

NEW PARADIGM FOR RAINFED FARMING

From Impoverishment to Empowerment :

**With Productivity, Profitability &
Sustainability**

For Farmers & Farming

By : ASHOK BANG

Characteristic features of the farms & farmers of India

- Small farms & farmers, majority less than 1 hectare
- Rainfed, risk prone
- Resource poor
- Rich expertise of traditional knowledge & indigenous wisdom
- Debt-ridden — “debt-trapped”

शेतात सरण रचून शेतकऱ्याने पत्करले मरण

प्रतिनिधी/३ जून

पुनव: ज्या शेताने वाजवर पिढे पोसला त्याच शेतात फर्लाख्या झिरवावाती सुदमतेच्या शेतकऱ्याने स्वताचे सरण रचून मरण पत्करणे पसंत केले. तदव हेर वृत्त टाळवारी ही घटना शुक्रवारी बुधारी लकीकच्या आरिगाव येथे घडली. वंदगान विठराव जमवाडे असे या पुढेची शेतकऱ्याचे नाव आहे. फोरहण्टू शेतीतून होणारे

जळो जीणे लाजिरवाणे!

अत्यल्प उत्पन्न, कऱ्याचा घोडा व पुढोत इगामात शेतीत पेरवताती घरी छवामही नसल्याने जगमाला फटवलेल्या जमवाडेने वापल्या शेतातच रबत,ची विला रचून आत्महत्या केली. पाषाणातारी पादर फोरगाचा या घटनेने आरिगाव आणि परिसरातील समाजमन हेलावून गेले आहे. पुसदगासून ६ कि.मी. अंतरावरील आरेगाव येथील चंद्रभान शिवराम जमवाडे (४८) या

कात्ताक राची गावातील नावाजणख ४ एकड फोरहण्टू शेती आहे. ३ मुलांपैकी दोघांना कऱ्यासहच नाईक सुनगिरणीत शेवटारी तर एका मुलाचे म्हाविद्यालयीन शिक्षण आणि काही वर्षांपूर्वी मुलीचे लग्न झाल्याने फोरहण्टू शेतीतून निघालेल्या उत्पन्नात कऱ्याच्या चरधर्मा हे कालवित होते. त्याच काही वर्षांत शेतीचा बाडला खर्च, बँकेचे १० हजार व

खोसापटीचे ७ हजार रुपये कर्ज, खारणी तोकांकडून वेतलेली उरगवत आणि हे सर्व कर्ज त्या शेतीच्या उत्पन्नाच्या भरवशावर फेडण्याने त्या शेतीतून निघलेले अत्यल्प उत्पन्न, याखुळे जनाखर्चाची टोकं लुडविताना चंद्रभानची दमछाक होत होती. याच विवेचनेत मळतरी तो वारव्याली आहारी गेला. पाडोवरीचे पेशित पाटील गगराज जमवाडे व पुसद त.प.मधील

➤ पान २ वर



ज्या शेताने कुटुंबाचे पातनपोषण केले त्याच शेतात कर्जबाजारी चंद्रभान जमवाडे यांनी सरण रचून जीवनयात्रा संपवली. कुटुंबीयांच्या हाती लागला तो केवळ जळालेला सांगाडा.

Self-immolation on funeral pyre (MVM), in his own field.
Mountains of debt strangulate ∴ debt-trap
Maharashtra, AP, Karnataka, Kerala etc. Mostly small, rainfed

Problems Faced

1. Productivity - Low
2. Profitability - Low, quite often **-ve**
3. Sustainability -
 - Low
 - Unstable & fluctuating, jerky
 - Eco-unfriendly;
Natural Resource Base getting eroded
 - Pests, diseases |
 - Agrobiodiversity |
 - Soil health |
 - Energy audit & Balance Sheet |

Problems Faced (Contd.)

4. Quality of Life -
- Majority BPL,
 - Hunger
- Hidden hunger, deficiencies
- Gender colour, Female problem
- One symptom : anaemia - 50%
- Peace of mind lost; frightened
 - Dignity lost, no honor.

40% want to QUIT farming.

Location and conditions of the field experience

- Central India, Maharashtra State, Vidarbha, District Wardha
- Land : Medium and shallow black cotton soil,

1-3% gradient

Rainfed

- Rainfall : 800-1000 mm, mostly June-Sept
- Temperature : Max 47⁰C in May for 1-2 weeks
- Relative humidity : Min. as low as 5-10% in May

Key Features of the Experience

- Researched and Developed on Alternative Agriculture Resource Centre (AARC)
- 7 years' trial
- 1-4 years on farmers' fields
- Replicability and high potential for immediate upscaling for millions of farmers

Model R&D'ed with the same constraints and under similar conditions -

- Medium soil; land without fence
- Rainfed, dryland, no irrigation
- Limited resources of all kinds :
Knowledge, skills, equipments, capital, labour, draft power etc.

Key Features

1. Natural Resource Management : Soil & Water Conservation

Inside-field bunds :

Three contour/graded bunds of 0.2% slope

- By Village Engineer
- Withstands drought of even 5 weeklong dryspell

2. Seeds : 2nd Corner Stone

- Self-reliant
- Resistant to pests, diseases, drought
- Productive but not HIV
- Taste

3. Labour & Power

- Family labour + supplementary agricultural labour
from village
- Bullock-power on rent

4. Manures & Fertilizers

- Only local FYM, ordinary
- How much?
Rs. 1,500 (12 CL) for 1 ha.
- No other external or sophisticated source

5. Companion Cropping Consortium

3rd Cornerstone

- 35 different crops
- Cover crops for sun harvesting 1200 Kg Cal/day
- Scientific, technically appropriate, Synergy effect
- Legumes for bio-N-fixation & better CN ratio of biomass

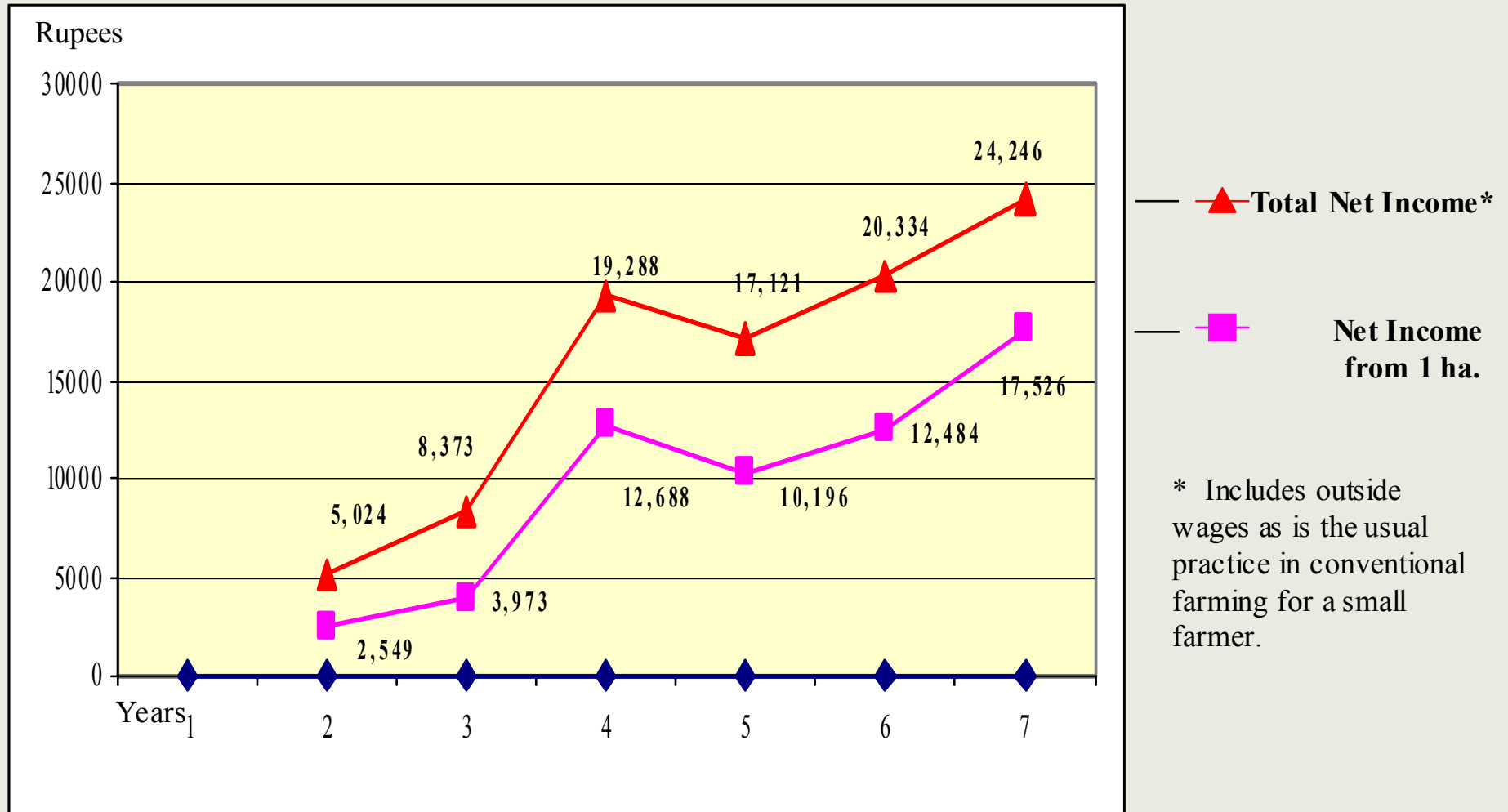
6. Rich Agrobiodiversity of Crops

- Cash crops - 3
- Cereals - 5
- Pulses - 8
- Oil seeds - 4
- Vegetables - 15
- Spices & condiments .. - 5
- Tubers - 1
- Fibre - 2
- Fodder - 2 - 5

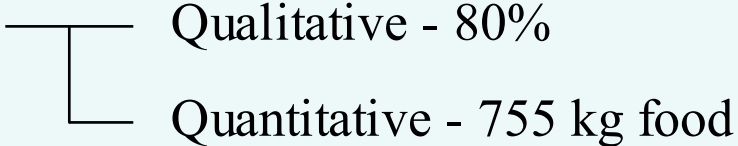
TOTAL : 30-40 crops in 1 hectare. *No reason for intimidation !!*

Most of the foodcrops needed for the family-consumption

Net income from 1 hectare over years



Food & Nutrition Security

- Affordable
- Sovereignty
- Diverse richness
 - > 30 food crops
- Achievement 
 - Qualitative - 80%
 - Quantitative - 755 kg food

About 80% self-reliance in livelihood

Income Security

- Average of last 3 years (From 1 ha.) :

Secured net income right from the first year.

Net income :	From field	+ _____	From agril. wages	=	_____	Total
5 th year :	10,196	+	6,925	=		17,121
6 th year :	12,484	+	7,850	=		20,334
7 th year :	17,526	+	6,720	=		24,246

Bare basic need of the family : (at current level Rs. 25,000)

Achievement at 7th year (from 1 ha.) : from field - 70 %

Total - - - 97 %

- No conversion loss period / no gestation

Food & Income Security

Data of last 3 years (From 1 ha.) :

Sr. No.	PARTICULARS	YEAR 5 (Rs.)	YEAR 6 (Rs.)	YEAR 7 (Rs.)
1	2	3	4	5
1	Cash crops produced	10,704	10,420	15,336
2	Food crops produced	8,268	8,613	9,469
3.	Fodder produced	1,649	2,156	2,751
	Total	20,621	21,189	27,556
4.	Expenditure (seeds, FYM, outside labour, bullocks for cultivation operations)	10,425	8,705	10,030
5.	Net income from farming	10,196	12,484	17,526
	+ Soil with better fertility. + More organic matter. + Self-reliant, secure, risk free farmer family with more food and rich nutrition.			
6.	Income of daily wages from agricultural labour outside.	6,925	7,850	6,720
	Total Income	27,546	29,039	34,276

Soil Health improvement in 5 years

Sr. No.	<u>Parameters</u>	Comparative Improvement		
		Control Level	Improved Level	Improvement
1	2	3	4	5
1.	Organic matter (Humus) %	1.25	4.6	368 %
2.	Cation Exchange Capacity (CEC)*	35.16	44.91	128 %
3.	Total N %	0.073	0.267	378 %
4.	Available P (Kg/H) %	22.45	50.43	225 %
5.	Available K (Kg/H) %	100.00	435.00	435 %
6.	Porosity %	39.23	47.16	120 %
7.	Available water holding capacity			
	7.1 AWC w/w%	14.46	19.59	135 %
	7.2 AWC cm ³ /cm ³	19.60	21.94	112 %
	7.3 AWC mm/m	196.60	219.40	112 %

* (C.E.C. of organic matter (humus of C:N=10:1) is 300-400 C mol)

Extent of Present Coverage

- Some hundred farmers,
high proportion of women.
- For last 1 to 4 years
- All rainfed
- 90% small, resource poor, representing majority of Indian farmers.

What are their results ?

Farmers' Experience (initial years) : Trend

Case 1 : Mr. Varalu Milmile & Ms. Laxmi :

Education 7th Std.

Land : 0.5 ha out of 1 ha , shallow, poor

Baseline (average of 3 years) : under chemical farming

Crops : Cotton or Soyabean ; Food crops - Nil

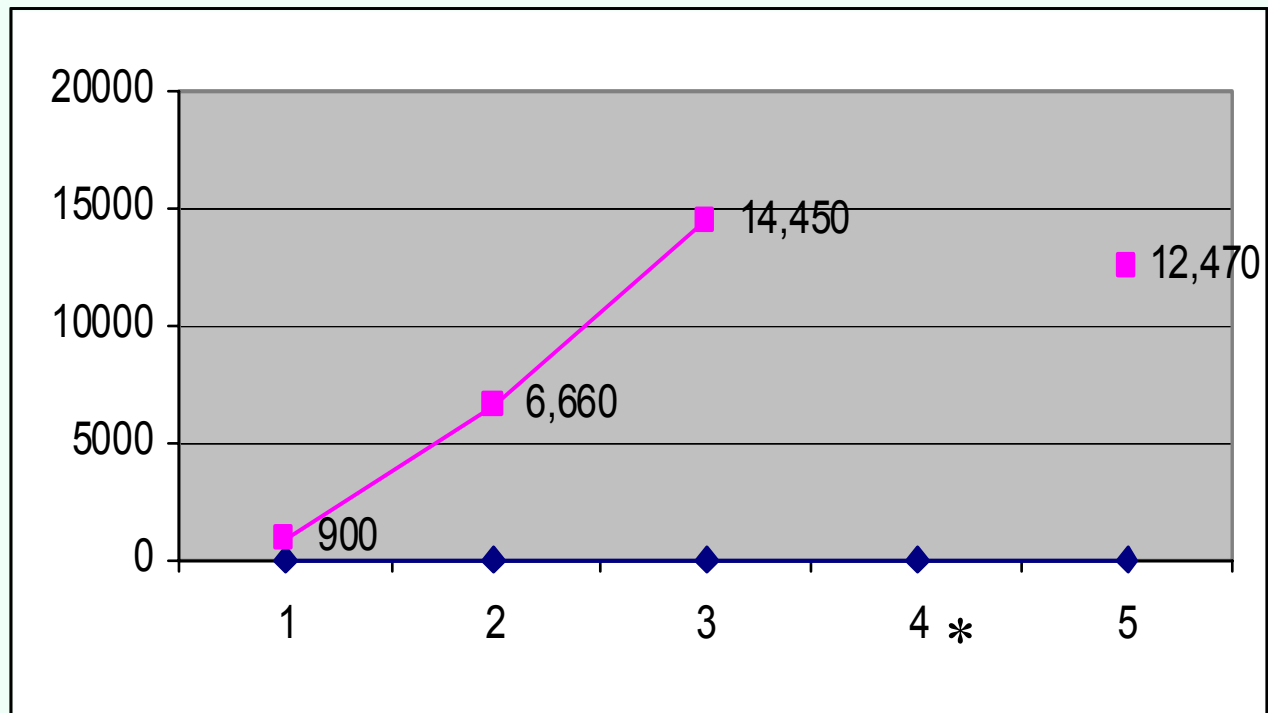
Expenditure : Rs. 2,250

Gross income : Rs. 2,000

Net income : Rs. 250

Alternative Model (Mr. Milmile) : Trend

Net income / Rs. per ha.



* Serious illness in the family, could not farm properly.

Farmers' Experience (initial years) : Trend (Contd.)

Case 2 : Mr. Janardan & Ms. Suman :

Education 7th Std.

Land : 1 ha (out of 2.5 ha), rainfed, shallow to medium

Baseline (with chemical agriculture) :

No. of crops : 2

Net income : (loss) -ve Rs. 1,550 (mean of last 3 yrs)

Supplemented by daily wages earned outside.

Alternative model experience (1 ha)

Total no. of crops since 2003 - Average 25 each year

- * Application of FYM : 3 tons only in the 1st year
- * Net income : 1st year - Rs. 12,425 (including 21 food crops)
- * Net 3 years continuous adverse wet years,
lands of other farmers of the village remaining fallow

Yet, Janardan got net income Rs. 4,652 , 7,055 & 10,085 respectively in these adverse years (mean Rs. 7,264)

Year 2's special experience : sowing 3 times ! *Suicides*

Farmers' Experience (initial years) : Trend (Contd.)

Case 3 : Mr. Janrao & Ms. Shobha :

Education 2nd Std.

Land : 1 ha (out of 1.5 ha), rainfed, medium to good

S.No.	Particulars	Baseline	Year 1	Year 2	Year 3
1	2	3	4	5	6
1.	FYM applied (tons)	4	4	Nil	Nil
2.	Number of crops	02	21	20	16
3.	Net income from bud	11,450	20,000	24,410	18,265

Farmers' Experience (initial years) : Trend (Contd.)

Case 4 : Mr. Arun & Ms. Archana : Education 8th Std.

Land : 1 ha (out of 3 ha), rainfed , medium

S.No.	Particulars	Baseline (<u>Chemical agri</u>) (mean of 2 yrs)	<u>Alternative model</u> 1 st year
1	2	3	4
1.	FYM applied	Nil	Nil
2.	Number of crops	02	18
3.	Number of food crops	01	16
4.	Total production (kg)	675	794
5.	Gross income (Rs.)	9,350	16,000
6.	Net income (Rs.)	4,750	11,000

- NB :
1. No fall in production and net income even in the 1st year of conversion
 2. Despite no fertilizers, FYM, pesticides, no external inputs
 3. Biomass of weeds, in situ composting, “Weed as Wealth”

Support System for Upscaling

1. Recurring inputs etc.

1. Pest & disease management :

Micro bioagents & Macro bio agents, predators, paracites,

Tree planting eg. Neem

2. Seeds. Appropriate.

Support System for Upscaling (Contd.)

2. Infrastructure

- Cattle shed with non-absorbent flooring for urine and droppings, biogas, toilets for recycling of human waste
- Godown and warehousing
- Storage for seeds : Farmer level, Community level and higher
- Soil water cons. & watershed development work etc.
- Foodgrain storage ; containers at 2/3 rd subsidy

(costly PDS : Re 1 vs Rs 3.65 Ref. Jalan, RBI)

- Bullocks & improved B. drawn implements

Institutional Framework

- Self Help Group (SHG) :
 - Of Women and Men
 - Of Farmers
 - Of Consumers for healthy food
- Participatory Guarantee Scheme of Certification (PGS)
- Strengthening local markets and producer-consumer relationship

Capacity Building

- HRD : Knowledge-Attitude-Skill
(for e.g. LEISA, Village Engineers)
- Live demonstrations on Resource Centres and farmers' fields
- Exposure visits
- Weather forecast facility : improved and outreach expanded

Financial Implication

- Price Stabilization Fund (NCF)
- Crop loan for organic manures, wages, bullocks etc.

Overall Policy Considerations

- Remunerative & stable prices for agro-produce
- “Help farmers feed themselves with dignity”
- Focus away from wheat & rice to nutritious cereals and pulses
- Support to such Resource Centres for R&D, HRD, Extn.
- Support and incentives for ALL
that relieve the Government of the burden, and makes it lighter
- Strengthen the farming & farmer by Self-reliance for real *SWARAJ*

Strengths & Merits

1. A) Agricultural aspects

1. LEISA, self-reliant , *SWARAJ*
(“63% of organic agri. inputs BOGUS” - Maharashtra Govt’s Dept of Agri)
2. Freedom from shackles of debt and debt “trap”
3. Soil health on various parameters
4. Resilience, stability , insurance
(Insurance : more than 75% claims pending, unsettled, infact avoidance)
5. Sustainability
6. Better distribution of labour requirement
7. Better distribution of income
8. More scope for agro-processing and value addition

2. B) Social

1. Saves Forex, Fossil fuel
2. Ecofriendly, Climate change
3. Decentralized
4. Food & nutrition security, affordability, sovereignty

Relieves the burden on “COSTLY” PDS.

(Delivery of Re 1 costs Rs. 3.65 - Jalan, RBI.)


5. Peace and happiness

NOT just another organic model,

MUCH more and many more dimensions

Taking forward towards Empowerment & real *SWARAJ*

Acknowledgement & Thanks

- Alternative Agriculture Resource Centre (AARC)
of CHETANA  VIKAS,
- Ms. NIRANJANA MARU, HOD
- AND The Farmers

T H A N K

Y O U