

PERFORMANCE OF SCI CROPS DURING THE DROUGHT OF 2009

- Experiences from HP & UKD-



PEOPLE'S SCIENCE INSTITUTE, DEHRADUN

SRI-Workshop 23rd December 2009, New Delhi

SRI – A Boon for Mountain Farmers

- 88% of farmers are small and marginal farmers with less than 0.4 ha (1 acre) per family.
- Rice and wheat are the staple food of the populace.
- Higher stalk volume means more fodder for the cattle.
- More farmyard manure and possibly increased milk yields.



POTENTIAL TO ADDRESS THE FOOD SECURITY AND LIVELIHOOD NEEDS OF SMALL AND MARGINAL FARMERS

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Upscaling SRI in Himachal Pradesh & Uttarakhand (2006 - 08)

Particulars	2006		2007		2008	
	Conventional	SRI	Conventional	SRI	Conventional	SRI
No. of Farmers (Villages)	40 (25)		591 (133)		12,214 (496)	
Area (ha)	-	0.95	-	15.00	-	252.98
Average Grain Yield (Q/ha)	31.5	52.5	28.5	54	39.5	60.5
Per Cent Increase in Grain Yield	-	67	-	89	-	53
Average Straw Yield (Q/ha)	58	72.5	55	73.5	110.5	145
Per cent Increase in Straw Yield	-	25	-	34	-	31

The average percent increase in grain yield is about 70 per cent

Average landholding under SRI : 0.02 ha/household

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SRI Kharif Programme (2009)

Goal - To enable mountain farmers of Himachal Pradesh and Uttarakhand to enhance food and livelihood security through adoption of the SRI technique

Objectives -

- Undertake capacity building of 16,000 farmers to adopt the SRI during Kharif in UKD & HP covering 897 ha.
- Build capacities on SRI of 30 voluntary organizations by creating a talent pool of 47 master trainers & 190 village level resource persons from 448 villages.
- Influence states' agricultural policy for promoting the extension of the SRI technique.

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Capacity Building

- Twelve 3 days' Training Programmes conducted covering 47 Master Trainers and 190 Village Level Resource Persons (44 % F)
- 317 two days' orientation workshops conducted covering 14,605 farmers (59 % Women; 29 % SC/ST)
- User-friendly manual on SRI (in Hindi) for farmers.
- Poster set on SRI (in Hindi) for MIs and VLRPs
- Film on SRI (in Hindi)
- Field support & trouble shooting

8,170 Farmers (56% of the trained farmers) adopted SRI

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% Rainfall Departure during 2009

State	June	July	August	September
Uttarakhand	-58%	-46%	-52%	+31%
Himachal Pradesh	-59%	-25%	-37%	+6%

Source: Indian Meteorological Department, 2009

Coverage under SRI during Kharif 2009

Items	Field Condition	UKD	HP	Total
Farmers	Irrigated	1,131	2,000	3,131
	Rainfed	8,299	1,795	10,094
	Sub-total	9,430	3,795	13,225
Area (ha)	Irrigated	33.56	69.78	103.34
	Rainfed	369.98	71.62	441.6
	Sub-total	403.54	141.4	544.94

- 13, 225 farmers (83 %) adopted SRI against a target of 16,000 farmers
- 545 ha (61 %) covered under SRI against a proposed target of 897 ha
- 0.04 ha/household against a target 0.05 ha/household
- In addition, about 1,700 farmers were mobilized to adopt SRI principles in other crops covering 41.98 ha

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Alterations in Practices - SRI

Recommended Practices	Normal Year	Drought Year (2009)
Young Seedling	8-12 days	10-25 days
Wider Spacing	25 x 25 cm	P to P : 15-25cm R to R : 15-20cm
Single Seedling / hill	1 / hill	1-3/ hill
Alternative Wetting & Drying	✓	Not under control
Inter Cultivation	2+ (mechanical weeding)	1+ (mechanical/ manual weeding)
Organic Matter	PAM	PAM

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SRI Crop Performance during Kharif 2009

Particulars	Rainfed				Irrigated			
	UKD		HP		UKD		HP	
	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI
No. of Effective Tillers/ hill	3	12	4	18	5	18	8	23
Average Plant Height (cm)	70	86	86	98	95	108	96	112
Average Panicle Length (cm)	14	19	18	26	20	26	22	28
Average no. of grains /Panicle	64	102	79	230	113	170	109	189
Grain Yield (Q/ha)	11	19	34	63	26	46	29	59
Straw Yield (Q/ha)	19	27	58	101	59	97	91	128
% Inc. in Grain Yield	-	73	-	74	-	77	-	103
% Inc. in Straw Yield	-	42	-	78	-	64	-	41

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Comparative Crop Cutting Results of 2009

S. No.	Particulars	Normal Year (2006-2008)		Drought Year (2009)	
		Conventional	SRI	Conventional	SRI
1	Average no. of effective tillers/ Plant	7	21	5	18
2	Average Plant Height (cm)	99	122	88	102
3	Average Panicle Length (cm)	18	24	19	25
4	Average No. of Grains/Panicle	93	177	90	174
5	Grain Yield (Q/ha)	36	55	25	48
6	Straw Yield (Q/ha)	111	145	51	85

The grain yields of conventional crop decreased by 31% as compared to reduction of only 13% in SRI crop.

In the drought year while non-SRI yields stood close to 25 quintals per ha, the SRI yields were about 48 quintals per ha (average increase of 92 %).

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Adaptations for Finger Millet & Maize

Practice	Finger Millet		Maize	
	Conven.	SCI	Conven.	SCI
Young Seeding	Broad-casting	Transplanting @ 15-20 days or direct line sowing	Direct seed Sowing	Direct seed sowing
Spacing	Thinning out	P to P : 20 cm R to R: 20 cm	Broadcasting	P to P : 30 cm R to R : 30 cm
Single Seeding/hill	-	1 plant/hill or line sowing	-	1-2 seeds/hill
Inter-Cultivation	2+ (man. weeding)	2+ (man. weeding)	1+ (man. weeding)	2+ (man. weeding)
Organic matter	Compost	Matka Khad, Vermi-compost, PAM	Compost	Cow dung, Matka Khad, PAM

Finger Millet: 340 farmers - 8.04 ha

Maize: 183 farmers - 10.34 ha

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Results of SCI-Finger Millet & Maize during Kharif 2009



Particulars	Finger Millet		Maize	
	Conven.	SCI	Conven.	SCI
Avg. no. of ears/plant (in maize: cob/plant)	3	5	2	3
Average Plant Height (cm)	69.5	88.5	149.4	173.7
Average no. of grains /ear (in maize: cobs/cob)	290	428	225	248
Grain Yield (T/ha)	1.2	1.8	17.1	22.9
% Inc. in Grain Yield	-	50	-	34

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Adaptations for Black Gram & Soyabean

Practice	Black Gram		Soyabean	
	Conven.	SCI	Conven.	SCI
Young Seedling	Direct seed Sowing	Direct seed Sowing	Direct seed Sowing	Direct seed sowing
Wider Spacing	Broadcasting	P to P: 25 cm R to R: 30cm	Broadcasting	P to P: 30 cm R to R: 30 cm
Single Seedling /hill	-	1-2 Seed/ hill	-	1-2 seeds/hill
Inter-Cultivation	1+ (manual weeding)	2+ (manual weeding)	1+ (manual weeding)	2+ (manual weeding)
Organic Matter	Compost	Cow dung, <i>Matka Khad</i> , PAM	Compost	Cow dung, <i>Matka Khad</i> , PAM

Black Gram : 314 farmers – 2.0 ha

Soyabean : 77 farmers – 2.47 ha

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Results of SCI- Black Gram & Soyabean during Kharif 2009



Particulars	Black Gram		Soyabean	
	Conven.	SCI	Conven.	SCI
Avg. no. of pods /plant	19	28	35	56
Average Plant Height (cm)	24.1	29.5	49.5	65.5
Average no. of grains /pods	4	5	3	4
Grain Yield (T/ha)	1.4	2.2	2.8	3.6
% Inc. in Grain Yield	-	57	-	29

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Adaptations for Kidney Bean

Practices	Conven.	SCI
Young Seedlings	Direct seed Sowing	Direct seed Sowing
Wider Spacing	Broadcasting	P to P: 25 cm R to R: 30cm
Single Seedling /hill	-	1-2 Seed/ hill
Inter-Cultivation	1+ (manual weeding)	2+ (manual weeding)
Organic Matter	Compost	Compost + PAM



Kidney Bean: 679 farmers - 14.01 ha

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Results of SCI-Kidney Bean during Kharif 2009

Particulars	Con.	SCI
Avg. no. of pods/plant	34	56
Average Plant Height (cm)	163	205
Average no. of grains /pod	4	6
Grain Yield (T/ha)	1.3	2.2
% Inc. in Grain Yield	-	69



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Problems faced in adopting SCI During Drought

Specific problems encountered during the current drought are :

- Repeated raising of nurseries resulted in increased labour input.
- 10 to 15 per cent seedling mortality was observed in case of paddy.
- Restricted use of weeder and timely application of liquid organic manure.
- Less tillering and lesser grain development (more unfilled grain) as compared to normal years.
- Shortfall in adoption and area coverage.
- Variability in adoption (seedling age, water management, spacing, weeding, etc.) of SCI recommended practices.

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Areas of Improvement

- Improvements in package of practices (water, nutrient, and labour management, cost effective equipment, etc.).
- Effective Capacity building strategy (village level resource persons - regular quality training; government extension personnel).
- Research (other crops, disease resistant and tillering ,varieties, equipments, etc.).
- Networking amongst stakeholders (farmers, CSOs, government, research institutions, agriculture universities, media, etc.) and convergence with other programmes (ATMA, Organic Board, BRGF, etc.).
- Policy Framework (incentives, assured irrigation, outlets for equipments, market, etc.).



Farmers should be provided flexibility for adoption of different principles under SRI

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Thank You

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Adaptations for Wheat

Practice	Conventional	SWI
Young Seedling	Broadcasting	Direct Seed Sowing / Transplanting
Wider Spacing	-	P to P : 20 - 25cm R to R: 20 - 25 cm
Single Seedling / hill	-	1-2 Seed/Seedling per hill
Inter Cultivation	1+ (manual weeding)	2+ (manual weeding/ weeder)
Organic Matter	Compost+ Chemical Fertilizer	Compost + PAM

PAM: Panchgavya, Amritghol, Matkakhad



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Trials on Other Crops

Crop	No. of Farmers (Area in Ha)	2006		2007		2008			
		Conv. Grain Yield (Q/ha)	SCI Grain Yield (Q/ha)	No. of Farmers (Area in Ha)	Conv. Grain Yield (Q/ha)	SCI Grain Yield (Q/ha)	No. of Farmers (Area in Ha)	Conv. Grain Yield (Q/ha)	SCI Grain Yield (Q/ha)
Wheat (I)	Research Farm (5.0 Ha)	16	22 (38%)	30 (0.224 Ha)	23.5 (81%)	42.5 (14.5 ha)	557 (97%)	24.4	48
Wheat (UI)	-	-	-	19 (0.086 Ha)	15.5 (61%)	25 (6.7 Ha)	491 (81%)	17.7	32.1
Mandwa	-	-	-	5 (0.40 Ha)	18 (33%)	24 (0.80 Ha)	43 (60%)	15	24
Rajma	-	-	-	5 (0.40 Ha)	14 (43%)	20 (2.26 Ha)	113 (67%)	18	30

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Cost Benefit Analysis for SCI and Conventional method of Cultivation

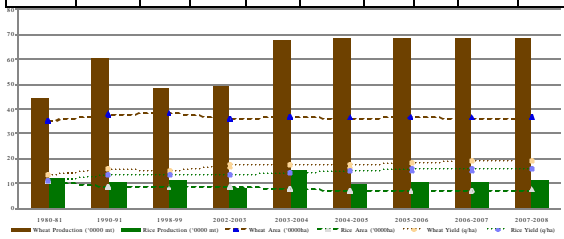
S. No.	Method	Conventional				SCI			
		Total Expenditure (Rs./ha)	Gross Income (Rs./ha)	Net Profit (Rs./ha)	C-B Ratio	Total Expenditure (Rs./ha)	Gross Income (Rs./ha)	Net Profit (Rs./ha)	C-B Ratio
1	Transplanting (Local Paddy)	26,250	34,700	8,450	1:1.3	23,750	56,125	32,375	1:2.4
2	Transplanting (Paddy Basmati-Type-3)	28,000	63,125	35,125	1:2.3	25,500	96,875	71,375	1:3.8
3	Direct seed sowing (Wheat)	22,720	30,600	7,880	1:1.3	25,850	51,600	25,750	1:2.0
4	Mandwa	14,920	25,900	10,980	1:1.7	15,640	34,400	18,760	1:2.2
5	Rajma	28,250	56,000	27,750	1:2	30,250	80,000	49,750	1:2.6

Organic Basmati Type 3 variety is most profitable for mountain regions at altitude below 1500m.

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Himachal Pradesh: Trends in Rice & Wheat Production

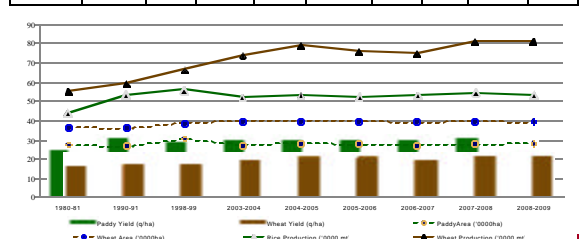
Total Geographical Area (lakh ha)	Total Population (lakh)	Average Rainfall (mm)	Net Sown Area (lakh ha)	Area under Paddy (lakh ha)	Total Rice Production (lakh tonnes)	Average Yield of Rice (t/ha)	Area under Wheat (lakh ha)	Total Wheat Production (lakh tonnes)	Average Yield of Wheat (t/ha)
55.67	60.78	1469	5.60	0.8	1.07	1.34	3.27	5.44	1.66



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Uttarakhand: Trends in Rice & Wheat Production

Total Geographical Area (lakh ha)	Total Population (lakh)	Average Rainfall (mm)	Net Sown Area (lakh ha)	Area under Paddy (lakh ha)	Total Rice Production (lakh tonnes)	Average Yield of Rice (t/ha)	Area under Wheat (lakh ha)	Total Wheat Production (lakh tonnes)	Average Yield of Wheat (t/ha)
53.49	85	1547	7.66	2.76	5.50	1.9	3.92	8.15	2.1



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Upscaling Strategy

Average Family Size : 5 members/household
 Average Landholding – 0.2 ha/household (10 Nalis)
 Total Annual Cereals' Requirement : 8-10 Q/household
 Average SCIGrain Production : 3 T/ha/season (120 kg/nali/yr)

The target should be to bring at least 0.15 ha (7.5 nali) of land/household under SRI and SWI to meet the household cereal requirements

Saturating villages where SRI and SWI has been successfully demonstrated by increasing number of households and area coverage per household.

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Policy Advocacy

- **Linkage with Agriculture Department:** SRI included in the State Agriculture Plan of Uttarakhand, HP State's Agriculture Directorate has given consent for promotion of SRI
- **Convergence with other programmes:** ATMA & Macromanagement - Partner organisations got support in the form of seeds, equipment and manure; Ajeevika Programme, Uttarakhand Decentralised Watershed Development Programme.
- **Linkage with other Institutes:** Research institutions, Agricultural Universities, KVKS, Uttarakhand Organic Commodity Board, etc. ; NABARD, HP & UKD has agreed to provide financial support for promoting SWI
- **Media Advocacy:** Popularisation of SRI through newsletters, local newspapers, magazines, national journals, TV, etc.
- **State-level Workshops:** Proposed in January 2010, state level workshopS will be conducted where senior state level officials and policy makers will participate.

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System of Rice Intensification: SRI

System of Rice Intensification is a package of practices involving sustainable management of plants, soil, water and nutrients resulting in higher production with reduced external inputs

- Planting young seedlings
- Avoiding trauma to the roots
- Plantings seedlings at wider spacing
- Keeping paddy soils moist but unflooded
- Actively aerating the soil through weeder
- Enhancing soil organic matter



➤ **Seed Saving, Water Saving, Labour Saving, Cost Saving**

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Recommendations for SRI for Mountainous Regions

Seed Sowing Time for Nursery

- High Altitude (>1500m) :15 April - 14 May
- Medium Altitude (1000-1500m):15-31 May
- Low Altitude (<1000m) : 1-15 June

Transplanting Time

- 10-15 days -Yield 70-75Q/Ha
- 16-23 days -Yield 55-60 Q/Ha
- > 23 days – 40-45 Q/Ha

Weeding

- Three Times - Yield 70-75Q/Ha
- Two Times - Yield 60-65 Q/Ha
- One Time -Yield 50-55 Q/Ha



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SRI- Farmers' Perceived Benefits & Constraints

A. BENEFITS

- Less seed requirement
- Saving in water
- Decreased workload
- Less disease occurrence
- Less lodging
- Early maturity
- High grain yields
- High grain quality
- Increased biomass
- Improves soil fertility

B. CONSTRAINTS

- Time bound operations
- Labour intensive, in the beginning
- Limited availability of quality weeders and markers
- Inadequate compost material
- More effort required in operating Mandava weeder for small terraces & clayey soil
- Rainfall aberrations
- Lack of timely training & field support
- Difficulty in changing mindset

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SRI Coverage in HP & Uttarakhand (upto 2008)

Uttarakhand

Himachal Pradesh

Crop	Districts covered	Blocks covered	Number of villages covered	Farmers Trained	Farmers Adopted	Area (ha)
UKD	13/13	27/95	358/15761	11377	9201	195.43
HP	05/12	16/75	138/20118	3733	3013	57.55
Total	18/25	43/170	496/35879	15,110	12,214	252.98

Average landholding under SCI : 0.02 ha/household
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Results of Rainfed SRI Crop Cuttings in Uttarakhand during 2009

District	Bageshwar		Pauri Garhwal		Tehri Garhwal		Rudrapurayag		Uttarkashi		Average	
	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI
No. of Effective Tillers/ hill	5	17	2	7	4	13	3	10	2	11	3	12
Average Plant Height (cm)	86	108	62	76	67	72	72	95	62	78	70	86
Average panicle Length (cm)	16	24	13	17	12	16	14	17	15	20	14	19
Average no. of grains/Panicle	67	118	53	71	52	85	64	105	82	130	64	102
Grain Yield (Q/ha)	6.4	14	8	14	12	18	13	24	15	23	11	19
Straw Yield (Q/ha)	24	32	12	19	17	23	19	31	21	29	19	27
% Inc. in Grain Yield	-	119	-	75	-	50	-	85	-	53	-	73
% Inc. in Straw Yield	-	33	-	58	-	35	-	63	-	38	-	42

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Result of SRI Crop Cutting-2009

Condition	Kangra (GSA)		Chamba (RTDC)		Sirmour (SARDHA)		IRRIG-ATED		Bilaspur (MVS)		Kangra (SWERA)		Kangra (ERA)		RAINFED	
	Irrigated		Irrigated		Irrigated		Irrigated		Rainfed		Rainfed		Rainfed		Rainfed	
	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI
No. of Effective Tillers/ Plant	5	24	4	18	9	29	6	24	3	15	4	14	5	24	4	18
Average Plant Height (cm)	91	113	86	104	119	124	99	114	89	97	84	119	86	77	86	98
Average panicle Length (cm)	19	25	19	30	27	31	22	29	19	26	18	28	18	24	18	26
Average no. of grains/Panicle	115	202	61	192	140	186	105	193	86	235	55	205	95	250	79	230
Grain Yield (Q/ha)	35	60	22	50	35	75	31	62	44	70	28	63	30	56	31	63
Straw Yield (Q/ha)	60	66	72	132	70	135	67	111	77	98	40	116	56	90	58	103
% Inc in Grain Yield	70		127		114		100		59		125		87		90	
% Inc in Straw Yield	11		83		93		66		27		190		61		78	

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Results of Irrigated SRI Crop Cuttings in Uttarakhand during 2009

Districts	Bageshwar		Chamoli		Tehri Garhwal		Rudrapur		Haridwar		Champani		Pithoragarh		Uttarkashi		Nainital		Average Production	
	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI	Con.	SRI
No. of Effective Tillers/ Plant	4	23	8	16	6	19	3	15	2	19	3	16	2.5	16	7	29	10	16	5	18
Average Plant Height (cm)	99	126	83	88	91	107	98	126	121	122	99	118	110	120	70	81	86	87	95	108
Average panicle Length (cm)	14	25	19	24	16	24	16	24	25	26	21	26	22.8	28	20	24	24	25	20	26
Average no. of grains Panicle	86	140	75	104	80	122	91	187	209	173	105	140	157	217	137	177	79	145	113	170
Grain Yield (Q/ha)	12	25	40	81	26	53	14	24	21	46	13	18	16.8	32	52	85	35	45	26	46
Straw Yield (Q/ha)	65	112	80	120	73	116	72	110	32	100	11	19	21	59	110	165	70	75	59	97
% Inc in Grain Yield	-	103	-	102	-	102	-	67	-	87	-	38	-	95	-	63	-	29	-	77
% Inc in Straw Yield	-	71	-	50	-	60	-	53	-	73	-	71	-	176	-	50	-	7	-	64

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Expected Outcomes

- Adoption of SRI by 16,000 farmers (897 ha) and SWI by 2,640 farmers (56 ha) in HP and Uttarakhand.
- Cadre of 190 village level resource persons for mobilizing and supporting farmers of 448 villages.
- A talent pool of 47 master trainers who will further promote SCI in future years.
- Increased avg. paddy grain yield of 5.5 T/ha against present yields of 3T/ha. Similarly wheat yields are to increase by 50 per cent.
- Advocacy with the state governments to promote SCI and increase its impact on meeting livelihoods and food security needs of small farmers.



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Preparation of Communication Materials & Information Dissemination

- Advertisements spots in Doordarshan .
- User-friendly manual on SRI (in Hindi) for farmers.
- Poster set on SRI (in Hindi) for MTs and VLRPs
- Film on SRI (in Hindi).




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Field Support Activities



Nursery Raising



Mulching



Land Preparation



Transplanting

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Programme Coverage under SRI in UKD(2009)

S. No.	District	No. of Villages	Repeat Farmers	New Farmers	Total Farmers	Area (in Ha)	% Rainfall Dep.
1	Tehri Garhwal	92	1530	2690	4220	128.62	-77
2	Rudrapur	20	615	748	1363	91.12	-74
3	Chamoli	11	25	50	75	4.06	-43
4	Uttarkashi	13	38	81	119	2.72	-1
5	Pauri Garhwal	11	78	183	261	8.72	-53
6	Haridwar	4	28	16	44	0.88	-17
7	Dehradun	0	-	-	-	-	-41
A	GARHWAL	151	2314	3768	6082	236.12	-45
8	Bageshwar	60	643	1449	2092	86.60	
9	Pithoragarh	22	374	185	559	44.26	-20
10	Champawat	4	-	100	100	8.80	-20
11	U.Nagar	6	6	212	218	11.48	-73
12	Nainital	13	121	258	379	16.28	-40
13	Almora	0	-	-	-	-	-55
B	KUMAON	105	1144	2204	3348	167.42	-31
TOTAL		256	3458	5972	9430	403.54	-40

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Programme Coverage under SRI in HP (2009)

S. No.	District	POs	No. of Vill/ GPs	Repeat Farmers	New Farmers	Total Farmers	Area (in Ha)	% Rainfall Dep.
1.	Kangra	CORD	22	674	352	1026	24.00	-35
		ERA	22	215	145	360	21.00	
		GSA	39	28	316	344	27.68	
		SWERA	8	67	104	171	4.54	
2.	Chamba	RTDC	12	156	220	376	12.00	-71
3.	Bilaspur	MVS	10	204	221	425	28.20	-11
4.	Mandi	SRDA	19	57	103	160	2.00	-44
		SKVM	18	37	215	272	13.10	
5.	Sirmour	SATHI	18	102	54	156	3.60	-58
		SARDHA	11	37	268	305	5.28	
Total		10	179	1597	2198	3795	141.40	-44

- 13, 225 farmers (83 %) adopted SRI against a target of 16,000 farmers
- 545 ha (61 %) covered under SRI against a proposed target of 897 ha
- 0.04 ha/household against a target 0.05 ha/household

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Coverage under SCI (2009)

S. No.	Name of crops	Total Farmers	Area (in Ha)
1.	Maize	183	10.34
2.	Kidney bean (<i>Rajma</i>)	679	14.01
3.	Sesame (<i>Til</i>)	22	0.41
4.	Finger Millet (<i>Mandwa</i>)	340	8.04
5.	Black gram (<i>Urad</i>)	314	2.00
6.	Soyabean	77	2.47
7.	Tomato	45	4.36
8.	French bean	44	0.35
Total		1,704	41.98

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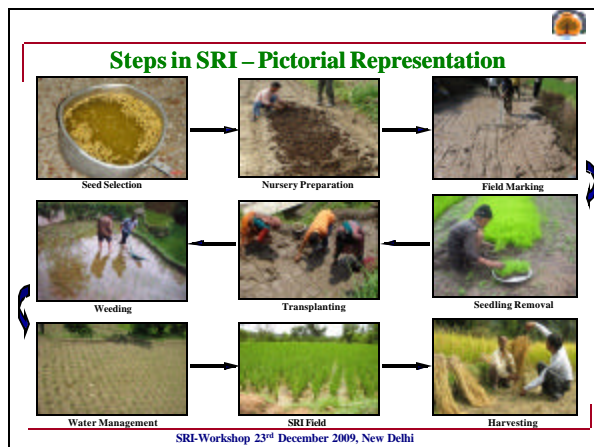
Adaptations for Sesame (Til)

Practices	Conventional	SCI
Young seedling	Direct seed sowing	Direct seed sowing
Wider spacing	Broadcasting	P to P : 25 cm R to R : 25 cm
Single seedling / hill	-	1-2 Seed/hill
Inter-cultivation	1+ (manual weeding)	2+ (manual weeding)
Organic matter	Compost	Cow dung, Matka Khad, PAM



- Sesame: 22 Farmers – 0.41 ha

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Research Activities

- Comparative study of inputs and benefits (based on a sample of 700 farmers).
- Trials on other crops like maize, sesame, black gram and soyabean (596 farmers).
- Trials on crop performance under application of different manures (Panchgavya, Amritghol, Matka Khad, Vermi-compost, and FYM)
- Trials on crop performance under different plant spacing

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Results of SRI Trials in Uttarakhand (2006 - 08)

Particulars	2006		2007		2008	
	Conventional	SRI	Conventional	SRI	Conventional	SRI
No. of Farmers (Villages)	22 (13)		399 (85)		9201(358)	
Area (ha)	-	0.48	-	11.00	-	195.43
Average Grain Yield (Q/ha)	31	55	28	55	34	56
Per Cent Increase in Grain Yield	-	77	-	96	-	65
Average Straw Yield (Q/ha)	60	75	55	75	122	172
Per cent Increase in Straw Yield	-	25	-	36	-	41

The average percent increase in grain yield is about 75 per cent

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Results of SRI Trials in Himachal Pradesh (2006 - 08)

Particulars	2006		2007		2008	
	Conventional	SRI	Conventional	SRI	Conventional	SRI
No. of Farmers (Villages)	18 (12)		192 (48)		3013 (138)	
Area (ha)	-	0.47	-	4	-	57.55
Average Grain Yield (Q/ha)	32	50	29	53	45	65
Per Cent Increase in Grain Yield	-	56	-	83	-	44
Average Straw Yield (Q/ha)	56	70	55	72	99	118
Per cent Increase in Straw Yield	-	25	-	31	-	19

The average percent increase in grain yield is about 61 per cent

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Selection of Villages & Farmers : Criteria

- Village clusters where the success of SRI/SWI has initially been demonstrated.
- New farmers (11,000) who are ready to adopt SRI in at least 1 nali
- Farmers who have earlier adopted SRI and are ready to bring 3 nali under SRI
- SWI : New Farmers (1600) – 1 nali, Experienced Farmers – 2 nali
- Farmers who are ready to contribute towards weeders /seed drill
- 25% of farmers should be SC/ST

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Proposed Programme Coverage for SRI (2009)

S. No.	District	Name of PO	No. of Villages	Farmers for Training	Area (in Ha)
1	Tehri Garhwal	MVDA, JVS, GVK, HIFEED	164	4600	236
2	Rudraprayag	PNVS	20	1000	55
3	Chamoli	GMVS	8	300	10
4	Uttarkashi	SRDHA	8	300	7
5	Pauri	BVSS	12	250	15
6	Haridwar	HIRA	8	300	10
7	Dehradun	PSI		Research	-
A	GARHWAL	9	220	6750	333
8	Bageshwar	KSS, HT, PVSS, KAGAS	47	2500	96
9	Pithoragarh	SWATI	17	700	35
10	Champawat	KAGAS	4	200	9
11	U.Nagar	KAGAS	6	400	32
12	Nainital	HIMANI, BIMARSH, CHESTHA	13	400	10
13	Almora	SRUS	3	50	2
B	KUMAON	9	90	4250	184
	TOTAL	18	310	11000	517

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Proposed Programme Coverage for SRI (2009)

S. No.	District	Name of PO	No. of Villages	Experienced farmers	Farmers for Training (New farmers)	Area (in Ha)
1.	Kangra	CORD	27	833	500	101.08
		ERA	20	396	250	49.02
		GSA	10	225	200	32.30
		SWERA	8	125	100	17.10
2.	Chamba	RTDC	12	385	150	44.50
3.	Bilaspur	MVS	16	363	250	46.00
4.	Mandi	SRDA	10	162	150	21.85
		SKVM	10	154	150	21.15
5.	Sirmour	SATHI	12	165	150	23.88
		SARDHA	13	205	100	23.12
	TOTAL	10	138	3013	2000	380.00

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Selection of Master Trainers and Village Level Resource Persons : Criteria

Each PO will select 1-3 Master Trainers depending on the coverage

- Workers having prior experience in promoting SCI

One experienced Village level Resource Person for every two villages

- Progressive farmers (preferably woman) who have earlier adopted SCI

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Shortfall & Constraints

- Shortfall in adoption and area coverage due to drought conditions and lack of commitment from POs
- Lack of mobilisation and support to experienced SRI farmers (continued and timely field support required)
- Unavailability of adequate equipment (inadequate outlets for weeders)
- Inadequate compost material (cow dung and urine)
- Limited linkages with Agriculture Department and convergence of programmes
- Variability in adoption (seedling age, water management, spacing, weeding and gap filling)

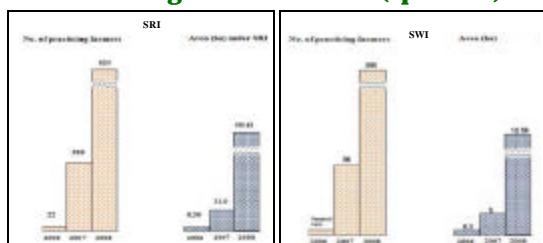
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SRI Coverage Area



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SCI Coverage in Uttarakhand (upto 2008)

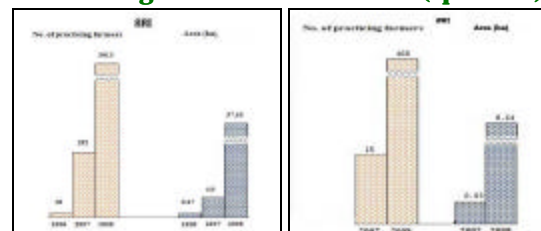


Crop	Districts covered	Blocks covered	Number of villages covered	Farmers Trained	Farmers Adopted	Area (ha)
Paddy	13/13	27/95	358/15761	11377	9201	195.43
Wheat	7/13	10/95	75/15761	670	580	12.56

Average landholding under SCI: 0.02 ha/household

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SRI Coverage in Himachal Pradesh (upto 2008)



Crop	Districts covered	Blocks covered	Number of villages covered	Farmers Trained	Farmers Adopted	Area (ha)
Paddy	05/12	16/75	138/20118	3733	3013	57.55
Wheat	03/12	14/75	64/20118	768	468	8.64 ha

Average landholding under SRI: 0.02 ha (0.5 Kanal)/household

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Institutional Networking

- Gobind Ballabh Pant University of Agriculture and Technology (GBPUAT), Pantnagar, Uttarakhand
- Vivekanand Parvatiya Krishi Anushandhan Sansthan (VPKAS), Almora, Uttarakhand
- Rice and Wheat Research Centre (RWRC), Malan, HP
- CSKHP Agriculture University, Palampur, Kangra, HP.



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Programme Monitoring

- PSI's resource staff conducts regular visits to programme areas for monitoring and guidance.
- State level panels (PMCs) of experienced persons constituted, including experts, govt. officials, scientists, etc.
- PMCs review the programme through field visits as well as hold meetings with the programme staff.
- Programme feedback provided to top government officials like Rural Development Commissioners, Agriculture Secretaries, and Agriculture Directorates.



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Exposure Visit of Farmers



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Experience Sharing Workshops



20 Workshops conducted, one each at the district level

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