Scaling up Sustainable Agriculture

a way forward to address Agrarian Crisis in India

Agro-ecological approaches (ecological farming/organic farming/LEISA/Non Pesticidal Management/SRI etc) approaches are now acknowledged for the wide set of ecological and economic benefits that accrue to the practitioners as well as consumers of agricultural products. These approaches which are based on low external inputs are also low energy intensive and less polluting hence mitigate and help in adapting to the climate change.

However, the promotion of sustainable agriculture on a large scale is often confronted about its potential as well as its practical limitations. In the last five years two large scale initiatives, NPM scaling up (Community Managed Sustainable Agriculture-CMSA) in Andhra Pradesh (Ramanjaneyulu and Rao, 2008) and SRI promotion in states of Tripura, Odisha and Tamil Nadu have brought in new learnings and broken the earlier apprehensions on scaling up such practices and their relevance on a large scale.

These successful experiences had three elements in common. First, all have made use of locally adapted resource conserving technologies. Second, in all there has been coordinated action by groups or communities at local level. Third, there have been supportive external (or non-local) government and/or non-governmental institutions working in partnership with farmers. Almost every one of the successes has been achieved despite existing policy environments which still strongly favor 'modern and established' approaches (technology and support systems) to agricultural development.

Now the challenge is how these can be scaled up onto a large scale across the nation given the wide diversity of situations. This needs a newer approach in terms of capacity building, horizontal learning, newer institutional systems and newer forms of financial support to be put in place. The programmatic support to agriculture today favour only high external input based agriculture. As a result, none of the mainstream programs provide any support for promotion of these models. This needs the recasting of program guidelines or initiating newer program to provide support to more sustainable models in agriculture which can be easily accessible to small and marginal farmers. The mission on sustainable agriculture can initiate a programmatic support to scale up sustainable agriculture with the objectives to

- Reduce the dependency on external inputs and reduce the costs of cultivation
- Reduce the risks with uncertain weather conditions and degraded and limited natural resources in these regions, by adopting suitable cropping patterns and production practices,
- Diversify the assets and income sources to sustain the livelihoods by integrating livestock and horticulture into agriculture and promoting on-farm and off-farm employment opportunities,
- Conserve and efficiently use the available natural resources like soil and water, and promote biomass generation,
- Organize farmers into institutions which can help them to have better planning, greater control over their production, help to access resources and support, improve food security and move up in the value chain, and link to markets
- Build livelihood security systems to withstand the natural disasters like drought, floods and other climate uncertainties

Suggestions for way forward

1. **Promoting Sustainable agriculture:** Sustainable Agriculture which is an integrated farming system based on locally adapted cropping patterns and local resource (natural resources and natural processes) use based on local knowledge, skills and innovations.



The capacity of a farming system to adapt to changing climate and weather conditions is based on its natural resource endowment and associated economic, social, cultural and conditions. The viability of these elements also constitutes the basis for sustainable agriculture, understood as agricultural production that: ensures adequacy of food production; does not harm the resource base; is economically viable; and enhances quality of life. Many climate and weather risk management strategies fit squarely into sustainable agriculture practices and can, therefore, be promoted with several of the programs and policies targeting environmentally responsible production. Monocropping also leads to less labour days and peak labour requirement at the same and for a short time, which increases migration - hence mixed cropping models need to be encouraged.

Strategies to be adopted

a. *Changes in cropping patterns and cropping systems to suit the local resource and weather conditions. Multiple/mixed cropping, intercropping systems with legume components etc.*

b. *Ecological farming practices which can maximise the local resource use. Many of these practices are based on indigenous knowledge and focus on building soil biological productivity. Non Pesticidal Management, Organic Soil Management, Community Seed Banks, System of Rice Intensification, Soil moisture management etc have already proven to be useful.*

c. *Locally adopted crop varieties specially in saline and flood prone areas, drought prone areas, making suitable selections adopting Participatory Plant Breeding and Participatory Varietal Selection.*

d. *Developing suitable farming systems integrating agriculture, horticulture and livestock.*

e. *Research on improvising these practices*



f. *At the macro level, there is a need to revisit the paradigms governing the agricultural research in the country. Probably one needs to revisit the concept of agroclimatic zones and consider regrouping them in the changed context*

g. *There are many technologies/varieties that are sitting in the laboratories of the public sector research organizations. One needs to take stock of these and test them in the field to see which of them work in the changed context*

2. **Efforts towards natural resource generation:** There need to be efforts towards natural resource regeneration (especially in rain shadow districts like Anantapur, rainfed areas likeBundelkhand or tribal areas of central, eastern and north eastern India) so that there is ensured water supply for agriculture, livestock and human consumption.

Strategy to be adopted –



a. *Soil fertility should be recognized as the national property and government should invest in building it. Suitable incentives should be given to encourage for increasing the soil organic matter and soil conservation.*
b. *There is a greater need to revive the traditional water harvesting structures in the drought affected villages. These structures can be revived through the imaginative use of MNREGA funds and watershed funds.*

3. **Farmers' Institutions:** Organized communities have proven to be more effective in planning and managing their resources and livelihoods, value addition and marketing. Appropriate institutional systems for each of the purposes need be established.

Strategy to be adopted –

a. *The farmers would be organised into common interest groups federated into producer collectives. Existing institutions like Women SHGs etc would be used to initially anchoring the program.*
b. *These institutions would take the roles of planning, mobilising resources, organising production, and take up post harvest management and marketing activities.*
c. *The producer collectives will improve the collective bargaining power of the farmers, will internalize market activities like bulking, primary and secondary processing which improve the village economy.*

3). Food and livelihood Security: Shift to sustainable agriculture is often seen as a compromise on food security. This is mainly because food is understood as only wheat and rice, few pulses, oilseeds and vegetables. The food basket can be increased if we can expand the scope to include millets, coarse cereals, dryland fruits, uncultivated greens etc which can also bring in nutrition security. Data from National Centre for Organic Farming (NCOF), ICRISAT and CMSA have proven that crop productivity can also be maintained with organic/ecological farming. Going beyond the current food security systems like PDS and mid-day meal schemes, systems need to be established to improve livelihood security in terms of sustaining food production in the village, improving income generation opportunities to the small farmers and agriculture labor is important in the rural areas especially in rainfed regions. The frequent monsoon failures results in droughts and support systems needs to be build to help the farm families and livestock to tide over.

a. *Building house hold food security systems by adopting suitable cropping patterns*
b. *Village level management systems for alternative models like grain banks would be appropriate and attempted.*
c. *Suitable off-farm and non-farm employment opportunities would be identified and promoted.*

4) Financial Support Systems: Currently all the financial support systems to agriculture are given only for external inputs. We need to create proper support systems for farm internalized inputs, community based infrastructure, knowledge and skill building and sharing etc.

a. *Direct Subsidies to farmers rather than input subsidies including for their own inputs*
b. *Integrating NREGA with sustainable agriculture so that each farmer gets 100 labor days for farming can provide ample scope in this direction.*

c. *Explore tools like Direct Income Support which exist in many developed/developing countries need to be explored as decent living income cannot be explored only through pricing mechanism.*

5) Partnerships: At the district level we need build partnerships between various governmental and non governmental agencies to implement the program. At the national level we need to build an alliance of Public sector research organisations, extension agencies, departments dealing with rural livelihoods and NGOs which are working on sustainable agriculture/organic/natural/ecological farming.

6) **Special bonus for ecological services by ecological farming:** While conventional agriculture receives various support in the form of subsidies shift to ecological farming models do not get any support. Government should evolve a mechanism to directly support such models. The methodologies already designed for 'Payments for Ecosystem Services' should be used.

Pilot phase

We propose a progressive approach towards scaling up of ecological farming and realizes that an overnight shift to organic farming is not feasible. We believe that a small pilot in 100 districts across the country with clusters of 5-10 villages, to at least in 10,000 villages to for at least 3-4 years, wherein a mix of subsistence and market-based agriculture scenarios exist. The focus should be on small and marginal farmers, in the rainfed and ecologically fragile areas/biodiverse areas in addition to crisis-ridden farming belts. The pilots should primarily focus on production related changes but also be able to pilot innovative approaches around collective enterprises around inputs, collective marketing including with processing and value addition, systems for running community level seed banks etc. It has been found that working with women's SHGs for management of the programme and through FFS (farmer field schools, with participation of both women and men farmers) for capacity building, knowledge enhancement, horizontal sharing and learning etc., works out well.

The objective should be to make farming a viable and sustainable profession, thereby restoring farmers' dignity in their profession by improving their social status.

Despite a number of government-funded projects and programmes on agriculture on the ground, these lack the ability to pull out farmers from their distress due to problems in approach, design and implementation. One important component missing is farmers' organizations being built so that farming can be made into a collective enterprise both in the production phase and post-production marketing phase.

This needs:

- enhancing the knowledge and skills of farmers on effectively conserving and using their resources for sustainable production;
- building institutional platforms at the village level for managing, planning and implementation by the farmers themselves;
- convergence of various government programmes to maximize the benefit

1. PILOT PHASE OF COMMUNITY MANAGED SUSTAINABLE AGRICULTURE

Given under is our proposal for the pilot project related to Community Managed Sustainable Agriculture:

- Identify 100 districts across different agro-climatic conditions in the country; in each district identify 5-10 districts which are ecological and economically crisis ridden in

agriculture and 100 villages in all as clusters of 5-10 villages, map out and draw in local resource agencies and nearest practicing ecological/organic farmers once these locations are finalised in addition to mapping out and understanding local resources.

- A cadre of resource persons need to be built. A team of people who will coordinating the project can be identified and be given four trainings spread over a year.
- The package of practices for most crops is already well-evolved; any fine-tuning to be done for particular agro-ecological conditions should be taken up.
- Identifying resource agencies who would take up creation of appropriate IEC materials as well as take up trainers' training in a cascading model would be important.
- Large scale awareness campaigns to be taken up on ecological/economic problems of conventional farming and benefits of ecological farming
- Developing resource persons at all levels, including ones who will be with the participating farmers constantly is a necessary pre-requisite.
- In terms of programme management, in the scaling up phase, around 400 acres spread over 10 villages can be treated as a cluster, work of which will be coordinated by one trained person, in addition to one village-level practicing farmer as a resource person. Further on-the-job training would be provided by the government agencies/NGOs who provide technical support.
- The staff at village and cluster level should be accountable to the farmers' group/cooperative. The funds have to be released to the farmers' group which conducts monthly reviews and releases the funds.
- Participating farmers need to be organized into groups based on homogeneity and proximity of landholdings, crop etc.
- Regular Farmers' Field Schools (FFS) should be organized every week for learning for at least four seasons. These groups can also engage themselves in issues of quality management, production planning, processing, marketing etc.
- Farmers Groups can be federated at cluster level to form Farmers' Cooperatives/Producer Companies for storage, value addition and marketing which forms single window for everything. Village Institutions can plan for the needed infrastructure by mobilizing financial support for various ongoing schemes and through banks.
- Village plans can be prepared and submitted to the District Planning Board. The village production plans can be integrated with the district level plans sourcing funds from RKVY, FSM, NHM and NREGA–this can be based on new partnerships between NGOs, CBOs, and government departments.
- Beyond block level, the program should be integrated with the Departments of Agriculture, Horticulture, Animal Husbandry, Sericulture etc.
- At the district and state levels, special project management unit should be set up with people from agriculture, horticulture, animal husbandry and rural Development departments etc along with representatives of farmers institutions.
- draw in some research agencies/Krishi VigyanKendras to work along with the resource organizations to document and validate the models (parameters of assessment should be evolved differently) including collection of baseline information etc.
- As sustainable agriculture practices are largely based on local resources mapping local resources which can used as inputs in agriculture and planning for their sustainability becomes important. An inventory of such resources would be prepared for each identified village.

The entry point can be any successfully-established practice to address the most pressing problem locally and move on to other components in an incremental fashion (for instance, the CMSA programme in AP began with dealing with the issue of synthetic pesticides in farming, by promoting Non Pesticidal Management (NPM) on a large scale; later, it moved to localised seed production systems at the grassroots level; zero-budget farming etc.). In each cluster of villages, thrust could be on creating at least one village that will become completely organic with

integrated farming systems in 3-5 years' time. It has been found in the past that such iconic examples leave an inspiring impression on participating farmers and help the scaling out of the effort. The need for data-based documentation from Day 1 cannot be over-emphasised.

2. ORGANISING FARMER FIELD SCHOOLS

One of the most critical activities in the spread of ecological farming is that of organising farmer field schools on a regular basis, facilitated by a knowledgeable/experienced/trained extension worker (the cluster coordinator along with the village level extension worker), since ecological farming is a knowledge-intensive production process, as opposed to chemical agriculture which is input-intensive.

Experience shows that FFS plays a very important role for farmers to acquire knowledge and skills over sustainable production practices and these fora have been used to take up collective crop planning, programme planning, monitoring and implementation.

Every farmer has to undergo such a training for at least 4 seasons.

Farmer field schools which are taken up on a rotational basis in various farms throughout the season also help in identifying innovative and successful farmers who can then be trained as future resource persons during the expansion phase.

3. MISSION MODE SCALING UP

Preparations for the main phase will have to begin in the pilot phase itself through season-long capacity building programmes on the technical as well as institution-building facets of the programme from the end of the first year of pilot. The pilot project should be used to develop modules of trainings, materials in different languages (for farmers, for motivators etc.) and for locating as many resource agencies as possible in all districts in the state. The third and fourth seasons of the pilot can be used for exposure visits etc.

The main phase of the programme's mission-mode scaling up should be centred not on the technical/technological aspects (which would get firmed up in the pilot phase, given that enormous knowledge exists already across crops and locations on agro-ecological approaches) but on creation of sustainable institutions, systems and mechanisms by which the livelihood needs of farm households can be met comprehensively – this should include livestock integration, insurance, marketing, collective enterprises etc. It is important therefore, to carefully combine various existing programmes towards a common objective. The example of CMSA in Andhra Pradesh where convergence with ongoing programmes like NREGA, NRHM, credit coverage for agriculture, marketing support etc. is well worth emulating.

The main phase should attempt to scale up the pilots by adding other components like building infrastructure facilities for storage and value addition, support for marketing etc.

4. FINANCIAL REQUIREMENTS FOR THIS SCALING UP

Funds are required for such a scaling up mainly for campaigns, IEC materials, capacity building efforts, institution-building efforts, and most importantly, for extension support from village upwards. They are also needed for administrative costs especially in the pilot phase.

Finances are also needed for seed capital for setting up Seed Banks, for marketing by farmers' collectives, for any infrastructure and capital costs around storage, processing etc., funds for insurance and risk management funds etc.

Resources can be tapped from the ongoing schemes like RKVY, NRLM, NFSM, NHM etc.

The Andhra Pradesh experience shows that the per acre investment in the CMSA programme was Rs. 800/acre in 2005 when the programme started on 25000 acres and that this has become Rs. 175/acre when the programme reached two lakh acres. The investment of the project at present is around Rs. 100/acre, after it reached 25 lakh acres.

The pilot is expected to cost Rs. 800 crores per year (1000 villages, 25 states, each village reaching 400 acres in the pilot phase, at the rate of Rs. 800/acre).

Thereafter, it is expected that scaling up would have targets of 10% of India's agricultural land per year (incrementally), over the next 10 years. From the sixth year onwards, the first year's intervention areas can be closed for intervention; in the seventh year, the second year's intervention areas and so on.

Each year, the investment is expected to be on 14 million hectares across India (out of 140 million hectares net sown area at the national level). This is around 35 million acres or 350 lakh acres. With a per-acre investment in the scaling up phase of Rs. 200/acre, **this works out to around 700 crore rupees per year**.

While this is for the production-related aspects, for marketing infrastructure-related support for such organic farming produce, fixed investments can be staggered between regions based on some parameters evolved in the programme. In the CMSA programme in Andhra Pradesh, it has been seen that an investment of 1 – 1.5 lakh rupees per village for seed banks, community level storage facilities, processing facilities etc., is of immense value. **This would require financing to the tune of Rs. 675 crores**, for forty five thousand villages approximately each year.

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