Followed with 19 farmers in Nalgonda District during Rabi 2007-08
- Project farmers were provided with experiential learning
- Each farmer was asked to motivate 10 farmers in his or her village



SRI Results:

Season	No. of trials	<u>Yield (kg/ha)</u>	
		SRI	Conventional
Kharif 2003	134	8,300	5,300
Rabi 2003-04	94	9,700	7,100
Kharif 2004	194	7,800	5,900
Rabi 2004-05	224	7,200	6,000
Kharif 2005	236	6,900	5,300
Rabi 2005-06	50	5,000	4,000
Kharif 2006	92	7,157	5,710
Rabi 2007	19	8,250	6,562
TOTAL	1,043	7,538	5,733

SRI Resource Materials

With support of WWF International-ICRISAT, ANGRAU has produced:

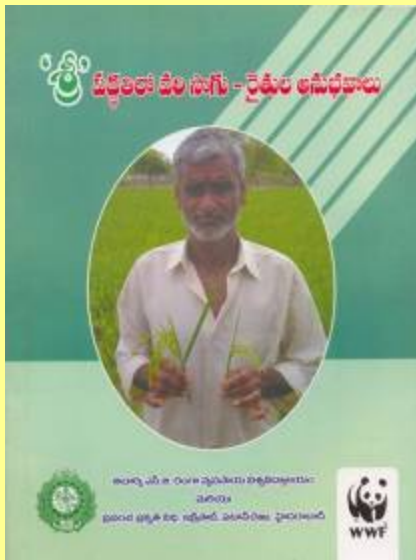
➤ 5,000 SRI manuals, and 10,000 booklets – 5,000 each in English and Telugu



➤ 2,000 copies of book on SRI farmers experiences -- in Telugu

➤ CD on SRI cultivation

➤ 1,000 copies of monograph on *Farmers' Experiences in SRI Cultivation* – in English



Overall impact of SRI

- Research results showed that **average tiller density** varied from 160 to 937/m² in the conventional cultivation, while it ranged from 154 to 1,074/m² in SRI
- Average **maximum grain yield** with conventional and SRI methods was, respectively: 8.1 t ha⁻¹ vs. 10.0 t ha⁻¹
- Overall **average grain yield** was 5.8 t ha⁻¹ vs. 7.5 t ha⁻¹
- **Grains per panicle** was higher by 40.2% in SRI, and maximum grains per panicle was, respectively, 446 and 469 with conventional and SRI practices

- **Irrigation water economy** was also observed to be far better with SRI as compared to farmers' practice of continuous flooding maintained at typical representative university's experimental stations. The quantum of water savings ranged from 9 to 39%
- **Pest incidence** with respect of stem borer, brown plant hopper and leaf folder was greater in conventional system as compared to SRI methodology, reinforcing the common observation that using less chemicals, as in SRI, triggers *systemic acquired resistance* (SAR) in crop plants.
- **Crop harvest** (maturity) was advanced by 7 – 10 days

Force Field Analysis

A. Driving forces (according to farmers)

- Higher grain yield (83%)
- Low seed rate (81%)
- Water saving (81%)
- More productive tillers (80%)
- Reduced pest and diseases (79%)
- Suitable for seed multiplication (78%)
- Higher grain weight (47%)
- Better quality grain (29%)

Force Field Analysis

B. Restraining Forces

- Drudgery in weeding (89%)
- Difficulty in transplanting young seedlings (81%)
- Difficulty in alternate wetting and drying (58%)
- Non-availability of organic manures (51%)
- Requirement of more skilled labour (46%)
- No suitable agricultural implements (45%)

Constraints – Farmers'

views

- ❑ Drudgery involved in nursery raising & transplanting young seedlings using marker and manual cono weeding
- ❑ Weed management in SRI field is difficult
- ❑ Lack of standardised protocol, as a result, different actors practise SRI differently
- ❑ Lack of institutional support
- ❑ Most of the farmers felt that SRI is labour-intensive technology
- ❑ Because of these constraints, many of the farmers discontinue during 2nd year
- ❑ Lack of skilled force available for



Strategies for SRI up-scaling

- ❖ Massive awareness-building programme
- ❖ Formation of state/national-level working committees to monitor the SRI process
- ❖ Capacity-building for farmers, field extension staff and labour force, including imparting skills to farm labourers, including tenant farmers
- ❖ Government subsidies for critical inputs
- ❖ Documentation of success stories, exposure visits and interaction sessions
- ❖ Large-scale on-farm demonstrations of 20 – 30 ha
- ❖ Exposure visits under ATMA to large-scale OFDs
- ❖ Implements museum

Impact of SRI on Rice Farming Community

- **2 kg of seed rate is sufficient to save:**
0.4 million tonnes of rice in AP alone --
worth about Rs. 300 crores
- **Young seedlings can give more yield**
- **Single seedling per hill is enough for obtaining good yield**
- **Rice can be cultivated with less amount of water than now used**

Conclusions:

- SRI has the advantages of cost-effectiveness and increased yields per unit area over conventional paddy cultivation
- Extension, research and policy support for SRI must be given immediate attention
- For scaling up SRI, strong research data base on SRI, large-scale demonstrations, multi-location trials, motorised cono weeder, and skills upgrading of SRI partners including labourers are needed



THANK YOU