

Organic Farming in Balaghat: Power to the Community, Power to the Farmer!

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Exploring the possibilities of introducing and implementing organic practices in several villages has resulted in better yield, higher income and an exponential increase in the confidence of women engaged in organic farming, raising hopes for greater economic stability as well as gender equality

INTRODUCTION

The National Organic Standards Board, based in the USA, provides a succinct definition of organic agriculture: a practice, which comprises an ecological production management system, which promotes and enhances biodiversity, biological cycle and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony.

The Balaghat team of PRADAN was set up in 2008. The team is currently working in two blocks—Paraswada and Balaghat Sadar, with the Schedule Tribes (ST) such as the Gonds, the Particularly Vulnerable Tribal Groups (PVTG) such as the Baiga, and Other Backward Castes (OBC) such as the Pawar, the Marhar and the Ahir communities. The outreach is 6,200 families in 150 villages, covering 500 SHGs. The area has about 60 per cent forest cover and an undulating terrain. Low accessibility and widespread poverty are the characteristic features of the villages in which PRADAN is working. The average land-holding of the community is about 1.5 acres.

The team has been exploring the possibilities of introducing and implementing organic practices in patches since 2009. Usually, traditional chemical practices, especially in paddy-based intervention, were promoted. In vegetable cultivation, the approach has been more in tune with the organic way, as already practised in this area (vegetables grown for consumption purpose by the community). Based on the outcome of these experimentations in various villages, the team's approach to agriculture has undergone a radical change, with a complete shift in focus to the organic process.

The reality is that during the past decade, the change to chemical methods in the agricultural practices in this area has resulted in the loss of indigenous seeds and has increased dependency on external forces. With this change, the influence of the woman of the family in the agricultural activity has greatly diminished. The introduction of organic farming, it was believed, would, perhaps, facilitate in rectifying this situation.

At the core of organic agriculture is sustainability vis-à-vis economic profitability and social equity (farming independency). All three terms needs to be explored to understand the urgent need of a different way of practising agriculture in the area. As defined by D. Rigby (University of Manchester) and D. Caceres (University of Cordoba), in their study on sustainable farming, agricultural sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability can be a tricky term. For example, if an irrigation facility is used for farming (using coal driven electricity or oil, which in the long run is exhaustive), the concept is weakened a little. But our observation and assumption is that chemical agriculture not only causes health hazards and depletes the natural environment, thereby diminishing the ability of the future generations to meet their needs, but also forces the farmer to be dependent on external market forces for sustenance.

Economic profitability is often cited as the reason for the non-viability of organic agriculture. However, based on our intervention with the farmers of this area, we found, as is discussed in this article, the margin of profit in

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organic agriculture is comparable to that of chemical farming, if proper scientific techniques such as seed treatment, line-to-line sowing, etc., are followed. And with reduced input costs and greater health safety, the economic benefit outweighs the loss that occurs for a season or two due to the shift.

The third and the most critical aspect of organic farming is the control of the community on the farming process. The community in this area had been practising farming without much dependency on external market forces since the dawn of civilization. However, in the past few years, there has been a huge transition from independence to complete dependency on the external market, especially in paddy and vegetables cultivation—right from the procurement of seeds, to fertilizers and pest management. The situation is so critical that today, right before the *kharif* season, we find the agents of the companies, at the decentralized village level, competing with each other to sell seeds. The prices of chemical fertilizers and pesticides have shot up rapidly in the past few years, forcing the farmer to struggle for food security. The experience at the village level has proven that the situation can be addressed; the issue of a farmer's independence and control over agriculture can again be shifted back to the community. All that is needed is a more holistic approach and a sense of empathy for the farmer and her/his dignity—and organic farming is one of the ways to empower the farmers.

TRANSITION IN THE TEAM

Traditionally, the community in the area cultivated vegetables for personal

consumption, using totally organic methods. In paddy, Di-Ammonium Phosphate (DAP) and urea along with organic matter were used. In the first two years, PRADAN was actively involved in promoting improved agricultural practices through a chemical method. The team motivated the community by taking them to other PRADAN teams and introducing them to the chemical method of farming with a proper Package of

Practices (PoP). This, in turn, trickled down at the ground level, with widespread adoption in the first year. However, during the second year, the interest level of the community drastically dropped because the benefits of chemical farming were below their expectations and input costs were high. This was particularly stark in the case of vegetable cultivation. In paddy, where mixed organic and chemical farming was being practised, the results were quite encouraging.

This served as a wake-up call for the team. The Balaghat team began analyzing the traditional practices (organic, with controlled external input) as well as the newly introduced chemical method of agriculture. Sustainability, food security, production, farming independence of the community, etc. were studied and discussed. The team decided to explore organic methods, experiment with them in a few places and then present them to the community and let them decide what was in their best interest.

The initial quest for organic farming, as far as the team was concerned, came from the community itself. The traditional practices in this area, being in the vicinity of the forest, were largely based on organic matter even if seed treatment, line sowing or timely weeding

The initial quest for organic farming, as far as the team was concerned, came from the community itself. The traditional practices in this area, being in the vicinity of the forest, were largely based on organic matter even if seed treatment, line sowing or timely weeding was not done

was not done. Also, it was the norm in the area, especially in vegetable cultivation, to place two or three plants in one spot. The idea of vegetable cultivation as a cash crop in *kharif* (or even *rabi*) was new to the area. The dependency on external inputs, though gradually on the rise, was still under relative check. In 2009, professionals from the team visited Subhash Sharma's farm (the pioneer of natural farming in India) in Maharashtra

and found the experience very inspiring. The team then began experimenting in small patches in many villages. However, there was still skepticism in the team regarding organic farming.

But by 2012 the team was convinced. They organized an organic *mela* at the cluster level in Durenda and Pachpedi villages, which was attended by 1,100 farmers. Durenda and Pachpedi have been the focal point of the team in terms of organic agriculture and this *mela*/gathering served as a brilliant platform for farmers from more than 50 villages to be trained in organic farming. In Durenda village, organic farming is practised on contiguous patches, and some on-field demonstrations helped the farmers form a clearer picture. Durenda is an interior village in Balaghat and, traditionally, the practices were inclined to the organic process.

Workshops held in Hyderabad by the Centre for Sustainable Agriculture (CSA) in the month of August 2012 and Chetna Organic in Mandla in September 2012 were attended by professionals of the team. These helped the team cement the belief in organic farming. Further visits to Yawatmal (to Subhash Sharma's farms) by more than 600 farmers as well as professionals in December 2012

inspired and motivated both the community as well as the professionals. *Kisan melas*, based on the theme of organic farming and focusing on the women farmers (*mahila kisans*), were held in three places in February 2013. More than 1,300 farmers attended this event, along with officials from the agriculture department. There was vibrancy in the energy of this gathering of farmers, marked by singing and dancing. Plays were performed showing the woman farmer carrying the organic bandwagon. These were truly inspiring events for the team.

The desire on the part of the team to promote organic agriculture in all the villages is based on the following points:

- ♦ High level of acceptance and desire on the part of the community
- ♦ Reduced input costs
- ♦ Farming independence and reduced dependency on market forces
- ♦ Easy to learn
- ♦ Improved soil health
- ♦ Easy to replicate
- ♦ In tune with their traditional practices
- ♦ Perceived as safe by the community
- ♦ Strengthens the identity of a woman as a farmer with newly acquired technical skills
- ♦ High yields using indigenous variety of the seeds
- ♦ Availability of varied species of highly resistant indigenous seeds suitable for the local area
- ♦ Good market rates for organic products,

Based on the team's collective experience of three years on the different ways of implementing organic farming and the high level of acceptance in the community, in the kharif season of 2012, the Balaghat team decided to encourage only organic practice in vegetable cultivation

especially indigenous vegetables, in the local as well as the larger market

- ♦ In tune with the goal of the farmers and their way of life

THE BEGINNING: A SMALL STEP

When the PRADAN team started agriculture intervention in Balaghat in the *kharif* season of 2009, the baseline data showed that the farmers were using traditional seeds and practices in vegetable cultivation. They cultivated only five to ten plants of brinjal and chilli in the homestead land for the purpose of personal consumption. The team began promoting vegetables as cash crops for the impoverished families of the area, using a PoP, that included high-yield varieties of vegetable seeds with chemical fertilizer (urea, DAP) and pest management (ridomil, forret, bawastien). For many farmers (especially the women from the SHGs) in this area, this was their first brush with a chemical practice. They faced a series of problems. Insecticides were mixed with water in buckets and sprayed using brooms and then the same buckets were used after washing for fetching water for consumption. Some farmers also shared their apprehension regarding chemical insecticides and how they have to keep it outside the household. Incidentally, in the same period, the team also introduced 50 farmers to organic Handikhad in vegetable cultivation. This was practised in three stages—after transplantation, at the flowering stage and at the fruiting stage. The results from the initial organic practices were excellent, with similar yields between organic and inorganic processes, but with a marked reduction in the input cost for organic agriculture. The input cost fell by about 50 per cent, in case of organic farming. There was

very little variance between the production of organic and inorganic methods. However, the two main advantages of organic processes were that the input costs went down and the women found the processes easy to learn and handle.

In food crops, the farmers traditionally grew paddy through both the chemical and the farmyard manure methods. Even traditionally, the dependence on external inputs was low. But in the last decade or so, the use of chemical fertilizers had gone up. DAP was applied in large quantities. The average production was around six quintals per acre. In the first year (2009 *khari*), PRADAN initiated the System of Rice Intensification (SRI) with 506 farmers with recommended doses of chemical fertilizers. Of these, 40 farmers were invited to adopt the organic Jeevamrita practice in paddy. The comparative analysis of the production is listed below:

No.	Type of Practice	Average Yield in Quintal Per Acre
1	SRI along with Jeevamrita and chemicals	20
2	SRI exclusively with chemicals	16
3	Conventional farming with chemicals	8

During the subsequent seasons, the quantity of the chemical input in paddy cultivation was reduced gradually whereas that of the organic input was increased. In 2011–12, the practice of combining chemical and organic methods for paddy cultivation was promoted with 506 farmers. Encouragingly, the team managed to shift from chemical insecticide to bio-extracts

such as *neemkada*, *agniastra* and *brahmastra* for pest control in paddy. In the paddy season of 2012–13, pest control was completely through organic bio-extracts with chemical pesticides being rarely used. In 2012–13, the farmers opted for less chemical fertilizers and increased the usage of farmyard manure and organic matter. The pattern of use is as below:

Year	Soil Input (Quantity/Acre)	Rationale	Pest Management
2009–2010	DAP 40 kg Urea 20 kg Potash 10 kg	This was the first year; wanted to know the effect and to build confidence in Jeevamrita.	Insecticides, Fungicide
2010–2011	DAP 30 kg Urea 20 kg Potash 10 kg	Started applying bio-micro-nutrients in the soil along with Jeevamrita FYM	Reduced insecticide, fungicide. Introduction of bio-extracts
2011–2012	DAP 25 kg Urea 25 kg Potash 10 kg	Increased use of Jeevamrita and micro-nutrients, FYM	Reduced insecticide, fungicide. Scaling up of bio-extracts
2012–2013	DAP 25 kg Urea 20 kg Potash 8 kg	Increased use of Jeevamrita and micro-nutrients, FYM	Total organic pest control through bio-extracts including preventive measures

Though the team would have ideally liked to shift to organic paddy as early as possible, the process has been gradual due to several factors. All the farmers were not ready for a complete shift. Even from the technical point of view, the chemical practices followed have led to a depletion of microbial activities of the soil. This will require some years to be restored. Farmers also do not have sufficient organic matter for a large-scale transition.

In 2011–12, the team promoted both practices—the chemical and the organic fertilizer, with 506 farmers. In 2012–13, we minimized the use of chemical fertilizers from 70 kg (in 2009–10) to 53 kg. In the monsoon season, total organic practices were adopted by 65 farmers from seed treatment to insect and pest control. More than 1,000 families have used *Jeevamrita* in paddy at least once or twice. In paddy, the farmers have been using integrated balanced fertilizers with chemical and organic inputs and 906 families have been using *Handikhad* and vermi-compost in vegetables. Almost 250 farmers have been using vermi-compost in paddy and vegetables. Based on our learning in the last few years, the paddy growth in the up-lands was stunted due to micro-nutrient deficiency. In 2012–13, 210 families in the up-lands treated 84 ha of their land with micro-nutrients.

The discontent of the community with chemical farming, the rising prices of inputs, the fluctuating market prices, the health hazards while using pesticides and the lack of control of the community over the farming process—all reinforced the view that there is a need for an alternative way

SCALING-UP ORGANICALLY, IN VEGETABLE CULTIVATION

In the *rabi* season of 2010–11, the team intervened with 350 farmers, to promote vegetable cultivation with a high-yield variety in onion and brinjal, using chemical fertilizers and insecticides. Most of these farmers were using their traditional methods of cultivation with indigenous seeds, and manure and other organic matter as fertilizer.

However, though production doubled, there were problems such as wilting and pest attack. Also, in the case of brinjal, though production increased, the rate in the market was less than of the indigenous products. So, in 2011–12, both indigenous seeds and hybrids were promoted, using a mixed organic process and chemical practice (wherever necessary). Organic *Handikhad* with bio-extracts was widely used. Seed treatment, line-to-line sowing, etc., were promoted in all cases. The results were successful with a similar range of production in all cases.

The community service provider (CSP) promoted patch-wise planning and the use of bio-extracts in vegetables. The focus was on a clustered approach to organic farming, to control insecticides, because the use of insecticide the previous year had a negative impact on the adjacent organic plot. In 2012, a preventive spray of *neemastra* was used

No.	Type of Practice	Average Yield in Quintal Per Acre
1	SRI along with <i>Jeevamrita</i> and chemicals	18
2	SRI exclusively with chemicals	14
3	SRI exclusively with organics	12
4	Conventional farming with chemicals	6

on the land of 600 farmers. In the *wadi* (backyard) plots, each farmer has eight to ten plants of *semi* (beans) on an average, with each plant yielding 2 to 3 kg of produce. Due to pest attacks, it had come down to below the potential production. In 2012–13, the plants were treated with the preventive spray in entire patches, covering the land of 300 farmers, and the per plant production increased by 1 kg. Indigenous *semi* was also introduced with the Baiga community in two places and it proved very successful.

In the *rabi* of 2012–13, the team intervened in the *chana* (chickpea) cultivation by introducing a natural farming process. Experts were invited for demonstration at the plots where the farmers were advised to adopt intercropping with line sowing for *chana*, peas, mustard and coriander—crops that the farmers were familiar with growing. There was a need to intervene and introduce them to line-to-line sowing. In all, 51 farmers are now engaged in the natural farming process.

Based on the team's collective experience of three years on the different ways of implementing organic farming and the high level of acceptance in the community, in the *kharif* season of 2012, the Balaghat team decided to encourage only organic practice in vegetable cultivation. The Community Mobilizers (CMs), the Service Providers (SPs) and the farmers were all trained in organic practices, for both paddy and vegetable cultivation. The use of indigenous seeds was encouraged. *Matkakhad* for soil fertility and *neemastra* and *agniastra* were used extensively for pest management. Decentralized training on organic practices was organized in every village. In all, 1,526 farmers cultivated vegetables as a cash crop, using organic methods. In the *rabi* season

The Balaghat team has initiated a fourfold practice in agriculture in the area: SRI in paddy and vegetable cultivation, organic soil nutrition management, pest and disease control and indigenous seed promotion

of 2012–13, an additional 80 farmers (in addition to those who participated in the *kharif* cultivation), joined the programme for organic vegetable cultivation. The observed trend for production, as compared to the production through chemical practices, is much lower input costs and higher market prices for the

produce.

THE DHUTTI EXPERIENCE

The entire patch (river side land) adjacent to the Dhutti Dam gets inundated during the rainy season. During the *rabi* period, the water subsides and the patch is available for vegetable cultivation. The area is under the irrigation department and they lease it to small land-holders and land-less farmers from the Gond community. In 2011–12, 80 farmers in this area were growing indigenous seed, using traditional practices, in small patches of 5 decimals each. PRADAN intervened with two farmers for vegetable cultivation and helped them adopt SRI practices, using indigenous seeds in just two acres of their land. The results were outstanding, with Ramkali Bai earning Rs 25,000 and Hemlata Bai earning Rs 60,000. This inspired the other families and in the *rabi* season of 2012–13, all 80 families adopted organic SRI practice in vegetable cultivation completely. The results from this intervention have been very encouraging with bulk organic production from the patch.

FOCUSED GROUP DISCUSSION WITH FARMERS

In February 2013, the team conducted a Focused Group Discussion (FGD) in three groups of 15 farmers each, with the purpose of reviewing the team's intervention along

with suggestions from the farmers for further engagement in Amoli village. Farmers from Amoli, Dhutti, Takkabarra and Alipur were present in this FGD. These four adjacent villages are heavily involved in vegetable cultivation. During the review, the farmers shared the progress of agriculture productivity and what they had learned. According to them, paddy production doubled after PRADAN's intervention in *kharif* and the input cost had gone down due to the focus on the organic approach to farming. In the case of *rabi* vegetables, production increased, but there was saturation due to a faulty strategy adopted at the market place. During the last year, they had had to compete with vegetables that came from adjacent districts and which were produced through the chemical method. There was lack of awareness in the market about the vegetables grown through the organic process. To create awareness, the farmers set up a banner, "*Desi bhatta nachakna, sadapi khathu tha fasal* (indigenous brinjal and vegetable, organic matter, crops)", and sat with it to acquaint the people with the concept of organic vegetables at both the Lamta local market and in the adjacent block of Paraswada. The farmers also formed an execution committee (*Karyakarni Samiti*), to further explore the markets at the district level.

EXPOSURE TO THE BALAGHAT MANDI (MARKET)

In February 2013, PRADAN organized an SHG members' 'exposure to the market' with the purpose of:

- ♦ Understanding the system of the *mandi*

The last few years have been an incredible learning curve for the Balaghat team. Organic agriculture has been promoted after many deliberations, at both the community as well as the team levels. In vegetable cultivation, the shift towards organic farming has been complete. The next challenge is to replace hybrid seeds with high yield indigenous seeds, the process for which has been initiated

and the interaction with the stakeholders

- ♦ Learning the importance of grading, vis-à-vis the rate differences according to grading
- ♦ Being informed of the rate of vegetables in different places
- ♦ Knowing the supply and demand vs rates
- ♦ Comparing the rates to the local area

Of the 15 members, 13 of them had never seen the district market before and the other four had never been to the district.

The large vegetable market overwhelmed them but they were very excited to see the process of the announcement of rates. The women interacted with the vegetable farmers and traders, and in the process learned the rates and the varieties as well as the mechanics of the demand and supply. They also studied other details such as packaging and grading, and became familiar with tools such as the crate and the weighing machine. The women learned that indigenous and organic varieties of vegetables fetched a much higher rate (about 30 per cent higher) than the hybrid chemical variety. They realized that there was great scope for learning and for using the local market as well as the market in the adjacent block of Paraswada, if proper strategies were followed.

The women shared their learning at the village-level meeting and re-strategized their approach. They decided in this meeting that the women would set up an organic crop production and knowledge centre in Dhutti, where the vegetables were collected, and that they would sell their produce as a collective, after grading, weighing and packaging the

vegetables. They found that the key to greater profits was to have an understanding between farmers, to slot production and market the produce according to the demand of the local market. They also decided that surplus production would be collected and sent to various local markets rather than to a single place. All the farmers now sit under a banner that says “*Desi Bhatta Na Chaka*” meaning organically produced vegetables. With the increased awareness about organic produce, the margins of profit have gone up significantly.

A bumper produce of brinjal, tomato, chilli; *guar phalli* and peas was harvested by the farmers. The production of 20 farmers was analyzed and the net production of vegetable was 30,251 kg from February to May 2013. The net sale was for more than Rs 3,31,760. Farmers like Maheshwari, Ramkali, Bhagwanti, Sahabati, Mahbati and Koushal were not only part of the farming process but also accessed the market and sold vegetables worth more than Rs 30,000. The fact that women came out actively for the first time to the markets was a defining step in the direction of not just economic empowerment but also in terms of their elevated social standing.

ORGANIC VILLAGE: SAWARJHODI

PRADAN initiated its intervention in Sawarjhodi village in 2008, through the formation of an SHG, and in the subsequent year intervened in agriculture. There are 47 households in the village from the adivasi community. Prior to PRADAN’s intervention, the average land-holding in the village was two acres and food sufficiency was only for seven to eight months. Paddy production was seven quintals per acre and vegetables were grown for the purpose of personal consumption only. In paddy cultivation, the community relied on organic

matter as well as chemical inputs from outside. Interestingly, the community relied on organic matter only in their homestead land where they grew vegetables. PRADAN introduced SRI in both paddy and vegetable cultivation. With these interventions, production in both paddy and vegetables went up remarkably. The community began accessing markets not only for getting agricultural input supply but also to sell their farm produce. Six vegetable entrepreneurs emerged during this phase of three years.

During this period, a transition began to take place regarding the way forward in sustainable agriculture—at both the community as well as the team levels. The discontent of the community with chemical farming, the rising prices of inputs, the fluctuating market prices, the health hazards when using pesticides and the lack of control of the community over the farming process—all reinforced the view that there is need for an alternative way. This alternative evolved from the age-old wisdom of the community, albeit in a more scientific and technical fashion. In cash crop vegetable cultivation, seed treatment using cow urine, single plant sowing, line-to-line sowing, regular weeding, soil treatment using organic *matkakhad* and FYM, pest management through *neemkada*, *agniastra* and *brahmastra*, were the standard procedures followed. Indigenous seeds were also promoted. Encouragingly, women in this village have acquired the skills of making vermi-compost, *matkakhad*, *agniastra* and *brahmastra* and this process has been extremely empowering for the women of the SHGs. They now identify themselves as farmers and equal partners in agricultural activity.

By the *kharif* season of 2012, the vegetable production in this village was completely through the organic method and the village coined a title for itself, Jaiwik Gram Sawarjhodi (Organic Village Sawarjhodi).

There has been a tremendous shift in the practices followed by the farmers in paddy cultivation as well. A brief comparative note between the practice followed before PRADAN's intervention and after PRADAN's integrated organic approach is outlined below.

- ♦ SRI and improved paddy practices now widely followed
- ♦ Paddy seed rate of 5 kg per acre from 50 kg per acre
- ♦ Four various types of paddy varieties are being cultivated for risk mitigation

- ♦ The use of DAP reduced from 40 kg per acre to 15 kg per acre and one quintal of vermi-compost and *Jeevamrita* input
- ♦ *Neemkada* and *agniastra* used extensively for pest management, shifting from chemical pesticides
- ♦ Paddy production of 13 quintals per acre, an increase from 7 quintals per acre
- ♦ Regular weeding

The changing farming pattern of nine farmers from Sawarjhodi, based on the farmers' FGD as in 2012 (kharif) is as below.

No.	Name of Participant	Farming Practice	Urea DAP	FYM (in Quintal)	Bio Extract	Land Holding (in Acres)	Land taken on Lease	SRI Paddy (in Acres)	Improved Paddy (in Acres)
1	Dwarka Uikey	Integrated	25 kg in two acres SRI	Vermi: 1.5 q	Yes	3	-	2	1
2	Santobai Parte	Integrated	DAP: 50 kg Urea: 50 kg in 3 acres SRI and Improved	FYM: 25 q		3	-	1	2
3	Maheswari Uikey	Integrated	DAP: 30 kg in 1.5 acres Improved	FYM 12 q	Yes	.5	1	-	1.5
4	Veenita Uikey	Integrated	DAP: 25 kg in 2 acres SRI and Improved	FYM 8 q		2	-	0.5	1.5
5	Pinki Uikey	Integrated	DAP: 25 kg Urea: 25 kg in 1.5 acres Improved	FYM 2 q	Yes	1.5	-	-	1.5

No.	Name of Participant	Farming Practice	Urea DAP	FYM (in Quintal)	Bio Extract	Land Holding (in Acres)	Land taken on Lease	SRI Paddy (in Acres)	Improved Paddy (in Acres)
6	Pritam Singh	Integrated	DAP: 60 kg in 4 acres Improved	FYM 15 q		4	-	-	4
7	Nokhsingh	Organic		FYM 10 q		1.5	-	1	.5
8	Gansingh Uikey	Integrated	DAP: 25 kg in 3 acres Improved	FYM 7 q		3		-	3
9	Dharam Singh Uikey	Integrated	Urea: 25 kg DAP: 100 kg Potash: 25 kg in 2 acres SRI and Improved	FYM 12 q		2		0.5	1.5

DWARKA BAI: A MODEL OF CHANGE AND HOPE

Dwarka Bai is a member of the Swarn Mahila Samiti, a SHG in Sawarjhodi village, Paraswada block, Balaghat district. Not only is she an active member of her SHG, she is also a vocal proponent of the organic revolution in her village. She has realized the importance of the role that sustainable farming can play in her life, in the well-being of the family and in the larger community of her village. She and her husband, Bharat Singh, own three acres of cultivable land. Since PRADAN's agriculture intervention in the village in 2009, she cultivates two acres of her land through the SRI method whereas, in one acre, she has adopted an improved paddy practice. In her homestead land of 30 decimals (0.3 acre), the family grows vegetables for personal

consumption and as a cash crop source. She has started selling vegetables at the local market in Paraswada. After flirting with inorganic practice in vegetable cultivation and an integrated practice in paddy in the first two years of intervention, she has now completely switched to the organic method in vegetable cultivation and integrated method with decreased chemical input in paddy. She treats the soil through sustainable agronomical and biological methods for enhanced soil fertility.

Her agriculture practices in 2012–13, as compared to previous years before the PRADAN intervention, are as follows:

- ◆ Paddy seed rate is 5 kg per acre from 50 kg per acre.

- ◆ Four types of paddy varieties are cultivated for risk mitigation.
- ◆ Reduced DAP usage from 40 kg per acre to 25 kg in two acres and 1.5 quintal vermi-compost usage
- ◆ Extensive use of *neemkada* and *agniastra* as a preventive measures for both paddy and vegetables
- ◆ Did not use chemical pesticides
- ◆ Paddy production of 40 quintals from three acres of land, 30 quintals from SRI of two acres and 10 quintals from one acre of improved paddy
- ◆ Both hybrid and indigenous seeds used in vegetable cultivation
- ◆ In homestead land for vegetable cultivation, vermi-compost usage of about 50 kg and *matkakhad* three times, micro-nutrients, pheromone trap (four in number) and growth regulating hormones (dhenzyme) worth Rs 50

The production details from the vegetable cultivation done in her homestead land of 30 decimals in 2012-13 are as below.

The success of Dwarka Bai as an organic farmer has been an inspiring experience not only for the team but also for the women of Sawarjhodi. Today she talks with confidence and pride about her identity as a farmer and how organic farming has empowered her. She is now a skilful farmer, who can talk about anything from soil management to pest management. With composure and poise she adds, "*Is sal hamne kuch bhi soda aur bazaar ka dava nai dala hai* (This year we have not used any chemical fertilizers and insecticides in vegetable cultivation)." She further adds that organic farming has reduced her dependency of buying expensive fertilizers and she no longer has to deal with the fear of using insecticides. Any visitor who comes to the Organic village of Sawarjhodi can experience her conspicuous aura, as she talks about the importance of organic farming, how it has helped shaped her identity as a farmer and why it should be adopted by everyone. Her eyes light up as she talks and one can sense the change and feel the hope!

Name of Crop	Area in Decimals	Farming Practice	Production in Kilograms	Rate per Kilogram (Average)	Total Income (in Rupees)
Chilli	2	Organic	124	30	3,720
Barbati	5	Organic	164	24	3,984
Brinjal	5	Organic	216	15	3,240
Bitter Gourd	2	Organic	129	30	3,870
Bottle Gourd	3	Organic	125	20	2,500
Tomato	2	Organic	57	20	1,140
Semi (Beans)	3	Organic	150	40	6,000
Grand Total			965		24,454

Presented here is the yield comparison between the production in 2011–12 and 2012–13. In 2011–12, farmers used chemical practices whereas, in the following year, there was a complete shift to an organic practice. The idea of the comparison is to critically review the variance in production, if any, due to a complete shift to organic farming from the chemical and integrated process. The production data shows interesting results. The production per decimal is very similar (40 kg and 43 kg, respectively). But the per decimal income varies from Rs 640 in chemical (and integrated method) to Rs 800 in the purely organic method of production. The primary reason for this variation in profit is the recognition of a higher value of organic product at the market level and strategic marketing by the producers. In the markets that they accessed, they sat under a single organic banner (*Jaivik Khetti*). The vegetables are not only sold at a higher rate but there were hordes of customers in the stalls under the organic banner, leading to quick sales. In addition, there is the advantage of reduced input cost in organic farming and the community control on the process of vegetable production. Also interestingly, wherever indigenous seeds were used, the products got sold faster than any other vegetable in the market.

AGRONOMICAL PRACTICES ADOPTED BY THE TEAM

The Balaghat team has initiated a fourfold practice in agriculture in the area: SRI in paddy and vegetable cultivation, organic soil nutrition management, pest and disease control and indigenous seed promotion.

- A. **SRI:** Seed treatment, line-to-line sowing, regular weeding, etc., in all cultivation activity
- B. **Soil Nutrition Management:** In organic practice, the soil is treated as a living entity with high microbial activity. Deep ploughing and the application of FYM are

encouraged. Interventions such as the use of vermi-compost, improved composting, *Jeevamrita* and *Matkakhad* are taken up with the farmers. In vermi-composting, earthworms are used to decompose cow dung.

- ◆ In improved composting, a 10 ft by 10 ft by 4 ft structure is made. All forms of biomass such as dung, leaves, grass, etc., are used to fill it. Azectobactor, PSB and trichoderma are added to it. The top is then plastered using mud and the ingredients remain buried for three months after which they are completely decomposed and serve as an excellent bio-fertilizer.
- ◆ The process of making *Jeevamrita* is as follows.

No.	Particulars	Purpose of Components	Quantity
1.	Water	Base	200 litres
2.	Cowdung	Micronutrients	80 kg
3.	Urine	Pesticide value	4 litres
4.	Jaggery (<i>gur</i>)	Fermenting agent	1 kg
	Total <i>Jeevamrita</i>		285 litres

A cement water tank or barrel with a capacity of 300 litres has to be made. First, the water is poured into the tank. To this 80 kg of locally available cow dung and four litres of cow urine are added. After adding 1 kg of jaggery (*gur*), the solution is stirred and left to ferment for 12 days in the tank or barrel. The solution has to be stirred once a day. At the end of 12 days, *Jeevamrita* is ready for application. The 285 litres of *Jeevamrita* prepared this way is sufficient for one single application for an acre of land, irrespective of the crop.

♦ *Matkakhad* Preparation

No.	Particulars	Purpose of Components	Quantity
1.	Water	Base	5 litres
2.	Cowdung	Micronutrients	5 kg
3.	Cow urine	Pesticide value	5 litres
4.	Jaggery (<i>gur</i>)	Fermenting agent	0.25 kg
5.	Besan	Fermenting agent	0.25 kg
6.	<i>Neem</i> leaf	Pesticide value	1 kg
	Total <i>Matkakhad</i>		16.5 litres

This mixture is kept in an earthen pot (*matka*) for five to six days and stirred twice a day. It can then be used by mixing one part with four parts water in vegetable and paddy at intervals of a week. This mixture of 85 litres (16.5 litres of *Matkakhad* and 68 litres of water) is sufficient to be used in a five-decimal plot of vegetable once. For excellent growth of the plant, the mixture should be used five times. It can also be used as a spraying agent, which serves as both a growth agent and insecticide by mixing 50 ml of *matkakhad* with one litre water and spraying at an interval of 10–15 days and about seven to eight times per crop.

C. Pest and Disease Control

- ♦ Seed treatment with trichoderma, cow urine
- ♦ Pheromone traps to reduce harmful insects
- ♦ *Neemkada* as a preventive pest spray

One Kilogram of neem leaves have to be boiled with 4 litres of water until the water evaporates, leaving the leaves and one litre water. The leaves are then removed and

one litre *neemkada* is added to 10 litres of water and can be used in a 10-decimal patch of vegetables. This should be used five times, beginning about 10 days after the transplantation and must be sprayed five to six times at an interval of 10–15 days.

In paddy of one acre, 90 litres of *neemkada* solution (9 litres of *neemkada* and 81 litres of water) is sprayed after 15 days of transplantation and three or four times more at an interval of 15 days each.

♦ *Agniastra* as pest control

No.	Particulars	Purpose of Components	Quantity
1.	Water	Base	10 litres
2.	<i>Neem</i> leaves	Pesticide value	1 kg
3.	<i>Dhatura</i> leaves	Pesticide value	1 kg
4.	<i>Besaram</i> leaves	Pesticide value	1 kg
5.	<i>Laltain</i> leaves	Pesticide value	1 kg
6.	Chilli	Pesticide value	0.5 kg
7.	Garlic	Pesticide value	0.5 kg
	Total <i>Agniastra</i>		15 litres

Agniastra is used when pests start appearing in the farm plot. For an acre of paddy, 90 litres of solution (5 litres of *agniastra* and 85 litres of water) are used. This is sprayed at an interval of 10–15 days, based on the presence of pests in the crops. In vegetable crops in an area of 10 decimals, a 10-litre solution is used (0.5 litre of *agniastra* and 9.5 litres of water) as a pest control measure. In some villages, extracts of *neem*, aloe vera, turmeric and *bel* leaves were also used as blast treatment.

♦ **Neem oil as a final control measure**

A 5 per cent solution of *neem* oil can be used as pest control in both paddy and vegetable cultivation. The quantity of the mixture is similar to that of *agniastra*.

THUMB RULE FOR PEST MANAGEMENT

Type	Purpose	Solution Percentage	Per Acre Need of Water Solution
<i>Neem-kada</i>	Preventive	10	90 litres
<i>Agnias-tra</i>	First line of attack on pests	5	90 litre
<i>Neem Oil</i>	Final line of pest attack	5	90 litre

D. Promoting Indigenous Seeds: Indigenous seeds of the area have high resistance to disease and are also capable of high yield. These are now being promoted actively across the villages. This has been very successful with vegetable crops. Various varieties of indigenous brinjal, chilli, beans, tomato, *barbati*, bottle gourd, etc., which were on the brink of extinction from the area are now recognized by the community and the larger market as a viable replacement for the hybrid variety. There is still a struggle as far as food crops are concerned because the local varieties have been more or less suppressed by the market variety. The team will continue to actively pursue and revive the local food crop seeds.

THE WAY FORWARD

The last few years have been an incredible learning curve for the Balaghat team. Organic agriculture has been promoted after many deliberations, at both the community as well as the team levels. In vegetable cultivation, the shift towards organic farming has been

complete. The next challenge is to replace hybrid seeds with high yield indigenous seeds, the process for which has been initiated. In another two years or so, it is expected that all vegetable cultivation will be by the indigenous organic method. Local food crops such as *kodo*, *kutki* and *maria* will continue to be promoted through the organic method and the community encouraged to practise line sowing. An integrated approach will be followed for paddy, and it will take a few years for a complete shift to organic paddy to take place. The team will also promote the indigenous high-yield variety in paddy, bring it back to the mainstream and make the community conscious of the importance of having the control of seeds in their hands. The team believes that the organic approach to farming is holistic and caters to the need of the community in this area and has a high level of acceptance among the people. This goal will be pursued with greater zeal in the coming period. The team is also exploring the possibility of organic farming being the means and the tool to reduce gender inequality, rampant at the community level and in the larger society.

The coming years are a critical phase for the Balaghat team as it explores the various dynamics of organic farming. Will it lead to a more equitable society? Will it empower the women of the community? Will the newly acquired skills raise the status of women in the community? Will it lead to further change? Or will it only add to their drudgery? Can it be replicated throughout the area and in other areas? Is it an impulsive and short-lived zeal of the community? Or will it have long-term acceptance?

These are the areas that need to be explored and the team plans to sincerely put all its efforts to discover the impact of various facets of this intervention. The Balaghat team has the conviction that the empowerment of women will lead to empowerment of the community, and that the community control of agriculture led by women will lead to their true empowerment. Power to the Community, Power to the Farmer!