



# Women-led Cottage Industry for Boosting Sustainable Agriculture: A Case study from India

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**Region: Chokkalingam Puddur , Tamil Nadu, INDIA**



## The problem

- Farmer demographics and their concern.
- Generally the farmer in this area are aged between 30-55 years wherein 35% of the farmers are females.
- 30% of produce lost due to pest and disease.
- 20-50% of investment would be lost due to wrong advice.
- Agro input dealers generally advice chemicals
  - Adverse effect of chemicals
- Farmers demand timely actionable knowledge
- Farmers need sustainable solutions : affordable, accessible, available



## Enabling Environment: FPOs

- Started in 2011 registered under producer company act.
- the main activity is to promote Sustainable agriculture and market for agriculture produce
- enhance skill and knowledge of 3000 farmer small holder (1051) and 35% are women farmers.
- main service is input services at affordable cost like seeds, fertilisers, get dealership from other companies.
- information dissemination-, climate, agriculture and animal husbandry for decision making
- Runs Plant Clinics to support their objectives



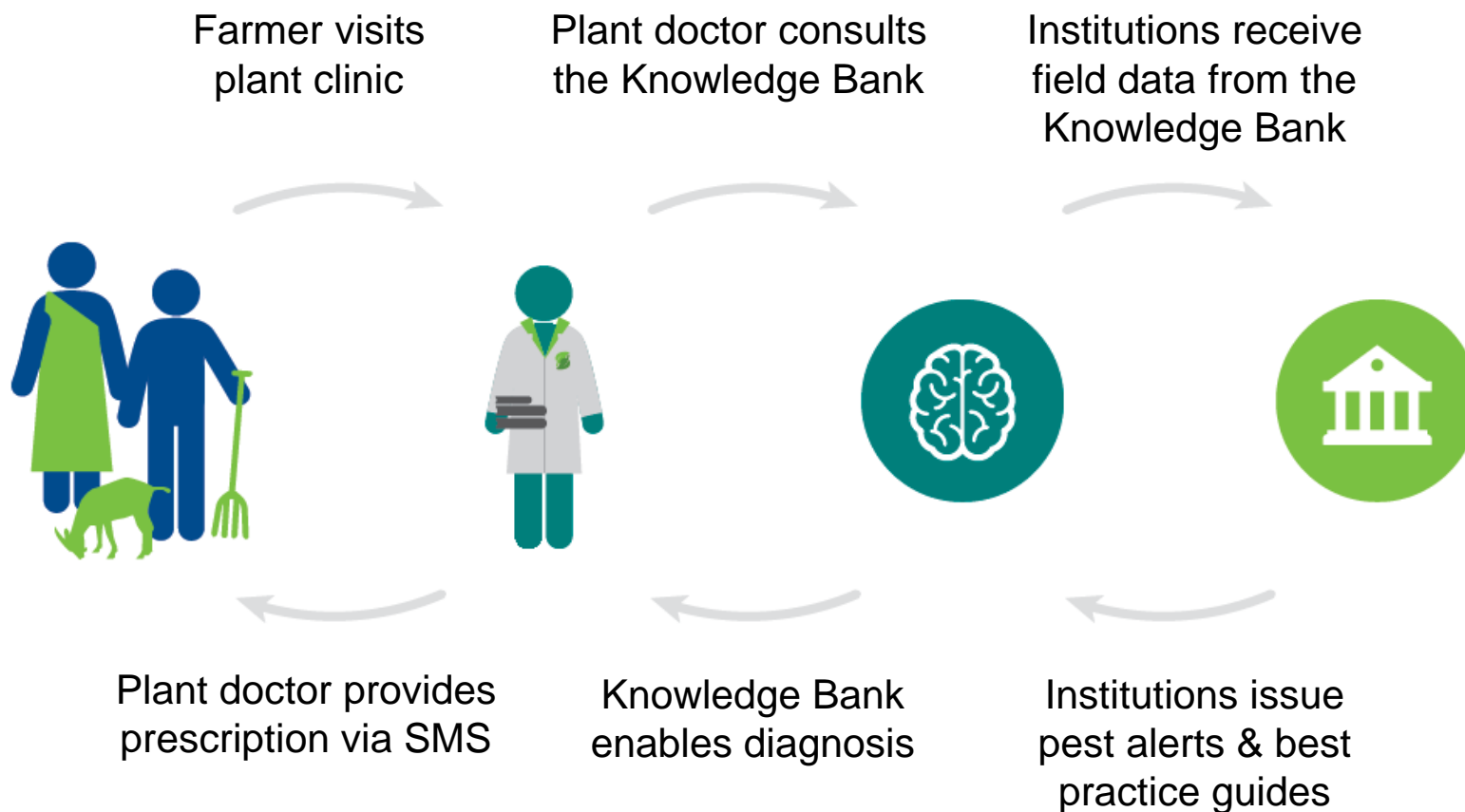
## What is Plantwise?

Plantwise is a global programme, led by **CABI**, to increase food security and improve rural livelihoods by reducing crop losses

**ICT4D**  
CONFERENCE

 **CABI** plantwise

# Data flow





## Plantwise Plant Clinics

- Two trained Plant doctors
- Run clinics twice in a month at fixed place and time
- Advocacy in local area through microphone, discussion at village level meetings etc
- Average farmer attendance: 15-20/session
- Digital for quick feedback
- Promotes biocontrol agents
- Agro dealers stock mostly chemicals
- Directs farmers to the source of biopesticides :
  - Ellya thendral : a unit by 12 women forming SHG



ICAR-NBAIR

## The Technology

- Biorational pesticides
  - efficacious against target pests
  - safe to natural enemies and broadly to the environment.
  - derived from natural sources eg plants, fungus, bacteria, virus etc



# Fungus-based pesticides



- Broad spectrum of action
- Insect pest : *Beauveria bassiana* , *Metarhizium anisopliae*, *Metarhizium (Nomureya rileyi)*
- Plant diseases : *Trichoderma spp.*, *Pseudomonas fluorescens*, *Paecilomyces lilacinus*.
- Contact Action: Integument of insects,
  - Destruction of tissue and production of toxins
  - Caterpillar turns into Cadaver : Mummified
  - Self propagation
  - Factors affecting: wind, rain, or frequency of contact
- Plant diseases: Antagonism, Mycoparasitism, Competition, Inducing Systemic resistance



## Challenges

Production, quality and distribution

## Regulation

- Products have to be registered
- Lengthy (?) registration process
- Technologies available in other Asian Countries



## Training and support

- Unit: Ellya thendral in village: Chokkalingam Puddur
- Filling in the gap : biocontrol products made timely available
- Supporting its 12 members in improving their livelihood by getting constant income.
- Produces and markets 5 fungal biopesticide
- Training from local university.
- Loan of INR 1,20,000 from Canara bank and 60,000 from MSSRF (interest free loan to procure certificate that what is produced in this unit is not toxic),
- the unit took off in 2003 with most popular of biopesticide *Trichoderma viride* with assured market.
- Subsequently in 2007 - introduced *Beauveria bassiana* in their product range
- 2016: added other Bio fungicide *Metarhizium anisopliae*, *Verticillium lecanii* and *Paecilomyces lilacinus*.

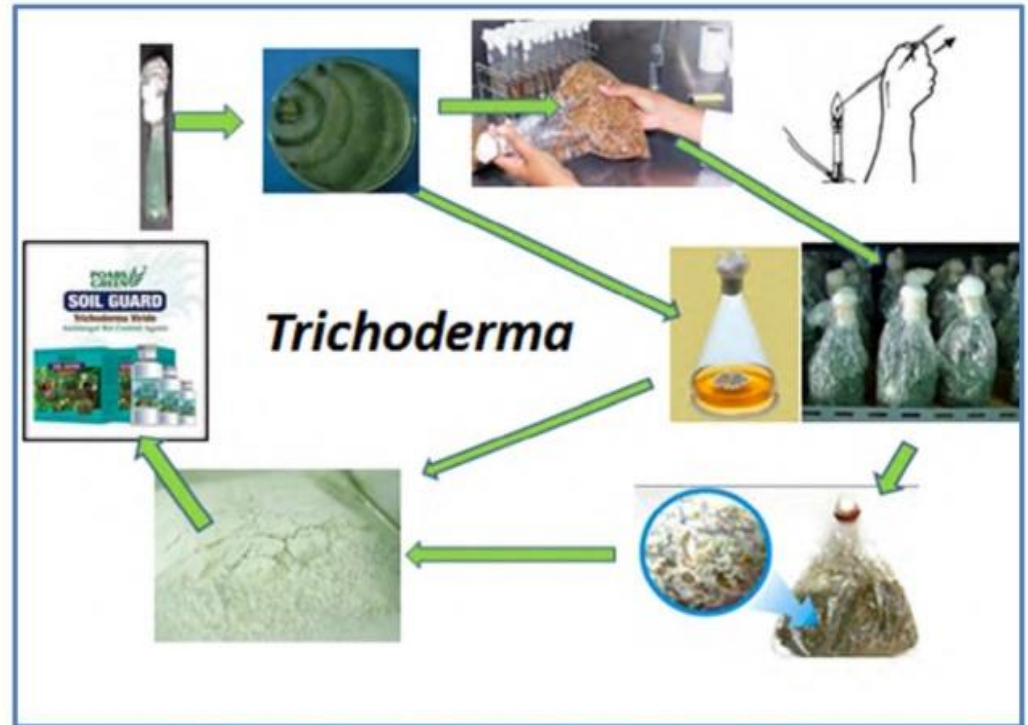


## Meet the CEO : Angel

- Angel is 48 years old
- Not adequately qualified to take up the technology
  - took a brave stride to educate herself
  - and get trained to handle and support the production unit. T
- Chiefly engaged in networking -popularize the technology, mobilise the product
- Other source of income -coconut tree, cattle and one acre of agricultural land.
- Family : Husband and son
- Raise in social status : Equal rights as her husband and son to take decision in the family matters both social and financial.



# Typical Production Cycle : Biofungicides





# Production and Marketing

- Mother culture from TNAU;
- Equal ownership : No Division of labour.
- Specialized in networking, an additional task
- Quality Control : Periodical Self testing periodical; Annually - local laboratories in Chennai and Coimbatore.
- Stock Maintenance: based on agricultural activity
- Channelising product : local NGO/FPO office: farmers would be picking up.
- Nearby Agrodealer : stock their product.
- Plant clinic recommendation : Creating awareness and link.
- Using social media - Facebook to publicize products.



## Growth and Progress

- Over the time: number of clients procuring their products.
- Increase in sales: From 5kg/month to average 3tons/year
- Initial 100% loss and now they have come to a level where there is zero waste.
- Prominent SHG in the region
- Knowledge and concern for the farmers leads to business very well accepted.
- Provide credit to farmers to procure products
- Profit shared as salary to industry members
- Finance system for Self sustainability
  - Social needs
- Growing confidence of government - to facilitate link between the government and farmers.



# Company Analysis

- All the member initially below poverty line
- Progress in Business
- accomplishing many milestones in their lives.
- Loans from SHG on priority basis according to the emergency status.
- Annual turnover is 60-70lakhs per year.
- Further steps
  - Skilling to improve their formulation -capsule formulation for their biopesticides.
- Angel has full confidence that the business would expand with time especially with association of Plant clinics



# Financials

Table 1. Cost of setting up and running of the biopesticide unit ( capacity of producing xx tons per annum)

Infrastructure	Cost/unit	Unit	Total Cost/annum
Facility*	200000	1	
Equipment*	300000	1	
Recurring cost	20000	12	240000
<b>Personnel</b>			
Staff Salary	4000	12	48000
Total expenditure			2,88,000
Sale			60,00,000
Net Profit*			

Table 2. Cost of Setting up of Plant Clinic with outreach for 3000 smallholders (Considering 3 clinics @2 Plant doctors each would be required)

Particular	Cost/Unit	Unit	Total cost
Training on diagnosis and recommendation	42560	6	2,55,360
Backstopping material in terms of customised messages for pest of concern	2,33,000	1	2,33,000
<b>Establishing Clinic</b>			
Digital device	17000	6	1,02,000
Table chair kiosk	5000	3	15,000
USB Microscope	3200	3	9600
Scissors, lens, forcep, brush etc	1000	3	3000





## Challenges and Lesson Learnt

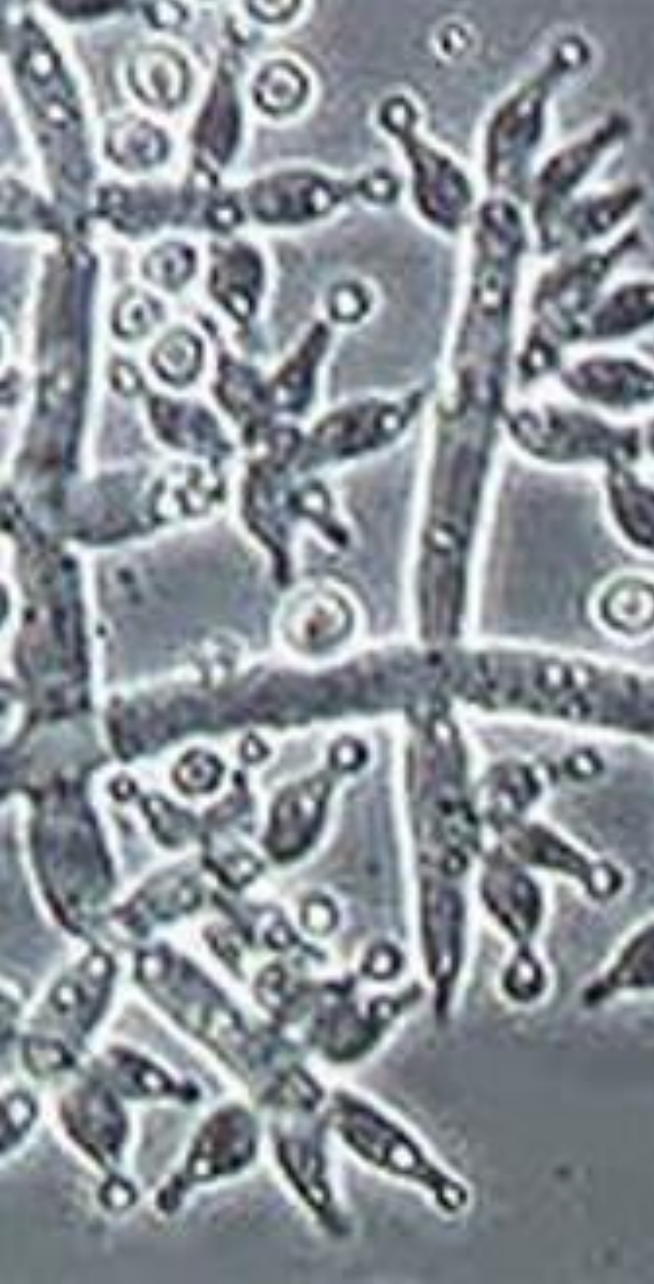
- Tough Initial phase of survival
- Demotivating Family and social surroundings
- Trainers not encouraging
- Unpredictable demand : Difficulty in stock keeping
- Initial loss ran to 100%
- Lack of rains leads to reduction in business
  
- Gradual Progress : increased their confidence level as entrepreneurs.



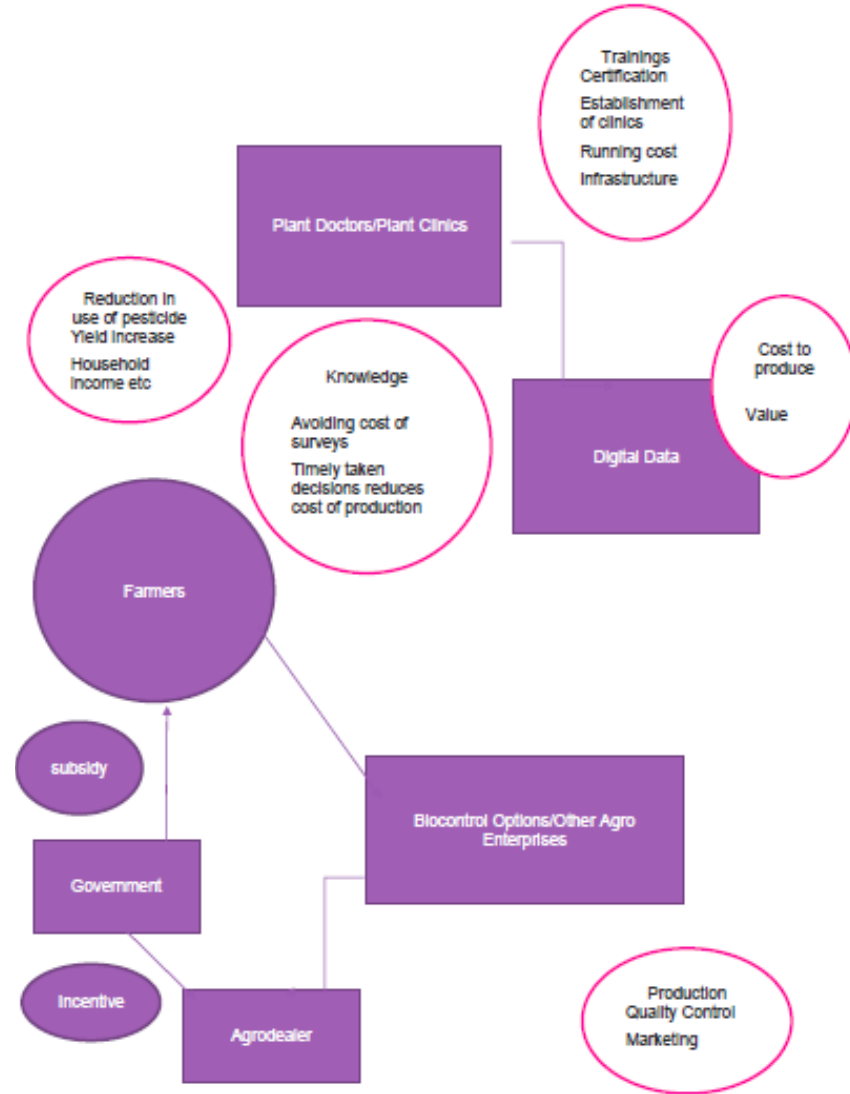
# GREEN TECH

## Environment Analysis

- Through Focus Group Discussion
- Farmers : well aware of biocontrol and its benefit.
  - want subsidies
- Awareness of adverse effect of chemical on human health
- Want timely advice to increase uptake of biocontrol product
- Ready to pay for good advice and product
  - Confidence in trained extension staff
  - Rural youth equipped with a ICT backed tools linking with the knowledge of experts
- Only 20% of the farmers carry a smartphone,
  - each household has one
  - The primary reason for the farmer to not to carry the smartphone
    - it is a expensive device
    - if lost during his field work would incur unnecessary expense



# Key success Factors





# Organic Agriculture

- Bhutan aspires to become 100% organic Agriculture
- Decrease in use of agrochemicals
- Use of herbicide has increased
- National Organic Program was institute in 2006
- Use of organic pesticides and bio-fertilizers promoted
- Almost all the products available are imported
- Technology and products expensive and not available



## Recommendations

- Advice to farmers : Plant Clinics
  - Actionable
  - Timely
- Motivating Self Help Groups to establish Community level Biopesticide units
  - Product Accessible, Available and Affordable
- Sustainability
  - Appropriate support from local authorities
  - Capacity Building
  - Creating Awareness
  - Adapting Global Good Practices
    - Safe Environment and Good health
    - Increased income

شكرا جزيلًا  
mercici शुक्रिया xie-xie obrigado  
merci zikomo xie-xie obrigado  
ありがとう kiitos thank you efharistó  
danke urakoze tak ke iturnetse asante  
terima kasih dhanyawaad

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