

# Seed Production - Experiences from the Field

The Revitalizing Rainfed Agriculture Network (RRAN) is a growing network of civil society organizations, research institutions, policy makers, donors and individuals engaged in evolving a differentiated agricultural policy with enhanced public investments and support system for rainfed areas in India. The Comprehensive Pilots (CPs) are part of the RRA Network's action research programme that seeks to establish evidence and experience on the ground, in support of the various propositions that the Network has developed. In order to offer support for CPs a set of organizations have been identified as Nodes on specific identified themes such as – seeds, soils, water, millets, fisheries, livestock, credit, markets and institutions.

The Centre for Indian Knowledge Systems (CIKS) has been identified and functioning as the nodal anchor for the theme of seeds. A series of booklets is being published on various technical and institutional aspects of seed systems to build the capacity of the CPs as well as various field groups who are involved in the efforts to build community managed seed systems.

This book presents a case study on community managed organic seed production and marketing. It also describes in detail a seed business incubation programme which has helped to create seed entrepreneurs which has been implemented by an NGO. The role of SRI in organic seed production is also highlighted.



Centre for Indian Knowledge Systems, Chennai  
[www.ciks.org](http://www.ciks.org)



Revitalising Rainfed Agriculture Network  
[www.rainfedindia.org](http://www.rainfedindia.org)



# **Seed Production - Experiences from the Field**

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# PREFACE

The Revitalizing Rainfed Agriculture Network (RRAN) is a growing network of civil society organizations, research institutions, policy makers, donors and individuals engaged in evolving a differentiated agricultural policy with enhanced public investments and support system for rainfed areas in India. Based on the vast experience on the ground and analysis of issues, RRA Network is evolving specific propositions on various aspects of rainfed agriculture such as seeds, soils, water, crop systems, millets, livestock, fisheries, credit, markets and institutions. The Comprehensive Pilots (CPs) are part of the RRA Network's action research programme that seeks to establish evidence and experience on the ground, in support of the various propositions that the Network has developed. In order to offer support for CPs a set of organizations have been identified as Nodes on specific identified themes such as – seeds, soils, water, millets, fisheries, livestock, credit, markets and institutions.

The Centre for Indian Knowledge Systems (CIKS) has been identified and functioning as the nodal anchor for the theme of seeds. The CPs started functioning in the year 2012 and in June 2012 the seed node convened a meeting of representatives of CPs for an inception workshop in Chennai. During this workshop the CPs shared their proposals and plans of work as well as their thinking about the work that they plan to undertake in the area of seeds. Presentations were made during the workshop on how to undertake a situation analysis with respect to seeds, the elements of designing a robust seed system for rainfed areas and also about undertaking a planning exercise through which each CP can proceed towards the establishment of a robust community managed seed system in its area of work. A part of the workshop was to identify the specific needs expressed by each of the CPs in terms of the support and help they would need in the area of seeds. A beginning was made in terms of the capacity building exercise through a series of presentations.

Beginning from the early part of the year 2012 Dr. G. Venkat Raman of the Seed node had started making a series of visits to various CPs. During the visits he provided help and assistance to the CPs for performing situation analysis, evolving a plan for a robust seed system for the area undertaking capacity building exercises and also trying to create linkages between the groups and scientists and institutions who could provide technical support. During this process he also identified various needs in the form of topics on which training and capacity building was required.

Subsequently, on two different occasions when the seed node team met the CPs – in Bagli in Madhya Pradesh in November 2012 and in Tiptur in Karnataka in December 2012 there were opportunities to review the progress of each CP as well as provide technical inputs and training. Earlier this year, towards the end of July 2013 a workshop was held by the seed node in the CIKS Technology Resource Centre in the Kancheepuram district of Tamil Nadu. In this workshop a series of technical trainings were provided on various aspects of seeds. The training was not only in the

form of lectures and presentations but also included field work, experiments, visits to government and private seed farms and seed production centres as well as meetings with the officials of the Directorate of Agriculture and Seed Certification departments. During these meetings drafts of some of the technical training modules that were prepared were circulated and comments and suggestions were sought from the CPs. Based on these efforts and also building upon discussions that took place during the visits to CPs a set of topics had been identified to produce training modules. We expect this process to be dynamic and interactive so that changes can be made based on the suggestions received from the various user groups. A series of reports and books that have been circulated and discussed as drafts and presentations are now being brought out as publications.

A.V. Balasubramanian  
Coordinator RRA Seed Node

Centre for Indian Knowledge Systems  
Chennai, December 2013

### **About this Book**

This book presents a case study on community managed organic seed production and marketing. It also describes in detail a seed business incubation programme which has helped to create seed entrepreneurs which has been implemented by an NGO. The role of SRI in organic seed production is also highlighted.

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# INTRODUCTION

Quality seed production which follows efficient certification procedures play a major role in the increase of food production of our country. There is a ever growing demand for good quality seeds and the Governmental agencies are finding it tough to cater this requirement. This situation is changing to a small extent by the entry of a large number of private players in the seed industry. Production of good quality seeds and marketing offers a good scope of business for farmer groups. It assures them of good quality seeds at the right time. Besides this it also provides them with a good income generating opportunity.

In addition to this with organic farming gaining worldwide momentum globally, requirement of organically produced seeds is also gaining importance. However, certified organic seeds are not commonly available in the markets. To overcome this situation, certified organic farmers could take up the production of quality certified organic seeds in consultation with the Department of Seed Certification and an organic certifying agency. Farmers should follow all the organic certification standards according to the National Programme for Organic Production (NPOP) in addition to the seed certification standards for the production of certified organic seeds.

For the production of such seeds, farmers have to register their land with any of the accredited organic certification bodies in India and also the seed crop with the Department or Board of Seed Certification in the respective State. All the accreditation agencies for organic certification have their own application forms and agreement norms. Availability of organically produced seeds is becoming very important in the light of the fact that use of organically produced seeds is being made mandatory by organic certification agencies.

A lot of handholding with respect to training and marketing support is required for the production of certified seeds. A case study in the production of organic seeds and marketing by an organic farmers' group has been presented in detail in this book. In addition to this another case study about a seed business incubation programme which aims to create seed entrepreneurs has also been discussed in detail. System of Rice Intensification (SRI) is playing a major role in increasing rice production all over the World. It has also been found that SRI can be used as a very useful tool in the organic seed production of indigenous varieties. The role of SRI in organic seed production has also been discussed in this publication with examples from the field.



# COMMUNITY MANAGED ORGANIC SEED PRODUCTION & MARKETING – A CASE STUDY

## Introduction

Seeds play a very crucial role in agriculture. In fact the success of any agricultural activity is largely dependent on the quality of seeds used. Often times in recent years there have been complaints of poor quality seeds entering the market and wrecking havoc on the lives of unsuspecting farmers. A community managed seed production and marketing initiative could be one of the ways of ensuring that farmers have timely access to quality seeds. This study is an initiative by the Centre for Indian Knowledge Systems (CIKS), an NGO working with farmers' groups in five districts of Tamil Nadu promoting sustainable agriculture practices and conservation of traditional varieties of paddy and vegetable crops. For the last five years CIKS has been working with farmers groups in the Nagapattinam district of Tamil Nadu on Organic Value Chain Management in paddy.

CIKS has also been instrumental in federating the organic farmers of this region into a formal group which has been registered as the Sirkazhi Organic Farmers' Association (SOFA).

Use of organic seed is a pre-requisite for organic certification and this sometimes becomes a limiting factor for farmers registered for organic certification. In order to overcome this limitation, CIKS after discussions with their farmers groups came up with a proposal to start a community managed organic seed production initiative. The proposal was submitted to NABARD for financial assistance. A loan of Rs.85,000/- was sanctioned to SOFA under the Umbrella Programme for Natural Resource Management (UPNRM) scheme of NABARD for this pilot initiative. Since the organic seed production and sales activity was envisaged as a commercial enterprise, the rules and regulations laid down by the Tamil Nadu State Seed Certification Department were also followed and all the necessary documentation and registration formalities like obtaining the Trade Identification Number (TIN) from the Sales Tax



Department, Procurement License, License for Seed Sales were completed on time.

## The Process

### Farm Level

Mr. N. Elango is a certified organic farmer from Allivilagam village in the Sirkazhi Taluk of Nagapattinam district in Tamil Nadu. He has been associated with CIKS for the last 5-6 years and is the Chief Coordinator of the *Chozhan Uzhavar Mandram*. He has converted 3 acres of his land under organic management and has been growing paddy organically in this area. The pilot on organic seed production was carried out in this land during the *Samba* season of 2010. As a procedural requirement, in addition to the agreement for organic production, Mr. Elango has also signed an agreement with SOFA for organic seed production.

Mr. Elango bought 60 kg of FII type I.W. Ponni seeds from a seed dealer in Sirkazhi. The seeds were raised in a nursery and planted out following the spacing guidelines of the SRI method of rice cultivation. All management practices (to ensure organic integrity of the produce) and documentation procedures followed for certified organic crops were followed for this crop as well. In addition to this all the requirements of the State Seed Certification Department were also scrupulously followed right from land preparation, isolation practices to prevent contamination at all

stages of production, processing and procurement. A total of 3580 kg of seed was procured by SOFA from Mr. Elango at the rate of Rs.15.50/kg. The economics of cultivation is presented in Table 1.

**Table 1 - Economics of Cultivation**

<b>Cultivation costs</b>	<b>Amount in Rs.</b>
Seeds	2,000.00
Land preparation	15,310.00
Crop Management	5,850.00
Labour	12,000.00
Transportation	680.00
Seed registration charges	1,500.00
<b>TOTAL</b>	<b>37,340.00</b>

<b>Income from sale of seed to SOFA</b>	<b>Amount in Rs.</b>
3580 kg x 15.50/kg	55,490.00
Net Income	
55,490 – 37,340	18,150.00

### **Procurement by SOFA**

To enable SOFA to participate in the Seed Production, Procurement and Sales process, a number of requirements needed to be met, procedures followed and licenses obtained from the State Seed Certification Agency and the Department for Seed Inspection. SOFA has completed all the registration formalities for seed production, processing and sales with the Tamil Nadu State Seed Certification Department and since November 2010 is a registered producer of certified seeds. The seeds produced by SOFA are marketed under the brand name Akshaya Seeds.

All farmers producing seeds for SOFA are registered with the State Seed Certification Department by paying the prescribed fees. After registration each farmer is allotted a specific Seed Certification Number for each lot of seeds produced by him/her. This is a unique number and is used as a reference code for traceability. At the time of registration, details pertaining to

the farmer – name and address, place and exact location of seed production plot (including a map of the location), total area under seed production, crop produced including variety, quantity of seed purchased, source of seed and the date of sowing are recorded. The dates for inspection of the fields by the Seed Certification Officer (SCO) are also indicated at the time of registration. Two such inspections are carried out by the SCO and the findings are recorded in the prescribed format. Conditions and remedial measures if any are also recorded along with the estimated yield from the plot. After the second inspection if all the conditions are fulfilled the SCO certifies the crop for harvest and subsequent procurement as seed.

SOFA has obtained the license for procurement of seed from the State Seed Certification Department. At the time of procurement the moisture content of the seed should not exceed 12%, if due to unavoidable circumstances it exceeds 12%, special permission must be obtained from the Seed Certification Department for drying to the permissible level at the processing centre. A fee is charged by the Department for grant of permission. All activities are duly documented and filed for traceability. The seeds are then packed in gunny sacks that have been approved by the Seed Certification Department. Details regarding the total quantity procured, including the number of sacks procured with the size of the gunny sacks are submitted to the State Seed Certification Department. The sacks are properly labeled and SOFA transported the procured seeds to the K. Sivavadivel Odaiyar Mill (KSOM) Seed Processing Unit at Manganallur for further processing. SOFA has a processing agreement with the unit at Manganallur. Details regarding the date of procurement, date of dispatch to processing centre, total number of sacks transported including packaging size, vehicle number are all recorded and submitted to the Department.

### **At the Processing Centre**

Once the seeds have reached the processing centre they are unloaded and taken to the designated storage chamber. There are prescribed norms for storage of seed sacks and these must be strictly adhered to. A Seed Certification Officer visits

the storage areas of the seed processing unit for inspection and verification of all records. Based on the recommendation of the SCO further processing of the seeds is done.

To ensure that only good quality seed is packed for the farmer, the seeds are put through a mechanical Seed Sorter/ Separator that sort out all the chaff, impurities and poor quality seeds. The best quality seeds are then packed in 15 Kg bags and labeled. The details regarding the quantity of seeds taken for processing, the processed seed quantity is sent to the Department.

The SCO visits the processing plant and does a verification. Information provided to the department is cross checked with earlier documentation. After this processing labels with signature of SCO is provided and sacks have to be labeled with this. The seed samples are collected from various lots and should be sent to the seed testing laboratory for analysis through the Assistant Director of Seed Certification. Seed lots which meet the prescribed seed standards like purity, moisture, germination capacity etc., alone

will be allotted certification label. These labels should be bought by paying a fee. Each type of seed have different coloured label. For breeder seeds it is golden yellow in colour, for foundation seed it is white in colour and for certified seed it is blue in colour. The label gives information on the crop, variety, production date, name of producer, seed type – F1, F2, C, Lot number, germination percentage, percentage of physical and genetic purity, validity period etc. Producer tags which are green in colour should be attached to the seed lot along with the certification tag. Tagging should be done in the presence of the SCO. The processed, packaged and labeled seeds are then stored in a specifically designated storage area where there is no risk of contamination. The packaged seeds are now ready for sale. The entire process from registration to getting the seeds ready for sale is presented as a flow chart in the following page. The entire process of seed production and certification has also been dealt with in detail in an earlier publication of the seed node on seed production and certification which has been listed in the references.



**LABELS FOR CERTIFIED SEEDS - COLOUR CODED**

**TAMIL NADU CERTIFIED SEEDS**

Black Gram  
ADT-3

TAG NO., J B L

KIND: .....  
 VARIETY: .....  
 LOT NO: .....  
 CLASS OF SEED: .....  
 CERTIFICATION NO.: .....  
 DATE OF TEST: .....  
 CERTIFICATE VALID UPTO: .....  
 (PROVIDED SEED IS STORED UNDER COOL AND DRY ENVIRONMENT.)  
 NAME AND FULL ADDRESS OF THE PRODUCER: .....  
 NET WEIGHT: ..... KGS  
 CERTIFIED BY TAMIL NADU SEED CERTIFICATION DEPARTMENT COIMBATORE

444076

USE OF THE SEED AFTER EXPIRY OF THE VALIDITY PERIOD BY ANY PERSON IS ENTIRELY AT HIS RISK AND THE HOLDER OF THE CERTIFICATE SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE TO THE BUYER OF SEED. NO ONE SHOULD PURCHASE THE SEED IF SEAL OR THE CERTIFICATION TAG HAS BEEN TAMPERED WITH.

DATED SIGNATURE OF THE SEED CERTIFICATION OFFICER WITH AUTHORITY (Agg.)  
 N. THIRUPATHI  
 Seed Certification Officer,  
 047-KARUR.

→ White in Colour

**PRODUCER LABEL**

KIND	: PADDY	GERMINATION (Mini)	: 80%
VARIETY	: Improved White Ponni	PHYSICAL PURITY (Mini)	: 98%
LOT No	: Jan'12-22-1478-27	GENETIC PURITY (Mini)	: 98%
DATE OF TEST	: 24-08-2012	MOISTURE (Max)	: 13.0%
VALID UPTO	: 16-04-2013	WEIGHT (Kg)	: 30 kgs

Produced & Marketed by:  
 Sirkazhi Iyarkai Vivasayigal Sangam  
 No 37/1 T.B. Road,  
 7M/1  
 Thenpathi, Sirkazhi-609111.  
 Nagapattinam District, Tamilnadu,  
 Ph: 04364 - 270532.

Signature of the Producer

Green in Colour ←

**Tamil Nadu Agricultural University Coimbatore**

P 0238

Crop: Paddy  
 Variety: ADT-38  
 Class of Seed: BREEDER SEED  
 Lot No.: FEB-08-22-PKT-BS-01  
 Date of Test: 18.6.2008  
 Pure Seed (Minimum): 99.8 %  
 Inert Matter (Maximum): 0.2 %  
 Germination (Minimum): 89.0 %  
 Genetic Purity (Minimum): 100.0 %  
 Net Weight: 30kg  
 Producing Institution: PROFESSOR (PB & G)  
 Agricultural Research Station  
 PATTUKKOTTAI - 614 602

POISON TREATED

Agricultural Research Station  
 Pattukkottai - 614602.

→ Yellow in Colour

**TAMIL NADU CERTIFIED SEEDS**

PADDY  
 ADT-38  
 JAN-08-22-34-246  
 CERTIFIED  
 R-200/08-09  
 10-08-2009  
 01-04-2010  
 K KEE, FIREVENGADU

Y A  
 3  
 317372

J. JOSE, M.A. (Agg.)  
 156, SEED CERTIFICATION OFFICE  
 THUCKALAY

Blue in Colour ←

## FLOW CHART FROM REGISTRATION TO SALE OF SEEDS

Organic farmers register with State Seed Certification Department (SSCD) (within 35 days of sowing the crop / before flowering stage)



Approval of Seed Certification Officer (SCO) in writing



Two inspections are carried out by SCO (based on prescribed conditions)



SCO certifies crop for harvest and procurement if conditions are fulfilled



Seeds to be harvested within 3 days after getting approval



SOFA procures seeds from farmers  
(SOFA independently has obtained licence for procurement and sale of seeds)



Seeds packed in gunny bags and details submitted to the SSCD



Gunny bags labeled and transported to processing unit  
(processing agreement exists with SOFA). This should be done within 90 days.



All transport details also submitted to SSCD



At processing centre bags unloaded and taken to designated storage chamber and stored according to norms



SCO visits processing unit, inspects and verifies records and allows processing



Processing done according to standards.



Processed details like quantities taken for processing and seeds obtained sent to the Certification Department



SCO visits processing plant and does verification



Processing labels with signature of SCO provided and sacks labeled with this



Seed samples collected from lots



Sent to seed testing laboratory through Asst. Director of Seed Certification



Seed lots meeting prescribed standards allotted certification labels by the Department



Labels bought by paying fee (each type of seed has different coloured label).  
Labels give information on crop variety, producer etc.



Green coloured producer tags and seed labels to be tagged to the bags in the presence of SCO



Processed, packaged and labeled seeds stored in specific designated storage area with no risk of contamination



Packaged seeds now ready for sale

## Storage and Sales

Since SOFA is involved in the entire chain from seed production to seed sales, they have obtained a License for Sale of Seed from the Department of Seed Inspection. There are prescribed norms and minimum standards for storage of packaged seeds to ensure that the purity and quality of the seed is not compromised during storage. While applying for the License, the following information is submitted to the Department – exact location of the premises (including map), size of the premises, type of construction, contact details of the applicant, agreement of lease for a minimum of 3 years if the building is a rented/leased property and tax receipts for the premises. Based on the information provided, a Seed Inspector visits the premises for physical inspection of the premises and verification of the documents. If the verification is found satisfactory the Seed Inspector approves the application and the License is granted by the District Director of Seed Inspection. The License is valid for a period of 3 years and must be prominently displayed in the premises at all times. A monthly report detailing all the transactions at the store must be sent to the Seed Department. Since this is a commercial activity, permission is obtained from the Sales Tax Department as well. Once permission is granted, a TIN number is allotted to the applicant which must then be printed in all the cash/credit bills. It is essential that all transactions are accompanied by cash/credit bills. A separate Stock Register is also to be maintained in the store and all documentation must be available for inspection at all times. SOFA has successfully completed all the necessary formalities and is now involved in the commercial sales of organic seeds to organic farmers in Sirkazhi.

## Economics of the Activity

SOFA procured 3580 Kg of organic seed from Mr.Elango and after processing at the KSO Seed Processing Unit at Manganallur recovered 2835 Kg of good quality certified seed. The wastage during processing is recorded in the Table 2 below.

**Table 2 - Procurement and Processing of Organic I.W. Ponni Rice**

Procured quantity (Kg)	Loss during drying at processing centre (Kg)	Loss during seed processing (Kg)	Final Processed quantity (Kg)
3580	448	297	2835

Any activity must be financially viable for it to be accepted by the community. The economics of this initiative is presented in a tabular form. Table 3 shows the expenses incurred during the procurement and processing, Table 4 gives details of seed sales and net income from the activity.

**Table 3 - Expenses during Procurement and Processing**

S No.	COST DETAILS	AMOUNT IN RS.
1.	Procurement (3,580 x 15.50)	55,490.00
2.	Gunny sacks (58 nos @ Rs.20/bag)	1,160.00
3.	Transportation costs (58 nos. @ Rs. 15/bag)	870.00
4.	Loading/unloading charges (58 bags @ Rs. 10/bag)	580.00
5.	Loss during drying and processing (745 Kg X Rs.15.50)	11,547.50
6.	Cost of seed sacks (100 nos. @ Rs. 27/bag)	2,700.00
7.	Processing fee (3,132 Kg @ Rs.1/kg)	3132.00
8.	Labels (100 nos @ Rs.5/bag)	500.00
9.	Loading / Unloading of seed sacks (94 bags @ Rs. 10/bag)	940.00
10.	Receipt books	200.00
11.	Rent for storage centre	400.00
12.	Interest on loan from NABARD	5,546.00
<b>TOTAL</b>		<b>83,065.50</b>

**Table 4 – Organic Seeds - Sales & Net Income**

S. No.	Crop / Variety	Quantity sold in Kg	Rate per Kg in Rs.	Total earnings in Rs.
1.	Paddy / I.W.Ponni	2835	30.00	85,050.00
2.	Paddy / I.W.Ponni	297 (loss during processing)	7.50	2,227.50
	<b>Total</b>	<b>87,277.50</b>		
	<b>Net Income (Rs.) = Income from Sales (Rs.) – Expenses (Rs.)</b>			
	87,277.50 – 83,065.50			4,212.00

**Observations and Results**

Seed production, though a specialized activity requiring careful monitoring and documentation can easily be adopted by farmers if they are willing to comply with the basic requirements of seed production as set out by the State Seed Certification Department. In a sense, organic farmers would find the requirements and standards less demanding since they are already aware of and practice quality control measures as part of the requirements for organic certification. It would therefore be practical for them to maintain the quality control standards and meet the documentation requirements of the Seed Certification Department.

According to Mr.Elango, the procedures for seed certification are not difficult to follow, nor does it incur extra costs but what needs to be learnt is how to identify rouges and off-types and remove them from the stand. If this procedure of identifying and weeding out the rouges and off-types is not carried out in a timely manner, the possibility and risk of rejection by the Seed Certification is relatively high. This is a crucial and critical procedure in the seed production process and farmers need to be trained sufficiently in this step to ensure that good quality, true to label seeds are produced.

Mr.Elango is happy with the results of this experiment as he has earned a net profit of Rs.18,150/- from this activity. He feels that there is scope for improvement and increasing profits from this activity if the post-harvest processing

activities like drying, sorting and cleaning could be done at the farmer level by providing adequate facilities for these activities at the local level.

SOFA is a federation of organic farmers from the region who have been successful in managing the organic paddy value chain – from seed to store. They have now, with this pilot, also learnt the steps in managing the paddy seed value chain. They see this seed production, processing and sales activity as a necessary extension of their first activity. Their very first attempt at seed production has been successful, they have netted a profit of Rs. 4212/- over one production cycle. Though the profit margin is low considering the effort and time spent over the activity, SOFA members are confident that with fine tuning some of the procedures, especially in the processing stage, losses could be minimized thereby ensuring a higher profit margin. They see this initiative as benefitting the farmer both at an individual level (by increasing income) and the community level (availability of quality seeds). Table 5 gives details about the beneficiaries of this pilot initiative.

**Table 5 – Beneficiaries of the Seed Production and Sales Initiative**

No. of Villages	No. of Certified Organic Farmers	No. of Organic farmers	Total area cultivated in acres
18	26	24	94

This pilot initiative has ensured 26 certified farmers and 24 practicing organic farmers timely access to good quality seeds. The seeds have been distributed to farmers from 18 different villages and are being cultivated in an area of 94 acres.

### Conclusion

The entire paddy seed value chain has been effectively managed by SOFA which is a federation of organic farmers even though they did not have much prior knowledge or experience in this activity. They have been able to identify the 'blind spots' of this initiative and are looking to fine tune the weak areas to increase efficiency and profitability. They are confident of achieving this, and this is evident from the fact that this season they have increased the seed production area from 3 acres to about 27 acres involving about 9 farmers. This is a novel initiative in more ways than one:

1. Complete management of the seed value by farmers and groups of farmers

2. The onus of producing quality seeds rests with the community
3. Has a self regulating quality control measure as the producer is also the end user.

Investing in this initiative would be a worthwhile effort since it has the potential for improving the social structure in rural areas and improving rural economy through development of rural infrastructure and sustainable technologies.

### Future Plans of SOFA

SOFA has expanded its activities and has been instrumental in forming Valanadu Sustainable Agriculture Producer Company Limited (VSAPCL). From 2014 onwards the sale of organically certified seeds will be taken up by the company. SOFA will facilitate the organic certification process with its expertise in internal inspection for seed certification fields and this will be implemented from the *Samba* season of 2014 (August 2014 onwards). The VSAPCL would help the farmers to produce organically certified seeds, certified seeds and truthfully labeled seeds.

### A COMPARISON BETWEEN COMMUNITY MANAGED ORGANIC SEED PRODUCTION AND CONVENTIONAL SEED PRODUCTION

Sl. No.	Community Managed Organic Seed Production	Farmer Managed Conventional Seed Production
1.	The seeds are procured directly by the Society from the farmer from his field.	Farmer has to transport the harvested seeds to the Government processing centre.
2.	The drying of the seeds is taken up by the society. Even if there is excess moisture the society takes the responsibility for drying it and bringing it to the desired moisture level.	The seeds have to be dried by the farmer and moisture level has to be brought to 12%. Only then the procurement will be done.
3.	The loss during processing is taken up by the society.	The lost during processing is borne by the farmer.
4.	At the time of procurement itself the farmer is given the payment along with the premium for seeds.	At the time of procurement a first instalment is paid to the farmer. Only after the seed processing and testing the farmer is given the premium and the remaining money if the seeds conform to the acceptable standard.
5.	If the seed lot does not pass the seed germination tests of the seed certification agency the society bears the loss. It may convert this to grain and sell it. The farmer need not pay back the money to the society. In effect the society right from the beginning ensures that all quality parameters are followed for seed production and if there is a problem in spite of all this it bears the loss.	If the seed lot does not pass the seed germination tests the farmer has to take back the entire seed lot. Besides this he also has to repay the first instalment that was given to him at the time of procurement.

# SEED BUSINESS INCUBATION PROGRAMME

## *Creating Seed Entrepreneurs*

### Background

The effect of spiraling demand for good quality seeds is well experienced by the Indian farming community. Governmental agencies find it tough to cater the seed requirement of the farmers. This grim situation has changed to a smaller extent by the entry of large number of private players in the Indian seed industry. But the combined contribution of both the public and private sector hasn't bridged the gap between the seed demand and supply. In the state of Tamil Nadu, total seed distributed through all sources (Government, Quasi Government and Private) totals to 1.05 lakh tonnes as against the actual requirement of 2.79 lakh tonnes. Availability of good quality seeds continues to be dream for Indian farmers. They prefer to rely upon their own farm saved seeds. As a result, seed replacement in respect to important crops range between 1 to 18 percent in the state which is much below the desired level of 20%.

The Government of India has initiated various schemes in order to bridge this demand and supply gap so as to ensure continuous availability of quality seeds to farmers. But the sustainability of success of these schemes is to be well thought off. Seed demand can be very effectively met, if the farmers turn themselves in to seed entrepreneurs and produce quality seeds. Is there a programme leading farmers to turn themselves in to seed entrepreneurs? Yes, it's the Seed Business Incubation programme being successfully implemented by the Agri-Business Incubator of the International Crops Research Institute for the Semi Arid Tropics (ABI-ICRISAT), Hyderabad involving Farmers' Federations and service organizations in different regions of the country.

### Seed Business Incubation

Seed Business Incubation programme is an initiative to develop and promote rural seed business ventures at village level in order *to bridge the demand and supply gap of quality*

*seeds through public, private and people partnership.* This novel programme provides support to the seed entrepreneurs in terms of basic seeds, capacity building, quality control, business consultancy, branding and marketing by commercializing the existing/new varieties and benefiting the farmers.

### Need for Seed Business Incubation

- Lack of availability of new and good quality seeds
- Increasing seed demand and supply gap
- Poor access to improved high yielding varieties
- Seed market being controlled by middle men and local traders who exploit the farmers with poor quality and credit traps

### Service to Seed Entrepreneurs

Under the seed business incubation programme the seed entrepreneurs are extended with a package of services in all the steps of seed production.

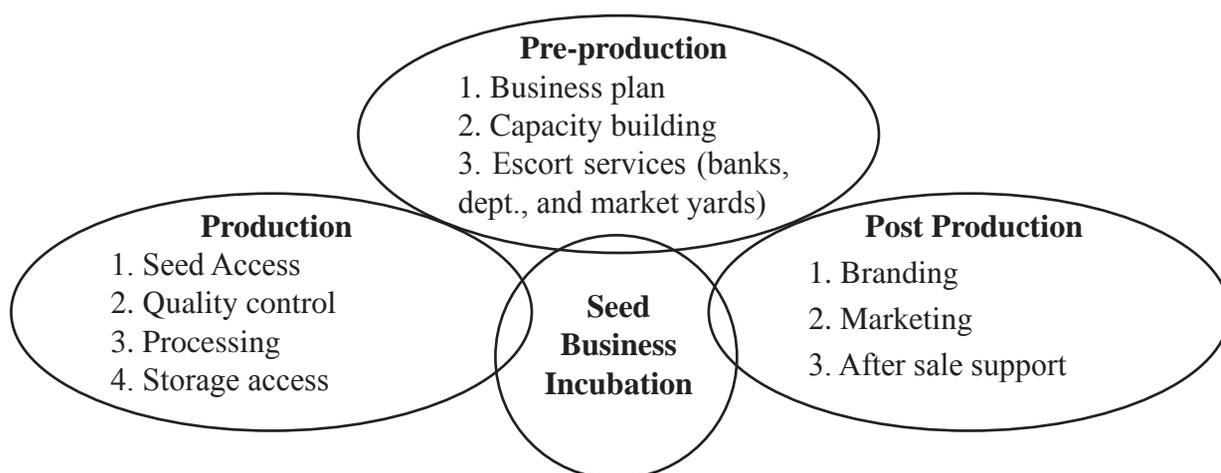
### Preproduction Stage

1. Business Planning- facilitate business plan development on village level seed business ventures.
2. Capacity Building- training on seed production, quality control, supply chain management, seed processing, marketing and business management are provided to the seed entrepreneurs.
3. Escort Services- liaison with market yards and banks.

### Production Stage

Seed Access- facilitate availability of breeder and foundation seeds along with local partners

1. Quality Control- facilitate field inspection, seed testing lab services to ensure production of good quality seeds.
2. Processing and Packing- provide access to seed processing machineries.



3. Storage access and transport- facilitate scientific storage at designated godowns.

#### **Post Production Stage**

1. Branding - guiding seed entrepreneurs to promote their own brand through advertisement and publicity
2. Marketing- facilitate market access to seed entrepreneurs
3. After sales support

#### **Seed Business Incubation Programme -Thiruvengadu**

The Agri Business Incubator at the International Crops Research Institute for the Semi Arid tropics (ICRISAT) is implementing the Seed Business Incubation programme in the tsunami affected regions with its partner - **Kazhi Kadaimadai Farmers Federation (KKFF)** in Thiruvengadu, Sirkazhi Taluk, Nagapattinam district, Tamil Nadu. The project implementation region is well known for its seed production activities. The region not only acts as the source of seed production but also a great sink for quality seeds.

#### **Project Implementation Partners**

##### **ICRISAT**

International Crops Research Institute for the Semi Arid Tropics (ICRISAT) ([www.icrisat.org](http://www.icrisat.org)) is a non-profit, apolitical, international research organization that is devoted to science based agricultural development. It is one of the 15 Future Harvest Centers of the Consultative Group of International Agricultural Research (CGIAR). ICRISAT works primarily on agricultural research in the semi-arid tropics to enhance the livelihood of poor.

##### **Agri-Business Incubator-ICRISAT**

Agri-Business Incubator (ABI) is an initiative under the Agri Science Park of ICRISAT in partnership with the National Science and Technology Entrepreneurship Development Board of the Department of Science and Technology (DST), Government of India. ABI works with a mission to **“Facilitate creation of competitive Agri-business enterprise through technology development and commercialization”**. ABI is the place where the process of starting agri-business ventures is catalyzed. ABI supports entrepreneurs with agri-technology, technical and business consultancy services, access to venture capital, physical infrastructure and marketing assistance so as to enable them in running successful enterprises. ABI maximizes the success of entrepreneurs by minimizing risk by offering the best opportunity. ABI has successfully commercialized seven technologies. It has pioneered globally by successfully commercializing Sweet Sorghum Ethanol production technology. ICGV91114- Ground nut, popularized by ABI through its Seed Business Incubation programme is currently being grown over 5000 acres. JG11- Chick pea, popularized by ABI is being grown by 20000 farmers covering around 1 lakh acres in Andhra Pradesh.

##### **Kazhi Kadai Madai Farmers’ Federation (KKFF)**

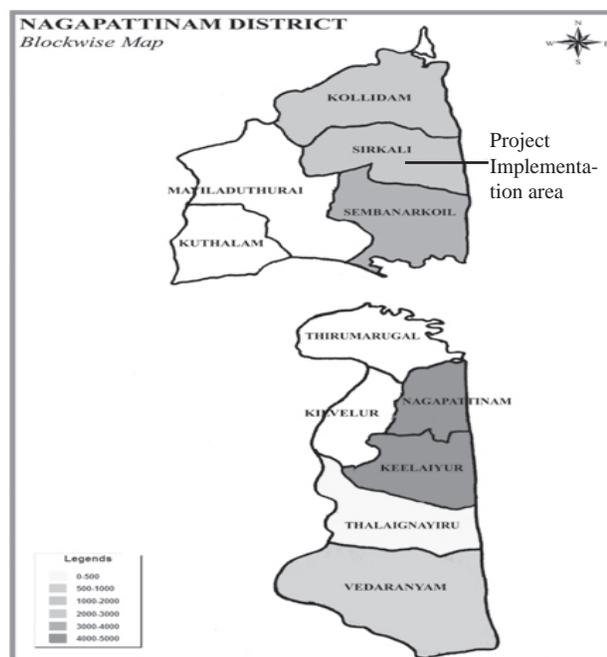
**Kazhi Kadaimadai Farmers’ Federation** was founded as a formally registered trust in 2006, in the Thiruvengadu of Nagapattinam district, Tamil Nadu. KKFF is continuously supporting tsunami affected rice farmers in the tail end zone of the Cauvery delta, present in its operational area, as a relief coordinating agency in the immediate

years after tsunami. But when it took a formal shape as a federation of Farmer Activity Groups (FAGs), it also started addressing the following development concerns of the farmers in the area.

- Building and strengthening **farmer institutions** in the form of activity groups & federation, and strengthening them towards self sustained (managerial and financial) management
- Empowering farmers towards better **resilience to frequenting natural disasters and reducing risks**, through use of appropriate technologies
- Enhancing net returns of farmers through **farm based micro enterprises**, alongside the rice value chain
- **Strengthening support services** for tail end rice farming, through coordination with different service providing agencies (like banks, input suppliers, researchers and crop insurance)
- Documenting and disseminating knowledge generated in the process, for spread and influencing **appropriate policies** addressing the unique needs of tail end delta farmers.

### Project Implementation Area

The project is being implemented in the Sirkazhi block of the Nagapattinam district of Tamil Nadu.



### Demand - Supply Gap (in the project implementation region)

The following table gives the seed demand and supply details for paddy, pulses, cotton and Oilseeds in Nagapattinam district for 2009-10.

S. No	Crop/ Season	Normal Area (ha)	Total seed requirement (tonnes)	Quantity to be distributed by Dept. of Agriculture (tonnes)	Quantity to be distributed by Private agency (tonnes)	Balance (tonnes)
<b>A.</b>	<b>RICE</b>					
1	Kuruvai	35000	1750	577	700	473
2	Samba	102000	5100	1683	2040	1377
3	Thaladi	32500	1625	536	650	439
	Total	169500	8475	2796	3390	2289
<b>B.</b>	<b>PULSES</b>					
1.	Black gram	84000	1680	202	1478	-
2.	Green gram	33000	620	79	581	-
	Total	117000	2300	281	2059	-
<b>C.</b>	<b>COTTON</b>	1000	15	2.25	12.75	-
<b>D.</b>	<b>OILSEEDS</b>					
1.	Ground nut	3500	490	24.5	465.5	-
2.	Gingelly	500	2.5	0.375	2.125	-
	Total	4000	492.5	24.875	467.625	-

(Source: Department of Agriculture, Govt. of Tamil Nadu)



## **SBI Programme Activities**

### **Selection of Seed Entrepreneurs**

Twenty Seed entrepreneurs were selected for seed production during the current season and seed of ADT38 and ADT46 were distributed to them.

### **Monitoring Field Activities of Seed Entrepreneurs**

Officials of *Kazhi Kadaimadai* Farmers' Federation and ABI-ICRISAT visit the plots of seed entrepreneurs and ensure clean cultivation.

### **Field Inspection**

KKFF offers all the services to its seed entrepreneurs from seed supply to sales. It facilitates seed inspection by the Seed Certification Officers of the region.

## **Harvest and Storage**

Seed plots are harvested at physiological maturity. Seeds are dried to 12% moisture and packed in gunnies.

## **Processing**

Seed processing machineries were purchased with the financial assistance from ABI-ICRISAT which were installed in the seed processing complex constructed by KKFF. Seed processing license was obtained in the name of "Pudhan Seeds". During the current year seeds were processed in the processing plant constructed under the project.

## **Storage**

Processed seeds are stored in the godowns constructed as a part of the Seed Processing plant complex. KKFF and ABI-ICRISAT facilitates the sale of seeds.

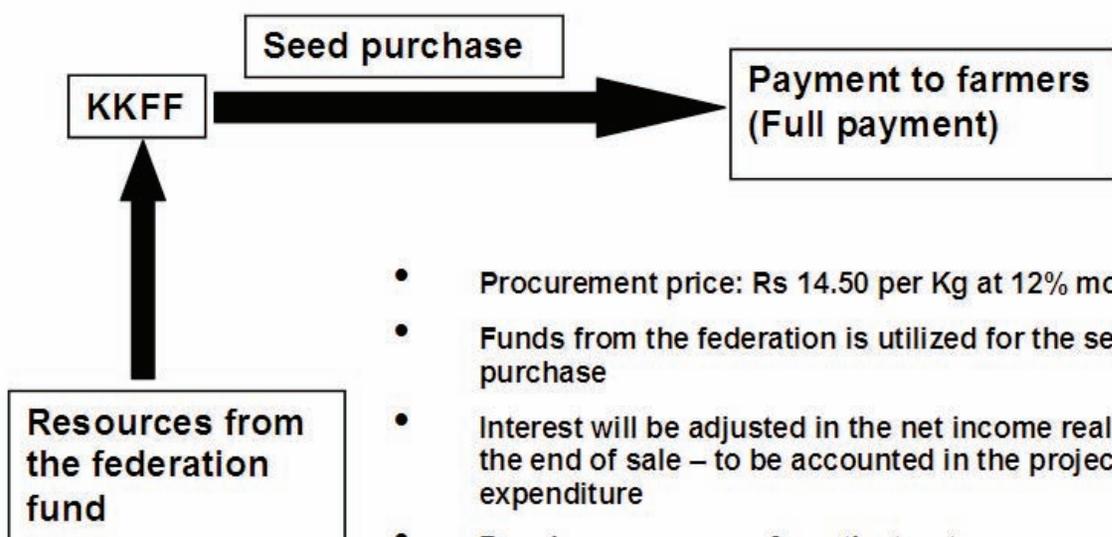
## **Seed Procurement**

Officials of ABI-ICRISAT and KKFF have presented three models of seed procurement to the seed farmers in the project implementation area so as to facilitate timely procurement and payment to individual seed entrepreneurs (immediately after harvest).

The following are the three seed procurement models proposed to the seed entrepreneurs.

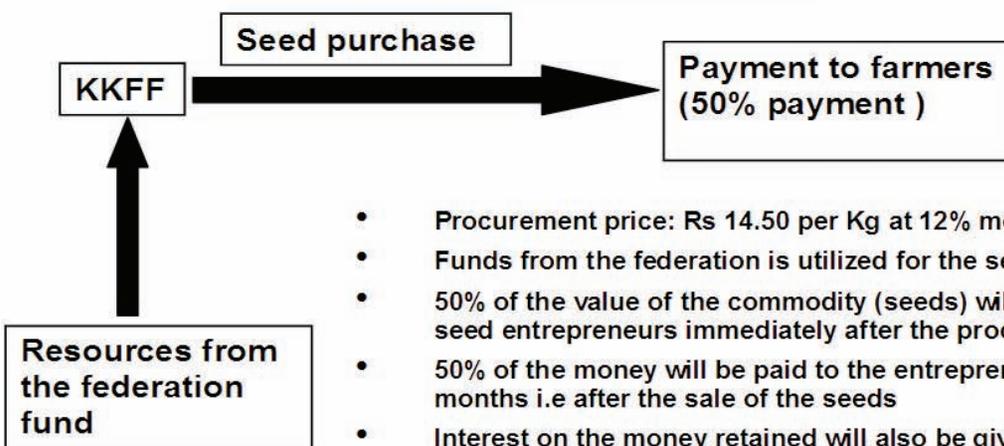


### SEED PURCHASE-OPTION-1

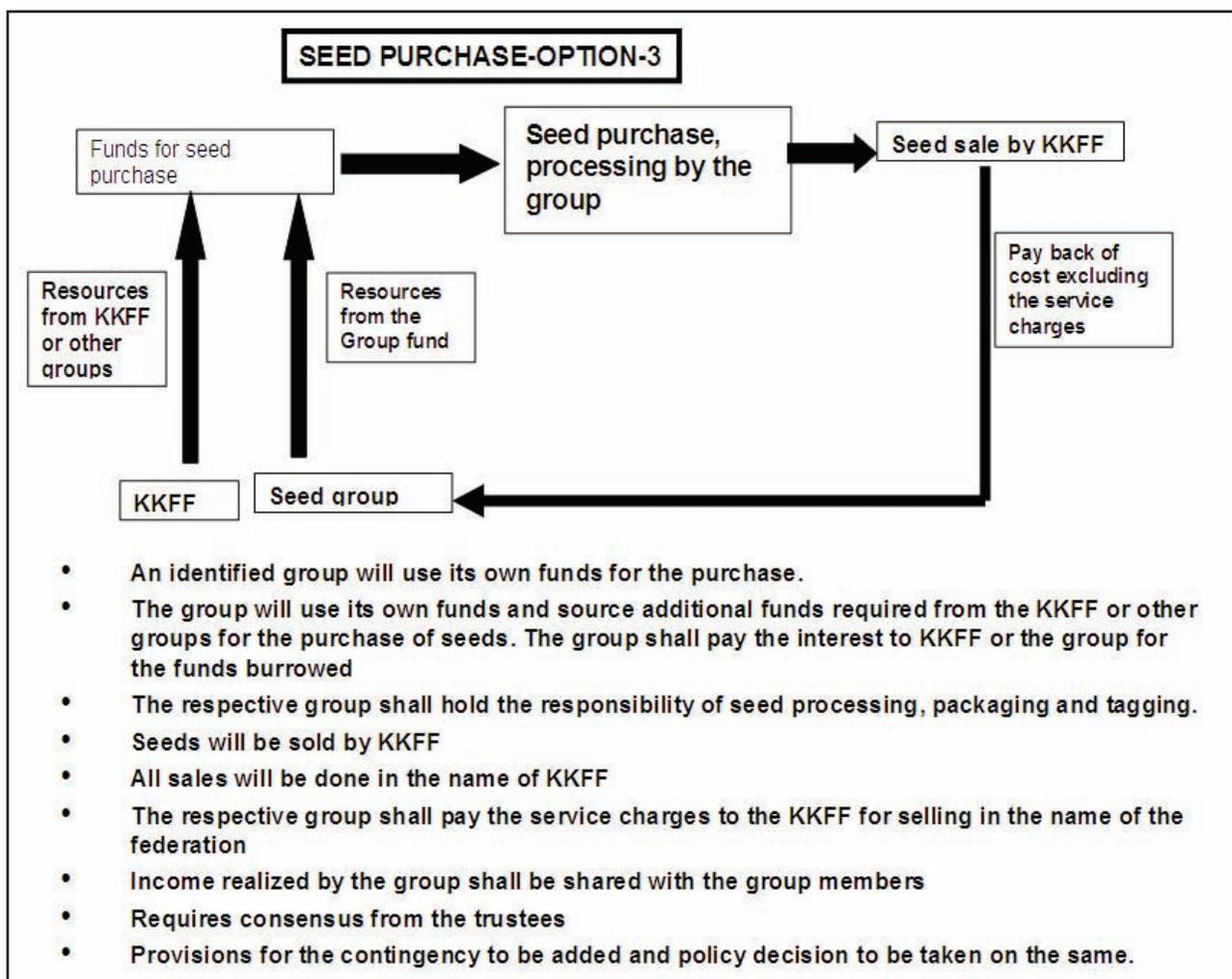


- Procurement price: Rs 14.50 per Kg at 12% moisture
- Funds from the federation is utilized for the seed purchase
- Interest will be adjusted in the net income realized at the end of sale – to be accounted in the project expenditure
- Requires consensus from the trustees
- Risk of draining the financial reserve
- Arrangements for the administrative expenses and salaries for the employees
- Provisions for the contingency to be added and policy decision to be taken on the same

### SEED PURCHASE-OPTION-2



- Procurement price: Rs 14.50 per Kg at 12% moisture
- Funds from the federation is utilized for the seed purchase
- 50% of the value of the commodity (seeds) will be paid to the seed entrepreneurs immediately after the procurement
- 50% of the money will be paid to the entrepreneur after five months i.e after the sale of the seeds
- Interest on the money retained will also be given to the seed entrepreneurs during final settlement
- Requires consensus from the trustees
- Risk of draining the financial reserve
- Arrangements for the administrative expenses and salaries for the employees
- Provisions for the contingency to be added and policy decision to be taken on the same.



Model-1 was followed up to 2010. In 2011, model-2 was followed and currently farmers groups have opted to follow the third option of seed procurement which is being followed.

Tamil) was registered (copy of the seed selling license certificate enclosed) and seeds are being sold in the same brand name during the past two seasons.

### “PUDHAN”- The Brand of Farmers

ABI has facilitated all the brand building operations to the seed entrepreneurs and the brand – “PUDHAN” (meaning the planet “Mercury” in

### Process Followed

The following table outlines the process followed at various stages of the operation.



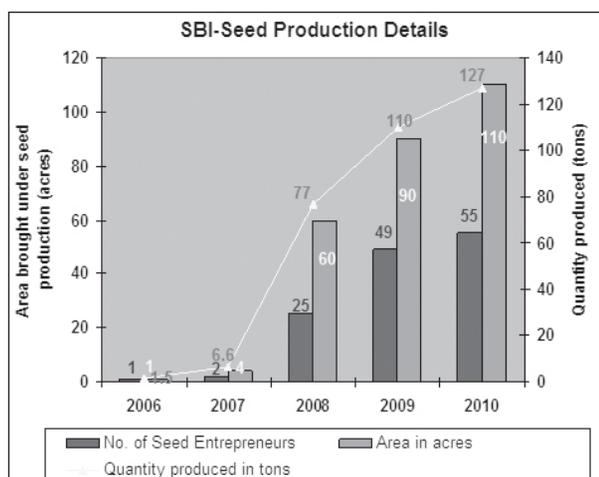
Stages	Steps	Support
a. Administration	1. Identification of farmer	KKFF
	2. Registration with KKFF	KKFF
b. Training	1. Study and visits to successful seed producers	KKFF
	2. Training on seed production – technologies and process	KKFF
c. Production	1. Identify the type of seed (class, variety, requirement, season)	Farmer & KKFF, TNAU
	2. Sowing and registration with the Dept. of Seed Certification	Dept. of Seed Certification (Certn.), Govt. of TN
	3. Monitoring the growth and provide technical support	KKFF, Dept. of Seed Certn.
	4. Seed inspection as per certification requirements	KKFF, Dept. of Seed Certn.
	5. Harvest and cleaning	Farmer & KKFF
d. Certification	1. Cleaning the seeds	Farmer & KKFF
	2. Certification process	KKFF, Dept. of Seed Certn.
	3. Tagging, branding	KKFF, Dept. of Seed Certn.
e. Marketing	Branding, facilitation, linkage and platform	KKFF

### Performance of SBI Programme

Farmers of KKFF have started seed production in paddy during the year 2006. The number of farmers involved, area brought under seed production and quantity of seed produced has increased tremendously over years. The following table gives the seed production details of the SBI programme.

#### Seed Production Details of SBI Programme

Year	No. of Seed Entrepreneurs	Area brought under seed production (acres)	Quantity of seed produced (tonnes)
2006	1	1	1.5
2007	2	4	6.6
2008	25	60	77
2009	49	90	110
2010	55	110	127



### Benefits to the Farmers through the Programme

Through this programme the farmers have access to all seed production technologies. Availability of good quality seeds is ensured and this leads to better productivity. There is better bargaining power and hence better price realization. Farmers are becoming entrepreneurs and self sufficiency in seed production is being ensured.

## Benefits to Traders

Traders also benefit through this programme. There is availability of a large quantity of seeds at one location at a competitive price.

## Economic Impact of SBI Programme

The following table gives us the comparison of income realized by the farmers before and after entering in to the SBI programme of ABI-ICRISAT

### Income Realization in Grain Vs. Seed Production (per acre)

Details	Grain production (Before entering in to SBI programme )	Seed production under SBI programme
Yield realized (tonnes/acre)	1.8 (20% moisture)	1.65 (12% moisture)
Price (Rs./kg)	10	15
Cost of production (in Rs./acre)	11000	13000
Gross income per acre (in Rs.)	18000	24750
Net income realized (Rs. per acre)	7000	11750

*(Note: 1 acre = 0.4 hectares; INR refers to Indian Rupee)*

Seed entrepreneurs have realized more as compared to normal grain production. Seed entrepreneurs have realized Rs 4500 more than the grain production. This increased income realization by the seed entrepreneurs created

interest among other fellow farmers to take up seed production.

## Social Impact of SBI programme

### Bridging Demand and Supply Gap in Paddy Seeds

The seed demand of Nagapattinam district for *Samba* 2009 season was 1377 tonnes. About 77 tonnes of seeds were produced by KKFF during *Samba* 2008 which was sold during *Samba* 2009, reducing the demand in the district by 5.6%.

### Enabling Factors

The support of ABI – ICRISAT in the process, support of ARS, Tamil Nadu for technical and source seeds and support of Department of Seed Certification has played a major role in the success of the programme. Infrastructure facility (processing plant and godown), high efficiency of seed processing machinery, experienced and qualified staff, support from trustees, interested seed producers and availability of trained and skilled labour has further contributed towards achieving the objectives of the programme.

### Challenges Faced

There is a need for a large investment and this has to be organized. The capital locking period is for more than six months. There is also a seasonality risk and lack of infrastructure facility like drying yard and fencing. Release of Government subsidies take a very long time. There are seeds available in the outside market for a cheaper price (quality not ensured) and farmers may prefer this because of the lower costs.

**Note :** This article was prepared based on the information provided by Mr. A.V. Poomurugesan, Executive Director, KKFF. We acknowledge the cooperation provided by him.



# SYSTEM OF RICE INTENSIFICATION AS A TOOL FOR ORGANIC SEED PRODUCTION

## Introduction

The rice growing area has reduced from 2.8 million hectares to 2.1 million hectares in the Tamil Nadu state of India since the last 50 years. However, as far as the production is concerned, Tamil Nadu is in second position next to state of Punjab. To match the food productivity with the growing population, research is conducted at various levels to increase the rice productivity. Among the various methods of rice cultivation, the SRI (System of Rice Intensification) method is gaining great popularity in recent days. Farmers in several parts of Tamil Nadu have adopted this method on a trial basis. SRI is a method that has been introduced in agriculture to increase productivity. In this method of cultivation, techniques like transplanting of very young seedlings, transplanting seedlings with sufficient spacing, use of weeders to manage weeds etc., are adopted to increase the yield. Moreover use of inputs like seeds, irrigation water, manures is lessened. In general SRI is recommended along with the use of chemical fertilizers and the focus is to increase productivity. CIKS has been also promoting the practice among its organic farmers. Trainings and result demonstrations have been organized for this purpose. CIKS has also brought out a publication titled, “System of Rice Intensification—An introduction” in the year 2009 and was authored by its technical team. CIKS documents and evaluates the feedback of farmers on the adoption of this practice.

Earlier work of CIKS has shown that indigenous varieties grow well in organic farming condition. Besides this, indigenous varieties provide the basic genetic material for developing any other variety in future (Arumugasamy, S. *et. al.*, 2001). The major challenge with indigenous varieties is that, enough quantity of seeds is not available readily. It has to be sourced from different farmers who have been conserving it and then multiplied. Many varieties fulfill specific nutritional and other dietary needs. Till recent times, our Indian farmers have identified good quality seeds, crossed them to produce several other varieties

and have preserved them. Indigenous varieties adapted to the local environmental conditions are fast disappearing (Arumugasamy, S. *et. al.*, 2002). There are many reasons why indigenous varieties are still conserved in spite of all odds. High yielding varieties are not suited to all farming conditions and there are situations where indigenous varieties are better suited. For example, in the alkaline soils of Tamil Nadu, an indigenous variety of Paddy called *Kalarpalai* alone can be cultivated (Vijayalakshmi, K. and A.V Balasubramanian, 2004).

Good quality seeds are extremely important in increasing the productivity of any crop. Currently, seed production in rice is fraught with several problems and farmers getting access to good quality seed is becoming a major issue. This is even more problematic in the case of organic seed production. Organic certification agencies insist during the process of certification that organic farmers should use seeds which are produced only through organic production methods. However there is dearth of organic seeds in the market. CIKS wanted to explore the feasibility of using SRI for organic seed production.

## The CIKS Experience

CIKS has an Organic Agricultural Research Farm of 4.4 hectares in the Kancheepuram district of Tamil Nadu, India. Every year for the last five years nearly 100 indigenous rice varieties are grown in 5 cents each under SRI for seed production. The following table provides the advantages that have been observed in the field by using SRI for seed production as against the conventional method. It was also only through SRI that it was possible to document the characteristics of the indigenous rice varieties like height, thickness of the stem, number of tillers, length of the ear head, 1000 grain weight, age of the crop and yield. Thus it was evident that SRI method of cultivation under organic production method offers many advantages over conventional method when looked in the angle of seed production as well as yield estimation.

### Comparison of Conventional and SRI Method of Cultivation for Seed Production

Sl. No.	Problems in conventional cultivation methods	Solutions through SRI
1.	<p><b>Seed Selection</b></p> <p>The amount of seeds used in conventional cultivation is very high. This is nearly 30–40 kgs per acre. Hence, it is extremely difficult to select good quality seeds manually.</p>	<p>The amount of seeds used in SRI is very low. It is as low as 1 – 2 kgs per acre. Since the quantity used is very low it is easy to select good quality seeds manually.</p>
2.	<p><b>Nursery</b></p> <p>When the nursery is raised for several varieties next to each other there is a possibility of varieties getting mixed up with each other if there are rains immediately after sowing.</p>	<p>The nursery raising technique for using SRI is normally done in an elevated area and the area for raising the nursery is very small (8 cents in the conventional method for an acre and 1 cent for SRI). Hence, the nursery for different varieties are separated from each other with proper spacing and this helps to avoid varieties getting mixed up.</p>
3.	<p><b>Main Field</b></p> <p>It is difficult to handle a large number of seedlings of different varieties separately.</p>	<p>Since the seedlings involved is very less they can be handled efficiently.</p>
4.	<p><b>Planting according to a season</b></p> <p>If it does not rain properly during the planting season it may not be possible to conserve many varieties together.</p>	<p>Since the water requirement is low we can plant several varieties in the same season.</p>
5.	<p><b>Lodging</b></p> <p>The lodging takes place in the bootling stage itself and as a result of this the earheads are not formed properly.</p>	<p>Lodging takes place only at a very late stage after the earhead formation. Besides this it is possible to remove admixtures of other varieties in the field itself.</p>

The farmers who had undertaken seed production of rice under organic method through SRI also reported satisfactory yield of 5.5 tonnes/ha of rice seed. CIKS had trained the farmers in seed production technology. The seeds thus produced had two certification namely; certification from the Seed Certification Department of the Government as well as organic certification from the organic certification agency, with which the farmers were registered. It was hailed as a first instance in the state of Tamil Nadu where seeds with double certification was produced.

#### **Conclusion**

The study in the CIKS organic farm and farmers' field showed that System of Rice Intensification (SRI) is an effective tool for indigenous

seed conservation as well as for organic seed production. There is an increase in demand for indigenous seeds of rice like *Seeraga samba* and *Kitchili samba* in the state of Tamil Nadu, India as the nutritional and other properties are now increasingly recognized. Nevertheless, there is dearth for good quality indigenous variety of rice seeds. Farmers who have conserved it could offer only limited quantity of seeds to those interested. In this context, SRI offers the scope to produce seeds under SRI with limited base material, which could then be multiplied. The evaluation also showed that SRI is effective for indigenous seed conservation also. Farmers' involved in commercial rice seed production through organic methods can effectively utilize SRI rather than conventional method.

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