Evaluation of the PPPIAD *Project on* SOYBEAN



Documentation of the project on
Improving productivity of Soybean in Maharashtra by
Archer Daniels Midland Company (ADM)
and
Department of Agriculture, Government of Maharashtra

Supported by
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1

Executive Summary



1

Executive summary

Maharashtra is the first state in India to implement projects under the Public-Private Partnership for Integrated Agriculture Development (PPPIAD) scheme. In 2012, the State Department of Agriculture rolled out projects focusing on improving value chains for crops as well as developing integrated value chains for specific crops through public private collaboration and co-investment. In the first year the partnership was rolled out with the aim of reaching out to at least 200,000 farmers in the state.

FICCI undertook the evaluation of Soybean project implemented by ADM in year 2012-13 and 2013-14. The objectives of the study were to assess the outcomes in terms of increase in productivity of Soybean, improvement of farm incomes; document the processes of linkage of farmers with input and output markets; and to identify the processes that enable a successful partnership between the Government, private industry and farmers.

The project on Soybean aimed at improving the standard of living of small and marginal Soybean growing farmers by enabling/empowering them to be self-reliant through supply of high yielding planting materials, providing agronomic support, assisting in adopting advanced agri practices, providing market linkages, and sharing experiences of research and development in Soybean cultivation.

ADM has set up a very efficient and meaningful extension program over the past 8-9 years in Latur to disseminate new technologies to small and marginal farmers. Careful observation of several initiatives reveals that these efforts were not beneficial merely in terms of productivity but helped farmers with agri input, resource conservation, better extension services and market linkages. The results of this highly successful farmer program are evident in the fact that the Soybean acreage has grown from 7,000 ha in 2001 to 3.80 lakh hectares in year 2014-15 (Kharif season).The yield per hectare of soybean increased to 1.8 MT/ Ha against the national average of 1.2 MT/ Ha.

Approx 88, 350 farmers are engaged with ADM in PPPIAD project. ADM adopted the strategy of continuous interaction with farmers and FPOs to design various components of the project. This strategy helped in providing solutions to the ground level problems at farmers end. Empowering women with knowledge on Soybean cultivation is one of the distinct features of project.

The project has been able to enhance the productivity of Soybean by (a) distributing certified varieties of high yielding varieties of Soybean such as DS 228 and MAUS 71 which gave incremental yield of 20-30% (806 qtl of certified seed distributed in year 2013-14) (b) training and skill development of farmers and FPOs for seed production programme (total 418 ha of area is covered under seed production programme in year 2013-14) (c) providing end to end mechanized solutions for soybean cultivation which led to 25% increase in yield for Soybean crop.

Regular advise on extension services by ADM officials at each ADM Extension centres known as KVKs (Krishi Vigyan Kendras) has contributed to the adoption of best practices in Soybean cultivation. Some of the major initiatives taken under front line demonstrations include (a) educating farmers about soil test based fertilizer application (b) seed treatment prior to sowing etc. ADM has also facilitated SMS service to more than 3000 lead farmers. Training farmers on seed production was one of the major initiatives under extension programme.

There is a well-defined institutional mechanism created both at the Government and at the company level to oversee the implementation and monitoring the progress of the project with periodic reporting and assessment across all levels. PPPIAD project has created a framework where the Government and the private company have worked in tandem, supporting the development of the back end supply chain along with providing the market linkage opportunities to the Soybean growing farmers.

Based on the interactions during primary survey, two important initiatives which had tremendous impact on strengthening value of Soybean are as under:

- Labor consists 30%of the total cost of Soybean cultivation for a one acre land. Mechanization is a logical choice when the country is looking for ways of managing agriculture labor concerns. Introduction of new farm implements in Soybean cultivation which led to end to end mechanized solutions led to net saving of 30% in Soybean cultivation, 25% increase in yield and saving of Rs 640 per acre in cost of seed. Two FPOs (Farmer Producer Organizations) formed for establishing custom hiring centres for Soybean cultivation were very efficient. There is need to promote soybean variety fit for mechanical harvesting. The financial support provided by ADM and State Govt of Maharashtra was very instrumental in success of this pilot on farm mechanization in Soybean.

- Creation of market linkages by (a) Direct procurement programme by way of creating ADM kissan cards for each farmer (b) and connecting farmers to Commodity exchange were very impactful. Farmers saves 2% cost by selling directly to ADM. 104810.4 MT of Soybean was procured by ADM in year 2013-14 (from Oct'13 to Sept'14) and 78612.95 MT (from Oct'12 to Sept '13) under direct procurement programme. Pilot project on warehousing cum marketing of Soybean through spot exchange has been able to raise farmers income by 35%.

It was felt that the project has further scope of strengthening Soybean value chain by (a) creation of more FPOs (b) incentivizing FPOs to undertake activities such as custom hiring centre and seed production programme (c) convergence among State Govt of Mahrashtra, Universities, industry and FPOs regarding supply of breeder seed and building strategies for conversion of breeder to foundation and certified seeds. Connecting farmers to Commodity exchange, scientific storage under Maharashtra state warehousing corporation and linking farmers to banks as all farmers who transact with ADM now hold bank account and have improved marketability of Soybean under PPPIAD project. This should be promoted in big way.



2

Public Private Partnership for Integrated Agriculture Development (PPPIAD)



2 PPPIAD (Public Private Partnership for Integrated Agriculture Development)

Background

A number of private sector companies are active in agriculture and agri-business, directly engaging with the farmers and improving their farm incomes. While most of these initiatives are successful, they are limited to specific geographical regions, crops and limited number of farmers. On the other hand, the Government has increased funding to farmers through a variety of schemes/subsidies for improving productivity/market linkages, etc. Unfortunately, the outcomes do not commensurate with the quantum of Government spending, mainly due to the limited extension capabilities leading to gaps in execution, delivery and results.

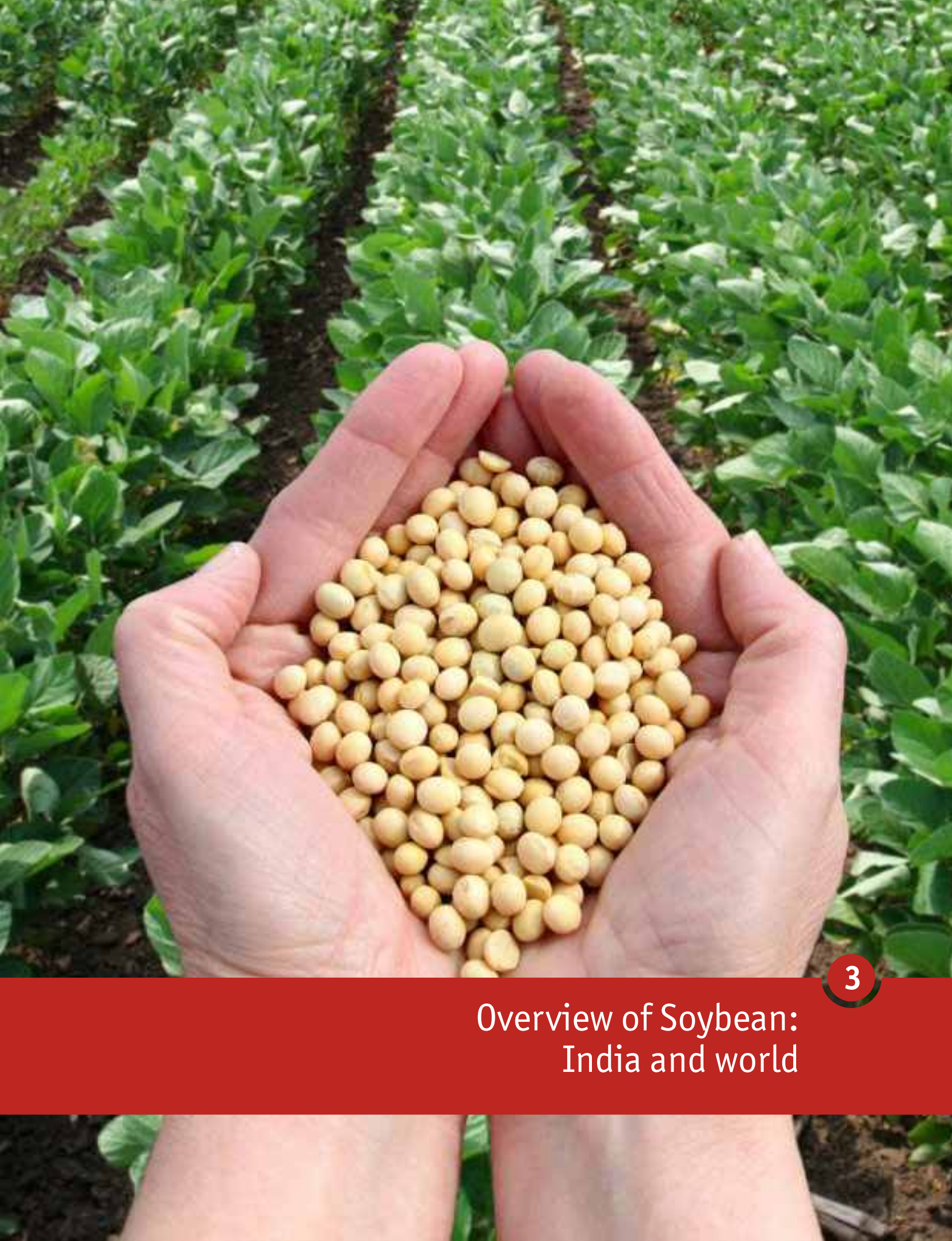
The Federation of Indian Chambers of Commerce and Industry (FICCI) has been working on devising policies and suggestions that contribute to increasing farm income, productivity and global competitiveness of Indian agriculture. Over the years, through its long standing collaboration with the Ministry of Agriculture, Government of India, FICCI has worked to promote public-private partnerships in various parts of the agriculture value chain including warehousing, farm mechanization, extension, secondary agriculture, risk management and agri-marketing reforms. FICCI was instrumental in developing a policy framework for public-private partnership for integrated agriculture development (PPPIAD) jointly with the Ministry of Agriculture, Government of India (GoI). The Ministry issued the guidelines on August 14, 2012. The main objective of the PPPIAD scheme was to facilitate large scale integrated projects led by private sector in the agriculture and allied sectors, with a view to aggregating farmers, creating critical rural infrastructure, introducing new technologies, adding value and integrating the agricultural supply chain. The PPP model aims to reduce the transaction costs and enhance the access to subsidies/schemes for farmers through a facilitator i.e. the company and motivate them to build a profitable/self-sustaining model for improving the entire supply chain.

The PPPIAD program embodies the following principles:

- Combine operational efficiencies of the private sector and the investment by the public sector;
- Quantifiable outputs with defined timelines and strategies; and
- Move away from business as usual approach replacing traditional methods of farming by modern and scientific methods.

FICCI is engaged with the Small Farmers Agri-Business Consortium (SFAC), Government of India, forpromoting the adoption of the guidelines. It is involved in increasing the awareness amongst the privatesector .

Download PPPIAD gudielines - http://www.nhm.nic.in/Archive/PPPIAD-Brochure.pdf



3

Overview of Soybean: India and world



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Overview of Soybean: India and world

Overview of Soybean

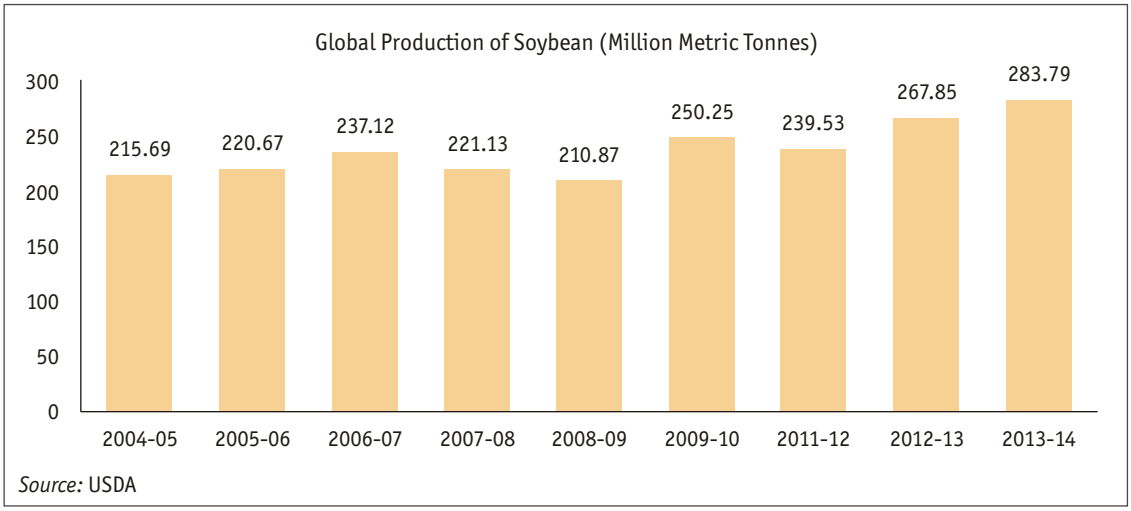
Soybean has an important place in world's oilseed cultivation scenario, due to its high productivity, profitability and vital contribution towards maintaining soil fertility. The crop also has a prominent place as the world's most important seed legume, which contributes 25% to the global vegetable oil production, about two thirds of the world's protein concentrate for livestock feeding and is a valuable ingredient in formulated feeds for poultry and fish.

About 85% of the world's soybeans are processed annually into soybean meal and oil. Approximately 98% of the soybean meal is crushed and further processed into animal feed with the balance used to make soy flour and proteins. Of the oil fraction, 95% is consumed as edible oil; the rest is used for industrial products such as fatty acids, soaps and biodiesel.

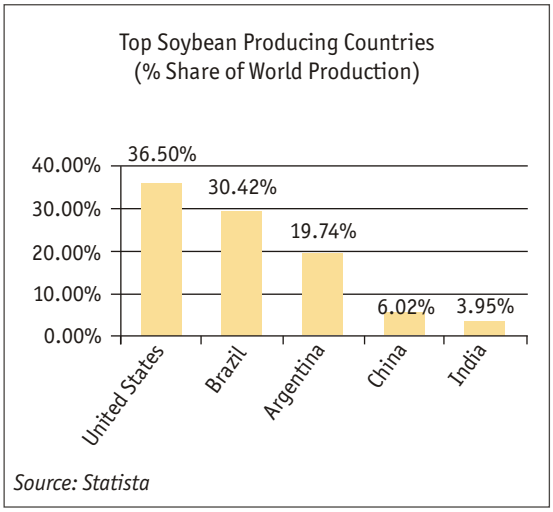
The major soybean producing nations are the United States, Brazil and Argentina. The three countries dominate global production, accounting for 80% of the world's soybean supply.

Global production of Soybean has grown at a CAGR of 2.78% from 215.69 million metric tons in 2004-05 to 283.79 million metric tons in 2013-14.

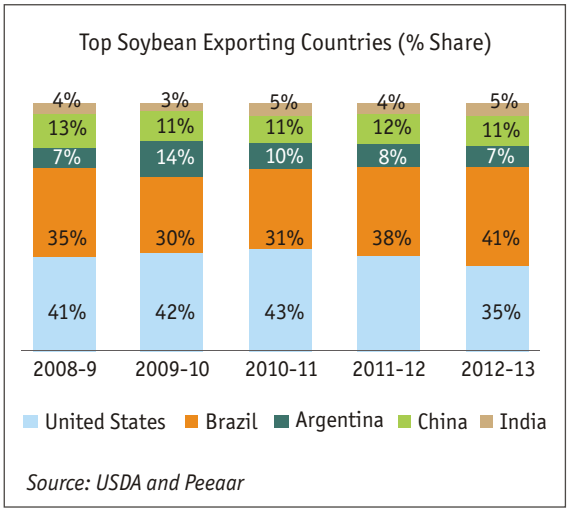
Exhibit 1: World Soybean Scenario



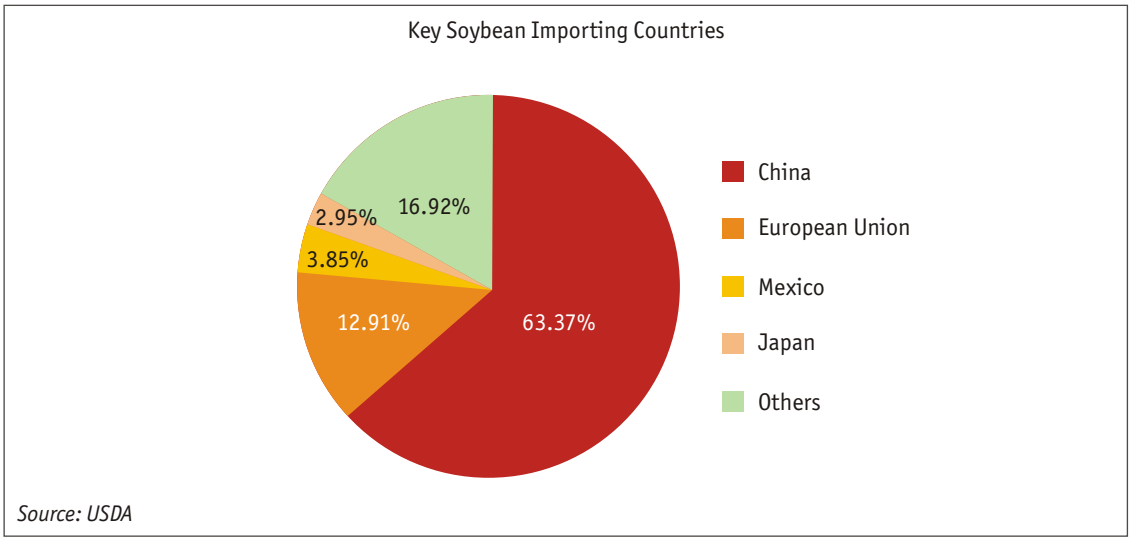
Source: USDA



Source: Statista



Source: USDA and Peeaar



Source: USDA

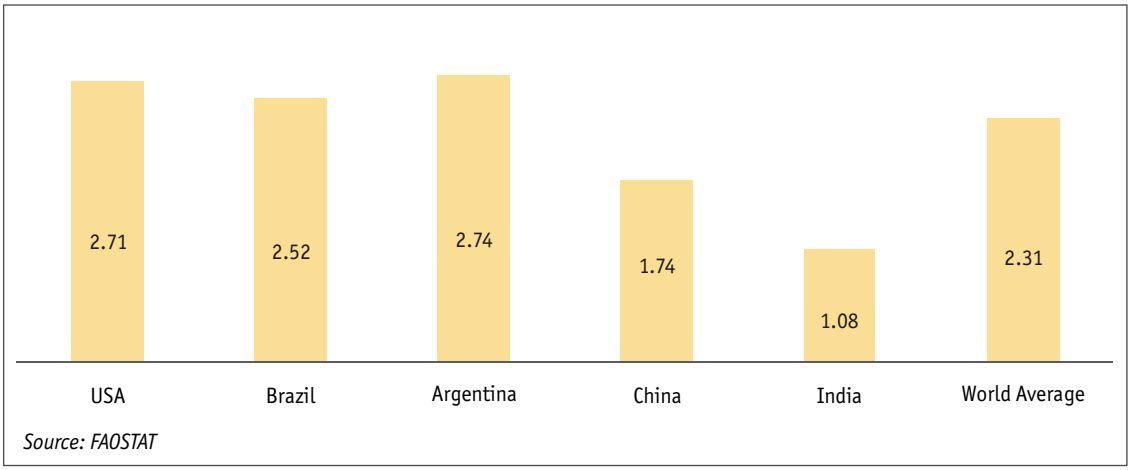
Importance of Soybean in Indian Economy

Soybean contributes significantly to the Indian edible oil pool. Presently soybean contributes 43 % to the total oilseeds and 25% to the total oil production in the country. Currently, India ranks fourth in respect to production of soybean in the world. The crop helps earn valuable foreign exchange (Rs. 62000 millions in 2012-13) by way of soya meal exports.

Soybean has largely been responsible in uplifting farmer's economic status in many pockets of the country. It usually fetches higher income to the farmers owing to the huge export market for soybean de-oiled cake.

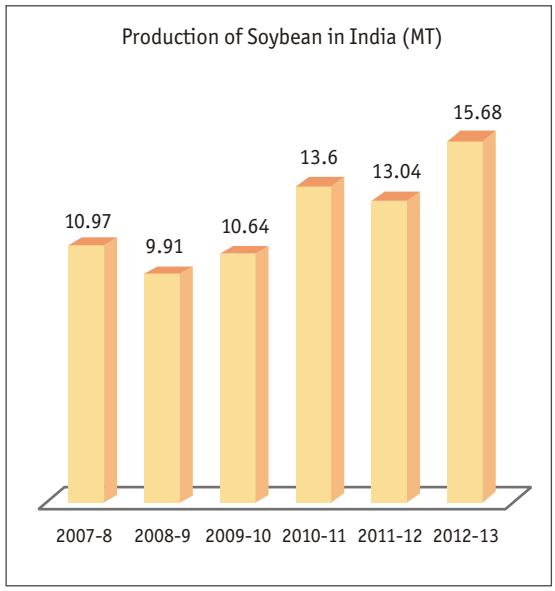
While on one hand production of Soybean in India has increased at a CAGR of 9.60 per cent from 6.87 million tonnes in 2004-05 to 15.68 million tonnes in 2012-13. On the other hand Soybean meal consumption has also increased at a CAGR of 10.82 per cent over the last eleven years from 1365 thousand million tonnes in 2004-05 to 4225 thousand million tonnes in 2014-15. Therefore to keep pace with the increasing demand it is imperative to increase the productivity level of Soybean in the country. The graph below shows that there is ample scope for improvement of productivity of Soybean crop in India when compared to other benchmark countries.

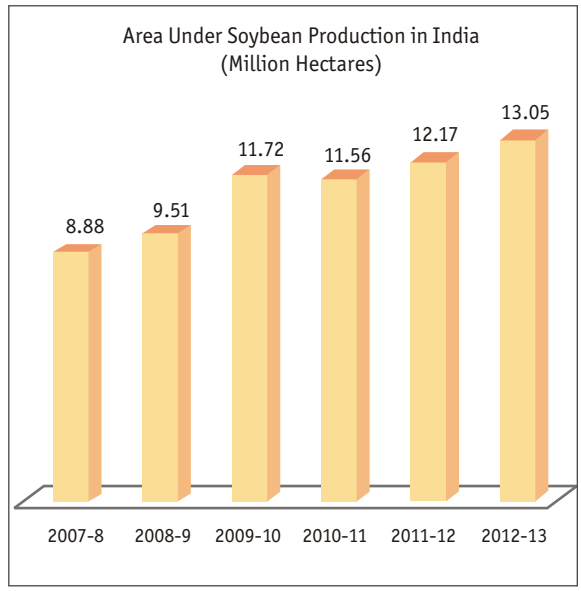
Graph 1: Yield of Soybean in Different Countries (Metric Tonnes / Hectare)



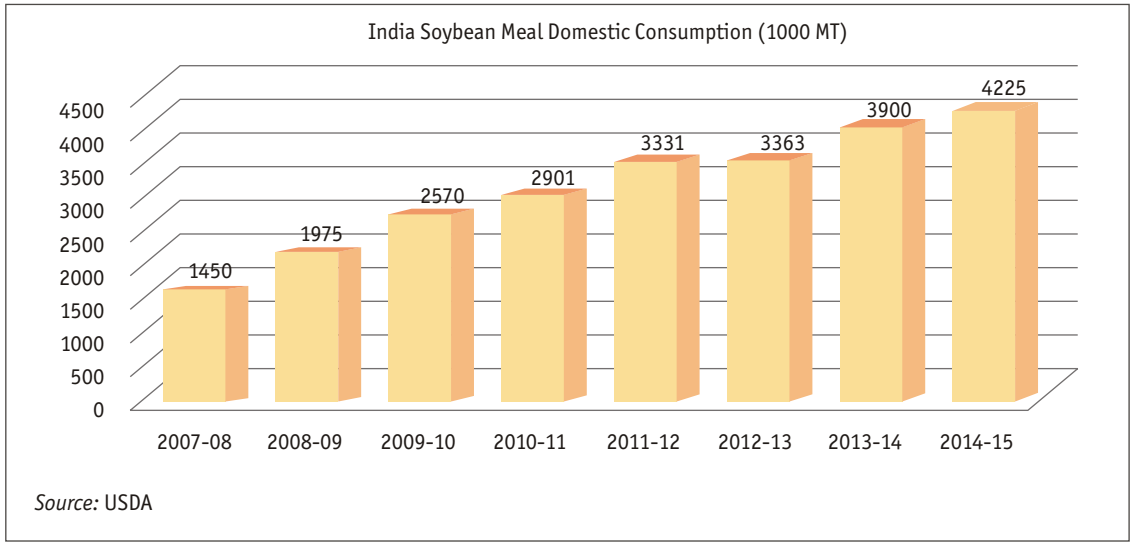
Source: FAOSTAT

Exhibit 2: Indian Soybean at a Glance

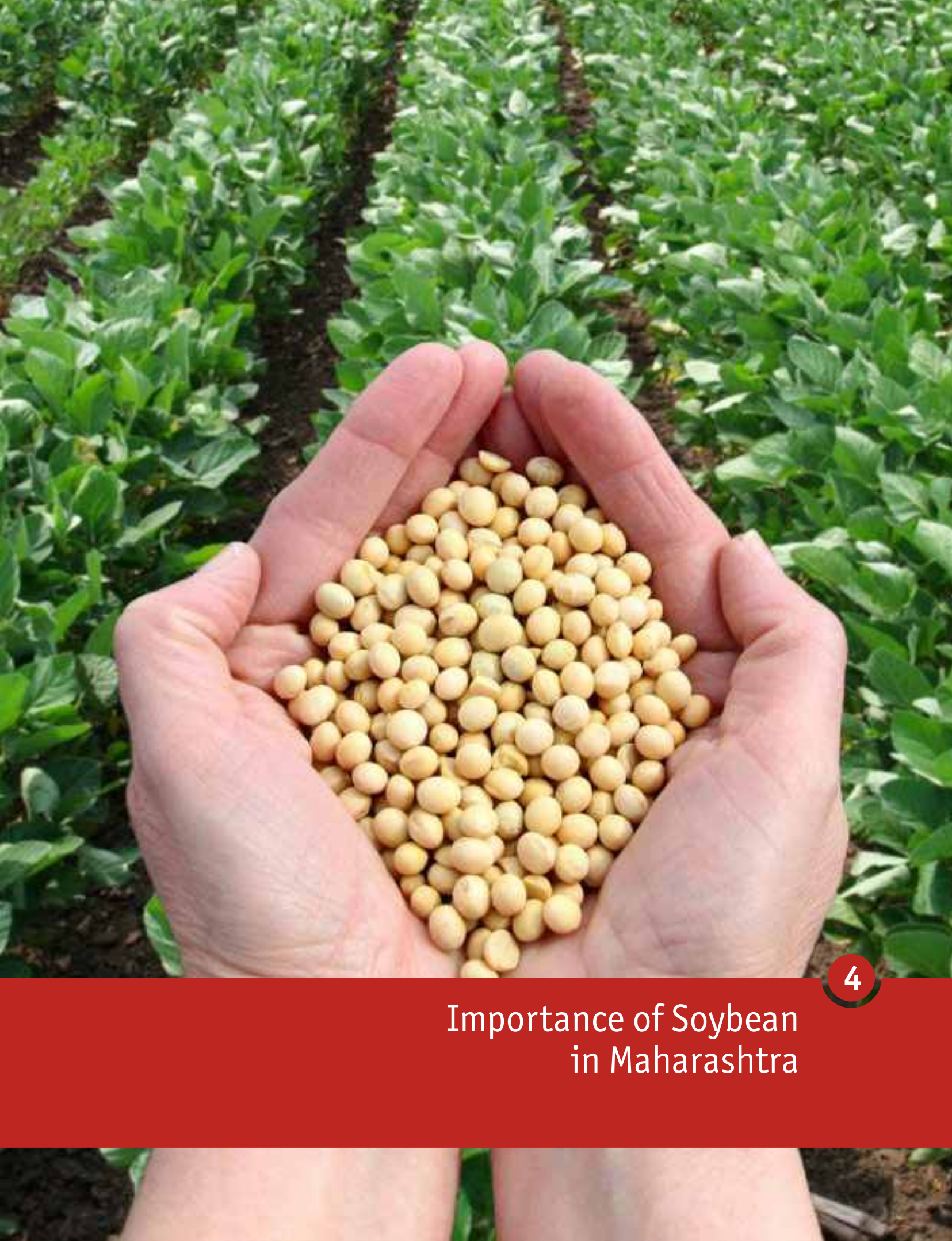




Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation.



Source: USDA



4

Importance of Soybean in Maharashtra



4

Importance of Soybean in Maharashtra

Contextualising Mahrashtra- Vast Scope in Improving Soybean Productivity

Production of soybean in India is dominated by Maharashtra and Madhya Pradesh which contribute to 89 per cent of the total Soybean production in country

India has the fifth largest vegetable oil economy in the world. After cereals, oilseeds are the second largest agricultural commodity, accounting for the 14% of the gross cropped area in the country. However, country meets its edible oil demand through imports, which accounts for almost 50% of requirement. The per capita consumption of the vegetable oil is increasing very rapidly due to increase in population and improved economic status of the population. The demand has increased to about 12.6 kg/year compared to 4 kg/year in 1961 and the projected demand for the year 2020 and 2050 is 16.443 and 19.16 kg/year respectively. To meet this demand, the country will require nearly 25.26 and 35.90 million tons of edible oil. In this scenario, soybean has played and will play a pivotal role in the future.

Production of soybean in India is dominated by Maharashtra and Madhya Pradesh which contribute 89 per cent of the total production. Rajasthan, Andhra Pradesh, Karnataka, Chhattisgarh and Gujarat contribute the remaining 11 per cent production.

Table 1: State Wise Soybean Cultivation Statistics

Name of State	Area	Production
	Lakh Hectares	Lakh MT
Madhya Pradesh	62.605	59.475
Maharashtra	38.704	48.565
Rajasthan	10.588	12.176
Andhra Pradesh	2.840	3.479
Karnataka	2.470	3.001
Chhattisgarh	1.560	1.560
Gujarat	0.930	0.977
Rest of India	0.630	0.599
Total	**120.327**	**120.832**

Source: The Soybean Processors Association of India

Mahrashtra has the potential of becoming the leader in Soybean. Having realized the fact that new technologies for sustainably increasing the crop yields are essential, PPPIAD project takes a holistic approach to provide end-to-end solutions to the Soybean growing farmers in Mahrashtra. The PPPIAD project on improving the productivity of Soybean crop in Maharashtra looks at and tries to address the major reasons for low productivity in Soybean.

Addressing these challenges on a mission mode will not only enhance productivity, profitability and quality of produce but will also improve the financial status of the farmers.

Agriculture in Maharashtra

Agriculture in Maharashtra including allied activities, accounted for 12.4% of the Gross State Domestic Product at current prices in 2011-12 but its role in State's economy is much wider as agriculture continues to be the main occupation of the state. Around 64.14% of the people are employed in agriculture and allied activities. During the XI Five Year Plan (FYP), an average growth of 4.3% was achieved against the target of 4%. The growth target for agriculture and allied activities sector in the XII FYP remains at 4%, as in the XI FYP.

Agri marketing reforms in Maharashtra

Maharashtra was one of the first few states to amend the APMC Act in 2006. The amendment of the APMC Act has enabled licensed direct marketing agencies and private markets to participate actively in direct purchase of agricultural commodities. Farmers in the state are now able to sell their produce in open markets and not constrained to the APMC (Agricultural Produce Marketing Committee) market yards.

The Maharashtra APMC Act was amended on the lines of the Model Act suggested by the Central Government. The amendments include provisions for establishment of proper markets, some elements of direct marketing, special commodity markets, farmers-consumers markets and single licensing system for all APMCs. Restrictions or regulations on storage are imposed as per the directives of the Central Government under the Essential Commodities Act.

Maharashtra has made rapid strides in reforming agriculture marketing. The amendment made to the State Agricultural Produce Marketing (Development and Regulation) Act in 2006 has opened up the market to competition and encouraged private investment in infrastructure development and agro- processing.

Improving the standard of living of Soybean growing farmers in Vidarbha region

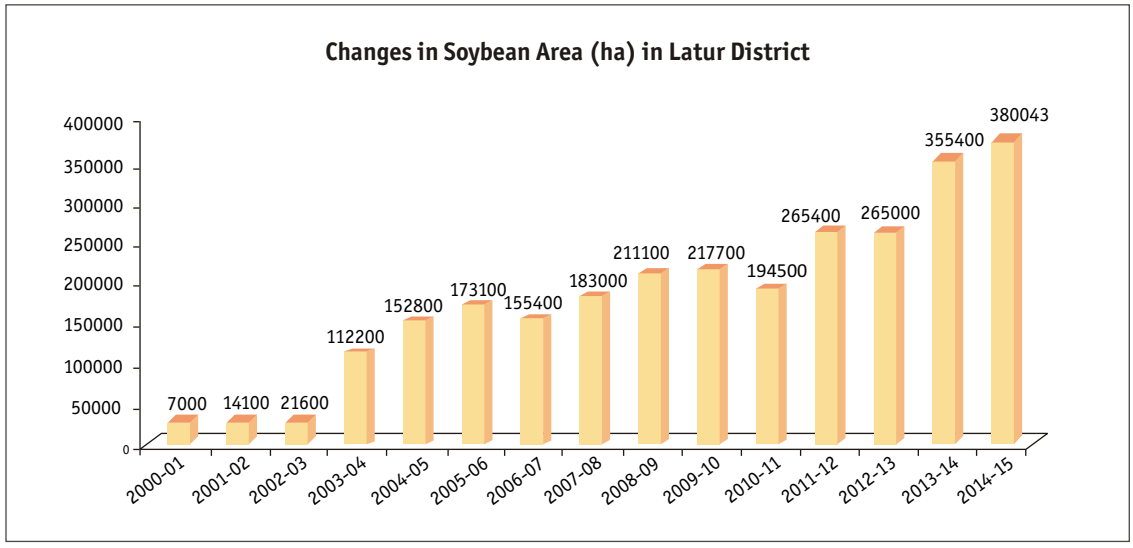
Vidarbha constitutes 15.6 percent of Maharashtra's GDP. However despite its inherent strengths and a rich resource base, it is felt that Vidarbha has not been able to attain its full potential. Government of Maharashtra is keen to improve the standard of living of farmers in Vidarbha and have taken several initiatives in this regard. The two flagship programmes launched by State Government are (a) PPPIAD programme and (b) CAIM (Convergence of Agriculture Intervention Management).

CAIM (Convergence of Agriculture Intervention Management) is a programme of the Government of Maharashtra to assist farmers in Vidarbha region of Maharashtra through capacity building modules. ADM, as a major processor of Soybean in Vidarbha, has associated with CAIM to bring soybean farmers in CAIM project areas and converge the efforts of ADM and CAIM in implementing their respective projects for the common benefit of the participating Soybean growing farmers. Under PPPIAD programme ADM and State Government of Maharashtra aimed at improving the income of small and marginal Soybean growing farmers by not only improving productivity of crop but also assisting farmers with agri input, resource conservation, better extension services and market linkages.

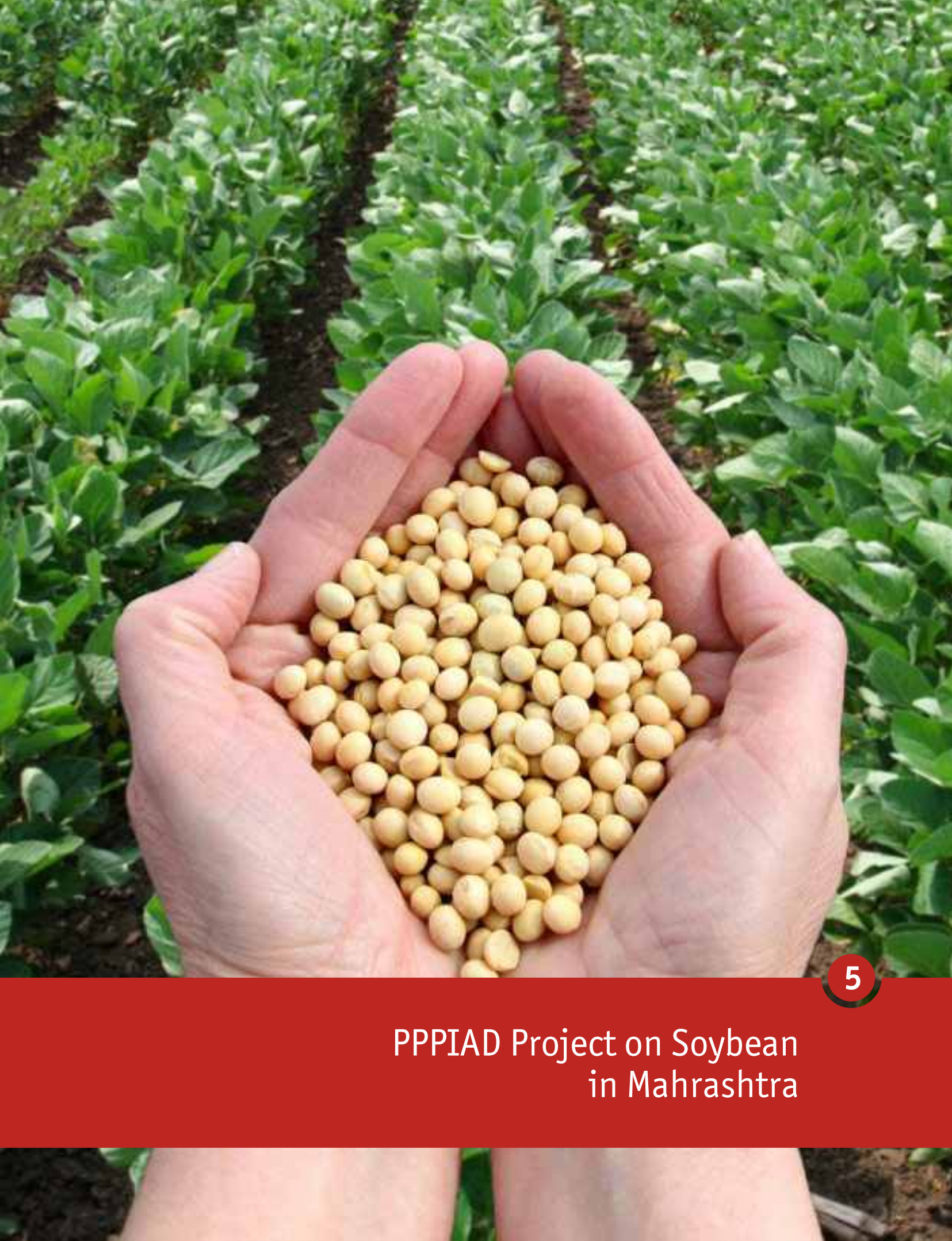
Soybean revolution in Latur district of Mahrashtra

The last fifteen years have witnessed noticeable changes in soybean cultivation in Latur with ADM entering the region and introducing agro technologies across the soybean chain. Contrary to other countries, agribusiness companies in India face the immense challenge of having to work with small farmers and fragmented land holdings. ADM has set up a very successful extension program over the past 8-9 yearsin Latur to disseminate new technologies to small and marginal farmers. Careful observation of several initiatives reveals that these efforts were not beneficial merely in terms of productivity but helped farmers with agri input, resource conservation, better extension services and market linkages. The results of this highly successful farmer program are evident in the fact that the Soybean acreage has grown from 7,000 ha in 2001 to the current380,043 hectares .The yield per hectare of soybean increased to 1.8 MT / Ha against the national average of 1.2 MT/ Ha.

Graph 2: Soybean revolution in Latur district of Mahrashtra



	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Reasons for increase/ decrease in area	ADM commenced extension services in the district and introduced soybean as kharif crop		Amendment to APMC Act & Issue of Direct Marketing License by State Government. ADM started direct procurement.		Net Realisation from sugarcane & pulses was also good.			Drought year	Higher net returns from soybean	Value chain development under PPPIAD, increase in net realisation from soybean over competing crops due to higher awareness, higher yields.		
Avg Rate/Qtl	1,215	1,372	1,426	1,683	1,763	2,087	2,115	2,051	2,288	3,336	4,017	
MSP Rs /Qtl	930	1000	1010	1020	1050	1390	1390	1440	1690	2240	2560	2560



5

PPPIAD Project on Soybean in Mahrashtra



5

PPPIAD Project on Soybean in Mahrashtra

(A) Project objectives and activities

Current average yield of Soybean is significantly lower compared to other countries. Therefore there is significant scope to increase the productivity through modern agro technologies. Under the PPPIAD Project with State Government of Maharashtra, ADM introduced new technologies for Soybean cultivation.

Regardless of the extent of the project, it is important to measure the success of the project implemented under PPPIAD. Undertaking a review of each project provides an opportunity to evaluate if the project is meeting the desired objectives – increasing productivity, increasing farmer incomes, and development of the value chain. In this review the endeavor has been to provide valuable information on whether the project met its target objectives, the delivery of outputs and the level of project scope, time, cost and quality. FICCI, which has been involved in the formulation of the PPPIAD guidelines with the Ministry of Agriculture, Government of India was therefore entrusted the task of evaluating the pilot project on increasing productivity of Soybean in Maharashtra and also for dissemination and advocacy.

The evaluation study assesses the objectives (mentioned below) set by the project team for year 2012 and 2013

1. To increase the net income to the farmer per acre of crop by – providing better quality, High-Yielding varieties of seed, seed production programs, technology transfer and customized agri-extension services.

2. To increase net income to farmer by providing him with an alternative marketing channel by way of direct procurement from the farmer.

(B) Project Components in 2012-13 and 2013-14

Soybean is an important Kharif oilseed in Maharashtra with approx 20% of the kharif area under Soybean Production in 2012-13. Under this project ADM and State Government of Maharashtra introduced new agro technologies in soybean cultivation. The major initiatives are given in table below:

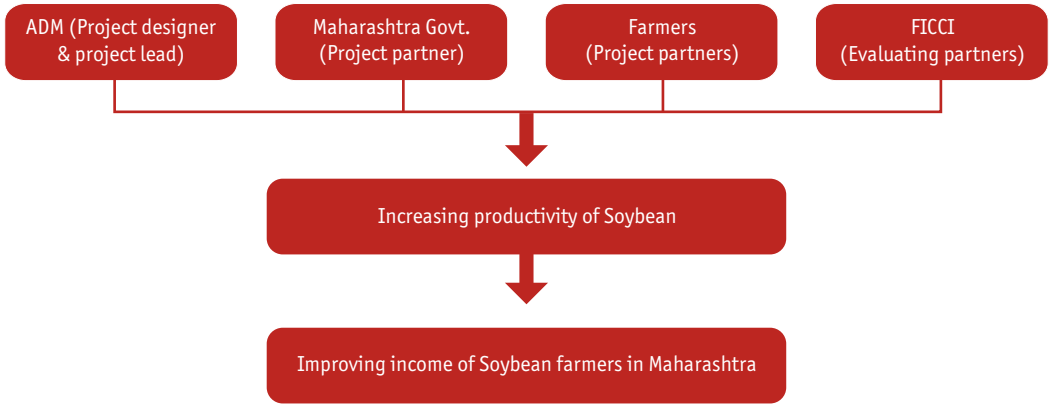
Table 2: Initiatives undertaken in two years project period of PPPIAD

Intervention	2012-13	2013-14
Soil Testing	✓	✓
Distribution of Certified Seed	✓	✓
Seed Production (Breeder to Foundation)	✓	✓
Seed Production (Foundation to Certified)		✓
Front Line Demonstration		✓
Training (Seed Production Training)	✓	✓
Training on Value Chain Awareness		✓
Farmer Linkage with Commodity Exchange		✓
Farm Mechanization		✓

(C) Role of different stakeholders in project

Different stakeholders have played their part in marking improvement in the overall value chain of soybean in Maharashtra. ADM have used meaningful extension models to empower farmers with knowledge and technology. The farm extension program by ADM has increased the yield of Soybean in Latur to 1.8 mt/ha as against national average of 1.2 MT/ha.Government on the other hand has played an instrumental role in providing financial support to the project:

Graph 3: Role of Various Stakeholders in Project



C.1) Support Provided by State Governmnet of Mahrashtra

Table 3: Financial support provided by State Govt of Maharashtra in project

S. No	Activity	Year 2012-13		Year 2013-14	
	Unit: INR (lakhs)	Outlay	Subsidy	Outlay	Subsidy
1	Distribution of Certified Seed	3150	0	806.4	9.65
2	Seed Production (Breeder to Foundation)			51.2	2.53
3	Seed Production (Foundation to Certified)	288.5	36.91	367.1	29.19
4	Front Line Demonstration	0	0	718	19.14
5	Training (Seed Production Training)	49	7.1	29	3.83
6	Training Value Chain Awareness			380	7.58
7	Farmer Linkage with Commodity Exchange			24	3.1
8	Farm Mechanization	0	0	2	36.2

Although the growth in the area and production of soybean in India had been impressive subsequent to its introduction as commercial crop in 1970s, the productivity enhancement could not keep pace. Low yields and lack of infrastructure are keeping Indian soybean from realizing its true potential. Having realized the fact that there is significant opportunity in increasing the productivity of the crop which contributes significantly to the edible oil pool of the country, State Government of Maharashtra piloted a PPPIAD project on improving productivity of soybean with an integrated approach.

PPPIAD project not only aims at improving productivity of Soybean, but also undertakes allied initiatives to provide end to end solutions to farmers. Financial support provided by State Government of Maharashtra under various interventions in PPPIAD project on Soybean is mentioned in the table above. There is a well-defined institutional mechanism created both at the government and company level to oversee the implementation and monitor the progress of the project with periodic reporting and assessment across all levels.

The project combines operational efficiency of private sector and investment by public sector to bring fore noticeable changes in soybean value chain through an integrated approach.

(C.2) ADM Initiative

ADM implementing the value chain development of Soybean project with Agriculture department, State Government of Maharashtra under PPPIAD scheme has developed an efficient model to educate farmers in soybean cultivation beginning from land preparation to harvesting. ADM officials have given importance to details in improving production through training and encouraging farmers to adopt best practices. The project has enabled the aggregation of farmers into groups and added value for integrating the supply chain for Soybean. Various initiatives and responsibilities against each intervention taken by ADM under the project is mentioned in the table below.

Table 4 : Support provided by ADM in PPPIAD project

Intervention	ADM Responsibilities
1. Soil Testing and soil nutrient management	• Ensures that farmers are educated on the proper soil sampling methodology • Ensures that the soil test results are provided to farmers in a timely fashion • Coordinates the samples and test results for the farmers
2. Seed Production	• Selection of Seed Production Farmers. • Training selected farmers on seed production, plot registration for certification etc. • Processing the harvested seeds, grading, bagging, tagging and sending samples for lab test and certification. • Obtaining release orders • Facilitate warehousing, processing, bagging, labelling and certification process of the seeds
3. Distribution of certified seeds (DS-228, MAUS-71 & JS-9752)	• Distribution of certified seeds produced to farmers at subsidized rates.
4. Procurements & marketing support	• Incur the infrastructure expenses to buy approximately 1,15,000 MT of Soybeans • Procure soybeans directly from farmers under direct marketing license. • Train the farmers on all aspects of Direct procurement through awareness meetings
5. Linkage of farmers with Commodity exchange	• Organized farmers into informal group. • Training farmers for warehousing beans so as to sell at the best price at a future date through NCDEX-NSPOT • Provide buying support as buyer in the Spot Exchange whenever farmer wants to sell on the Exchange.
6. Front line demonstrations (FLD)	• Farmer's selection for FLD • Distribution of subsidized inputs as per government guidelines
7. Farm Mechanization	• Formation of FPOs • Assist FPOs in registering as a legal entity, • Assist FPOs in preparation of project report for obtaining financial assistance from Banks. • Explain benefits of mechanization to user farmers.

C.3 Farmer Contribution

Soybean continues to be the preferred Kharif crop for farmers due to its high net returns. Small-scale and marginal farmers constitute almost half of the farmers of Maharashtra who depend on soybean as a Kharif crop.

An increase in the yield of soybean could have significant impact on the livelihoods of such small and marginal farmers. Soybean is grown as a rainfed crop in Kharif Season, as

- Soybean is a high yielding crop compared to other crops
- Water Requirement of the crop is very less (110 mm),
- Time duration is very less (3 months and 20 Days)
- Market rates of soybean are economical.

While aiming to increase the yield of soybean in major soybean producing states of the country it is important to trace the reasons for low productivity. Few such reasons relates to non-adoption of modern agro technologies such as plant protection technologies like sowing of seeds without treatment, inadequate weed control, high insect pest infestation and disease infection etc. Therefore, PPPIAD project on Soybean aimed at disseminating awareness among soybean growing farmers in Maharashtra regarding new agro technologies in soybean cultivation.

PPPIAD project has given importance to a farmer participatory approach in implementing the set objectives. For instance, availability of seed of improved varieties is a big concern in soybean cultivation. Concept of farmers 'participatory approach in seed production of improved varieties of soybean is one of the successful initiatives of the project.

Table 5: Participation of farmers in PPPIAD Soybean project

Intervention	Farmer Participation
1 Soil Testing and soil nutrient management	• Follow the methodology of soil sampling as demonstrated to them and delivering it at collection centres of ADM. • Follow the nutrients application as suggested in soil test reports.
2 Seed Production	• Follow the registration process for certification • Follow the best practices • Deliver harvested seeds to seed production unit of ADM • Maintain all required documentation
3 Distribution of certified seeds (DS-228, MAUS-71 & JS-9752)	• Use high yielding certified seeds and follow the best practices. • Maintain documentation for claiming the subsidy provided by the government through ADM
4 Front line demonstrations	• Make best use of input kits provided by ADM. • Follow the best practices as demonstrated during training. • Demonstrate the benefits to other farmers in the village.
5 Farm Mechanization	• Make use of mechanized operations • Save the cost • Participate in reducing inefficiencies of manual operations.



6

Research Methodology and Approach



6

Research Methodology and Approach

(A) Research Objectives

FICCI study on impact of Soybean PPPIAD project in Maharashtra aims at evaluating and documenting the major initiatives taken by ADM in Maharashtra on strengthening Soybean value chain. These are as follows:

- To assess the outcomes of the project in terms of increase in productivity of Soybean.
- Document processes of linking farmers with input and output markets.
- Document a process which enable a successful partnership between government, private industry and farmers in improving Soybean productivity.

(B) Approach and Methodology

The project through a series of well-designed intervention approaches worked on various aspects beginning with the selection of farmers, training and capacity building, field demonstrations and appropriate package of practices required for the Soybean production. These intervention approaches helped in the delivery of the project by preparing the farmers and developing their knowledge and skills. Approaches adopted during the project are indicated below.

1) Discussion with Dr. Sudhir Kumar Goel, Additional Chief Secretary, Govt. of Maharashtra: A discussion with Dr. Goel was held in Mumbai to understand the initiation of the PPP project in the state and get his insights on the study design and methodology.

2) Review of secondary literature and developing the set of questions: Secondary information was obtained from the PPPIAD secretariat based in the Department of Agriculture, Government of Maharashtra and ADM. The documents included the proposal, baseline study, progress reports and presentations. Based on the review of literature and baseline information, focused group discussions were organized for collecting responses from the farmers on important parameters like inputs, capacity building, increase in yield and incomes, procurement and feedback on the delivery of the project.

3) Visits to the project sites for primary survey: FICCI team visited three districts (Osmanabad, Beed, Latur) to undertake focused group discussions with farmers and officials of the project implementation team (both government and ADM officials). The list of respondents is given in the Annexure.

(4) Interactions with officials of Maharashtra Government and ADM officials were held to understand the delivery of the project and elucidate responses on the project implementation, outcomes and improvement areas. Discussions were also undertaken to understand the perception of the government and the private sector on key areas requiring attention in scaling up the project.

5) Collation of findings and developing of the report: Based on the review of secondary literature, results of the focused group discussions with farmers, company officials and officials from state government, the report was prepared.

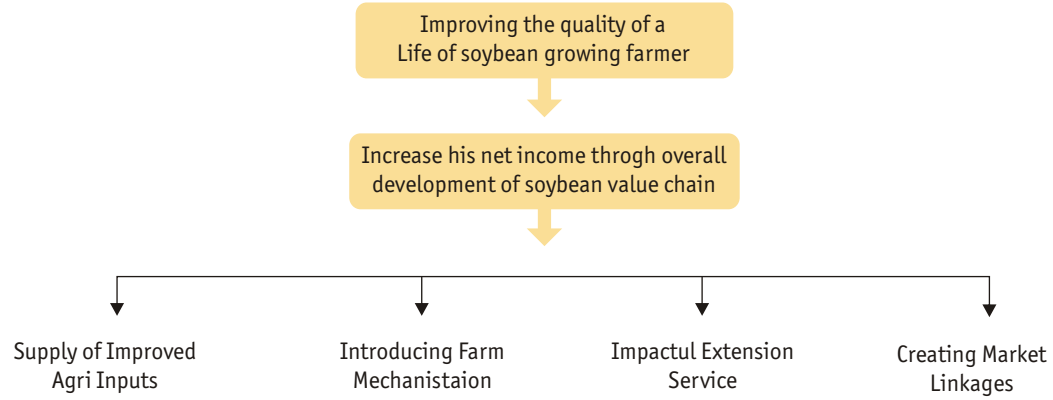
(C) Primary survey detail: Sample composition and sample size

Table 6: Sample composition and sample size of primary survey

District	Osmanabad, Beed, Latur
Stakeholders surveyed	
• Farmers	258
• Government officials	21
• Bank and MSWC Officials	4
• ADM officials	20
Total Sample size	303

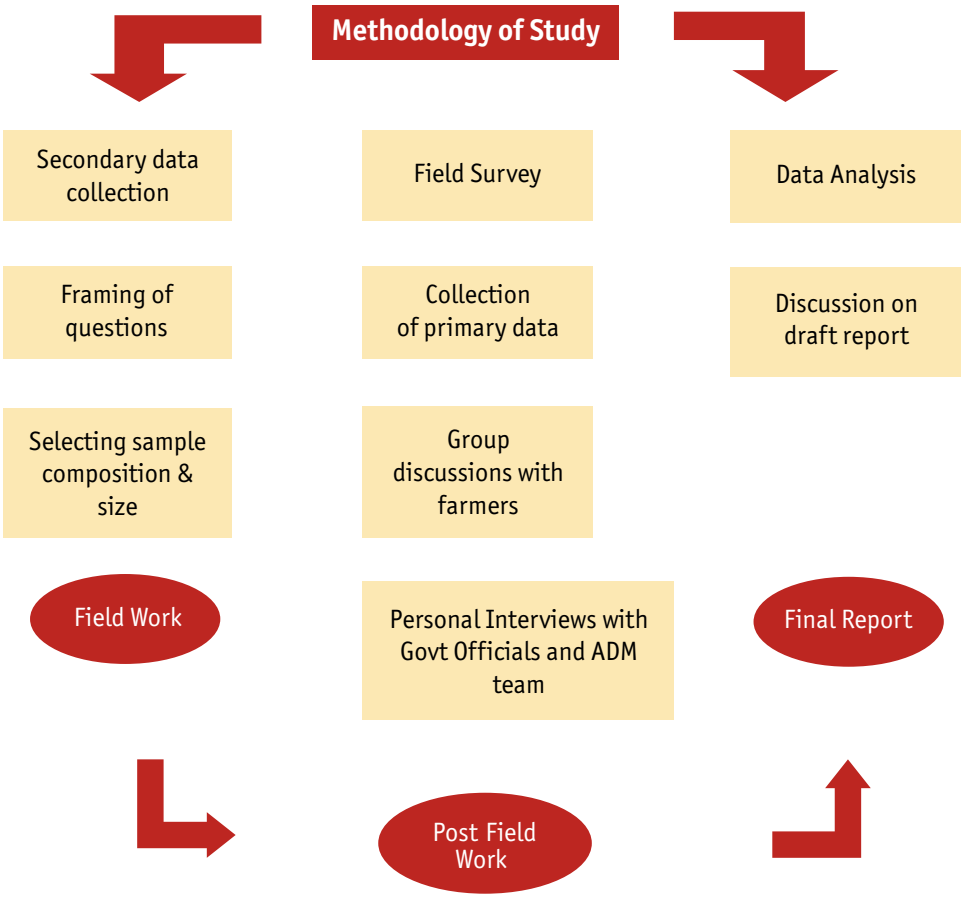
(D) Expected outcome of the project

While access to hybrids and right variety of seeds might be seen as the first step towards addressing the productivity issues in Soybean, clearly any solution is bound to be incomplete without providing end- to –end solutions to farmers.

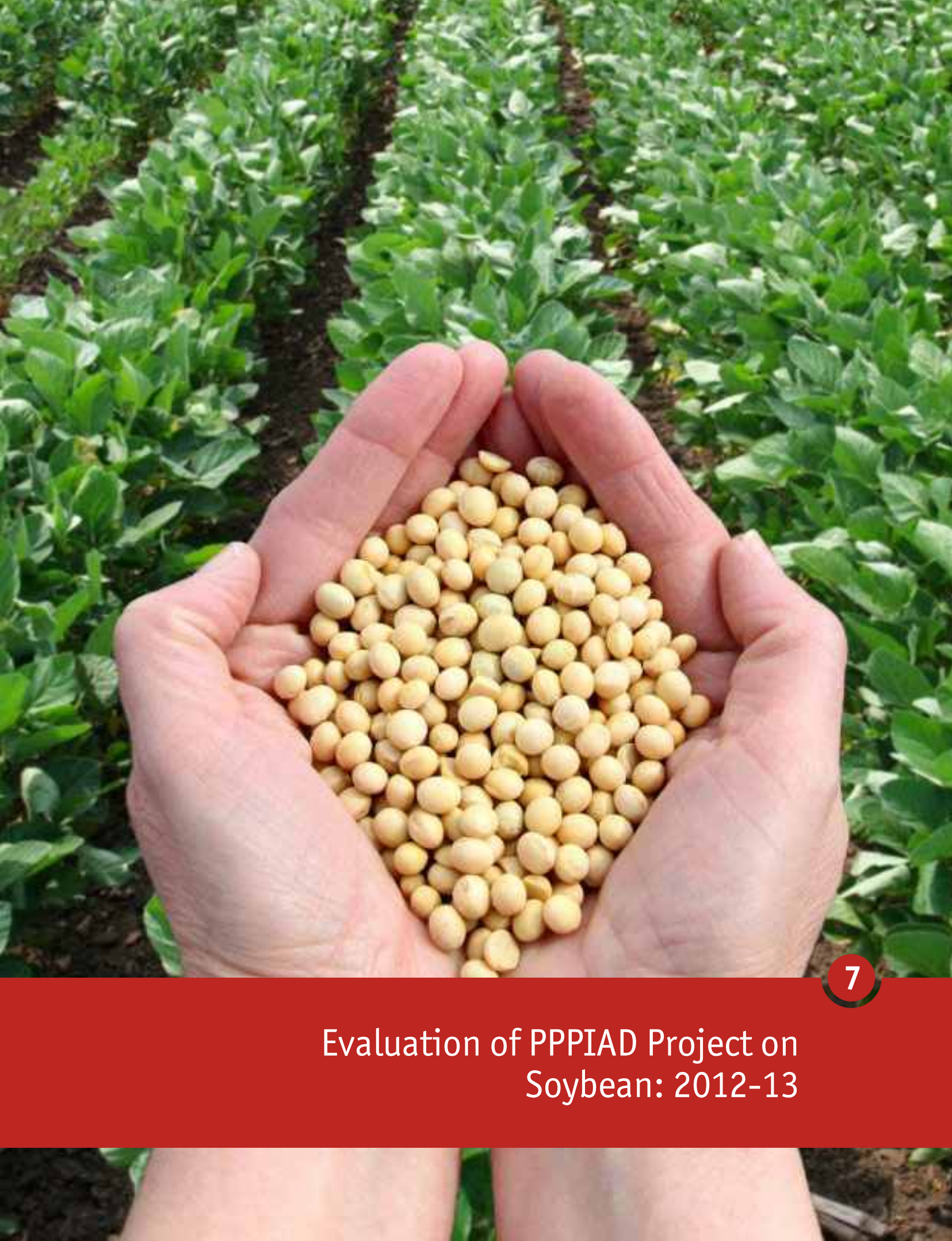


A wide spectrum of extension activities are provided under PPPIAD scheme to impart knowledge and know-how to farmers through initiatives like field demonstrations and dedicated farmer trainings. In addition, access to quality inputs enable farmers to increase the farm productivity. These efforts are designed to create better quality agricultural produce which can get a higher value in the market.

Methodology:



The report presents a matrix of performance measure worksheet to evaluate the outcomes of the project interventions. The team has tried to validate the outcomes through some measurable outcomes wherever possible.



7

Evaluation of PPPIAD Project on Soybean: 2012-13

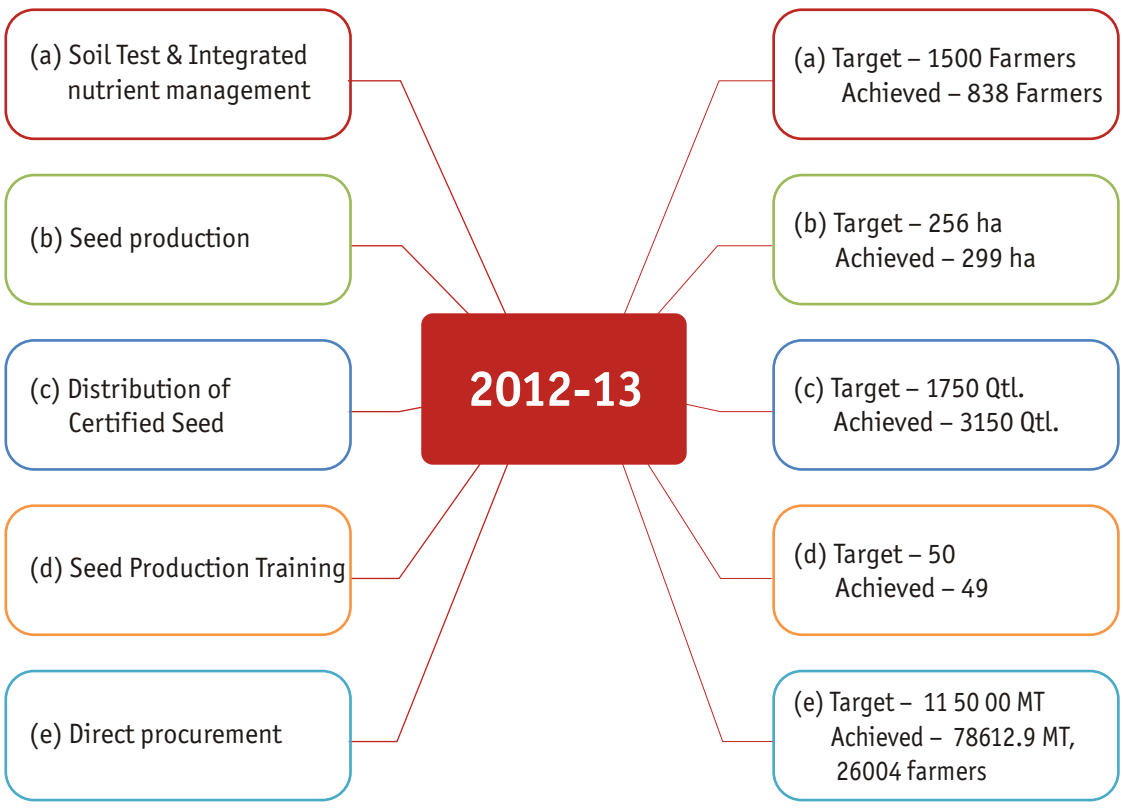


7

Evaluation of PPPIAD Project on Soybean: 2012-13

PPPIAD Project on Soybean
Snapshot and Outcome
Evaluation period: 2012-13
Districts: Latur, Osmanabad, Beed, Akola , Nagpur

Project Components and Target 2012-13



Component 1: Soil Test and Integrated Nutrient Management (2012-13)

Objective : Rationalization of fertilizer usage
Intervention : Soil testing based application of fertilizer dose
Target/achieved : 1500/838
(Unit: No of farmers)

Snapshot of Intervention

Soybean growing farmers under PPPIAD program are trained about benefits of soil testing and right method of collecting samples from their fields. Analysis of soil sample helps farmer in understanding nutrient availability in soil and farmers can accordingly plan for fertilizer application. ADM ensures that farmers are educated on the proper soil sampling methodology and soil test results are provided to farmers on time. In other words ADM coordinates the samples and test results for the farmers.

Outcome

The ultimate aim of the PPPIAD project is to improve income of soybean growing farmers by adoption of modern agronomic practices. One of the major expenses in producing soybean is fertilizer cost. Farmers were asked about the benefits of soil testing and its impact on cost of production. As per the response received by farmers soil test based fertilizer application helped them in saving fertilizer cost as they now use less urea for per acre cultivation of soybean. Soil testing activity done under PPPIAD in year 2012-13 in different districts are as under:

Table 7: Detail of Soil Testing Activity Under PPPIAD (2012-13)

Districts	Farmers	No of villages
Latur	196	107
Osmanabad	191	25
Beed	101	12
Akola	300	35
Nagpur	50	11
Total	**838**	**190**

Component 2: Soybean Seed Production (2012-13)

Objective : Increasing the availability of high quality planting seeds
Approach : Farmers participatory approach in seed production
Target/achieved : 256 ha/ 299 ha
Unit: Area in ha

Snapshot of Intervention

Seed Production under PPPIAD scheme: In order to achieve the desired productivity, certified seed of soybean varieties should be made available to the farmers. Concept of farmers participatory approach in seed production of improved varieties is being piloted under the scheme. The project aims to organize farmers group to take up production of sowing seeds and help them to be self-reliant in sourcing high quality planting seeds.

Outcome

Industry officials were asked about the three major problems in the soybean seed availability in the country. The three major concerns as answered by respondents are

1. Inadequate availability of quality seeds of improved varieties
2. Conversion of breeder seed to foundation and certified seed is low
3. Lack of advanced seed planning

The main reason for the continued low use of quality seed has been inadequate access. Farmers are trained to convert breeder seed to foundation seed and later foundation to certified seed under the programme. The area (seed plots) under seed production programme for year 2012-13 is given in table below.

Table 8: Soybean seed production in 2012-13 in three districts

Districts	Breeder to Foundation (ha)	Foundation to Certified (ha)
Latur	11.2	207
Osmanabad	NA	47.2
Beed	NA	33.6
Akola	NA	NA
Nagpur	NA	NA
Total	**11.2**	**288**

Component 3: Distribution of Certified seed (2012-13)

Objective : Assist farmers to access quality inputs
Approach : DS-228 and MAUS-71 seed variety distributed to farmers
Target/achieved : 1750 qtl/3150 qtl

Snapshot of Intervention

Promotion of High yielding seed varieties under project: One of the core reasons for low productivity of soybean crop in previous years is the inadequate access of quality seeds to farmers. It needs no emphasis that use of low quality seed adversely affects crop productivity. Under the PPPIAD project high yielding seed variety (DS-228 and MAUS-71 developed by State Agriculture University is provided to farmers. 3150 qtl of high yielding certified seeds were distributed directly to farmers.

Outcome

In majority of the surveyed districts it was found that variety JS 335 was used traditionally which was of short duration and gave lesser yield. Variety DS 228 and MAUS- 71 which were high yielding, had bold seed and had good marketability. PPPIAD project in 2013 aimed at introducing these varieties at a large scale to farmers.

Farmers were asked about the improvement in yield by using these improved varities. Farmers were satisfied by the reported increase in the productivity of crop by using these varieties. The sowing of quality seeds at right time is instrumental in increasing the yield per hectare of soybean crop in PPPIAD covered areas.

Table 9: Improvement in Productivity by use of MAUS-71 and DS-228.

Variety	Introduced in year	Qtl/ha	Duration (days)	Special character
MAUS 71	2002	22	93-100	Resistance to pod breaking
DS 228	2005	26	95-100	Bold seed, good marketability

Component 4: Farmer Training Programme in Seed Production: (2012-13)

Objective	:	Skill development of farmers in seed production
Intervention	:	To provide step by step technical guidance to farmers in seed production from sowing stage till certification.
Target/achieved (No of trainings)	:	50/49

Snapshot of Intervention

Purpose: Having established the fact that availability of certified soybean seed play a very crucial role in improving productivity of soybean , PPPIAD project focused on training farmers in seed production.

Outcome

For implementing this programme ADM identified lead farmers for providing training in seed production. Department of Agriculture provided breeder seed to farmers to undertake the seed production programme and ADM officials provided step by step technical guidance to farmers in seed production from sowing till certification. The number of farmers trained in soybean seed production and number of villages covered is as under:

Table 10: Farmer training programme in three surveyed districts

Districts	Farmers	Villages	No of training programme
Latur	2664	29	29
Osmanabad	941	10	10
Beed	1014	10	10
Total	4619	49	49

Component 5: Direct Procurment (2012-13)

Objective : Providing marketing support to farmers
Intervention : Creating linkages to purchase directly from farmers
Target/achieved : 115000 MT/78612.95 MT) (Unit: Qty procured (MT)
Procurement from October'2012 to September 2013)
No of farmers: 26004 farmers
Value of procurement:273 crores

Snapshot of Intervention

With an aim to create market linkage for soybean, PPPIAD project introduced direct procurement from buyers which helped farmers to reduce cost of intermediaries and indirectly raise farmer income.

Outcome

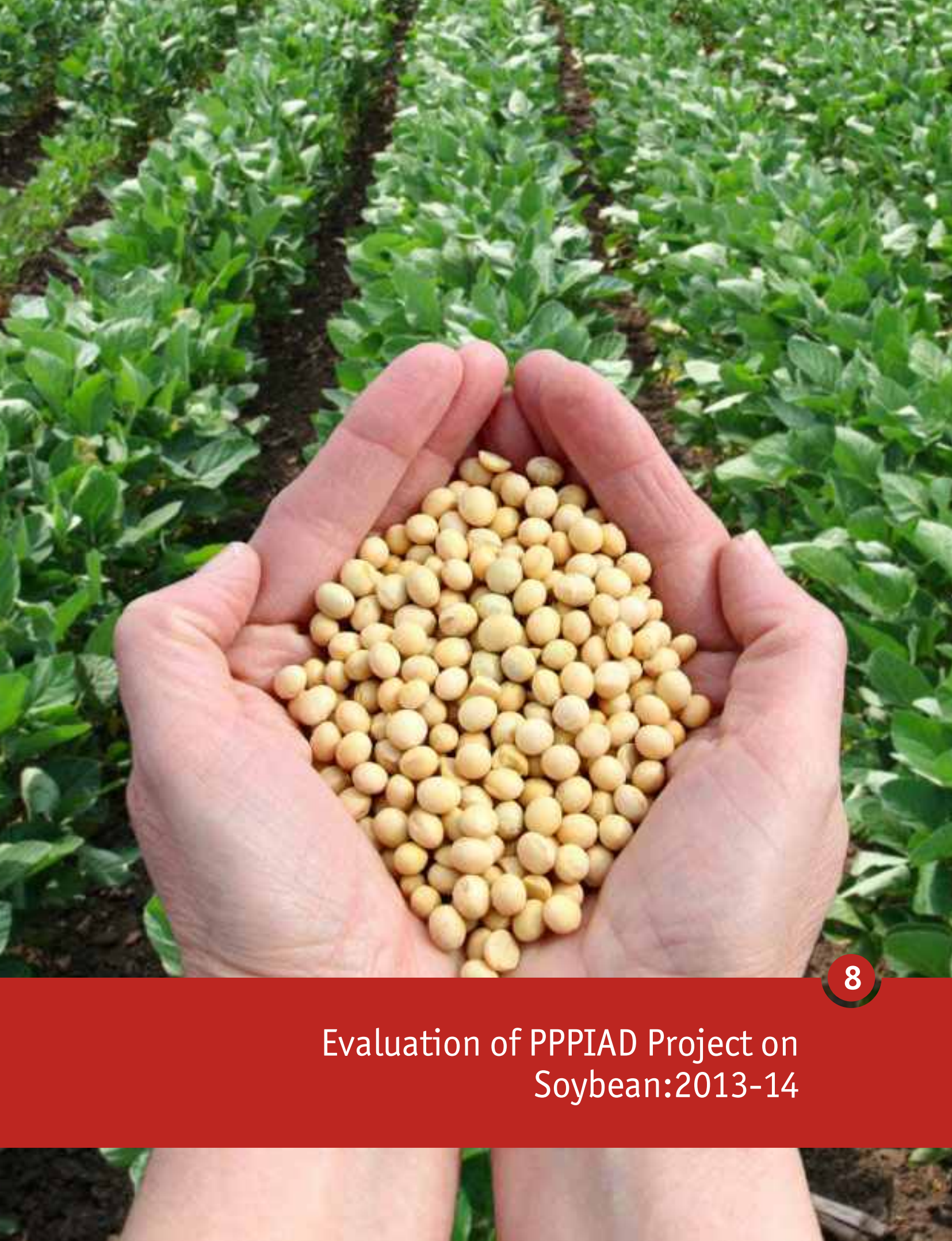
ADM has established soybean procurement centres near villages, where farmers sold their produce and got higher returns as compared to local mandis. Approx 26004 farmers benefited from the procurement. The process adopted at procurement centres includes issue of ADM kissan card to farmers. There are no middlemen in the operations as in the case with local mandis, thereby saving money (mandi fees, other transactions costs etc), time and harassment to the farmers.

Table 11: Year wise detail of ADM procurement centers in different districts in Maharashtra

Districts	2012-13	2013-14	2014-15 (Proposed)
Latur	3	5	8
Osmanabad	1	2	5
Beed		1	4
Akola	1	2	5
Nagpur	1	1	5
Wardha			3
Amravati			3
Washim			3
Yavatmal			1
TOTAL	6	11	38

Table 12: Procurement details from Oct.' 2012- Sept.' 2013

Districts	Farmers	Procurement (MT)	Value of purchase (INR)
Latur	23080	68089	2371 119 749
Akola	2924	10523	360 917 937
TOTAL	26004	78612.95	2732 037 686 or (273.2 crores)



8

Evaluation of PPPIAD Project on Soybean:2013-14

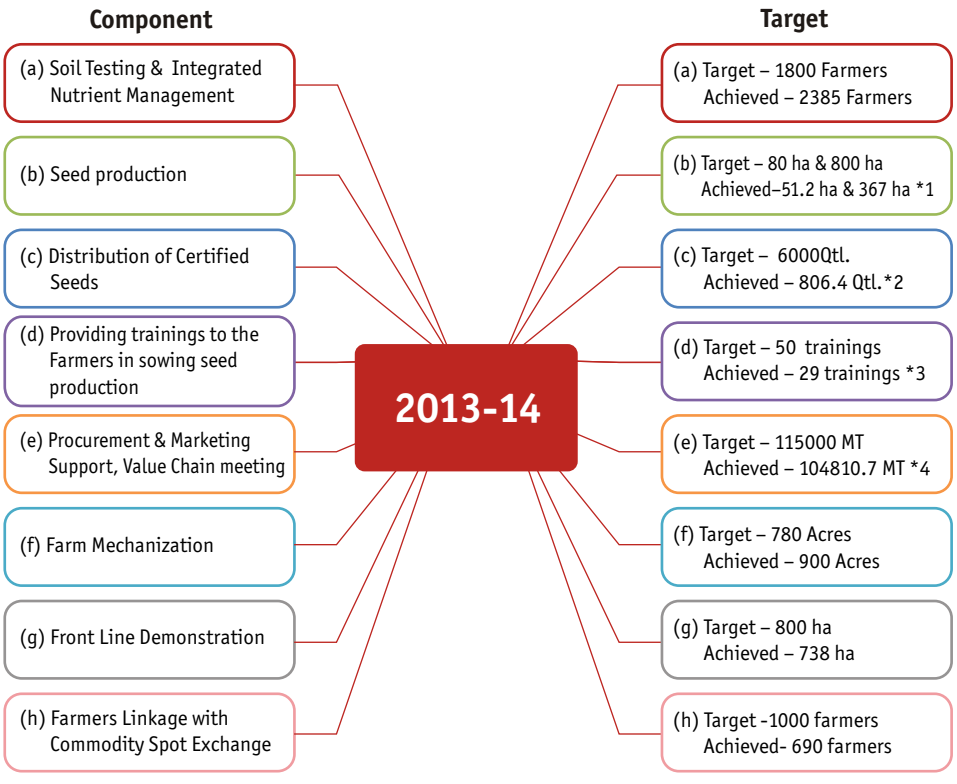


8

Evaluation of PPPIAD Project on Soybean: 2013-14

PPPIAD Project on Soybean Snapshot and Outcome Evaluation period: 2013-14
Districts: Latur, Osmanabad, Beed, Akola , Nagpur

Project Components and Target 2013-14



Note:

*1= Due to non-availability of breeder seed from Universities seed production programme could not be taken in all targeted areas.

*2= Seeds were distributed according to availability

*3= Since breeder seed quantity was less, so were the number of farmers . All farmers could be trained within 29 sessions.

*4= Value Chain meeting and training:425 trainings organised for 17477 farmers.

Project Components and Outcome of Interventions (2013-14)

Component 1: Soil Testing and Integrated Nutrient Management (2013-14)

Objective	:	Rationalization of fertilizer use
Approach	:	Soil test based fertilizer application
Target /achieved (Unit: No of farmers)	:	1800 farmers/2385 farmers

Snapshot of Intervention

PPPIAD project aims at training farmers about benefits of soil testing and right method of collecting samples. The results of the soil testing are made available to the farmers and they are advised on the right amount of fertilizer dosage based on requirement of the soil.

Methodology: Criteria for selection was to obtain 4 to 6 samples from all directions of village which also helps in understanding soil health of the village. These collected samples ware submitted to RCF, Laboratory in Ahmednagar and IFFCO Laboratory in Aurangabad. Soil Testing Van from RCF also visited several villages during the project period. Soil test results received from laboratory ware distributed to farmers on one to one basis.

Outcome

Soil Testing has been done for 2385 soybean growing farmers in year 2013-14. Soil test based crop-specific fertilizer use can have a major positive effect on improving cost of production along with saving costs. Awareness among farmers regarding benefits of soil testing based fertilizer application has increased during the PPPAID project. Farmers saved Rs 350 per acre (i.e the cost of 1 bag of 50 kg of Urea) due to soil testing based fertilizer application. Farmers were also communicated about micro nutrient usage for Soybean e.g. Usage of Sulphar 20 Kg per Ha is recommended for Soybean post soil testing reports.

Table 13: Outcome of Soil Testing activity (2013-14)

Districts	Farmers	Villages
Latur	1067	145
Osmanabad	600	70
Beed	208	18
Akola	510	43
Nagpur	Na	Na
Total	2385	276

Component 2: Seed Production Programme (2013-14)

Objective	: To reduce production cost and increase yield
Approach	: Selection and training of lead farmers in seed production
Target	: Breeder to foundation seed: 80 ha : Foundation to Certified seed: 800 ha : Total: 880 ha
Achieved	: Breeder to foundation seed: 51.2 ha,65 farmers : Foundation to Certified seed: 367.6 ha, 326 farmers : Total: 418.8 ha
Training on seed production (Unit: No of training)	: 50/29

Snapshot of Intervention

Seed production activity under PPPIAD:Seed Production programme is one of the major components of PPPIAD project. ADM plays a major role in identifying and selecting lead farmers to participate in the seed production programme in four districts. Department of Agriculture assists in registering of farmers for seed production and timely release of subsidies as per achievement.

Table 14: Seed production program 2013-14

Sr. No.	Component of the Project	Target				Achievement		
		Unit	Quantity	No of Farmers	Hectares	Quantity	No of Farmers	Hectares
1	Seed Production Breeder to Foundation	Ha	80	80	80	51.2	65	51.2
2	Seed Production-Foundation to Certified	Ha	800	800	800	367.6	326	367.6

Methodology: Seed Production Program for foundation to certified Seed was implemented in Latur, Osmanabad, Akola and Beed District. Selection of farmers for the Seed Production was done by analyzing farmers experience in seed production for last two-three years. Also farmers responsive towards learning new Technologies were selected. List of seed growers (selected farmers) was communicated to respective TAO & DSAO. Farmers were trained about all aspects of seed production such as plant spacing efficiency , Good Agriculture Practices etc. The farmers are regularly visited by ADM Extension team for supervision and advice.

Table 15: Training to farmers in sowing for seed production

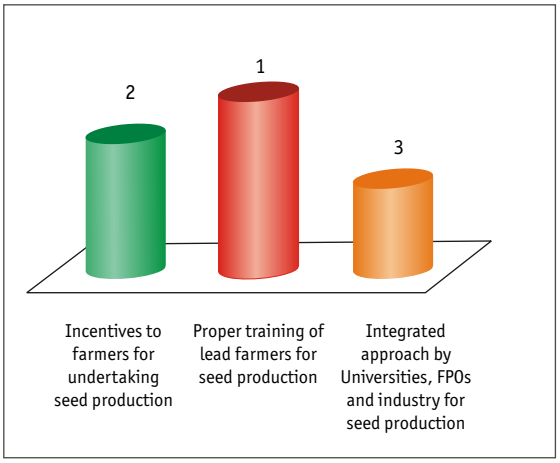
Districts	Number of meetings
Latur	16
Osmanabad	6
Beed	3
Akola	4
Total	29

Outcome

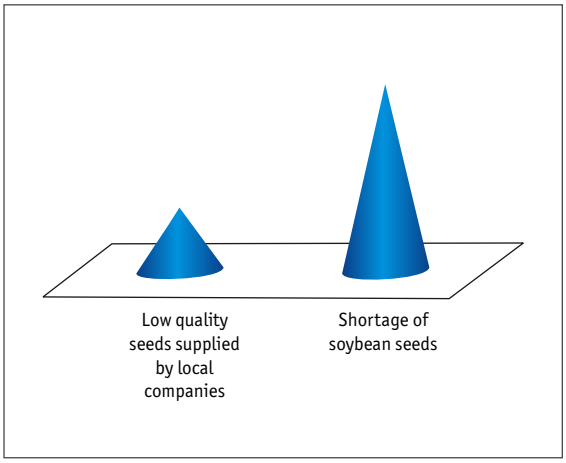
Sufficient production of certified seed is important to meet the future demand of Soybean. Seeds of DS-228 (MPKV, Rahuri) and MAUS-71 (MKV, Parbhani) were provided under PPPIAD project which are rust tolerant and are higher yielding varieties with a pod shattering period of 10-15 days. JS-9752, MAUS-162 and NRC-37 varieties suitable for mechanical harvesting are also introduced in the project.

Top three suggestions to strengthen the seed production programme as emerged from the discussions during the primary survey relates to (a) Proper training of lead farmers for seed production (b) Incentives to farmers for undertaking seed production (c) Combined efforts by Universities, FPOs and industry for seed production.

Graph 4: Top three suggestions for strengthening seed production programme



Graph 5: Two major seed related problems as informed by farmers



Soybean seed production is first of its kind initiative undertaken by private player (ADM) approved by Department of Agriculture, State Govt of Maharashtra. Training farmers on seed production, procurement and providing logistics support is one of the vital services provided by ADM. This has a big role to play in sustainability of the project considering the scarcity of Soybean seed.

Component 3: Promote use of High Yielding Certified Seed Varieties (2013-14)

Objective	:	Assist farmers to access quality inputs
Approach	:	(a) To provide high yielding rust tolerant varieties (DS-228, MAUS 71) (b) To introduce JS 972, NRC 37, MAUS-162 soybean variety fit for mechanical harvesting
Financial contribution	:	Subsidy of Rs 12/kg by Govt and balance cost of 46 per kg to be borne by farmer
Target/achieved	:	6000 qtl/806.4 qtl, 968 farmers

Snapshot of Intervention

Promotion of High Yielding seed varieties under PPPIAD: There is dire need to increase the adoption of certified Varieties mentioned below are being given to soybean growing farmers at reasonable cost.

Table 16: Soybean varieties introduced under PPPIAD

Variety	year	Qtl/ha	Duration (days)	Special character
MAUS 71	2002	22	93-100	Resistance to pod breaking
DS 228	2005	26	95-100	Bold seed, good marketability
MAUS 162	2012	25	100-103	Fit for mechanical harvesting
NRC 37, JS 972	2001	22	99-105	Fit for mechanical harvesting

Outcome

Importance of seeds cannot be ignored while we talk of improving the productivity level of soybean which was stagnant at 3-4 qtl/acre from last few years.There is a large gap between attainable levels of productivity achieved in front line demo plots and actual productivity at farm level. The reasons for this are: (a) lack of awareness about potential of quality seed (b)non availability of seed. Under the PPPIAD project 806 qtl of certified seed is supplied to farmers.

Table 17: Promotion of use of Certified Soybean seeds in districts

Districts	Farmers	No of Villages	Bag (1 bag=30 kg seed) 1 bag used for 1 acre	Ha
Latur	490	131	1569	628
Osmanabad	186	67	622	249
Beed	79	28	228	91.2
Akola	213	12	269	108
Total	968	238	2688	1076.2

Component 4: Direct Procurment Awareness Program (2013-14)

Objective	:	To provide more options to farmers for marketing of his produce
Approach	:	Educate farmers about direct marketing Vs traditional marketing
Target/achieved	:	Quantity procured: (target) 115000 MT/(achieved)104810.77MT (From Oct 13 to Sept 14)
		Value chain meeting and training: 425 trainings organised for 17477 farmers

Snapshot of Intervention

Procurement awareness programme under PPPIAD: The purpose of the project is to provide more options to farmers for marketing of his produce. ADM already has a direct marketing license. ADM procures soybean directly from farmers in PPPIAD project under the Direct Marketing License.

Methodology:

a. Transparent pricing and effective communication on pricing: The daily pricing is fixed at 11:30 am, based on (i) day's average price at the nearest mandi, (ii) prices in other markets and (iii) commodity exchanges. The rates are then displayed at designated Procurement Centres. For farmers who are registered for receiving the rates on SMS, the message is sent on their mobile everyday by 12:00 noon automatically through system. Farmers who have not registered themselves can check the rates through IVR system by dialling 223333. (average calls on IVR per month : 32,200).Rate once fixed, are not altered during the day, though market may go down or up.

b. Accuracy in Weighment: The farmer goods are weighed on electronic weighing scales. Small farmers' goods are weighed by individual bags on electronic weigh scales. Goods of big farmers who bring in their goods in bigger vehicles, are weighed on electronic weigh bridge. All the weights are taken in the presence of the farmers, who can verify that accurate weights are recorded. Even the samples taken for testing, are placed back on the weighing scale. Farmer signs in confirmation of accuracy of weight.

c. Transparency in quality test: The moisture content is the vital quality parameter which needs to be tested accurately. ADM is using calibrated electronic moisture meters which display moisture content precisely. The reading is recorded in front of the farmers . Farmer signs in confirmation. Trained personnel test for other parameters like damaged seed and foreign material (refractions). The entire quality tests are done in the presence of the farmers and the goods are accepted from farmers only upon their confirmation about the tested values.

d. Timely Payment: The payments to farmers are made through cheques / electronic transfers to the Bank accounts of the borrower. In case any farmer has no bank accounts, ADM has made arrangements with HDFC Bank, to open bank accounts through their banking correspondent model. Under electronic transfers, farmers receive the payment directly in their bank account and get SMS confirmation from the Bank. ADM also have an ATM installed from HDFC Bank at factory purchase point. Farmers can withdraw the funds from this ATM, even if they bank with other banks.

e. Exclusivity of direct marketing facility only to farmers: In order to ensure that the direct marketing facility is used only by the farmers (and not by any aggregators or traders), ADM obtains the KYC documents comprising of (i) Agriculture land record extract (Form 7/12) (ii) photo ID (iii) Bank pass-book copy (iv) declaration that the soybean cultivated is produced by him. A farmer-master is created in the system, capturing the photograph of the farmer. A magnetic card (Kisan Card)

linked to the farmer's data base is issued to the farmer. Whenever farmer transacts with ADM, he produces the Kisan card. Swiping of this card at procurement centres, accesses his master and all purchase documents are automatically generated through the system. The system does not generate the purchase documents, if the quantity to be sold is beyond the cultivated extent of the farmers' land. The procurement staff also verifies the photograph for authenticity of the card-holder.

f. No charge to farmers: No charges are payable by the farmers for any services.

g. Training the farmers: PPPIAD provides training to farmers on marketing aspects. These trainings are jointly arranged by ADM and the Department of Agriculture. Farmers are trained on price trends, quality maintenance, best practices on post-harvest storage, warehousing facilities etc. These trainings are held at farm level during pre-harvest stage, so that farmers can take considered decision where and when to sell. Though ADM is providing all pre-harvest and post-harvest services, there is no binding on the farmer that he should sell his produce only to ADM. He is free to sell wherever he gets the best price. However, it is always the endeavour by ADM to ensure that whenever farmer chooses to sell, ADM should be his first choice.

Table 18: Value chain meeting (training on market awareness)

Districts	Meetings	Number of farmers
Latur	205	8305
Osmanabad	105	4794
Beed	25	1200
Akola	90	3178
Total	425	17477

Table 19: Details of Direct Procurement of Soybean (2013-14)

Districts	Procurment (MT)	Value(INR)	Farmers
Latur	92280.76	3497 624 887	27859
Akola	12530	458 588 632	4236
Total	104810.77 MT	394 crores	32095

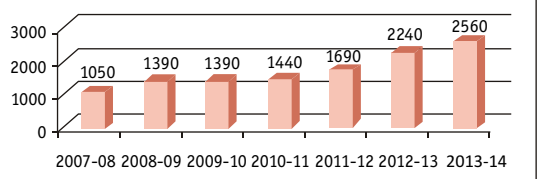
Outcome

Supporting farmers in accessing markets can address various market constraints and thus help them respond to new opportunities resulting in better incomes. The soybean prices offered by ADM to the soybean growing farmers are linked to the market and shared with the farmer in a transparent manner. The prices offered are not lower than nearest APMC Auction average rate and not less than Govt. announced MSP. Transparent and scientific tests of produce is provided to the farmer for better pricing. Feedback on quality of produce is also given to the farmers. Farmer saves 2% of the cost by selling directly to ADM. Minimization of repeated handling of produce makes the value chain more competitive by reducing wastages and this benefits the farmer in the form of higher earnings .Weighing is done electronically and in transparent manner with no deduction.

Table 20: Soya seed rates by ADM (Rs/qtl)

Lowest for 2012-13	2650
Highest for 2012-13	5075
Lowest for 2013-14	3010
Highest for 2013-14	4100

Graph 6: MSP of Soybean (Yellow) (Rs/quintal)



Source: CACP

Component 5: Front Line Demonstration (FLD) (2013-14)

Objective	:	To showcase best soybean cultivation practices
Approach	:	Developing awareness about timely application of agrochemicals
Target/achieved Unit area (ha)	:	800 ha/738 ha

Snapshot of Intervention

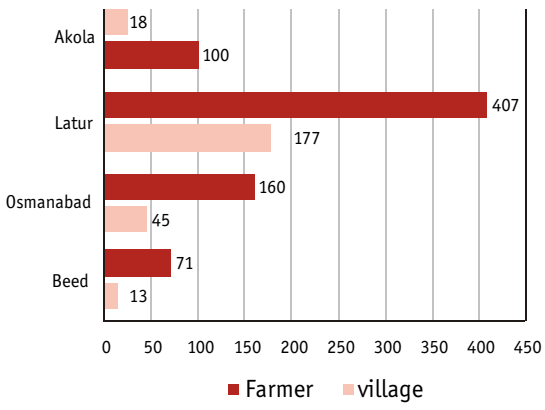
Farmers are well aware of agricultural technology but hesitate to implement them on their field. To increase farmer's confidence on agricultural technology,PPPIAD project introduced the new concept of front line demonstration in year 2014. Front line demonstration program aim to develop awareness of timely implementation of fertilizer, insecticide and increase productivity of soybean and reduce production cost of soybean.

Approach:

1) Shortlisting of farmers from different areas to demonstrate new agro technologies
2) ADM provides Soybean crop protection kit including bio-fertilizer and balance chemical fertilizer for FLD
3) Encouraging farmers to use recommended package of practices in FLD area
4) All FLD plots used soil test based fertilizer application.

Outcome

Graph 7: Front Line Demonstrations (Numbers)



Direct connect with farmers, well planned training programmes and front line demonstrations have played a key role in informing farmers about the modern method of soybean cultivation. Educating farmers about soil test based fertilizer application, seed treatment prior to sowing and use of bio fertilizers have been crucial in generating positive outcomes in soybean cultivation.

Component 6: Farm Mechanisation

Objective	:	To mechanize end-to-end operations of soybean cultivation
Approach	:	Forming farmer groups in identified clusters
Project cost	:	44.624 lakhs / project (two projects)
Financial Contribution	:	22.31 lakhs subsidy by State Govt / project
Target/achieved Unit area (acres)	:	780 acres/900 acres (two FPOs)

Snapshot of Intervention

Soybean is a Kharif crop with duration of 90 days. As it is a short term crop, timely execution of farming operations at each stage is critical. PPPIAD project aimed at providing end-to-end mechanized operations of soybean cultivation.

Objectives

1) Minimise cultivation expenses by 33 %
2) Increase operational efficiency by timely farm operation.
3) Save wastage at harvesting stage by 20%.
4) Encouraging FPOs to take up other allied ventures jointly (equipment leasing, input supply, seed production groups, warehousing, marketing etc).

Outcome

Formation of farmer group: Farmers' Groups register themselves as a legal entity, capable of entering into agreements of equipment lease, entitled to borrow term loans from banks/Institutions or as may be required under the applicable scheme for financial assistance from State/Central Govt. ADM assist them with such formation. ADM also help these groups in administration of the project.

Later, Farmer groups are promoted to purchase mechanical equipment's. Total cost of project was 45 lakh where subsidy of 50% is granted by State Govt of Maharashtra. Equipment's are purchased as per guidelines & norms set by Ministry of Agriculture.

Table 21: Project cost for Soyabean mechanisation

Sl No	Equipment	Unit Cost Rs (Lakhs)	Required Qty	Total Cost Rs (Lakhs)
1	Tractors 55HP	8.10	2	16.20
2.	BBF machine	1.40	2	2.80
3	Tractor mountable sprayers	1.50	2	3.00
4	Combined Harvester	13.50	1	13.50
5	Rotavator	1.00	2	2.00
6	Other accessories, harvest bins, etc			5.00
	Total Equipment Cost			**42.50**
	Contingencies & pre-operative expenses 5%			2.125
	Capital Cost of the Project			44.625

Benefits of mechanized operations:

Two FPO are formed during PPPIAD project. Each FPO executed a project on 300 acres of land each, which is minimum area required for positive benefits to flow from any farm mechansiation initiative. Farmers have realized 30-35 % savings in cost of production & 20 to 25 % increase in yield. Other benefits of mechanized operations as identified by discussion with FPOs during survey are as under

Benefits of mechansiation in Soybean cultivation

Goal	Outcome
Saving of time	Mechanical harvest can cover 10 to 15 acres a day, while manually farmers can cover 4 to 5 acres a day.
	Harvesting & Threshing operations commence at same time
Effective utilization of inputs	Manual sowing leads to non-uniform placement of seed and fertilizer. While on other hand mechanized spraying leads to uniform spraying which ensures effective utilization of Inputs. Vertical placement of nozzle leads to efficient utilization of chemicals.
Saving in cost of seed	By mechanized sowing row to row distance of 30 cm and plant to plant space of 60 cm is maintained. Efficient plant spacing saves seeds cost. Proper spacing lead to save on cost of seed of around Rs. 640 Per Acre
Multipurpose	The same Harvester can be used for Green Gram (Chana), Red Gram, Wheat. Husk gets collected separately which is a great source of Protein & is a good feed for animal.

Formation of Farmer Producer Organization during PPPAID projects to provide mechanized solution in Soybean cultivation.

To promote mechanization in Soybean, it was decided to form FPO (Farmer Producer Organization) under PPPIAD project. ADM took a lead in this initiative and invited various Farmer groups to discuss the concept. As per the performance, ADM shortlisted FPOs and guided them to form company with all necessary documentation. Details of two FPOs formed during PPPIAD project is as under:

FPO name: Kranti Jyoti Farmers Producer Organization

Kranti Jyoti Farmers Producer Organization was established in 2013, located at Sarola Tehsil of district Osmanabad. There are ten board of directors in FPO. With a capital investment of Rs 10 lakh and financial support of Rs 30 lakhs from IDBI Bank, the FPO initiated the project of providing mechanized solutions for Soybean cultivation. FPO is providing custom hiring services for Soybean cultivation in 300 acres of area. Other than Soybean, FPO has also initiated such services in Gram (Chana) and Arhar (Tur).

FPO name: VRD Agro Producer Company

VRD Agro Producer Company was established in 2013, located at Sarola Tehsil of District Osmanabad. There are ten board of directors in FPO. With a capital investment of Rs 10 lakh and financial support of Rs 34 lakhs from Bank of Maharashtra, FPO initiated the project of providing mechanized solutions for Soybean cultivation. FPO is providing custom hiring services for Soybean cultivation in 400 acres of area. Along with this FPO has started contract Farming for Safflower flower production program in 150 acres in year 2013-14. In year 2014-15 FPO has also conducted Seed Production Program on 450 acre.

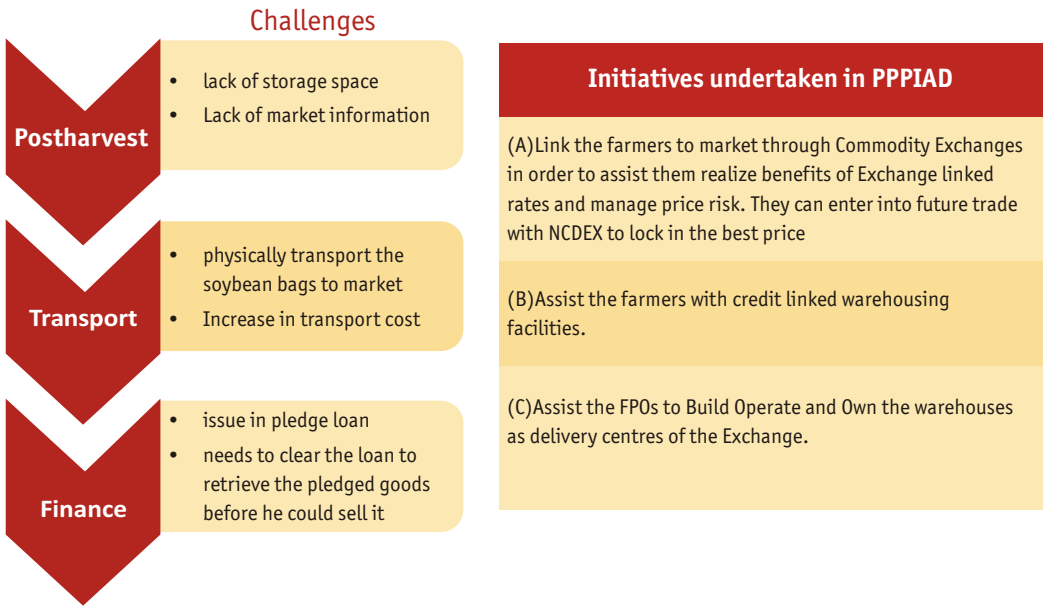
Component 7: Farmer Linkage with Commodity Spot Exchange

Objective	:	Better price realization for soybean crop
Intervention	:	Link the farmers to market through Commodity Exchanges and training farmers
Target/achieved	:	1000/690 farmers
Unit	:	No of farmers trained

Snapshot of Intervention

Soybean rates in domestic market fluctuate widely, as it is dependent on international market for soy oil and soy meal. Rates of soybean during last 3 years have been varying .Prices generally tend to be on lower side during harvest and move up during off season. In such a scenario, benefit of eventual price rise accrues to traders who buy when prices are low, stock it in warehouses and then sell when the rates move up. PPPIAD project aims at connecting farmers to commodity spot exchange for better price realization of their produce.

Outcome



Methodology :

For undertaking this activity, ADM organizes farmers into a formal Group (FPO).ADM, jointly with an accredited Warehousing Service Provider (like NCMSL) identifies a warehouse at a location convenient for farmers for storage of soybeans. The warehouse location shall also be acceptable to NCDEX-NSPOT for receiving delivery of soybean.Farmer deposits harvested beans conforming to quality conditions as specified by ADM. Warehouse Service provider issues a negotiable warehouse receipt to farmer. ADM

enters into a trading agreement with NSPOT wherein ADM agrees to give its best quotes to buy from farmers on daily basis. ADM buys from farmers through Exchange under the Direct Marketing license. Rates quoted by ADM appears on the Exchange site. Farmers who are willing to sell at that day's rate can enter their trade for sale on NSPOT site. Minimum quantity that can be traded is 1 Qtl . NSPOT pays to farmers on the same day as soon as ADM confirms the purchase. ADM pays to NSPOT for all purchases made on that day.Farmers can, if they need, avail loan against security of warehoused goods from a designated Bank who will design the loan against WHR specially for this project. Warehouse Service Provider (WSP) also act as Collateral Manager for the Bank and marks Bank's lien on WHRs at the time of sale, farmer can notify WSP/ NSPOT about the loan. NSPOT arranges to remit sale proceeds directly to the Bank. After adjustment of loan dues, the Bank credits the remaining amount to farmer's account. Farmer need not pay upfront to retrieve the pledged goods. All transactions of farmers with NSPOT are through FPO. This FPO is conferred with trading membership of the Exchange. NSPOT will train designated persons of FPO as how to enter trade transactions on behalf of farmer members on Exchange software Platform. FPO may charge a fee to farmer members for services rendered. Farmers pay warehouse rent to WH Service provider, which is fixed in consultation with FPO.

ADM also works with Maharashtra State Warehousing Corporation for scientific storage of produce. Maharashtra State Warehousing Corporation has introduced measures for providing economical services to the farmers to store their primary produce. M.S.W.C. encourages to avail the facilities of scientific storage by giving specific rebates.

Table 22: Successful execution of online trade at Latur

Number of farmers traded till now	**168**
Commodity	Soybean
Quantity traded	971 Mt
Value	3.5 Crore
Average Trade Price	Rs. 3994/qtl, Lowest : Rs. 3470/qtl Highest : Rs. 4640/qtl
Average Difference b/w trade price and Market price on the date of deposit	Average : Rs. 591/qtl Highest : Rs 1420/qtl
No of trades having pledge marked with banks	75
Banks involved in online trade till now	• Bank of Maharashtra • Central Bank of India • Uco Bank • HDFC bank • Indian Overseas Bank • State Bank of India



9

Impact Analysis



9

Impact Analysis

(A) Improvement in productivity level of Soybean and farmers perception on key interventions that helped in yield improvement significantly

Table 23: Improvement in yield of soybean

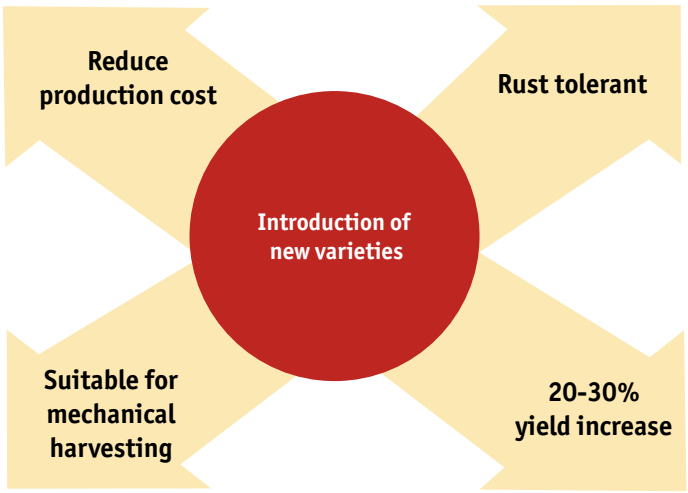
Villages covered under PPPIAD	Traditional yield	Yield in PPPIAD covered areas (qtl/acre)
Ausa	3-5 qtl/acre	8
Nilanga		9-10
Renapur		8
Ambejogai		10
Kalamb		11

Source: Primary Survey

Table 24: Soybean seed varieties introduced in PPPIAD project

Variety	Introduced in year	Qtl/ha	Duration (days)	Special character
MAUS 71	2002	22	93-100	Resistance to pod breaking
MAUS 158	2009	20	93-98	Resistant to stem fly
MAUS 162	2012	25	100-103	Fit for mechanical harvesting
NRC 37	2001	22	99-105	Fit for mechanical harvesting
DS 228	2005	26	95-100	Bold seed, good marketability

The primary survey confirmed that yield of Soybean has increased in PPPIAD covered areas. Farmers agreed that improved package of practices for better soybean cultivation, mechanized solutions and effective seed production programme are instrumental in increasing the yield of the crop. Farmers were responsive towards modern agronomic practices taught under extension activities and appreciated the support provided by stakeholders in helping them achieve improved soybean yield.



(B) Impact of seed production programme

Availability of Soybean seed is a big concern among farmers. Shortage of breeder seeds supplied by Universities is the major reason behind availability of certified seeds to farmers.

What is needed to strengthen seed production programme?



Quality seed tends to give the highest returns, relative to cost of other inputs. Low quality of soybean seed is one of the major concerns in soybean cultivation. Therefore , conversion of breeder seed to foundation and certified seed is very crucial for soybean cultivation in Maharashtra. Seed production progarmme under PPPIAD has been a very appreciable effort taken by ADM and State Govt of programme. However three suggestions as emerged during primary survey to strengthen the seed production programme are mentioned above.

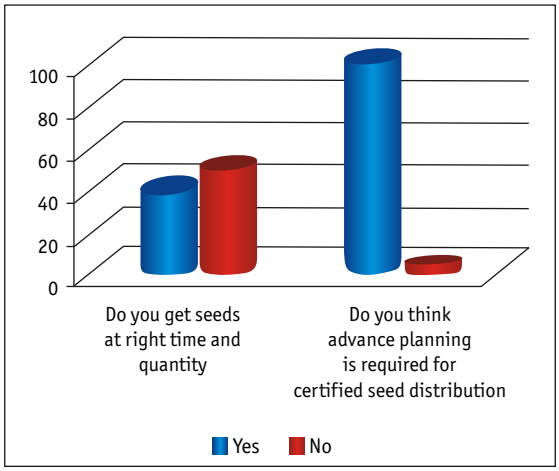
(C) Impact of PPPIAD project on Agri inputs

Farmers appreciated the joint efforts taken by State Government of Maharashtra and ADM in providing end-to -end solutions under PPPIAD for soybean cultivation. Availability of high yielding certified seeds have major bearing on improving productivity of soybean. When asked about timely availability of seeds farmers expressed concern on advance planning by State Govt and Universities for seed availability and distribution.

Table 25: Impact of PPPIAD on Agri Inputs

	Old practice	New practice
Seeds	Low yielding	High yielding certified seeds
Seed treatment	Non existent	Existent
Chemical fertilizer	unbalanced	Soil test based
Agri equipment	Manual	Planting and harvesting machines introduced
Extension services	inadequate	Front line demonstrations for proper use of agri inputs

Graph 8: Farmer response on availability of certified soybean seeds



(D) Share of different operations in cost of cultivation

Graph 9: Share of different operations (%) in total cost of cultivation

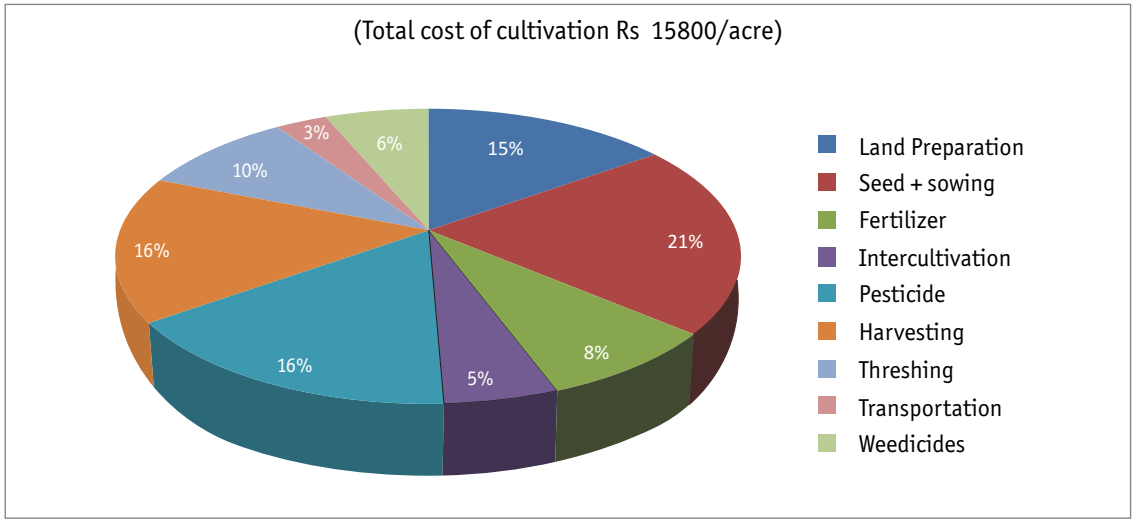


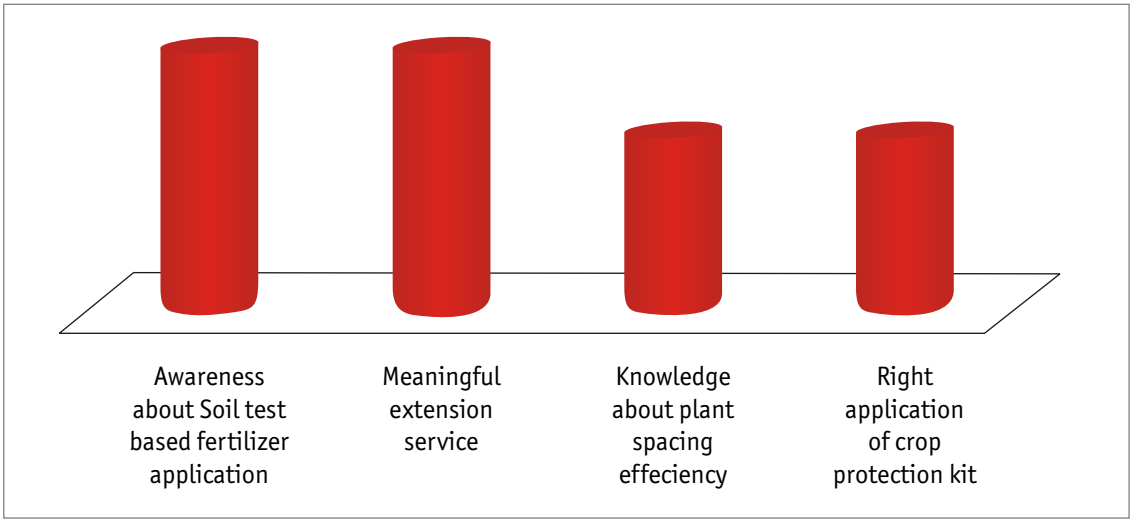
Table 26: Increasing farmer income by saving cost of production

Operation	Cost (INR/ acre)		
	Traditional	Mechanised	Saving
Harvesting and Threshing	3700	2300	1400
Seed	2500	2200	300
Sowing charges	800	600	200

As mentioned in above graph, planting and harvesting are the costliest operations in cultivation of Soybean. Encouraging FPOs to undertake custom hiring services for Soybean cultivation through modern agri equipments have yielded very positive results in PPPIAD project. As depicted in the table mechanized soybean farming increased farmer income by way of saving cost of seed and cost of labour for planting and harvesting.

(E) Impact of front line demonstrations on soybean cultivation

Graph 10: Farmers response on benefits of front line demonstrations



Empowering farmers with knowledge is one of the core project activities under PPPIAD. ADM Extension Centers are known as KVK- KrishiVikas Kendra. There are 15 KVKs spread across Latur, Osmanabad and Beed District. Each center has one KVK in their charge and the person is assisted by 2 field staff. Each Extension office serves 20-30 villages in their catchment area.

Farmers were asked about their perception about extension activities under taken as Front line demonstrations under PPPIAD. As depicted in graph above, surveyed farmers were satisfied with new initiatives in PPPIAD project.

(F) Cost of labour in total cost of cultivation of Soybean

Table 27: Labor required in Soybean cultivation

Operation	No of labour
Land Preparation Seed sowing	4
Weeding	2
Spraying	2
Harvesting	10
Threshing	4

Table 28: Agri equipment's introduced under PPPIAD

Sl No	Equipment
1	Tractors 55HP
2.	BBF machine
3	Tractor mountable sprayers
4	Combined Harvester
5	Rotavator

As evident in the table above, harvesting and sowing operations requires maximum labour in soybean cultivation.Each operation needs to be commenced and completed in a short time. Land preparation should be completed before monsoon, sowing should start when rain sets in and should be completed in a week's time. Likewise, fertilizer application, pesticide spray, weedicide application are to be done in a short time at appropriate stages. Harvesting also needs to be done timely, as any delay would result in pod shattering and loss of matured beans. All these operations are currently done manually by employing labour.

Availability of skilled labour in agricultural operation is an additional challenge. This indicates significant opportunity for mechansiation in Soybean. Agri equipment's introduced under PPPIAD project are also mentioned in the table above.

(G) Impact of mechanized operations

PPPIAD project aims to mechanize end-to-end operations of soybean cultivation in identified clusters by forming Farmers' Groups. The initiative s by ADM and State Govt of Maharashtra in creating FPO's and successfully implementing the set objectives is really appreciable. Noticeable impact of mechanized operations are mentioned in tables below:

Table 29: Mechanization of operations lead to timely operations

	Equipment	Time undertaken
1	Harvester	One hour/ acre
2	Rotavator	One hour/ acre
3	Boom sprayer	Ten minute/acre
4	BBF	40 minute/acre

Table 30: Saving in cost of production due to mechanized operations

Operation	Manual expenses (Rs/acre)	Mechanical expenses (Rs/acre)
Land preparation	2500	2200
Sowing	800	600
Spraying	700	300
Threshing and Harvesting	3700	2300
Total	7700	5400
	Net saving of 30% over manual charges	

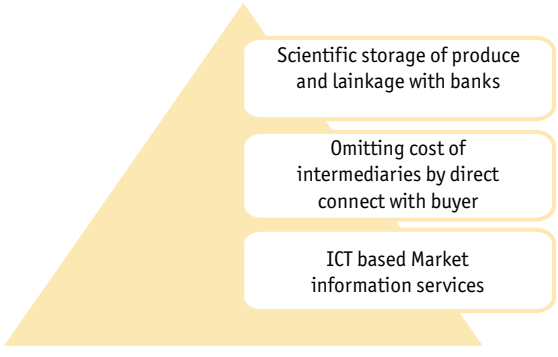
Table 31: PPPIAD project encouraged FPO's to run custom hiring center for soybean cultivation

Operation	Equipment	Rental charges
Spraying	Boom sprayer	200/acre
Sowing	BBF+ tractor	800/acre
Ploughing	Tractor+ plougher	1300/acre
Cultivation	Tractor+ Cultivator	700/acre
	Rotavator	1200/acre

Source: primary survey

(H) Improvement in Marketing of Soybean

There is huge scope for creating market linkages in soybean crop. Industry officials were asked about what can be the three important steps that can help farmers fetch better price for soybean.



As per the response received by majority of respondents the three crucial steps relates to (a) scientific storage of produce and linkage with banks (b) omitting cost of intermediaries by direct connect with buyer(c) ICT based market information service. ADM has facilitated SMS Service to more than 3000 Farmers on Daily basis to selective farmers in villages which informs farmers about ADM Soya Market Price for the day.

Table 32: Saving by direct selling to ADM

		Selling at mandi	Direct procurement by ADM
1	Transport charges	Rs 60/qtl	Selling at collection centers
2	Mandi charges	2%	None
3	Weighing charges	ApproxRs 20-30	None
4	Hamali	Rs 10-20/qtl	None
5	Total saving		**Rs 90/qtl**

Initiatives on ICT based Market Information service: ADM have IVR (Interactive Voice Response Sytem) 02382 223333, which is available from 11 AM for rest of the day, there are Four Lines available on which Farmers can call and Get Location Specific rate i.e. for ADM Latur, ADM Akola & ADM Nagpur. Each of the KVKs also display the rates. Miss Call SMS Service: ADM has a Miss Call Service to Farmers where Farmer can give a Miss Call on Number 022 45303015, immediately he will get SMS for ADM Soya Purchase Rate for that Day.

Creation of financial linkages with banks: Under direct marketing project, ADM took an initiative to bring the farmers under banking fold, so as to make payment to farmers instantly through electronic mode. This initiative resulted in achieving 100% results. All farmers who transact with ADM, now hold bank accounts directly with banks or through rural banking correspondents of HDFC Bank arranged by ADM. Through this initiative more than 25000 farmers accounts are opened in HDFC Bank. Also ADM has facilitated an ATM at Plant Purchase Center for Farmers.

(I) Impact of connecting farmers to Commodity exchange

The proposed project is first of its kind to link farmers directly with commodity exchange for trading in physical goods. Pilot project on warehousing-cum-marketing of Soybean through spot exchange has been able to increase farmers income by 35%. This project supported the farmers to hold the crop and sell at a time of their choice on spot exchange. Few other benefits of this model as confirmed by the farmers during the survey are as under:

Benefit

- Farmers can store the entire harvested crop in warehouse and part sell it as and when they want. No repeated transportation costs or repeated handling is required.
- Once warehoused, all subsequent sale is only through endorsements on WHRs without any hassle of physical movement of goods.
- Loan can be availed on the basis of WHRs.
- Exchange linked rates are provided to farmers.Eventually farmers can cover price risk by forward selling. It is a secured transaction for Exchange as there would not be any default in delivery (in fact goods are already delivered).
- Farmers can use this Exchange platform for sale of other commodities as well, e.g: Tur (which is an intercrop with soybean and also currently traded in NSPOT)
- FPO gets trained in trading on Exchanges.Eventually, FPOs can themselves construct own warehouses (under Rural warehousing Scheme) and operate it themselves as delivery centre for the Exchange.
- ADM's buying support is available all through the process by way of daily quotes, which provides inherent strength to the project.
- Farmers will have access to market information from Exchanges.
- However farmers will have means to know the trends in future prices through Exchange and have a choice to sell forward.

Table 33: Comparison between trade on NSPOT platform and Local mandi

NSPOT	Local Mandi
• Transaction Fee = Nil • Transportation cost = Nil • Loading unloading charges=Nil • Pledge facility = Available	• Transaction charges : 2% • Transportation cost : minimum Rs. 10 per Qtl • Loading unloading charges : Rs 8 per bag • Pledge facility :cannot trade without repaying loan



10

Performance Measure Framework



10

Performance Measure Framework

Goal	Approach	Monitorable Indicator	Outcome	Impact/Remarks
1. Soybean development	Integrated Soybean development	(a) Extension programme to disseminate new technologies to small and marginal farmers (b) Number of Soybean farmers and women farmers engaged	(a) ADM has set up a very meaningful and efficient extension program over the past 8-9 years in Latur to disseminate new technologies to small and marginal farmers. As a result soybean acreage and yield of Soybean improved in Latur district of Maharashtra since 2001. (b) 88,350 farmers engaged with ADM under the project. Approx 98,294 ha of area under improved technologies of which 7863 ha is owned by women	• Soybean acreage has grown from 7,000 ha in 2001 to the current 3.80 Lakh hectares in Latur in 2014-15. • The yield per hectare of Soybean increased to 1.8 MT / ha against the national average of 1.2 MT/ Ha. • Empowering women with knowledge On Soybean cultivation
2. Increase in soybean yield	Dissemination of improved cultivation practices to improve yield of crop.	Overall increase in yield due to better/modern cultivation practice such as: (a) Distribution of certified seeds to farmers (b) Seed production programme (c) Good quality seed (d) Plant spacing efficiency (e) Mechanized operations	(a) 806 qtl of certified seed distributed to 968 farmers in year 2013-14 (b) Total 418 ha area under seed production in 2013-14 (c) High yielding and seeds fit for mechanical harvesting supplied (d) Plant spacing of 30* 60 cm maintained (e) Agriequipments supplied for end to end operations	• 20-30% increase in yield

Goal	Approach	Monitorable Indicator	Outcome	Impact/Remarks
3. Increase in farmer income	(a) Increase in yield of Soybean by better cultivation practices	(a) Increase in yield of Soybean	(a) Soybean yield increased to 10-12 qtl/acre	• Soybean yield increase to 11-12 qtl/acre • 20-30% increase in yield by DS-228 and MAUS-71 variety • Saving in agrochemicals due to soil test based fertilizer application. One bag urea of 50 kg costingRs 350 is saved per acre. • Usage of Sulphur 20 Kg per Ha is recommended for Soybean post soil testing reports. • 104810 MT of Soybean procured under Direct procurement
	(b) Helping farmers to earn good market price for Soybean	(b.1) Connecting farmers with commodity exchange (b.2) Direct procurement awareness meetings	(b.1) 690 farmers connected to spot exchange in Soybean project (b.2) 104810 MT of Soybean procured under Direct procurement programme by ADM in 2013-14	
	(c) Educating farmers to decrease cost of production	(c.1) Number of soil testing done (c.2) Saving in agro chemical due to soil testing	(c.1) Soil testing for 2385 farmers done in 2013-14 (c.2) Decrease in usage of Urea after soil testing. Micronutrients eg use of sulphur recommended	
4. End to end farm mechansiation	(a) Introducing Mechansiation to small land holder farmers under group approach	(a) Area under farm mechanization and : (a.1) Saving in seed cost (a.2) Saving in cost of production (a.3) Timely operations	(a) End to end farm mechanization undertaken in 900 acres in 2013-14 by forming FPOs	• Net saving of 30% in production cost by taking mechanized operations • 25% increase in yield due to mechansied operations. • saving in cost of seed- Rs 640 per acre • Same harvester can be used for chana, red gram and wheat • Effective utilization of agrochemicals by mechanized spraying • Under this project two farmer producer organizations were formed.

Goal	Approach	Monitorable Indicator	Outcome	Impact/Remarks
5. Improving marketability of produce	(a) Helping farmers to earn good market price for Soybean	(a.1) Education to farmers about direct marketing vs traditional marketing (a.2) Soybean procured under Direct Procurment programme. (a.3) Pilot project on warehousing –cum-Marketing of Soybean through commodity spot exchange	(a.2) Farmers are registered under ADM Kisan cards.Farmers are informed about Daily Purchase rate. (a.2) 104810 MT Soybean procured under Direct procurement programme by ADM in year 2013=14. (a.3) 690 farmers under pilot project on warehousing-cum-marketing of Soybean through commodity spot exchange.	• Farmer saves 2% of cost by selling directly to ADM. • Minimization of repeated handling of produce makes value chain more competitive by reducing wastages and this benefits farmer in form of earning higher price. • Under Direct soybean procurement from farmers ADM provides a price to farmers linked to market(not lower than nearest APMC and not less than Govt MSP). • ADM provides Gunny Bag to farmers on deposit basis which has solved major Problem of farmers. • Pilot project on warehousing-cum-marketing of Soybean through commodity spot exchange has been able to raise farmers income by 35%. Secondly this project supported farmers to hold the crop and sell at a time of their choice on Spot Exchange.

Goal	Approach	Monitorable Indicator	Outcome	Impact/Remarks
6. Creation of financial linkages	(a) Under Direct marketing Project, ADM took an initiative to bring farmers under banking umbrella.	(a) Awareness among farmers to create linkages with banks.	(a) This initiative resulted in achieving 100% result.	• All the farmers who transact with ADM, now hold bank accounts directly with Banks or through Rural banking correspondents of HDFC arranged by ADM.
7. Strengthening extension service	(a) Development of market oriented extension system	(a) ICT based market information services (b) Front line demonstrations (c) Extension services at different phases of crop.	(a.1) IVR (Interactive Voice Response Sytem) 02382 223333 is available from 11 AM for rest of the day. There are Four Lines available on which Farmers can call and get Location Specific rate i.e. for ADM Latur, ADM Akola & ADM Nagpur. (a.2) ADM has facilitated SMS Service to more than 3000 Farmers on Daily basis to selective farmers in villages which also helps farmers getting to know about ADM Soya Market Price. (b) Front line demonsatrions undertaken in 738 ha in 2013-14 (c) Farmer trainings organized on: 1. Soya bean Plantation & Integrated Nutrient Management 2. Effective Intercultural Operations and Integrated Weed, Pest, Disease Management 3. Extension programme on harvesting , threshing & Direct Marketing awareness	• Integrated end to end approach through extension activities were appreciated by farmers. • Regular advise by ADM officials (krishivikas Kendra) through front line demonstrations has contributed to adoption of best practices resulting in enhanced soybean productivity.



11

Photographs

PHOTOGRAPHS



Soil Testing and Integrated nutrient management under PPPIAD



Seed Distribution





Certified Seed Production Under PPPIAD





Seed Production Unit Set up by ADM for Farmers Groups





Promotion of Farmers Groups in PPPIAD

CREATION OF MARKET LINKAGES UNDER PPPIAD

Farmers saves 2% of cost by selling directly to ADM.





ADM Kisan Cards Issued to Farmers



Opening of Procurement Centers

End to end Mechanisation for Soybean cultivation under PPPIAD increased Soybean yield by 25%















Farmer Trainings Under PPPIAD





Master Training Programme for Staff



HDFC ATM facility at ADM purchase Centre



Farmer training on modern practices of Soybean cultivation



12

Recommendations



12 Recommendations

A. **Convergence among State Government, Universities, Industry and FPOs for advance planning of Soybean seed availability.** Subsequently, the process of conversion of breeder to foundation to certified seeds should be streamlined to fill the demand- supply mismatch of Soybean seeds. FPOs should be trained and encouraged to take seed production programme for Soybean.

B. **Collection centers at village level:** PPPIAD project has been successful in terms of increasing the productivity of the soybean crop. However as the marketable surplus increases with the farmers there is urgent need to also link them with markets. Opening up collection centers in vicinity of villages is very crucial in this regard. ADM has opened ten procurement centres in year 2013-14 and plans to increase these numbers to 48 in year 2014-15.

C. **Increasing field level demonstrations for introduction of new varieties:** There is lack of awareness among farmers about new varieties of Soybean. As noticed during the primary survey the traditional low yielding variety of Soybean JS 335 has been replaced by high yielding varieties such as DS 228 and MAUS 71 under PPPIAD project. Likewise the varieties which are not only high yielding but also suitable for mechanical harvesting should be promoted in a big way under the project.

D. **Soil test based Integrated nutrient management:** PPPIAD project promoted the use of integrated nutrient management. The dose of fertilizers was reduced after following soil sample reports. For instance, farmers save the cost of one bag of Urea after analyzing soil sample reports. Use of sulphur as major micro nutrient is also recommended under integrated nutrient management. Soil test based integrated nutrient management should be promoted in a big way.

E. **Strengthening farm mechansiation in soybean:** Due to non-availability or higher cost of labour, farming activities often suffer due to untimely/inefficient operations. This in turn results in poor yields. Bringing mechanized solutions at planting and harvesting stage can decrease cost of production of soybean cultivation. FPOs should be encouraged to undertake custom hiring solutions for Soybean growing farmers.

F. **Active involvement of FPO's in project:** Encouraging FPOs to undertake seed production programme and custom hiring centers is very crucial. FPO s should be involved in discussion of project components at initial stage . ADM has formed two FPOs in year 2013-14 and aims to increase this number to 48 in year 2014-15. Likewise all PPPIAD projects should include FPO formation as one of the major deliverable.

G. **Promotion of water saving technologies:** Micro irrigation confers many agronomical advantages including early and uniform germination with less of water. Policy support is much needed and recommended to help disseminate and enable extensive adoption of water harvesting and water saving technologies.

H. **Need for analyzing and understanding farmers needs at ground level while designing the project:** The initiatives undertaken under project should be meaningful and based on farmer needs. For sustainability and long term impact of such efforts the interaction with farmers and FPOs should be maintained on continuous basis.



13

Annexure

Annexure: List of Respondents

List of Farmers surveyed

S. No.	Name of Farmer	Village	District
1.	Mr. Dattatraya Balasaheb Kakade	Bansarola	Beed
2.	Mr. Shivprasad Raghuraj Gilda	Bansarola	Beed
3.	Mr. Tukaram Haribhau Lonkar	Bansarola	Beed
4.	Mr. Dilip Dharam Raj Raul	Bansarola	Beed
5.	Mr. Shinde Digamber Mahadev Rao	Bansarola	Beed
6.	Mr. Shinde Dattatrayed Mahadev	Bansarola	Beed
7.	Mr. Barat Maruti Kardkar	Bansarola	Beed
8.	Mr. Gajanan Dattu Mali	Bansarola	Beed
9.	Mr. Shrimant Prabhakar Chavan	Palaskhed	Beed
10.	Mr. Triyambak Shankar Chavan	Palaskhed	Beed
11.	Mr. Ashok Janardan Chavan	Palaskhed	Beed
12.	Mr. Bhagwan Dadarao Chavan	Palaskhed	Beed
13.	Mr. Chanderkant Manohar	Bansarola	Beed
14.	Mr. Bhalchander Panduraj Kakade	Bansarola	Beed
15.	Mr. Datatrye Mahadev Shinde	Bansarola	Beed
16.	Mr. Balasaheb Kakade	Bansarola	Beed
17.	Mr. Harishchander Dagudu Panchankar	Bansarola	Beed
18.	Mr. Laxman Dattu Gore K	Bansarola	Beed
19.	Mr. Bharat Gulab Gore Mali	Bansarola	Beed
20.	Mr. Vishal Govind Gore	Bansarola	Beed
21.	Mr. Bappashaheb Prabhu Gore	Bansarola	Beed
22.	Mr. Ganesh Raghuraj Gilda	Bansarola	Beed
23.	Mr. Sambha ji Gopal Kakde	Bansarola	Beed
24.	Mr. Shrimant Mahadev Kakde	Bansarola	Beed
25.	Mr. Madhukar Sopan Kakde	Bansarola	Beed
26.	Mr. Anil Dagadu Gore	Bansarola	Beed
27.	Mr. Bapu Bhanudas Kakde	Bansarola	Beed
28.	Mr. Phulchand Pandurang Kakde	Bansarola	Beed

S. No.	Name of Farmer	Village	District
29.	Mr. Mahadev Laxman Shilnde	Bansarola	Beed
30.	Mr. Sunder Bhanudas Kawale	Bansarola	Beed
31.	Mr. Mane Balasaheb Laxman	Bansarola	Beed
32.	Mr. Kudale Shivling Sukhdave	Kumbephal	Beed
33.	Mr. Bhosale Mashrukar Namdev	Kumbephal	Beed
34.	Mr. Todkar Nivali Janadarn	Kumbephal	Beed
35.	Mr. Jhirmake Shidheshwar Raanba	Kumbephal	Beed
36.	Mr. Deshmukh Narayan Ramarao	Patoda	Beed
37.	Mr. Patil Bhau Vyankati	Dhanora Budruk	Beed
38.	Mr. Deshmukh Panjabrao Subharao	Lokhandi Sawargaon	Beed
39.	Mr. Deshmukh Arun Prataprao	Lokhandi Sawargaon	Beed
40.	Mr. Ghauge N Wahi	Morewadi	Beed
41.	Mr. More Ishwar Prathakar	Morewadi	Beed
42.	Mr. Shitole Amol Babuwahain	Anjanpur	Beed
43.	Mr. Shaikh Dastgir Kashiram	Lokhandi Sawargaon	Beed
44.	Mr. Jadhav Rajendra Murlidhar	Shripatraiwadi	Beed
45.	Mr. Burase Pandurang Bhima	Shripatraiwadi	Beed
46.	Mr. Chavan Dynoba Baliram	Morewadi	Beed
47.	Mr. Vishnu Rajaram Gangane	Radi	Beed
48.	Mr. Deverwade Ravinder Bhaudye	Devla	Beed
49.	Mr. Gore Dhananjay Vyanktrao	Dhanora	Beed
50.	Mr. Pandurang Shivram Aadnak	Kumbephal	Beed
51.	Mr. Jadhav Govind Vithal	Kumbephal	Beed
52.	Mr. Prashant Chander Kannt Igole	Kumbephal	Beed
53.	Mr. Jadhav Rajendra Murlidhar	Shripatraiwadi	Beed
54.	Mr. Ramraje Baliram Gaikwad	Radi	Beed
55.	Mr. Mamdage vikram Naray	Shripatraiwadi	Beed
56.	Mr. Shivaji Naagnath Padile	Patoda	Beed
57.	Mr. Sanjay Panditrao Dirgule	Patoda	Beed
58.	Mr. Pratap Nanarao Sahene	Patoda	Beed
59.	Mr. Todkar Prabhakar Dattatraye	Kumbephal	Beed

S. No.	Name of Farmer	Village	District
60.	Mr. Barkate Datatraye Rangnath	Akola	Beed
61.	Mr. Chanderkant Sankar Ugle	Patola	Beed
62.	Mr. Maayave Vikas Mohanrao	Lokhandi Sawargaon	Beed
63.	Mr. Virendra Sharanppa Kewaral	Ausa	Latur
64.	Mr. Rudra Shivmurti Kursule	Bramanpur	Latur
65.	Mr. Range Ankush Nirvarti	Ringani	Latur
66.	Mr. Shaikh N H	Sindgaon	Latur
67.	Mr. Balaji Gore	Ringani	Latur
68.	Mr. Sudhakar Digambar Patil	Bhada	Latur
69.	Mr. Dhanraj Sankar Range	Ringani	Latur
70.	Mr. Shivaji vishwanath Bhosle	Kajgaon	Latur
71.	Mr. Hemant Madhav Bhosle	sarol	Latur
72.	Mr. Shivaji Mohanrao	Dapegaon	Latur
73.	Mr. Vijay Kumar Shamrao pandu	Dapegaon	Latur
74.	Mr. Deepak Dinkarrao Deshmukh	Dapegaon	Latur
75.	Mr. Rajendra Ambadas Chavan	Chincholi	Latur
76.	Mr. Kamlakar Dagud Chavan	Chincholi	Latur
77.	Mr. Vittal Chame	Anandwadi	Latur
78.	Mr. Vishnu Shivaji Chame	Anandwadi	Latur
79.	Mr. Datu Govind Sugale	Chalburga	Latur
80.	Mr. Jagnnath Nivarti Gavali	Bhada	Latur
81.	Mr. Bala Vaman Dogre	Haregaon	Latur
82.	Mr. Aashutosh Raosaheb Maslenge	Haregaon	Latur
83.	Mr. Kurkarni Prakash Manirao	Haregaon	Latur
84.	Mr. Vaaghemare Mahadev Triyambak	Bheta	Latur
85.	Mr. Shivaji Sawant	Kavatha	Latur
86.	Mr. Jogdand Namdev Trimbak	Yaakanpur	Latur
87.	Mr. Shri hari Shivram Sange	Ringani	Latur
88.	Mr. Shande Dutta Kisra	Bheta	Latur
89.	Mr. Jadhav Rajkumar	Paanchicholi	Latur
90.	Mr. Ankush Ige	Renapur	Latur

S. No.	Name of Farmer	Village	District
91.	Mr. Ashok Namedev Kale	Renapur	Latur
92.	Mr. Shrikant Sopanrao Chevle	Renapur	Latur
93.	Mr. Hariram Narayan Chevle	Renapur	Latur
94.	Mr. Shendge Gunavat balaji	Kolagaon	Latur
95.	Mr. Gotke Vishnu Laxman	Kolagaon	Latur
96.	Mr. Vyakatrao Pandirnath Jadhav	Manusmarkhadi	Latur
97.	Mr. Dilip Kaka Aakingire	Manusmarkhadi	Latur
98.	Mr. RamchanderaSopan Jadhav	Patharvadi	Latur
99.	Mr. Pradip Anurath Igge	Renapur	Latur
100.	Mr. Shivaji Shaji Patil	Renapur	Latur
101.	Mr. Bharat Vyankat Jadhav	Renapur	Latur
102.	Mr. Ramakant Raghunath igge	Renapur	Latur
103.	Mr. Balasaheb Tukaram Madde	Patharvadi	Latur
104.	Mr. Dyneshwar Vishwambher Jadhav	Govindnagar	Latur
105.	Mr. Nandu Vithal Bhandare	Patharwadi	Latur
106.	Mr. Khot Dyanchandra Prahlad	Patharwadi	Latur
107.	Mr. Nagorao Kashinath Jadhav	Govindnagar	Latur
108.	Mr. Digambar Ratan Giri	Kaamkheda	Latur
109.	Mr. Hagwat Dattatraya Hatolkar	Darji boregaon	Latur
110.	Mr. Sanjay Babasaheb Mane	Darji boregaon	Latur
111.	Mr. Sopan Mukandrao Jadhav	Kamkheda	Latur
112.	Mr. Vithal Rajaram Sirskar	Renapur	Latur
113.	Mr. Sachin Laxman Ige	Renapur	Latur
114.	Mr. Udhav Bharat Igge	Renapur	Latur
115.	Mr. Mane OmKar Utamrao	Darji boregaon	Latur
116.	Mr. More Dharmraj Shrirang	Govind Nagar	Latur
117.	Mr. Amol Satish Gunale	Patharwadi	Latur
118.	Mr. Sahadev Sude	Patharwadi	Latur
119.	Mr. Vaman Gopal Aahilavat	Govind Nagar	Latur
120.	Mr. Virendra Sharanppa Kewaral	Ausa	Latur
121.	Mr. Rudrappa Shivmurti Kursule	Bramhapur	Latur

S. No.	Name of Farmer	Village	District
122.	Mr. Range Ankush Nirvarti	Ringani	Latur
123.	Mr. Shaikh N H	Sindgaon	Latur
124.	Mr. Balaji Gore	Chincholi	Latur
125.	Mr. Rajendra Aabadas Chohan	Chincholi	Latur
126.	Mr. Kamlakar Dagud	Chincholi	Latur
127.	Mr. Patil Deepak Shamrao	Killari	Latur
128.	Mr. Babatsure Dilip Devrao	Killari	Latur
129.	Mr. Suresh Chanderkant Patil	Killari	Latur
130.	Mr. Kasturbai Motichand Birajar	Killari	Latur
131.	Mr. Nivarti Aappa Shir sagar	Killari	Latur
132.	Mr. Balaji Govind Mali	Killari	Latur
133.	Mr. Sunil Hanumant Aadsare	Mangrool	Latur
134.	Mr. Balapure Rameshwar Parmeshwar	Mangrool	Latur
135.	Mr. Haridas Padit Bhosle	Killari	Latur
136.	Mr. Jadhav Rajnikant Ramchandra	Karla	Latur
137.	Mr. Jadhav Laxman Sopanrao	Malegaon	Latur
138.	Mr. Jadhav Vishwanath	Malegaon	Latur
139.	Mr. Aarikar Samadhan Sopan	Malegaon	Latur
140.	Mr. Prabhakar Subhash Hande	Sirsal	Latur
141.	Mr. Khandu Ganpati Dudbhate	Killari	Latur
142.	Mr. Bansode Satish Manohar	Killari	Latur
143.	Mr. Hande Shrihari Rameshwar	Sirsal	Latur
144.	Mr. Hande Tukaram	Sirsal	Latur
145.	Mr. Hande Pratap vijay Kumar	Sirsal	Latur
146.	Mr. Ranjeet Suresh Patil	Killari	Latur
147.	Mr. Haridas Padit Bhosle	Killari	Latur
148.	Mr. Lohar Dinkar	Killari	Latur
149.	Mr. Kale Vilash vyankat	Karla	Latur
150.	Mr. Rajendra Gudappa Birajdhar	Killari	Latur
151.	Mr. V L More	Killari	Latur
152.	Mr. Laxman Baburaon Gayakwad	Soundna	Osmanabad

S. No.	Name of Farmer	Village	District
153.	Mr. A.V. Gayakwad	Soundna	Osmanabad
154.	Mr. Jagannatha Bajrang Gayakwad	Soundna	Osmanabad
155.	Mr. Bibhishan More	Soundna	Osmanabad
156.	Mr. Mahadev Narayan Shinde	Soundna	Osmanabad
157.	Mr. Deshmukh Sunder Gyanba	Soundna	Osmanabad
158.	Mr. Palkar Bhujang Sanoba	Soundna	Osmanabad
159.	Mr. Gayakwad Yuvraj Shriram	Soundna	Osmanabad
160.	Mr. Bhairu Laxman Palkar	Soundna	Osmanabad
161.	Mr. Keshav Sonabo Gayakwad	Soundna	Osmanabad
162.	Mr. Anil Nivrati Devkame	Soundna	Osmanabad
163.	Mr. Yuvraj Bakiram Gayakwad	Soundna	Osmanabad
164.	Mr. Devkane Dilip Bharat	Soundna	Osmanabad
165.	Mr. Bhairu Laxman	Soundna	Osmanabad
166.	Mr. Sharad Aanalrao Palkar	Soundna	Osmanabad
167.	Mr. Kashinath Shripati Devkane	Soundna	Osmanabad
168.	Mr. Dayanand Palkar	Soundna	Osmanabad
169.	Mr. Gayakwad Babuwan Bhanudara	Soundna	Osmanabad
170.	Mr. Jaiprakash Devkale	Soundna	Osmanabad
171.	Mr. Babuwan Mahadev Devkale	Soundna	Osmanabad
172.	Mr. Datta bansode	Soundna	Osmanabad
173.	Mr. Gayakwad Vinayak Shahaji	Soundna	Osmanabad
174.	Mr. Ashok Ramchander Palkar	Soundna	Osmanabad
175.	Mr. Vilash Palkar	Soundna	Osmanabad
176.	Mr. Saheb Apparao Palkar	Soundna	Osmanabad
177.	Mr. Shivaji Parimdas Gayakwad	Soundna	Osmanabad
178.	Mr. Janardhan Sadopaan Gayakwad	Soundna	Osmanabad
179.	Mr. Palkar Mukur Manohar	Soundna	Osmanabad
180.	Mr. Gayakwad Mahadev Sahebrao	Soundna	Osmanabad
181.	Mr. Shankar Shri Kishan Palkar	Soundna	Osmanabad
182.	Mr. Gayakwad Vilas Sahebraon	Soundna	Osmanabad
183.	Mr. Palkar Dhaneshwar Vyankatrao	Soundna	Osmanabad

S. No.	Name of Farmer	Village	District
184.	Mr. Murlidhar Gaikwad	Soundna	Osmanabad
185.	Mr. Pandinath Devdutt	Soundna	Osmanabad
186.	Mr. Palkar Dagdu Prasad	Soundna	Osmanabad
187.	Mr. Bhosle Narshing Shivaji	A. Shivpura	Osmanabad
188.	Mr. Vijay Singh Ramrao Phand	Ter	Osmanabad
189.	Mr. Sudhir Aankush Patil	Kajala	Osmanabad
190.	Mr. Ravinder Pandurng Patil	Sangni	Osmanabad
191.	Mr. Kishan Bhagwan Jagdale	Sangni	Osmanabad
192.	Mr. Udhav Shrirangna Supalkar	Ter	Osmanabad
193.	Mr. Mahedra Umrao ghigre	Ter	Osmanabad
194.	Mr. Popar Parasram bikhalkar	Aarani	Osmanabad
195.	Mr. Suresh Maarte More	Thorsarwadi	Osmanabad
196.	Mr. Arun Bhanudas Supalvar	Ter	Osmanabad
197.	Mr. Vikas Kisanrao Patil	Jaagji	Osmanabad
198.	Mr. Vaijnath Bhagwan Kumar	Jaagji	Osmanabad
199.	Mr. Mahadev Baijnath Kaat	Jaagji	Osmanabad
200.	Mr. Kranti Sint Baban Rao Gaarde	Jaagji	Osmanabad
201.	Mr. Prakash Kisanrao Patil	Jaagji	Osmanabad
202.	Mr. Sahebrao Uttam Bhatbhage	Dakwadi	Osmanabad
203.	Mr. Aagatrao Babruwan Wakure	Ramwadi	Osmanabad
204.	Mr. Naamdev Gavinayak Wakur	Ramwadi	Osmanabad
205.	Mr. Bhivaji Bhaurao Vaaghmare	Ter	Osmanabad
206.	Mr. Khanderaon Kisanraon Galode	Bukanwadi	Osmanabad
207.	Mr. Manjur Aahmad Maajhi	Ter	Osmanabad
208.	Mr. Gore Gorang Bhagwandas	Ter	Osmanabad
209.	Mr. Ramshekhar Gore	Ter	Osmanabad
210.	Mr. Navnath Gore	Ter	Osmanabad
211.	Mr. Ramahing eknath Gayakwad	Ter	Osmanabad
212.	Mr. Rudraappa Kashinath Kaanad	Ter	Osmanabad
213.	Mr. Mahesh Arvind Utange	Ter	Osmanabad
214.	Mr. Vakur Sukhdev Sopan	Hingaljwadi	Osmanabad

S. No.	Name of Farmer	Village	District
215.	Mr. Gore Varun Namdev	Hingaljwadi	Osmanabad
216.	Mr. Vikaram Arjun Gire	Mendha	Osmanabad
217.	Mr. Ashok Vithal Sukhesh	Mendha	Osmanabad
218.	Mr. Sudhakar Nanasaheb Bunkar	Bukanwadi	Osmanabad
219.	Mr. Pramod Arvind	Palsap	Osmanabad
220.	Mr. Sudhir Madhukar	Palsap	Osmanabad
221.	Mr. Igge Kiran	Ramwadi	Osmanabad
222.	Mr. Shinde Barat Shivaji	Ramwadi	Osmanabad
223.	Mr. Gore Ram kishan Sambha ji	Ramwadi	Osmanabad
224.	Mr. Gore Vishwas Ramchander	Ramwadi	Osmanabad
225.	Mr. Bukan Vijay Kumar Shridhar	Bukanwadi	Osmanabad
226.	Mr. Shinde Khandelwal Vasantrao	Aarani	Osmanabad
227.	Mr. Bukrke Tanaji Aanada Rao	Sunbha	Osmanabad
228.	Mr. Kailas Balasaheb Patil	Sarola	Osmanabad
229.	Mr. Someshwar Tukaram Mandiwar	Sarola	Osmanabad
230.	Mr. Mahadev Baliram Sathe	Sarola	Osmanabad
231.	Mr. Anil Shankar Chandane	Sarola	Osmanabad
232.	Mr. Nivrutti Pandurang Kudale	Sarola	Osmanabad
233.	Mr. Shahaji Baburao Randive	Sarola	Osmanabad
234.	Mr. Ravindra Sakharam Chavale	Sarola	Osmanabad
235.	Mr. Jitendra Ahivaji Randive	Sarola	Osmanabad
236.	Mr. Atish Balasaheb Patil	Sarola	Osmanabad
237.	Mr. Amol Shahaji Randive	Sarola	Osmanabad
238.	Mr. Balasaheb Sambhaji Parit	Sarola	Osmanabad
239.	Mr. Shankarrao Pundlik Sathe	Sarola	Osmanabad
240.	Mr. Chagan Gundappa Chandane	Sarola	Osmanabad
241.	Mr. Ramjan Umbrao Shaikh	Sarola	Osmanabad
242.	Mr. Somnath Bhaskar Pawar	Sarola	Osmanabad
243.	Mr. Raju Shrirang Pawar	Sarola	Osmanabad
244.	Mr. Ashok Bhanudas Matte	Sarola	Osmanabad
245.	Mr. Pandurang Revappa Kudale	Sarola	Osmanabad

S. No.	Name of Farmer	Village	District
246.	Mr. Namdev Baburao Randive	Sarola	Osmanabad
247.	Mr. Khandu Baliram Sathe	Sarola	Osmanabad
248.	Mr. Saudagar Phakir Bakale	Sarola	Osmanabad
249.	Mr. Sandeep Janak Randive	Sarola	Osmanabad
250.	Mr. Manoj Prabhakar Kasar	Sarola	Osmanabad
251.	Mr. Arun Naryan Mhase	Sarola	Osmanabad
252.	Mr. Pandurang Govardhan Randive	Sarola	Osmanabad
253.	Mr. Vaibhav Dharyadhar Patil	Sarola	Osmanabad
254.	Mr. Chandrakant Narayan Devgire	Sarola	Osmanabad
255.	Mr. Ravindra Dyndev Igge	Sarola	Osmanabad
256.	Mr. Kisan Vitthal Kolhe	Sarola	Osmanabad
257.	Mr. Dashrath Vitthal Ghogare	Sarola	Osmanabad
258.	Mr. Suhash Jagganath Pethe	Sarola	Osmanabad

List of Bank & MSWC (Maharashtra State Warehousing Corporation) Officials:

Sr.No.	Name	Designation	Location
1	Mr. Dyneshwar Agale	IDBI, Branch Manager	Bansarola
2	Mr. Pramod Jangalbag	IDBI, Assistant Manager	Bansarola
3	Mr. S.A.Shinde	MSWC, Regional Manager	Latur
4	Mr. Arun Kadam	MSWC, Officer	Latur

List of Government Officials interacted during survey

S. No.	Name	Designation	Location
1	Mr. Uday Deshmukh	Project Coordinator, Pulses and Oilseed value chains and Principal	Agriculture Extension Management Training Institute, Pune.
2	Dr. Tukaram S. Mote	District Superident Agriculture Officer	Latur
3	Mr. D.B.Jadhav	Tehsil Agriculture Officer	Ausa & Renapur
4	Mr. Kasbe S.M.	Agriculture Assistant	Killari
5	Mr. S.H.Bhosle	Circle Agriculture Officer	Ausa
6	Mr. Jadhav B.V.	Agriculture Assistant	Renapur
7	Mr. A.O. Mane	Agriculture Assistant	Reanpur
8	Mr. Maharudra Palunde	Sub Divisional Agriculture Officer	Kej
9	Mr. Deepak Birajdar	Tehsil Agriculture Officer	Ambejogai
10	Mr. Kashinath Nirmal	Agriculture Supervisor	Ambejogai
11	Mr. Naryan Deshmukh	Agriculture Assistant	Ambejogai
12	Mr. Vilas Girmire	Agriculture Assistant	Ambejogai
13	Mr. Anil Patange	Agriculture Assistant	Ambejogai
14	Mr. Chadrakant Giri	Circle Agriculture Officer	Kej
15	Mr. Pandit Kakade	Agriculture Assistant	Kej
16	Mr. Birajdar U.B.	Sub Divisional Agriculture Officer	Osamanabad
17	Mr. Jadhav D.R.	Tehsil Agriculture Officer	Osamanabad
18	Mr. Maniyar M.S.	Deputy Agriculture Officer	Osamanabad
19	Mr. Chikse A.P.	Mandal Krushi adhikari	Osamanabad
29	Mr. M.R.More	Tehsil Agriculture Officer	Kalamb
21	Mr. Bhujang Lokre	Agriculture Assistant	Kalamb

List of ADM officials interacted during survey

S. No.	Name	Designation	Location
1	Mr.T.P. Shenoy	Head, APSD	Gurgaon
2	Mr. Amol Dhawan	Assst. Manager,APSD	Latur
3	Mr. Sudarshan Dhule	Supervisor	Latur
4	Mr. Vinod Pawar	Supervisor	Osmanabad
5	Mr. Yuvraj Waghmare	Officer	Latur
6	Mr. Dattatraya Ghogare	KVK In Charge	Ambejogai
7	Mr. Balasaheb Ghodke	KVK In Charge	Killari
8	Mr. Mahadev Pawar	KVK In Charge	Ausa
9	Mr. Siddharam Lamture	KVK In Charge	Nilanga
10	Mr. Govind Shinde	KVK In Charge	Nitur
11	Mr. Dayananad Mane	KVK In Charge	Renapur
12	Mr. Santosh Shinde	KVK In Charge	Klamab
13	Mr. Somnath Umbre	KVK In Charge	Ter
14	Mr. Shivhar Mithkari	KVK In Charge	Osmanabad
15	Mr. Tanaji Misal	KVK In Charge	Tuljapur
16	Mr. Suhas Kulkarni	Officer- Procurement	Latur
17	Mr. Kishorkumar Maslekar	Assistant	Latur
18	Mr.A.P.Shaikh	Officer Seed Processing Unit	Latur
19	Mr. Anand Kasbe	Assistant Seed Processing Unit	Latur
20	Mr. Ramchandra Suryawanshi	Jr. Officer Procurement	Latur



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