

**Agribusiness Management  
Leadership Course  
SBI Management Institute, Kolkata  
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**Indian farmers moving from  
subsistence to commercial agriculture and  
banks playing an enabling role in it**

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Sustainable Agriculture**

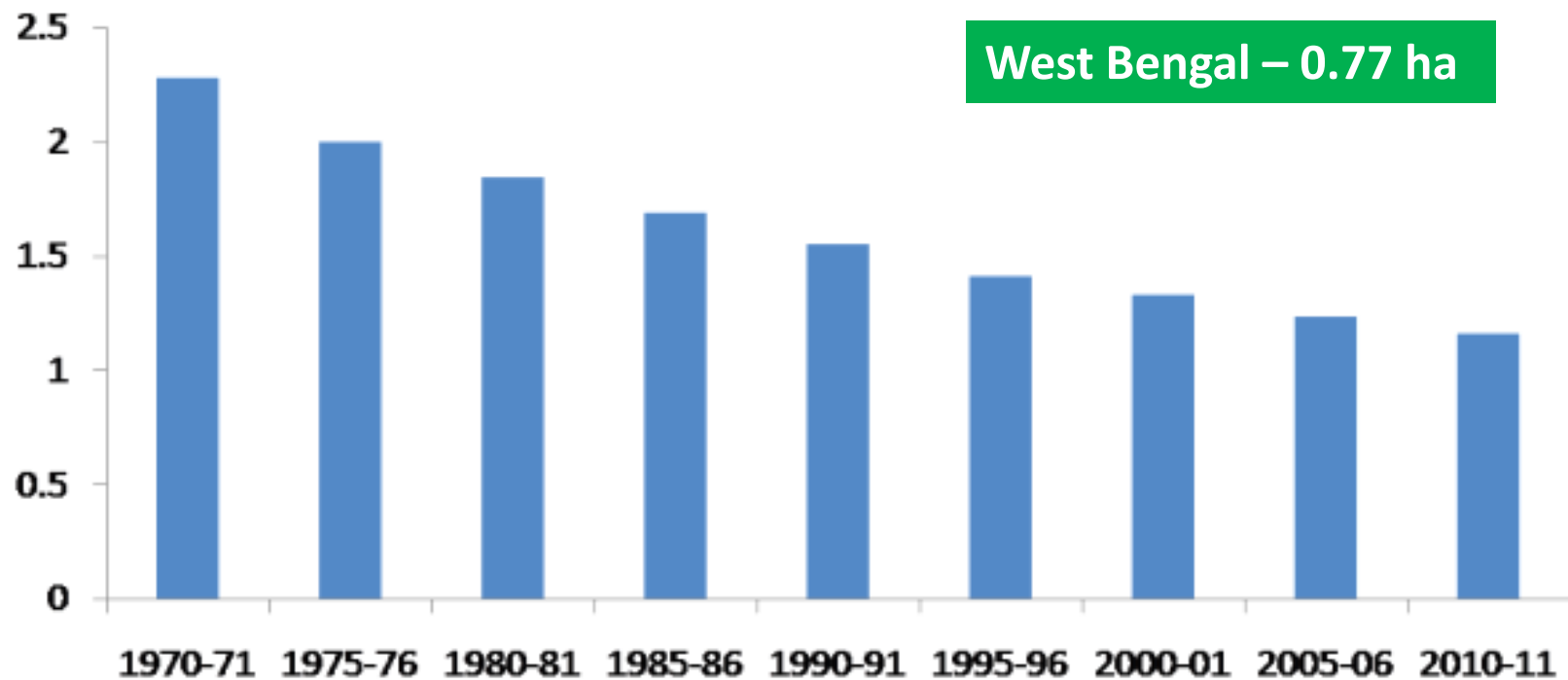
# Tough times for Indian small farmers

- Average Indian farm household makes about Rs. 6,000/- per month.
  - Only 40% of farmers of them are able to subsist on farm income alone.
- At least one hectare land is needed for making farming viable
  - **70% of them possess  $\leq 1$  ha;**
  - **West Bengal average landholding is only 0.77 ha.**
- Half of Indian farmers are in debt.



# Steadily shrinking size of land holdings

## Falling Average Size of Farms, 1970 – 2011, (in Hectares)



Source: Agriculture Census 2011

*By 2020-21, may fall below one hectare*

# Fragmentation is another major issue

- Individual holdings are often not in one block
  - “In West Bengal, two bighas of land may be scattered in a dozen of pieces”<sup>\*</sup>;
- State initiatives to consolidate landholdings have not been fruitful, so far.<sup>\*\*</sup>
- Individual units are often too small for efficient farming operations with application of technology, unless
  - These are aggregated into bigger entities.

\* Chatterjee, A S, at Roundtable on Innovative Models and Investments for Small & Marginal Farmers, organised by DRCSC and Re-emerging World, Kolkata, Jan 30, ‘17.

\*\* Ref. Jha, Raghvendra *et al* (2005) ASARC Working Paper 2005/01

[https://dev.crawford.anu.edu.au/acde/asarc/pdf/papers/2005/WP2005\\_01.pdf](https://dev.crawford.anu.edu.au/acde/asarc/pdf/papers/2005/WP2005_01.pdf)



# Size of farming units vs. farm income

## Sizes of farming operations

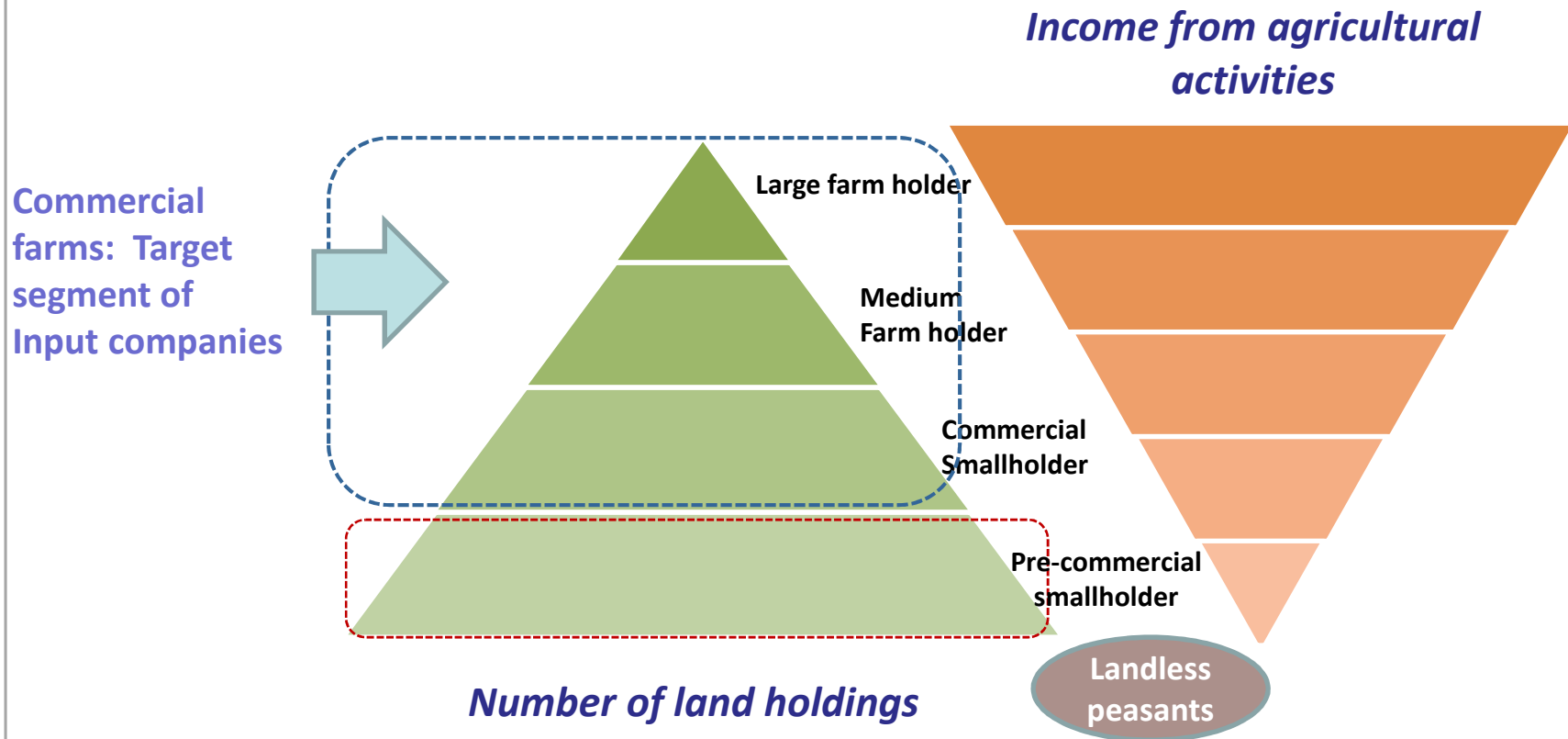


Illustration – courtesy, Project ‘Nirmiti’ of Syngenta India Ltd ©

# Small holdings are not unique to India

- **There are 500 million smallholders in the world**
  - They produce 80% of food consumed in Asia & S-S Africa;
  - > 2 billion people depend on them for their livelihoods.

## Distribution of small holdings & productivity of rice in Asian countries

Country	No. of smallholder farms (in million)	Area under rice (Mn ha)	Yield of rice (kg/ ha)
China	190	30.57	6811
<b>India</b>	<b>87</b>	<b>43.85</b>	<b>3584</b>
Indonesia	22	13.79	5134
Bangladesh	17	11.31	4622
Vietnam	10	7.81	5753

***Productivity is a function of agro-climate and farming efficiency***

Sources: 1) Nagayets, FAO (2005); 2) Nwanze, IFAD (2011)

<https://www.ifad.org/documents/10180/ca86ab2d-74f0-42a5-b4b6-5e476d321619>

3) FAO's World Census of Agri.; 4) China's 2<sup>nd</sup> National Agri. Census (2010)

4) FAOSTAT data, 2014.

# Other challenges facing Indian farmers

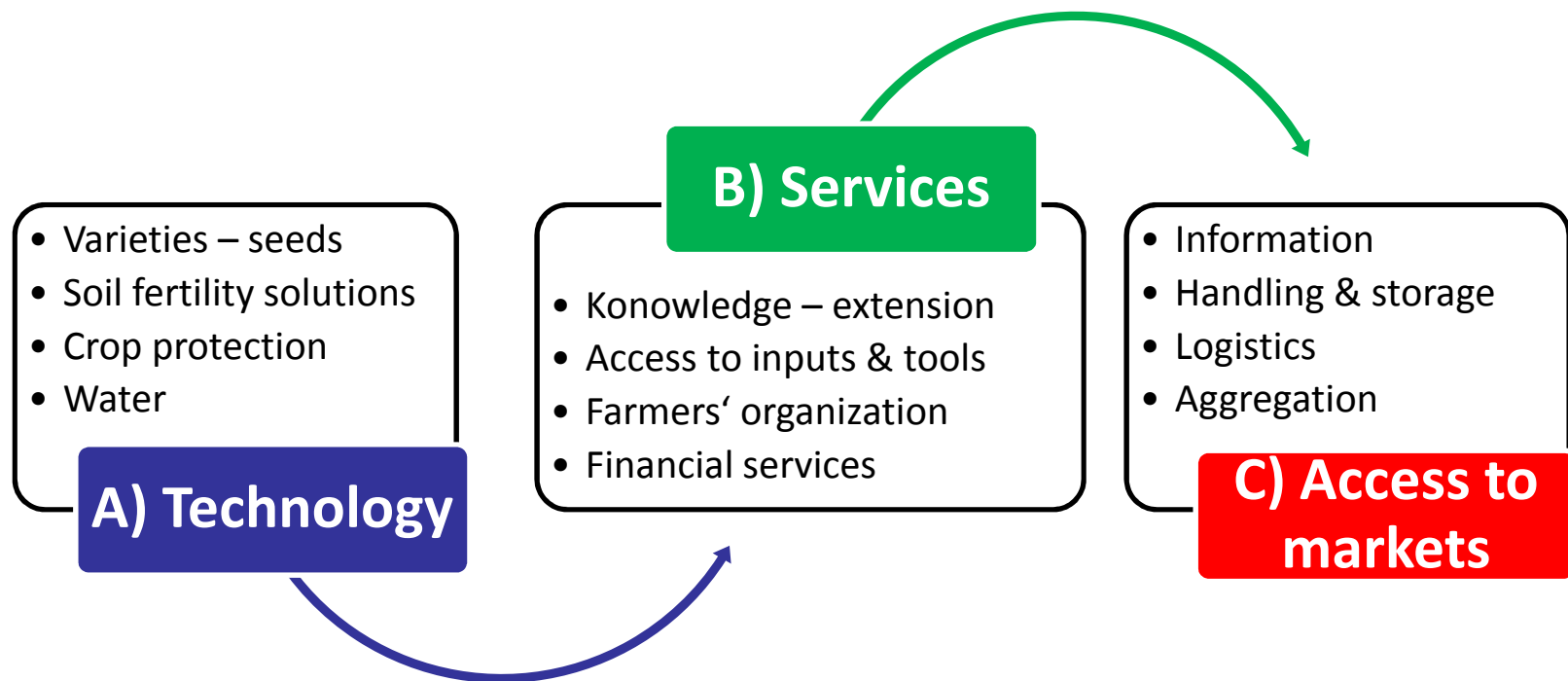
## Production

- Lack of knowledge of
  - Proper management of natural resources;
  - Advanced agronomic techniques – from land preparation to crop protection.
- Equipment & accessories for hi-tech cultivation
  - Availability and affordability issues.
- Entrepreneurship & skill development.
- Credit and risk mitigation.

## Post-production

- Post-harvest crop losses & deterioration in storage.
- Lack of access to markets & due share of value chain.

# Ways for smallholder agriculture to achieve a turnaround



## *Option of aggregation of farming units e.g., FPOs*

- For gainfully acquiring knowledge & using right inputs;
- Improving credit-worthiness;
- Achieving better access to markets.

# Making smallholder agriculture viable

## High-value agriculture better suited for smallholders

- Improving access to technology – knowledge & inputs
  - From where, how and at what cost.
- Right choice of farming systems
  - Land-based – a mix of food and cash crops;
  - Others e.g., livestock, dairying & mushroom culture, etc.
- Access to credit & risk mitigation as high-value agriculture entails high investment, greater risks.
- Improving access to markets – as individual farmers not able to cope with
  - **Suitable land reforms necessary;**
  - **Need to form producers' groups.**

*Farming to be run like a business*

# Technology – key to raising productivity

## Inputs

- Quality seeds of improved varieties – starting point.
- Manures/ fertilizers – managing fertility & nutrition.
- Agrochemicals – for crop protection & enhancement.

***What & how to use – both equally important***

## Special techniques

- For land preparation and water management;
- For sowing & planting;
- Harvest and post-harvest technologies.

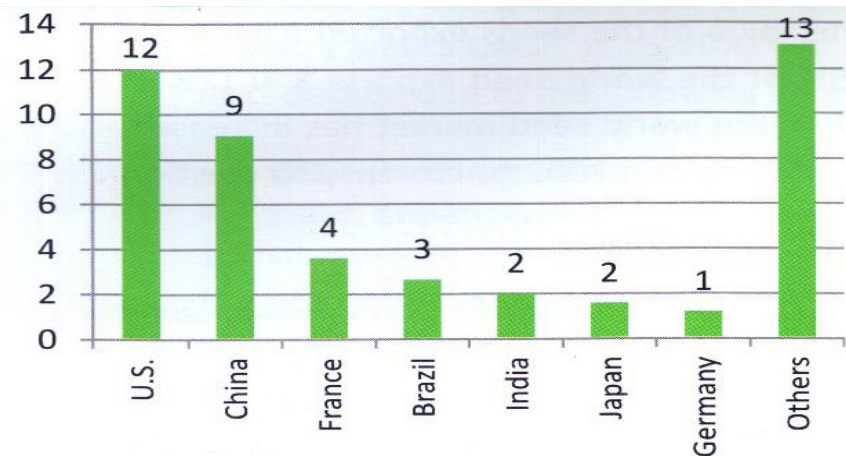
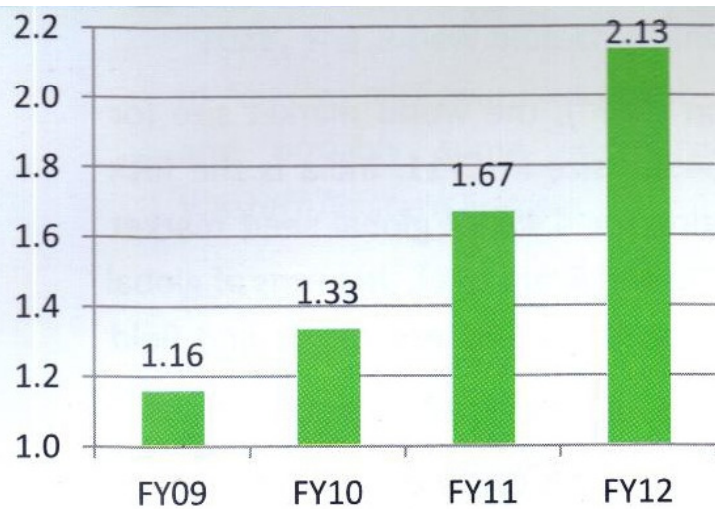
***Spreading techniques is more challenging.***

# Seeds – most important of farm inputs

## *Ushered in by impact of Green Revolution\**

- Seed played most important role in increasing production, followed by fertilisers & chemicals.

## *Gave rise to a robust domestic seed industry\*\**



Country-wise size of seed industry (US\$ Bn, 2011)

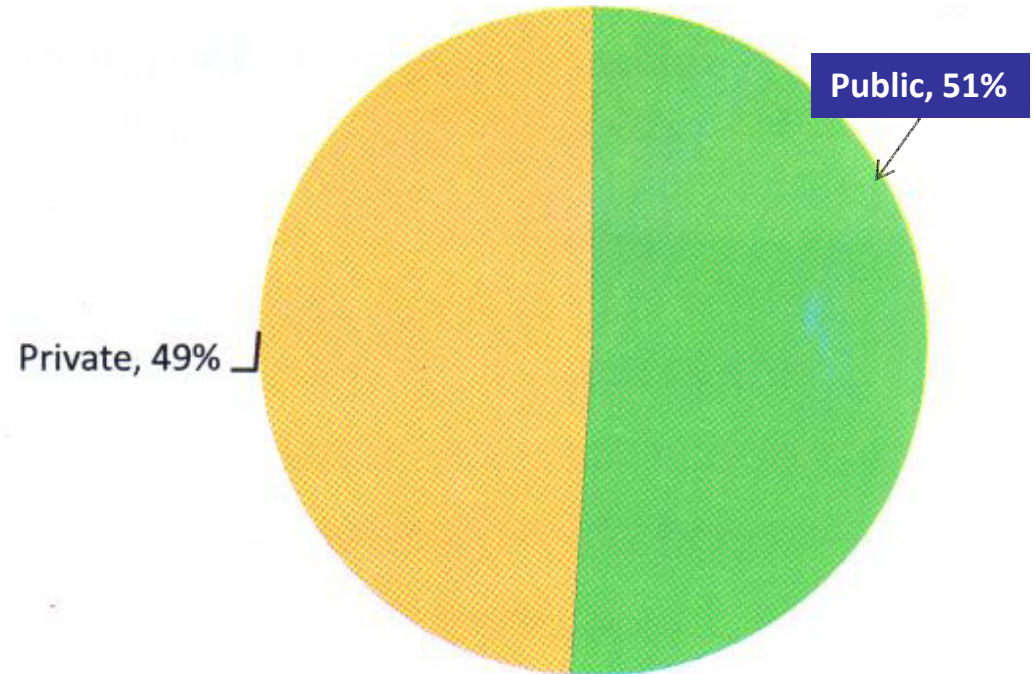
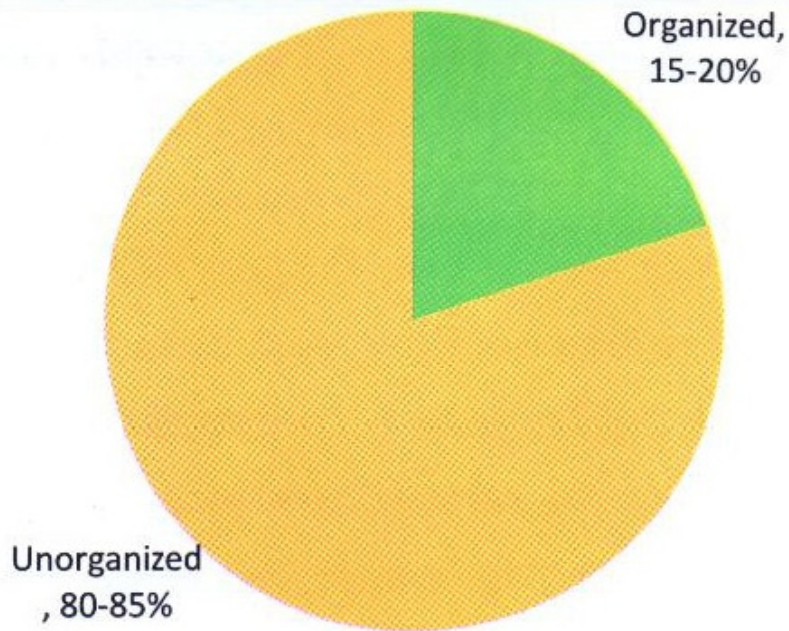
**Present size of business ~Rs. 20k crore; 6<sup>th</sup> largest in the world**

\* First through seeds of high-yielding varieties of wheat and rice – from late '60s. Second boost provided by Bt cotton seeds post-2002.

\*\* Source: NSAI.



# Seeds – large dependence on unorganized sector continues\*



- a) Private sector more engaged in high-value/ hybrid seed business.***
- b) Organised sector unable to meet demand of major field crop seeds – leaving a wide gap.***

\* For 2011-12: Source: Ministry of Agriculture (through NSAI).



# Technologies smallholders can apply gainfully – some examples

## Growing rice by SRI



## Hi-tech cultivation of vegetable – chilli for export



On plastic mulch



With drip irrigation



# Useful technology applications

*(contd.)*

## Raising quality vegetable seedlings in low-cost poly house



## Mechanised transplanting of rice





# Post-harvest handling and access to markets

## Proper grading and packing



Fresh produce weighed at a farmers' hub in Bankura



Transporting vegetables to market





# Special technique Hybrid rice seed production in Kalahandi



**Average net income from hybrid paddy seed Rs.50,000/- to 60,000/- per ha  
= double from that of paddy for grain.**



# Hybrid tomato seed production in Bankura

Hybrid tomato seed production in Bankura –  
process of emasculation



Final checking of fruit set in  
hybrid tomato seed plot in Bankura



Hybrid tomato seed production in Bankura –  
process of pollination



Year/ (company)	Total no. of growers	Total no. of production Units	Average area of unit (m <sup>2</sup> )	Total seed produced (kg)	Seed yield/ 1000 m <sup>2</sup> (kg)
<b>2012-13</b>					
(B)	16	23	888	300	14.689
Highest					22.410
<b>2013-14</b>					
(C)	16	17	888	207	13.712
Highest					19.538
<b>2014-15</b>					
(B)	14	15	1012	247	16.282
(C)	1	2	1012	35	17.301
(D)	5	5	1012	70	13.837
(E)	4	5	1012	34	6.721
Total	24	27		386	
Highest					20.454

Hybrid tomato seeds sold at  $\geq$  Rs. 10,000/- per kg.



# Farmers' group linked with bank credit

## TOMATO HYBRID SEED PRODUCTION PROJECT

(টম্যাটো সঙ্কর বীজ উৎপাদন এর প্রকল্প)

ORGANIZED BY :- SHAMAYITA MATH

(পরিচালনায়) :- শময়িতা মঠ

IMPLEMENTED BY :- BAN ASHURIA SABUJAYAN GOSTHI

(রূপায়নে) :- বন আশুড়িয়া সবুজায়ন গোষ্ঠী

FINANCE SUPPORTED BY :- IDBI BANK PVT. LTD., BANKURA

(আর্থিক সহায়তায়) :- আই.ডি.বি.আই ব্যাংক প্রাঃ লিঃ, বাঁকুড়া

VENUE :- BAN ASHURIA

(স্থান) :- বন আশুড়িয়া

75730501



# Entrepreneurship & skill development

Anandwan Agri Polytechnic



Classroom teaching



Students' practical class



# The case of Kisan credit card

- Introduced in 1998;
  - Under a scheme prepared by NABARD;
- Bank credit to farmers
  - With additional benefit of personal accident insurance.



**To provide timely & adequate credit to farmers, for crop production & ancillary activities**

## Assessment A\*

- KCC holders got more credit than others;
- Cash-crop growers borrowed more than those growing rice or jowar.

## Assessment B#

- Performance (of KCC) lower in East & NE;
- Credit helped farmers realize higher net returns.

## Assessment C\$

- Rice production increased by 33% in areas with increased exposure – to knowledge & banking;
- KCC holders used more farm inputs;
- Welfare aspects of KCC “remain ambiguous”.

\* Sajane et al. Karnataka J Ag Sci. 2011

# Bista et al. Ag Econ Res Review 2012

\$ Chatterjee, Bus Std, Nov 3, 2016.



## *Appendix*

# The case of an innovative farmer





















**NADIA KRISHI VIGYAN KENDRA**  
**BIDHAN CHANDRA KRISHI VISWAVIDYALAYA**  
**INDIAN COUNCIL OF AGRICULTURAL RESEARCH**  
GAYESHPUR, NADIA-741254



**KRISHI PARBAN-2018**

*Certificate*



*This is to certify that*  Kutubuddin Biswas, S/o. Nasiruddin Biswas  
*has been honoured with the* Best Innovative Farmer *award for*  
*the year 2018.*

Place : Gayeshpur, Nadia

Date : 10.01.2018

Senior Scientist and Head  
Nadia Krishi Vigyan Kendra

Director of Extension Education  
Bidhan Chandra Krishi Viswavidyalaya

# Summing up

- Farming should be profitable in order to remain viable.
  - Small farmers should focus on high-value agriculture.
  - It also necessitates high-investment;
  - Technologies are available but need to spread widely;
  - Access to credit and risk mitigation are important;
  - Land reforms/ aggregation essential.
- Extension services – public & PPP to be intensified
  - Field demonstration of special techniques a major challenge
- More advanced and cutting-edge technologies need to developed through R&D.
- **Can farmers' income be doubled by 2022?**
- **Is doubling farmers' income going to bring solutions to all problems facing Indian agriculture?**



# ON THE SHELF

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## **TRANSFORMING INDIAN AGRICULTURE—INDIA 2040: PRODUCTIVITY, MARKETS, AND INSTITUTIONS**

**Edited by Marco Ferroni**

**Sage Publications**

**₹995**

**Pp 357**

India's recent performance in agriculture has been favourable with agricultural production growing over the past 30 years. Yet there is widespread consensus that agriculture is lagging. This book explores the future and presents the audacious question: What could the agricultural sector in India look like 30 years from now?

## Agricultural Extension in South Asia

**COMMERCIAL AGRICULTURE BY INDIAN  
SMALLHOLDERS – FROM FARM PROSPECTS TO FIRM  
REALITIES**

Dr. Partha R Das Gupta (2017)

Maya Publishers Pvt Ltd, New Delhi & Samskriti, New Delhi in  
collaboration with Syngenta Foundation for Sustainable Agriculture,  
Switzerland



*"We do not learn from experience... we learn from reflecting on experience."  
John Dewey*

Successful managers know the importance of learning lessons from project implementation and they often do so. Reflection is one of the most important processes of learning and involves documentation and analysis. This book under review is about learning lessons from implementation through reflection which is important not only for the project implementers but also for others who are trying to address a similar set of problems elsewhere.

The Syngenta Foundation India (SF) experimented with the hypothesis: 'Whether the income of the smallholder farmers could be improved through the application of advanced crop production technologies'. This was tested in four different difficult areas of the country. The approach adopted by the Foundation was selecting the most backward districts, choosing local partners, conducting surveys to assess the farming situation, identifying suitable crops (especially high-value vegetables), trying on a pilot scale to assess the feasibility of the crops and replicating the successful interventions and scaling up to extend the area of the crops and increase the number of farmers. Once production of the crops went up substantially, the Foundation facilitated the producers' access to markets to enhance their profit margins. In the process, the Foundation has employed several extension methods such as workshops, training programmes for farmers, on-farm testing of the technologies, and tours to successful farmers' fields, farmers' fairs, exhibitions etc.

The Foundation has adopted a typical programme planning model involving the steps i) analysis of situation ii) problem identification iii) prioritisation iv) identification of appropriate solutions v) implementation vi) evaluation and vii) reconsideration. This book is all about the way the programmes were planned, implemented, progress made and lessons learnt; the programmes were revised as per the Foundation's experiences in working with resource-poor farmers.

The book has four chapters and an epilogue. The four chapters deal with the experiments conducted in four economically disadvantaged and backward areas in the country. The author Dr. Partha R Das Gupta, was involved in these experiments and he describes his experiences of working in these areas. It goes to the author's credit in vividly narrating both successes and failures in implementing the projects. It is worth reading this book to know the way the projects were planned, implemented with varying degrees of

