

NPM Scalingup in Andhra Pradesh

Learning from experiences

Ramanjaneyulu
Centre for Sustainable Agriculture

Traditional Development approaches

- Technology generation model
 - Technology generated by research system
 - Extension system taking technology to farmers
 - University system producing trained students
- Market based approach
 - Technology as a product (mostly hardware based)
 - Long shelf life, have broad base use, low volume-high value, control, dependency...

Modernization



Technology Development and transfer

Farmers as users and developers

- Local resource based
- Location specific
- Poly culture
- Creativity

Public Sector Research and Extension to Farmers

- External Resource based
- Professional interest

Private Sector Research and Marketing

- External resource based
- Universal application
- monoculture
- Market driven

2004



2006

Andhra Pradesh

- 16 out of 32 crisis effected districts
- More farmers suicides, migration
- Serious indebtedness-
 - 82 % indebted
 - Avg: Rs. 23,965/family
- 30 % of soils are saline



2009

Scaling up

- Several successes observed in the experiences generated by civil society initiatives
 - Micro experiences
 - More focus on livelihoods
 - Location specific problems
 - Staff from local communities
 - Passion as main driver
 - Flexible administrative and support systems
 - Remain smaller
- These experiences are in areas where conventional systems, knowledge, institutions, support systems failed.
- So who will be the better vehicle to take forward?

Scaling up questions

- Relevance of small experiences on a wider scale
- Availability of resources locally
- Farmers willingness
- What institutional and support systems
- Supplementing farmers' Knowledge and enhancing the skills
- Reducing the time of transformation
- How do u carry the passion
- Reaching to larger areas

What can be done...

- Proper understanding and ability to build confidence
- Practicing persons as resource persons at the grassroots
- Facilitation required
 - regular capacity building-Every farmer undergoing learning cycle
 - research on newer pests, newer inputs, newer scale
- Needs institutional approach-women SHGs, farmers cooperatives etc to sustain
- Scope for commercialization exists but still need to mature
 - Certain inputs-pheromone traps, neem powder

Pest management in india

- Largely based on pesticides and now on pesticide incorporated GM crops
- Methods largely borrowed from countries with large farms, less labor, more machines
- High costs of externalities were never accounted
- Technology driven rather than problem driven
- Scale neutrality question

distress

- Chemical pesticides are a treadmill technology-pesticide induced pest problems are on rise
- Pesticides have problems in manufacturing, usage and with residues in food, water, land and air after harvest
- Acute and Chronic impacts are well documented
- Pesticides and poverty
 - Agriculture workers/small farmers who spray often suffer poisoning
 - The acute poisoning is compounded by malnutrition
 - Spray person has no choice on time of spray as advocated
 - 97 % of farmer suicides are by ingestion poisoning
- Pesticides take major share in the costs of cultivation

Chemical pesticide use in india

- Indian pesticide industry with 85,000 MT of production in FY06-07 is ranked second in Asia (behind China) and twelfth globally
- In value terms, the size of the Indian pesticides industry was estimated at Rs. 7400 Cr for 2007, including exports of Rs.2900 Cr.
- average pesticide consumption is only 0.480 kg per hectare as compared to 10.7 kg per in Japan and 17 kg in Taiwan
- Estimated loss of crops in India due to pest problems amounts to about Rs. 90,000 cr

Cancers in Punjab

Source of data and information

- National Cancer Registry Program (ICMR)
- Hospital Based Registry
- Population Based Registry

Districts surveyed in population based registry: Bhatinda, Faridkot, Muktsar, Patiala,

Rupnagar

Pesticides-problems across

Research and recommendations

- Recommendations are based on industrial data than independent research
- Permissions are taken for few crops and are sold and recommended for other crops and pests-against insecticide act CIBRC do not have data
- MRLs fixed only for CIBRC registered pesticides and crops

Manufacturing

- chemical pollution eg. Patanchervu
- Accidents eg. Bhopal

Usage

- Acute and Chronic problems
- Effects on persons spraying
- Ecological disturbances leading to development of newer pests and resistance in existing pests

Pesticide residues

- Hardly 1 % of the pesticide used kills insects
- Remains in environment polluting water, land and food
- Residues found in mothers' milk, bottled water
- Residues of chemicals used 30 yrs back are still seen

GM crops

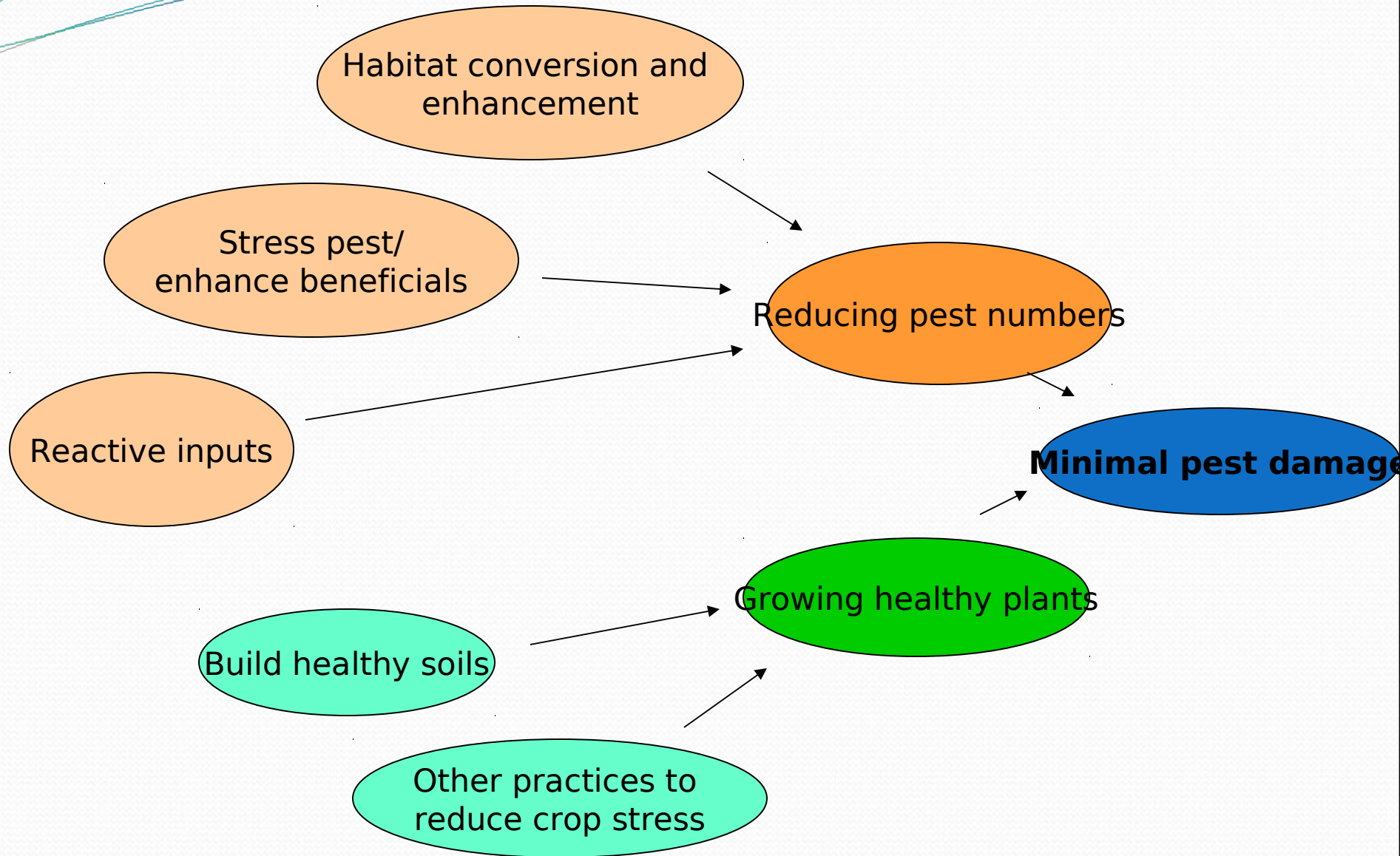
- More resource use
- Newer pests and diseases
- Animal morbidity
- Skin allergies
- Reduced soil fertility
- Monoculturing genes



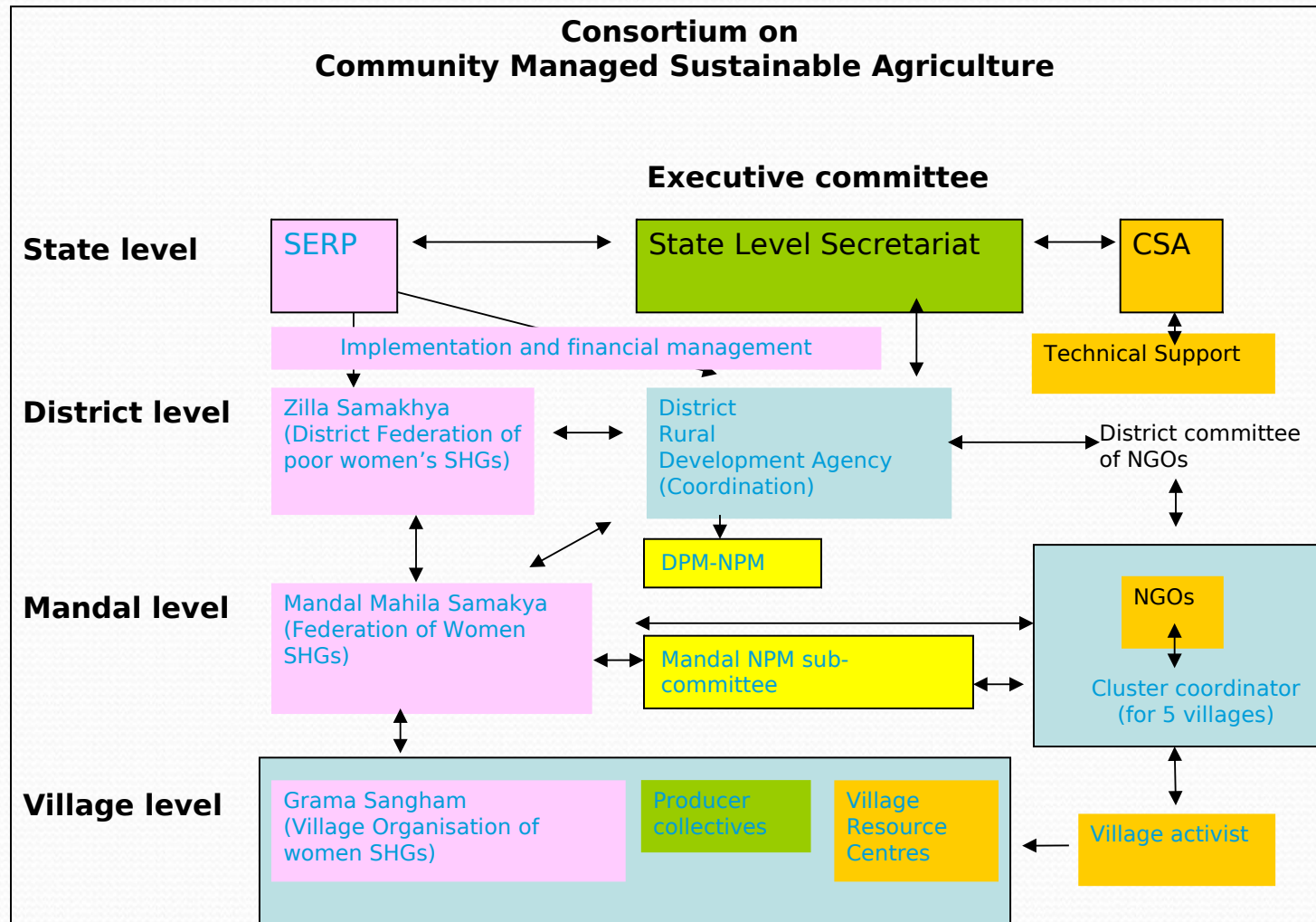
Non Pesticidal Management

- Ecological approach to pest management using knowledge and skill based practices to prevent insects from reaching damaging stages and damaging proportions by making best use of local resources, natural processes and community action
- Uses a set of practices which include
 - **Monitoring methods**-trap crops, pheromone traps etc, light traps,
 - **Preventive measures**-border rows, sticky plates, resistant varieties, mixed crops etc
 - **Control measures**-homemade biopesticides, mass trapping
- Mostly evolved based on experiences from working with small and marginal farmers

Non Pesticidal Management

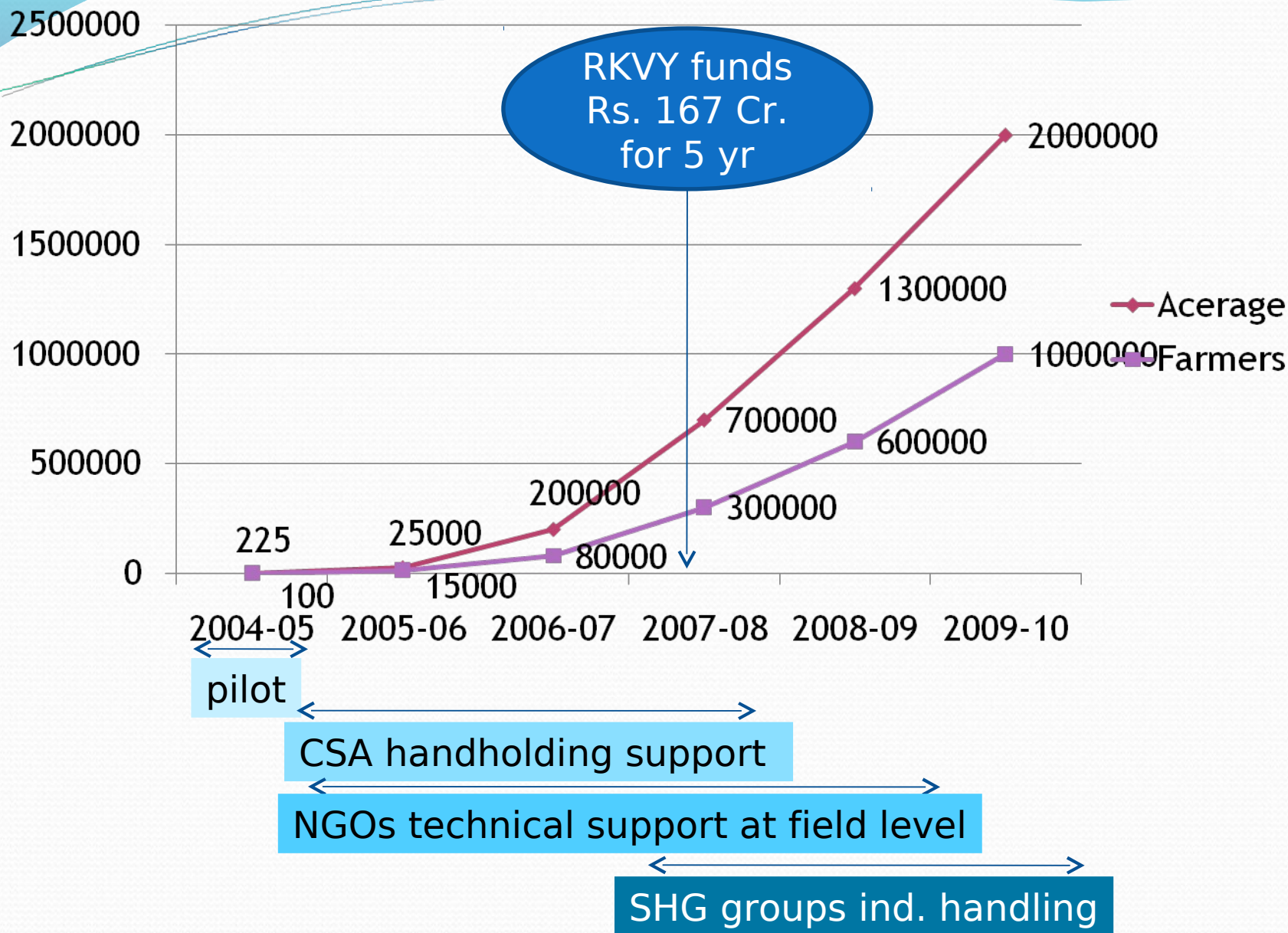


Institutionalization



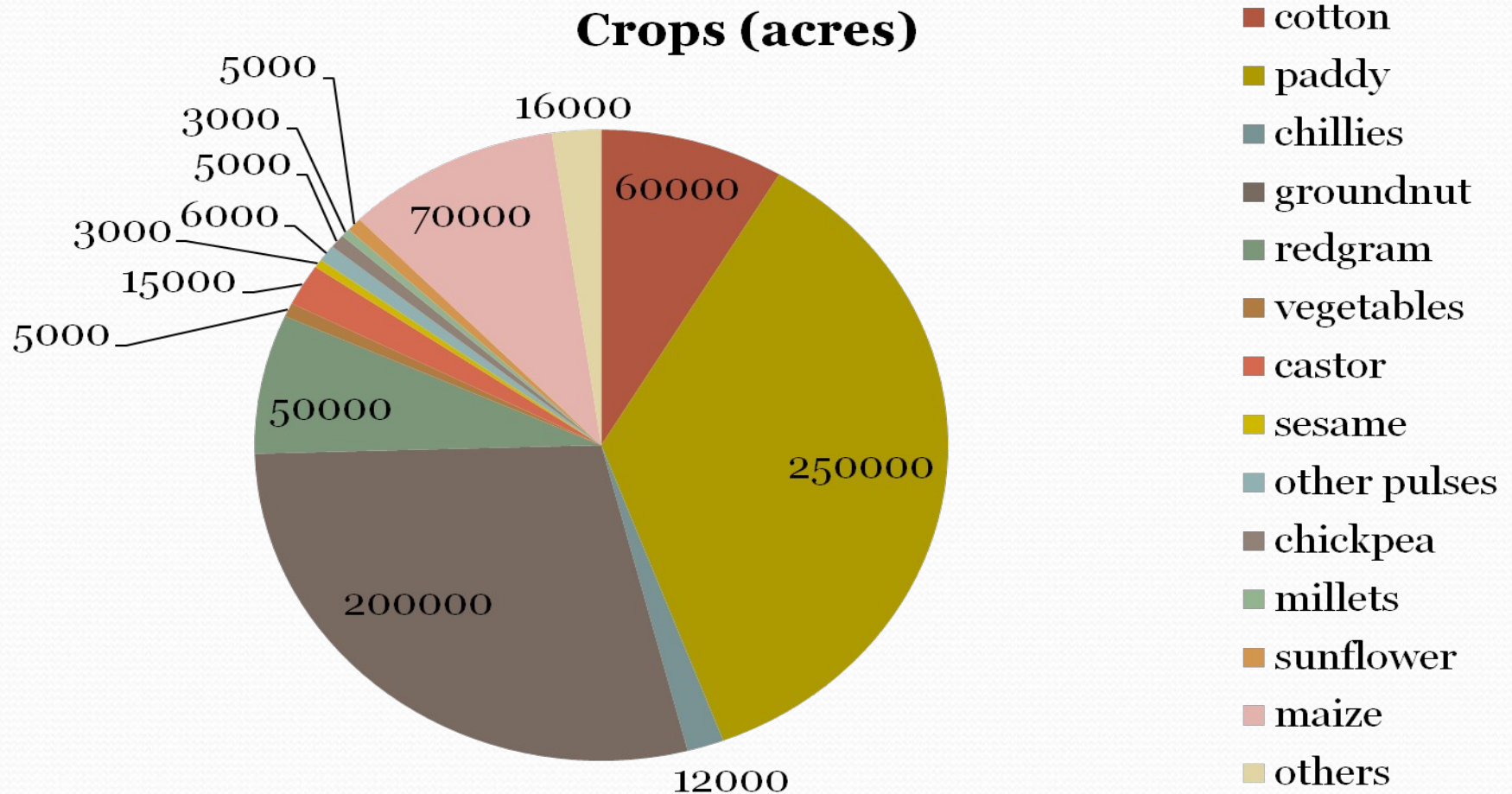
Integration of innovation by civil society through women farmers and support by Government.

Farmers and area covered under CMSA



...aiming to reach 100 lakh acres across crops in all districts of AP in by 2014

Area under different crops (2007-08)



NPM vs conventional pest management

Comparative economics in cotton

Strategy	Genotype	No. of chemical sprays	Cost of cultivation (Rs/acre)	Yield (kg/acre)	Gross returns (Rs/acre)	Net returns (Rs/acre)
NPM	Non Bt	0	6524	889	18036	11512
NPM	Bt	0	6222	888	17469	11247
Control	Non Bt	5.0	6555	835	16500	9945
Control	Bt	3.8	7235	897	17786	10551

Source: Study by CRIDA in WWF project on Sustainable Cotton production, Warangal, 2007

Economics of NPM v/s conventional Paddy in Kurnool dist (2005-06)

Sl. No	Village	Farmers		Area (ha)		Costs of plant protection (Rs/ha)		Yield (q/ha)	
		NPM	Con	NPM	Con	NPM	Con	NPM	Con
1	Arlagadda	16	15	8.4	12	400.00	2525.00	56.83	56.13
2	Durvesi	5	15	5.2	59.4	490.40	3116.80	61.87	65.5
3	Bhupanapadu	4	5	1.6	2	440.00	2000.00	56.25	58.87
4	Alamuru	17	23	7.6	10	480.00	3240.00	55.45	53.8
5	Konidedu	6	9	2.4	3.8	520.00	2280.00	64.05	50.12
6	Panyam	5	9	2	3.6	724.80	2680.00	64.5	48.13
	Total								

Source: Krishi Vigyan Kendra, Yagantipalli, 2005-06

Reasons for success

- Addressed immediate problem
- Not a treadmill technology-more a self sustaining system
- Establishment of successful models on fairly large scale
- Clear articulation of the problems and solutions
- Established institutional platform in the form of Women Self Help Groups and their federations
- Cooperation from NGOs at various levels
- Large financial support and problem solving approach by SERP

Status of Suicides and Severe Hospitalization, 2007-08

Sr. no	District	Suicides			Severe cases of hospitalisation		
		Before 2005-06	After 2005-06		Before 2005-06	After 2005-06	
			In NPM villages	Other villages		In NPM villages	Other villages
1	Khammam* (4 villages/ 4 mandals)	3	0	9	139	0	104
2	Vijayanagara m**	0	0	0	6	0	2
3	Adilabad * (18 mandals)	26	0	3	97	0	40
Total		29	0	12	242	0	146
	*	Crops grown are cotton, chillies, redgram and paddy					
	**	Crops grown are paddy, vegetables					

Policy support

- To reach a larger scale needs support to farmers, support organizations for facilitation
- Research support
 - On newer pests, newer methods, newer scales
 - Long shelf life products
 - Action research to develop entrepreneurship
- Para education system
 - Season long courses for farmers particularly young farmers
 - Staff working with farmers
- Pest surveillance
 - At farm/village level
 - At state/regional/national level
- Strengthening pesticide residue monitoring
 - By government and independent agencies
- Consumer education on problems with

acceptance from research system

- In spite of large scale spread research and extension systems have not taken note.
- Mostly suitable for small farms/family farms
- Established systems do not accept any knowledge generated outside its system
- System is not ready to accept problems with the chemicals or GM crops without which the shift is not possible
- NPM is based on a different paradigm which is not yet acceptable
 - Products used cannot be standardized (quantities, doses, set of practices etc)
 - Uniform recommendations not possible
 - Mc Donalds 'Pizza' vs Indian 'Rasam'
 - Long shelf-life and marketability
- Scale and data generation are not the major issues
- Sri. Shyam Saran taken interest. The team from Ministry of Agril visited, participated in discussions in PMO on 'National Mission on Sustainable Agriculture'

Current status-pesticides

- India still continues to use older pesticides like endosulfan etc banned world wide
- New age pesticides are low volume and have shorter half life-
 - Acute poisoning cases reduced
 - Chronic problems still need to be studied
 - pesticide residues not major issue based on existing knowledge and methods
- Bt cotton made a shift in pesticide usage
 - Discipline in pesticide usage
 - Residue problem in food still no studies

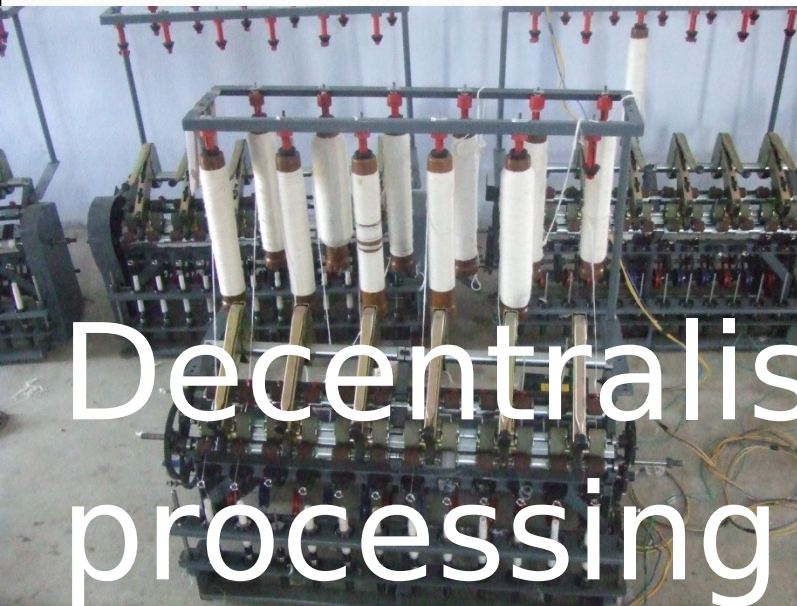
paradigm

- Small farms and small farmers are going to stay therefore we
 - need to address the issue of distress migration
 - Sustaining small farm livelihoods and attracting younger generation
- Production front
 - Technology
 - support to knowledge and skill building
 - Institutional support
 - Institutional systems are added advantage-initiate on existing institutions and built farmers institutions for planning and managing crops
- Market front
 - Specialized products
 - Moving up the value chain
- Policy support
 - Support for local knowledge and local resource based

forward

- Identify local experiences and design appropriate scaling up strategies
- Working with ongoing large scale programs like RKVY, NFSM, NHM etc. engaging on guidelines is also needed.
- Influencing National Mission on Sustainable Agriculture
- Improving the research system, regulatory system, monitoring systems-needs research and workshops
- Initial support to show proof of concepts and generate data
- Generate pool of resource persons-regular trainings/courses for young farmers and rural professionals and build careers for them

INNOVATIONS...



Decentralised cotton processing those who feed

Policy influencing.





A woman with a yellow headscarf is shown in profile, working in a field of green chili peppers. She is wearing a brown top and has a nose ring. The field is dense with green plants and many green chili peppers are visible. The text "Thank you" is overlaid in the bottom left corner.

Thank you

Contact us for organic food and practices

- Phones:

- 040-6526 8303,
- 040-27017735,
- 040-27014302

- Email:

- csa@csa-india.org,
- info@sahajaaharam.in
- gvramanjaneyulu@gmail.com

Websites

- www.csa-india.org
- www.indiagminfo.org
- www.sustainableagriculture.in
- www.sahajaaharam.in