

Fighting Drought and Improving Food Security in Maharashtra: A Women-Led Climate Resilient Farming Initiative

Anwasha Tewary
Swayam Shikshan Prayog (SSP)

1. Introduction

Swayam Shikshan Prayog (SSP) promotes sustainable community development through empowerment of women at the grassroots. SSP widely advocates for the recognition of grassroots women in their new roles of farmers, entrepreneurs, community leaders and change makers. At the core of SSP's approach is building robust partnership eco-systems that enable grassroots women's networks to access skills training, financial and digital literacy, technology and marketing platforms. The organization started its work in rural reconstruction with women in the forefront, following the Latur earthquake in 1993. Ever since, SSP's concerted efforts have been the socio-economic empowerment of women in some of the drought affected districts of the Marathwada region of Maharashtra, India. SSP operates in Latur, Osmanabad, Solapur, Nanded, Washim and Beed districts of Maharashtra most of which have earned the dubious distinction due to rising farmer suicides and recurring droughts owing to climate change implications on agriculture economy.

Marathwada, our project area, is the worst drought-hit region. According to a recent publication by the Hindustan Times , the State Government of Maharashtra has declared drought for 26 districts out of the 36 districts in the State. One of the driest regions in India, Marathwada falls under three major agro-climatic zones that range from scarce to moderate to assured rainfall and experiences 44% lesser rainfall than the national average and 20% coverage in irrigation. The region has been reeling under severe drought resulting in crop failure, depletion in ground water level, increased climate risks, food insecurity and uncertain cash flow in the absence of diversified livelihoods. These, in turn, have made farming economically unviable especially for small and marginal farmers. Despite such agrarian crisis, farmers have continued to grow water intensive single cash crops with expensive chemical inputs.

Among the small and marginal farmers, women are the worst affected by climate change repercussions. Women are extensively involved in farming but are barely recognized as farmers. They do not have ownership over land which limits their access to productive resources like finance, market, water and government extension services. The policy makers and government have continued to perceiving them as labourers. The double burden of risks due to climate change resulting in food and income insecurity and their limited

¹ <https://www.hindustantimes.com/mumbai-news/maharashtra-declares-drought-26-districts-hit/story-ETaPfo9owb7yVW8EQ1IQGL.html>

decision making related to the crops grown, has also led to negative impact on women's health. Addressing these complex issues of climate change, gender roles and its impact on health and nutrition, SSP redefined resilience for small and marginal farming households.

Evolving over the years (2014 onward), the "Women-led Climate Resilient Farming Model" (WCRF) repositions women as farmers and as bearers of knowledge, enabling them to take informed decisions related to what to grow, what to consume and how much to sell. It aims to empower women as change makers in agriculture with a view to promote resilient livelihoods for small and marginal farming households. In the process, the model ensures farming becomes an economically viable venture for these small and marginal holders. This is through integrated farming techniques, increasing livestock and farm-allied businesses, increasing consumption and marketing of nutritious farm grown food crops.

SSP teams sensitize women and their families in the villages of Maharashtra, drought prone Marathwada region. At the frontline, teams identify and train *Samvad Sahayaks* or Community Resource Persons (CRPs) who mobilize farmers, identify potential women farmer and families and provide continuous handholding support to empower women farmers throughout the project period. For intensive trainings on WCRF model, women farmers from small and marginal farming households are selected by CRPs and SSP teams, with adequate family support and readiness to shift to sustainable farming.

As women gain recognition as farmers, SSP encourages participation of women in local development by developing successful farmers as leaders/champions through leadership workshops. These champions become the "evangelists for the model" beyond the project, and in turn develop new leaders and lead grassroots advocacy efforts at the district and state level govt. Overall the project intervention builds upon SSP's experience in implementation of the WCRF model and its advocacy at the district and state level by leveraging resources that include entitlements for women farmers. SSP's role is to create an enabling eco-system that establishes linkages between key components by:

- Creating awareness on role of women in food security and agriculture
- Partnership eco-system with agriculture scientists, universities, government and institutes
- Creating a network of agriculture promoters and community leaders
- Pathways for the poor farmers, from farm to market and to the table

District teams of professionals supervise and monitor the implementation to ensure quality through regular program audits and measurement of performance indicators. The initiative is now being implemented at scale across 650 villages with support from the Govt. of Maharashtra (MSRLM), CSR and other funding agencies.

This case study presents an overview of the challenges faced by the Marathwada region due to climate change, and the Women-led Climate Resilient Farming (WCRF) approach with defined processes and outcomes, for small and marginal farming households.

2. Rationale

Marathwada is the region comprising the eight districts of Jalna, Aurangabad, Parbhani, Hingoli, Nanded, Latur, Osmanabad and Beed. It accounts for 16.84 per cent of the state's population and is home to nearly 30 per cent of the state's Below Poverty Line families. Falling under the rain shadow area, this region receives less rainfall compared to other districts in the state. The map below shows the state of Maharashtra and the blue coloured regions under Aurangabad division are together referred to as the Marathwada region.



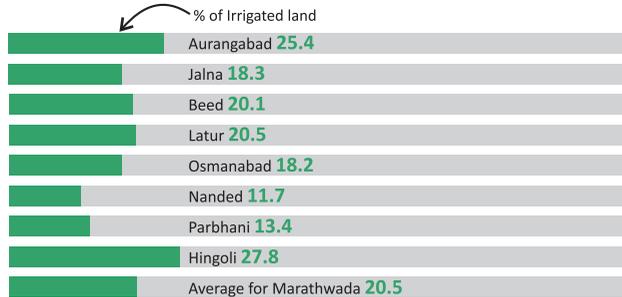
Source: (<https://www.maharashtra.gov.in>)

Figure 1: Map of Maharashtra

2.1 Issues in Marathwada

Drought: According to a study by the Indian Institute of Tropical Meteorology and the Indian Institute of Science, between 1870 and 2015 the region faced 22 droughts, of which there were five instances of two consecutive droughts, the most recent of which were in 2014-15 and 2015-16. Marathwada had a rain deficit of 40% in both 2014 and 2015. Figure 2 shows the percentage of irrigated land in Marathwada constitutes only a fifth of the total land.

Only a fifth of Marathwada's cultivable land is irrigated



Source: Maharashtra agriculture department

Figure 2: Irrigated land in Marathwada

Water efficient systems like drip and sprinkler irrigation are a rare phenomenon in the region while more common are the bore wells causing depletion of ground water level. In Beed district, only 6% of land accounts for having micro-irrigation facilities. In an article published by the Daily News and Analysis (DNA), Senior Journalist and author of seven books, Atul Deulgaonkar provides a picture of the drought scenario of Marathwada vis-a-vis criticizing the inaction by both the Centre and the State Government. He holds responsible both, climate change as well as ground water depletion from an increase in the number of bore wells for the agrarian anomalies in the Marathwada region.

Food security – Cash crop vs Food crop: Climate change has adversely affected the food security of the region due to deficit in crop production. The Economic Survey Report projected a 22 per cent drop in food grain production with diminishing rains and drought anticipations that will impact both *kharif* and *rabi* crops. Total food grains production has decreased from 109.47 lakh metric tonne to 84.93 lakh metric tonne, the report stated. According to the information, the production of cereals was projected to decrease by 24% and pulses by 11% in 2015-16 respectively. However, both the area as well as production of cotton has increased. While this has been similar for other cash crops, the concern is regarding the decreasing area under food crop cultivation which states that cash crops are preferred to food crops by farmers. Food insecurity among households due to cultivation of cash crops instead of food crops and high incidence of malnutrition and anaemia among women and children is affecting their health.

Water crisis: With reduced rainfall and drought condition, the ground water level is further depleted in this region. Use of bore well, tube well, piped water etc. have exploited the water level. Lack of efficient water conservation techniques such as creation of farm ponds or bunds or rain water harvesting etc. have added to the woes. The irrigation in the state is very low at 16% as compared to the national average of 42%, coupled with the lack of assured water supply is causing serious water crisis.

High input cost and low yield: According to the study by Dilasa Janvikas Prathishthan, almost 95 per cent of the farmers who committed suicide in the preceding years were cotton cultivators. Cotton is a traditional crop of Marathwada, owing to the favourable black soil condition despite requiring more water, is produced on a large-scale. Cotton cultivation incurs high input costs which in times of crop failure render the small farming households' huge loss. In the last decade, traditional crops of the region like groundnut, *jowar* and soybean that gave sustainable food and income to the farmers with less water have totally been replaced by cash crops. Mono-cropping and preference to grow cash crops has impacted the cropping pattern of the region. Increased dependence on expensive inorganic inputs such as seeds, fertilizers, pesticides etc. has added to higher cost of production and insufficient income in the households.

Women in agriculture: The State of Food and Agriculture (2011), a report released by the Food and Agriculture Organization (FAO), states that 43% of the agriculture labour force in developing countries comprises of women and they are involved in several of the agricultural activities such as crop selection, land preparation, selection of seeds, storage, marketing etc. Despite their involvement in agriculture, they are not given recognition of farmers. Government and agriculture extension agencies have long perceived women only as labourer and beneficiaries. The knowledge and decision making capacities of women in agriculture have been overlooked by agriculturists and policy makers. Their contribution could be much greater if they had equal access to essential resources and services, such as land, credit and training.

In Maharashtra, 70%² of the total female workers are involved in agriculture activities, and small and marginal women farmers hold 1,12,000 ha of land from a total of 6,95,000 ha of land. Despite their knowledge and active involvement in farming they are barely recognized as farmers. They have very limited say when it comes to crop cultivation, production and sale. As women do not have right to entitlement of land they are not able to access agriculture extension services. Most of the decisions related to agriculture inputs, crop cultivation, farming practices, sale of produce etc. are taken up by the men who are more inclined towards growing cash crops as they have the major responsibility of just earning bread and barely possess an idea about the foods that are required in the kitchen. Given the uncertain climate, growing cash crops is nothing less than a gamble. In such situation, the nutrition security of the families is threatened leading to higher risk in health and income. Studies show that women are differently affected by climate change than men. A significant, yet often, undermined perception is about the participation of women in agriculture, their challenges in times of climate change as well as their roles in addressing several of the aforesaid issues. This is partly attributed to the fact that women are involved in agricultural activities worldwide in large proportion and partly also because they have lesser earning opportunities than their male counterparts.

To address a large number of issues arising due to climate change and its impact on agriculture and women farmers in particular, SSP promoted the Women-led Climate Resilient Farming Model that connects the vital dots between women smallholder farmers, climate change, food security, diversified and sustainable livelihood.

3. SSP's Solution - Women-led Climate Resilient Farming (WCRF)

Having worked in the Marathwada region for more than two decades, SSP realized the gravity of the issues and following its vision and mission to empower women, started building women's capacities in sustainable agriculture techniques. SSP's experience in working with grassroots women shows that women not only possess knowledge of agriculture, are actively involved in the agriculture production process but also lack access to and control over resources – agriculture inputs, finance; information, training and technology.

3.1 Evolution of the Model

Considering the fact that a large number of women households belonged to small and marginal farming category in the drought affected Marathwada region, and were vulnerable to climate change implication than the large scale farmers, fostered the evolution of a model which will be sustainable and develop resilience of the communities during climate change. SSP's experience in working with women in these communities revealed that women were severely anaemic in the region and further digging into their eating and cultivation pattern

² http://labourbureau.nic.in/Statistical_Profile_2012_13.pdf

provided interesting insights into the problem. Women not only were disregarded by their families when it came to making choices in agriculture related to input selection, crop cultivation, consumption and marketing but also had limited consumption of food items i.e. women were found not to be eating vegetables and other pulses at all which resulted in their low haemoglobin levels as well as had effects on their children who were found to be mostly malnourished in the region. In order to resolve these problems, the organization came up with an approach that involves women farmers to practice climate resilient farming techniques that not only empowers them and their families but also promotes sustainable community development in an integrated manner.

The climate resilient farming model has evolved over the years and is mostly a learning outcome from the grassroots rather than a top down approach. From 2015 onwards, SSP defined the adoption criteria of the model in a more integrated manner which can be agglomerated under climate resilient farming practices.

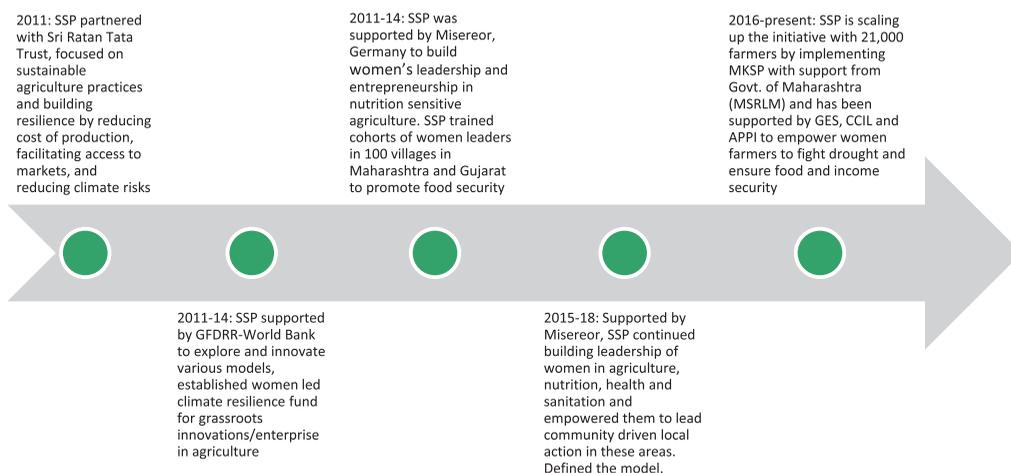


Figure 3: Evolution of the model³

3.2 Farming Practices and Adoption Criteria

Based on approaches that sustain farming under adverse climatic conditions and provide sustainable livelihood solution to small and marginal farmers, the following farming practices are promoted:

1. Use of bio-pesticides over chemical pesticides such as dasparni ark, neem ark, use of traps, etc.
2. Use of bio-fertilizers like cow dung, slurry, NADEP, vermi-compost
3. Use of local/traditional seeds (germination test and use)

³ APPI-Azim Premji Philanthropic Initiatives, GES- Great Eastern Shipping Co., CCIL-Clearing Corporation of India Ltd, MKSP-Mahila Kisan Sashaktikaran Pariyojana, MSRLM- Maharashtra State Rural Livelihood Mission

4. Diversification of food crops to five to seven varieties (pulses, cereals, vegetables, oilseeds)
5. Water management systems through use of drip, sprinklers and rain pipes as well as conservation structures such as farm ponds, farm bunds/trenches, rain water harvesting, well recharge etc.

The first four practices define the adoption criteria of this model. In addition to the above, the other practices promoted in this model are fodder cultivation, cattle feed supplementary, soil testing and planting of trees on farm as a measure for water and soil conservation and homestead gardens. This model addresses the issues of food security, income security, natural resource management and women empowerment all at the same time and can be replicated in similar geographies.

SSP encourages women farmers to gain cultivation rights to grow food crops, from their families on a small piece of land around one acre approximately. On the given piece of land the women leads the complete decision making around what to cultivate, what to sell, what to keep and eat, and where to sell, thus gaining control over income. On the acquired piece of land, usually to start with half or one acre, women practice water efficient, organic farming cultivation of vegetables, millets, cereals and pulses through a mixed cropping, diversifying to 5-7 food crops and by increasing crop cycles. Crop diversification increases household food security levels and reduces risk considerably in the short term. Access to targeted credit and diversification of livelihoods include livestock, agri-allied enterprises and small trades/businesses contribute to more sustainable incomes. Additionally special efforts to promote livelihoods/ventures around agriculture, land, water, energy protection of natural resources affected by climate change such as community/group enterprises around bio inputs (vermi-compost, bio pesticides etc), goat rearing, seed banks, vegetable selling groups, dairy, and poultry diversify income sources and again reduce risks of the farmers. Over a given period of time, it is expected that family members realize the benefit of cultivation of food crops vis a vis cultivation of “only cash crops”, which have high input cost as well as are highly dependent on external volatile markets.

3.3 Approach

The innovative aspect of the WCRF model is, to centre stage women as farmers and decision makers. This model seeks to empower and recognize rural women as farmers and change makers to promote food secure agriculture model and further as leaders and mentors for innovation transfer and replication to scale up the impact and outreach in similar newer geographies.

Figure 4 below represents the approach to the women-led climate resilient farming model.

Women led Climate Resilient Farming

Making farming viable for small and marginal farming households

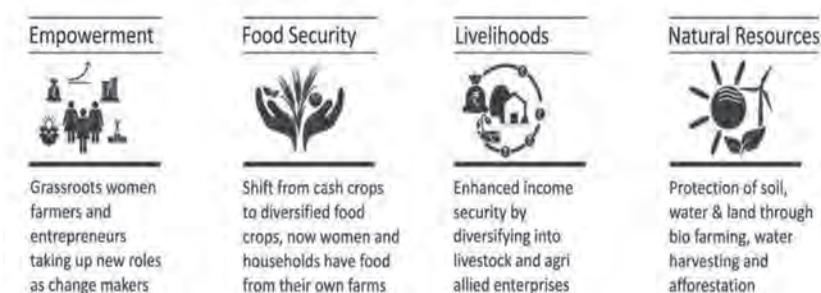


Figure 4: Approach to women-led climate resilient farming

4. Process

Implementing the WCRF model entails a systematic process which includes capacity building of women farmers in sustainable agriculture, demonstrations, exposure visits/ learning exchanges, farmer field schools, leadership workshops, agri-allied and other business training, dialogue workshops and convergence with government departments and institutions. The detailed processes and interventions within the model have been narrated below:

Selection of Villages: The villages are selected using a cluster approach whereby they are located within 20-25 km radius and on the basis of their drought situation. Another criterion for selection of villages is that the villages must have the presence of Self Help Groups (SHGs) through which entry point activities can be conducted.

Selection of CRPs: The next step is to identify Community Resource Persons (CRPs) known as *Samvad Sahayaks* from among the SHGs. Women farmers' families with landholdings, having good rapport with the community, having completed at least 8th or 10th standard, and willing to impart capacity building and transfer the knowledge to other women farmers either in their own villages or across nearby villages are selected. The CRPs are paid honorarium on a monthly basis. The CRPs are first self-empowered through capacity building programs and then they transmit the learning to fellow women farmers in their villages. The CRPs undergo class room training programs on sustainable agriculture and leadership development, on-site demonstration, farmer field school, learning exchange through exposure visit, dialogue workshop with government departments (for advocacy and convergence with schemes and programs).

Selection of Women Farmers: The CRPs identify poor women farmers from each village through SHG meetings and household visit. Small and marginal farmers are identified through secondary data source of the government at the village level. The list of small and marginal farmers with less than five acres of land is collected from the village *talati*.

Additionally, social mapping and household surveys are conducted for final selection of women farmers.

Awareness Campaigns: SSP conducts awareness campaigns and farmers meeting to generate awareness about the model in the drought affected villages as well as share its benefits. The awareness campaigns usually take place before beginning of each agricultural season.

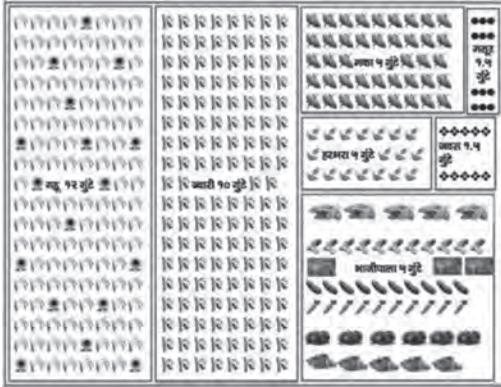
Capacity Building of Women Farmers: Awareness building is an on-going process in the villages. However, for building capacities of women farmers, they are federated into farmers' collectives of 20-25 members each and then trained on key resilient practices and its economic as well as health benefits.

- Agriculture – bio fertilizers and pesticides, indigenous seed collection and preservation, germination test, soil test, crop diversification, cultivation of cattle feed supplementary and fodder like azolla and hydroponics
- Health and Nutrition – importance of nutrition rich food, vegetables, importance of homestead garden
- Water management – water conservation structures like farm ponds, bunds, recharge structures-wells, bore wells and management systems like drip, sprinkler, rain water pipe
- Enterprise – agri-allied business such as dairy farming, goatery, poultry, sale of vegetables, fertilizers, pesticides, fodder, and other non-farm enterprises as well.
- Producer groups and market linkage – formation and importance of farmer groups for input sharing, labour sharing, procurement of inputs and sale of outputs, exposure visits to weekly market and district level market.

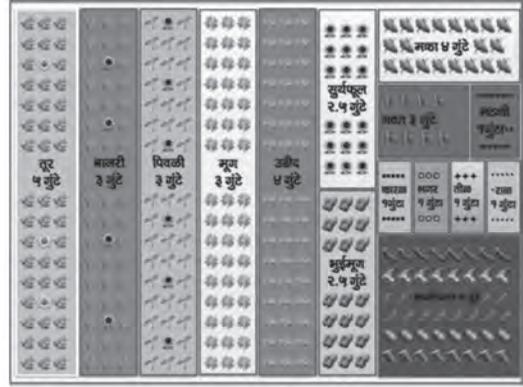
The table 1 presents season-wise crops and inputs that are suggested for cultivation. Besides, during drought women farmers are advised to cultivate **short-term and less water intensive crops, traditional and wild variety of vegetables** to ensure food security of their families and communities.

Table 1: Season-wise farm inputs and crops

S. No.	Season	Farm Inputs and Crop Selection
1.	Rabi	<p>Crops</p> <ul style="list-style-type: none"> • Pulses: Gram, Masoor • Grains: Jowar, Wheat, Sorghum • Vegetables: Beans, Chilli, Tomato, Potato, Cucumber, Spinach, Bitter gourd, Fenugreek, Brinjal, Ladies Finger, Green leafy vegetables • Oilseeds: Javass • Fodder: Maize <p>Pest Control</p> <ul style="list-style-type: none"> • Local Natural Pesticides – Dasparni Ark, Neem Ark, Neem Astra, Agni Astra, Brahmastra • Bio-logical pest control – Trap, Border crop traps <p>Soil nutrient management</p> <ul style="list-style-type: none"> • Jeevamrut <p>Seeds</p> <ul style="list-style-type: none"> • Preparation of own seeds • Germination test • Seed treatment
2.	Kharif	<p>Crops (only with farmers that have irrigation)</p> <ul style="list-style-type: none"> • Pulses: Red Gram, Green Gram, Black Gram • Grains: Bajra • Vegetables: Beans, Chilli, Tomato, Potato, Cucumber, Spinach, Brinjal, Ladies Finger, Green leafy vegetables • Oilseeds: Til, Mustard, Soyabean • Fodder: Maize <p>Pest Control</p> <ul style="list-style-type: none"> • Local Natural Pesticides – Dasparni Ark, Neem Ark, Neem Astra, Agni Astra, Brahmastra • Bio-logical pest control – Trap, Border crop traps <p>Soil-testing</p> <p>Seeds</p> <ul style="list-style-type: none"> • Preparation of own seeds • Germination test • Seed treatment
3.	Summer	<p>Crops (only with farmers that have irrigation)</p> <ul style="list-style-type: none"> • Pulses: Gram • Grains: Wheat, Sorghum • Vegetables: Beans, Chilli, Tomato, Potato, Cucumber, Spinach, Bitter gourd, Fenugreek, Brinjal, Ladies Finger, Green leafy vegetables • Oilseeds: Groundnut • Fodder: Maize <p>Fertilizer Management</p> <ul style="list-style-type: none"> • NADEP • Bio-compost • Vermi-compost • Green manure • Green fodder (Hydroponics) • Cattle feed supplementary (Azolla)



Rabi



Kharif

Figure 5: Cultivation as per WCRF

Considering the changing climatic conditions, its implication on household food security and related health issues along with the lack of irrigation facilities for majority of the farmers, the organization promoted the *Sakhi Arogyadai Parasbag* (vegetable/kitchen garden) where women can cultivate vegetables using less water. For this, two models were suggested depending on the size of the land. One is circular in shape covering 1000 sq. ft. area and the other is square shaped spread over 100 sq. ft. In both the models, growing six to seven types of vegetables were recommended.



Figure 6: Sakhi Arogyadai Parasbag (Vegetable Backyard Garden)

Knowledge exchange through model farms: SSP organizes exposure visit of women farmers to model farms and demo plots for learning and sharing knowledge. On site demonstrations of best practices are conducted through model farm creation - local seed production, fertilizer production, crop diversity techniques, and fodder production etc. The model farms serve as centres for learning and sharing through demonstrations.

Block level network meetings: SSP teams facilitate peer learning meetings at the cluster/block level for learning by sharing experiences and best practices. Besides, women farmers become members of these larger networks through which they collectively learn from and share with each other.

Community resilience fund: In order to provide fund support to women farmers for innovations in agriculture and starting new enterprises, SSP has created the community

resilience fund that is completely managed and owned by women groups. It is a revolving fund which is lent to women at a relatively low rate of interest.

Partnerships: In all the training programs and workshops, SSP has immensely been supported by the Krishi Vigyan Kendra, the Agriculture University, the Ground Water Survey and Development Agency, the MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) department and the Agriculture and Technology Management Agency (ATMA) with whom SSP has partnership to transfer required knowledge to women farmers and trainers.

Dialogue workshops for advocacy and convergence of schemes: SSP organizes and facilitates networking and dialogue workshops at the block and district levels with the participation of women leaders and government line department officials to discuss their needs and challenges with respect to capacity building and access to various schemes. Women leaders present the status of various applications submitted to government departments and lobby on behalf of women farmers to help them receive the schemes besides advocating for land ownership by women with village level Talati, other officials and families of women farmers.

5. Impact

In the last three years (2015-18), SSP has empowered 41,000 small and marginal women farmers in climate resilient farming. Having initiated farming on 10 *Guntha* of land⁴ women have eventually spread it to one acre and more. SSP's WCRF model has been adopted by women in Osmanabad, Washim, Nanded, Latur and Solapur districts.

The WCRF model offers a variety of outcomes linked to social, economic as well as environmental development and sustainability. In the context of sustainable livelihood and climate resilience, this case study focuses on some of the key impacts that have been achieved by implementing the WCRF model. These include:

5.1 Increased Agricultural Productivity

1. Minimum savings of 25% per acre per crop cycle through use of bio fertilizers, bio pesticides and home-grown seeds
2. Average annual savings of INR 35,000 per household by consuming farm grown food and using natural farm inputs
3. Increase in average yield of food crops by 25% through intercropping and mixed cropping techniques

SSP calculated the savings generated by comparing use of bio-pesticides, bio-fertilizers and use of local seeds before and after the intervention. The women farmers have reported that due to use of bio-inputs such as bio-pesticides, local seeds and fertilizers the cost of inputs for cultivation has come down and they have been able to save money which earlier incurred a great amount.

⁴ 1 acre=40 Gunthas

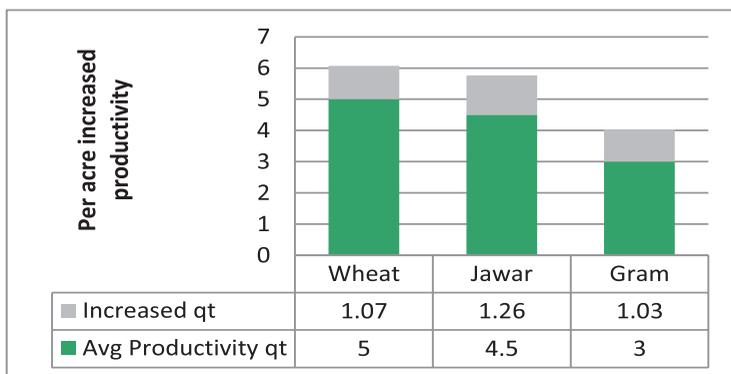


Figure 7: Increase in productivity due to pest control and seed germination test

Due to seed germination test and use of bio-pesticides there has been increase in crop productivity. The figure 7 above presents information on the basis of per acre production of wheat, jawar and gram in quintal. Before adopting the model, the average productivity of wheat, jawar and gram was 5 quintals, 4.5 quintals and 3 quintals respectively and after adoption, the increase per acre has been 1.07 quintals, 1.26 quintals and 1.03 quintals respectively for wheat, jawar and gram. The percentage increase in productivity per acre is calculated to be over 25%. This shows that the model has been successful in increasing crop productivity with low cost inputs and has scope for scaling to more number of acreages by more number of farmers.

5.2 Improved Food Security, Health and Nutrition

1. Cultivation and consumption of traditional food crops like local cereals, pulses, fruits and vegetables
2. Increased consumption of milk, chicken and eggs by integrating livestock in farming model
3. Elimination of chemical-infused food through bio-farming

Women farmers have reported cultivating about 40 types of food crops on the one-acre farm land. About 2/3 of these food crops are kept for self-consumption and the remaining is sold at the market. Women also reported that the consumption of meals in their household has improved from two to three times a day with a dietary variety of pulses, grains, vegetables, food from livestock etc, as compared to yesteryears that were severely affected by drought. SSP also encouraged women to sell the surplus in the market so as to gain income out of it and although about 20-30% is engaged in such activities, the first priority always remains food for self-consumption.

5.3 Strengthened Socio-economic Conditions

1. Diversified livelihoods through agri-allied businesses
2. Steady cash-flow by selecting shorter duration crops than cash crops like sugarcane and soyabean

3. Cessation of forced migration in search of labour work during lean seasons
4. 41,000 marginalized women recognized as farmers and agriculture decision makers by their family, community and government

More than 70% of the women farmers are engaged in agri-allied and small enterprises. These include dairy, goat keeping, poultry, and sale of seeds, bio fertilizers and bio pesticides, vegetables and other non-farm business. Diversification of livelihoods have secured the income of women and their families.

Women have also reported participating in decision-making in issues pertaining to income, their own and children's health, education, and other priorities. Women are now taking decisions related to the types of crops to be taken for cultivation and the inputs.

5.4 Improved Ecology

1. 30,000 acres under bio-farming through soil conservation by use of bio-inputs
2. Water conservation by micro-irrigation and selecting less water-intensive local crops

Due to the WCRF initiative, about 16,000 women farmers have adopted micro-irrigation techniques on their farm through use of drips, sprinklers and rain pipes.

Table 2: Summary of Impact/Major Shifts due to WCRF

S. No.	Aspects	Before Intervention	After Intervention
1.	Women's role in agriculture	Worked mainly as a labour with no decision making related to crop and input selection; involved in watering, weeding, harvesting	Farmer and decision maker in agriculture – crop and input selection, sowing, weeding, harvesting, watering
2.	Cultivation of crops	Single cash crops like sugar cane, soybean	Diversified food crops and vegetables along with cash crops
3.	Use of chemical inputs	Application of expensive chemical fertilizers, chemical pesticides on entire farm land	Application of low cost bio-fertilizers and bio-pesticides on the land where they have adopted the model
4.	Water management systems	Large dependence on flood irrigation	Adoption of micro-irrigation practices by 40% women farmers
5.	Income and control over income	Women had no control over the income that they earned as wage labour (Approx. INR 4500 per month)	Women earn between INR 10,000-15,000 due to agri-allied business and sale of vegetables per month. They use their income for priorities like their own and children's health, education, buying other necessities.
6.	Livelihoods	Single source of income from farm	Multiple sources of income from farm, agri-allied business and non-farm business 28,000 women farmers have diversified their livelihoods through 2-3 allied businesses

Impact of the initiative in the words of our women farmers:

“By cultivating crops under the one-acre model, I have been doing what the doctor does for people – providing good health,” says Vanita Manshetty, Chiwri village in Osmanabad district.

“Two years ago, we could not even grow basic vegetables like onions and tomatoes for our consumption. Today, my one-acre patch has 13 types of crops and vegetables, which we grow in rotation throughout the year. We are able to feed ourselves and also get a good income.” says Shailaja Narwade from Masia village near Solapur in interior Maharashtra.

Anusaya Baburao Kale from Boregaon village in Latur district exclaims, “Earlier, my husband was the decision maker in agriculture and had complete ownership of the farm but now I am taking the decisions related to crop selection, inputs, where to sell the produce and how much to sell.”

6. Challenges and Way Forward

The *key challenges* faced with regard to implementing the model are:

- Switching from cash to food crops: marginal farmers and among them women face increased risks – mono cropping, high use of chemical inputs and water
- Since women do not own land, it is a challenge their families to agree to give women even a small piece of land to practice the new farming model
- Women are generally not counted as farmers and not recognized as beneficiaries for Govt. sponsored subsidies, extension services, training and credit.

6.1 Opportunities to Scale-up

SSP has over two decades of proven experience in disaster risk reduction and entrepreneurship programs across Six Indian states. SSP has in-house capacities of experienced team members and trained CRPs and leaders to transfer the innovation. SSP has strengthened the leadership of women who are acting as grassroots’ advocates to forge partnership with the government to scale up this model to other districts and places.

SSP has partnership with Krishi Vigyan Kendra, Agriculture Technology and Management Association (ATMA) and Agriculture Universities at block, district and state levels to transfer required knowledge to women farmers and trainers. Other existing partnerships supporting the organization to scale this initiative include Govt. of Maharashtra (MSRLM), Misereor, Germany, Azim Premji Philanthropic Initiatives, Great Eastern Shipping Co. Ltd., and Clearing Corporation of India Limited across 500 villages in Maharashtra. SSP is a member of the GROOTS international network which has a membership of 40 countries where the initiative can be scaled at a larger level.

Besides, SSP teams are lobbying for implementation of a recent directive by the Ministry of Agriculture, Govt. Of India, 30% of State level funds for agriculture to be compulsorily allocated for women farmers. SSP is advocating to direct resources and entitlements under PoCRA (Project on Climate Resilient Agriculture) – implemented by the Government of Maharashtra and funded by the World Bank.

6.2 Sustainability of the Initiative

The overall change SSP wants to see through this initiative is agency/leadership of women as farmers and decision makers in their farms, families and communities that will expand and sustain beyond the project period. Women will have gained enhanced social capital (new economic and social identities) as farmers, decision makers in agriculture and in their households, and additionally as entrepreneurs, grassroots advocates in local development. SSP will strengthen the leadership of women who will act as grassroots' advocates to forge partnership with the government to scale up this model to other districts and places and create demand for organic produce. Further, SSP has facilitated the registration of two Farmer Producer Company to ensure market linkage and sustainability of the model.

6.3 Learning/Policy Level Changes Required

- Radical shift required in policy making and programs to recognize women's strategic role in climate smart sustainable agriculture practices
- Investment in skills and capacity building of women to train them as Climate Champions
- Recognition of women as important stakeholders in agriculture policy planning and decision making

7. Conclusion

The model has generated positive impact on the lives of small and marginal farming households. Use of organic/bio-farming practices and mixed cropping pattern has reduced their expenses related to food consumption and production and increased productivity per acre. Also the frequency of consuming home grown nutritious vegetables, cereals and pulses in a day has considerably improved addressing issues of food security in their families. Water management practices using drip irrigation and building farm bunds, farm ponds etc. in areas where the women faced shortage of water has helped in saving water and growing the crops in an efficient manner. These practices coupled with tree plantation on farm have together led to sustainable impact on soil, water and environment as a whole in the long-term.

Many of the women reported that the income earned by them from sale of surplus and agri-allied businesses has added to their individual and family income and they are able to use it for various purposes such as small household expenses, healthcare needs of family and education of children, etc. Social mobility has also increased to a considerable extent and women find themselves in decision making roles in agriculture and households (which were earlier a big constraint) thus, repositioning them as farmers and decision makers in agriculture.

The climate resilient farming model has been successful in bringing shifts in farming practices that can be termed as crucial to mitigate global climate change implications on agriculture and water resources. Besides, providing a sustainable farming and livelihood solution to small and marginal farming households, it has become an important tool in empowering women and recognising them as farmers and decision makers in agriculture.