

Country Name	<b>Project for Maximisation of Soybean Production in Madhya Pradesh</b>
Republic of India	

**I. Project Outline**

Background	According to the National Research Centre for Soybean (NRCS), among other oilseeds, soybean had been grown most extensively in India both in terms of area and production. Madhya Pradesh State (MP) had long been the largest producer of soybean in India. On the other hand, MP had also been one of the poorest states in India. Without sufficient investment, most of soybean cultivation in MP had been rain-fed and carried out mainly by marginal and small-scale farmers. Thus, the yield per hectare of those farmers in MP was lower than that of other states at the time of ex-ante evaluation.												
Objectives of the Project	<p>In Madhya Pradesh State of India, through development of the soybean production strategy, technologies in fertilization, pest/disease control and improvement of cultivation methods, the project aims at the establishment of soybean cultivation system designed for small and poor farmers, thereby disseminating those technologies for small and poor farmers in the target area.</p> <ol style="list-style-type: none"> <li>Overall Goal: Soybean cultivation technology for small and poor farmers is disseminated by the DoFWAD<sup>(1)</sup>, JNKVV<sup>(2)</sup> and RVSKVV<sup>(3)</sup>.</li> <li>Project Purpose: Soybean cultivation system designed for small and poor farmers is established.</li> </ol> <p>Note: (1) DoFWAD: Department of Farmer Welfare and Agriculture Development under the Government of MP (2) JNKVV: Jawaharlal Nehru State Agricultura University (3) RVSKVV: Rajmata Vijayaraje State Agriculture University</p>												
Activities of the Project	<ol style="list-style-type: none"> <li>Project site: Madhya Pradesh State</li> <li>Main activities: <ul style="list-style-type: none"> <li>(1) Development of the strategy, (2) Developments of fertilization technology, pest/disease control technology, (3) Improvement of cultivation methods, (4) Systematization of individual technologies</li> </ul> </li> <li>Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese Side: (at the terminal evaluation)</td> <td style="width: 50%;">Indian Side: (at the terminal evaluation)</td> </tr> <tr> <td>1) Experts: 6 persons (Long-term) 61 persons (Short-term)</td> <td>1) Staff allocated: 40 persons (26 from JNKVV and 14 from RVSKVV)</td> </tr> <tr> <td>2) Trainees received: 12 persons in Japan, 17 persons in Brazil</td> <td>2) Facilities: Project Office, field equipment, etc.</td> </tr> <tr> <td>3) Equipment: vehicles, scooters, laboratory equipment and office equipment</td> <td></td> </tr> <tr> <td>4) Local expenses</td> <td></td> </tr> </table> </li> </ol>			Japanese Side: (at the terminal evaluation)	Indian Side: (at the terminal evaluation)	1) Experts: 6 persons (Long-term) 61 persons (Short-term)	1) Staff allocated: 40 persons (26 from JNKVV and 14 from RVSKVV)	2) Trainees received: 12 persons in Japan, 17 persons in Brazil	2) Facilities: Project Office, field equipment, etc.	3) Equipment: vehicles, scooters, laboratory equipment and office equipment		4) Local expenses	
Japanese Side: (at the terminal evaluation)	Indian Side: (at the terminal evaluation)												
1) Experts: 6 persons (Long-term) 61 persons (Short-term)	1) Staff allocated: 40 persons (26 from JNKVV and 14 from RVSKVV)												
2) Trainees received: 12 persons in Japan, 17 persons in Brazil	2) Facilities: Project Office, field equipment, etc.												
3) Equipment: vehicles, scooters, laboratory equipment and office equipment													
4) Local expenses													
Project Period	June 2011 – February 2017 (Extended period: June 2016 – February 2017)	Project Cost	(ex-ante) 355million yen, (actual) 528 million yen										
Implementing Agency	Department of Farmer Welfare and Agriculture Development (DoFWAD) under Government of Madhya Pradesh Jawaharlal Nehru State Agricultura University (JNKVV) Rajmata Vijayaraje Scindia State Agriculture University (RVSKVV)												
Cooperation Agency in Japan	Ministry of Agriculture, Forestry and Fisheries												

**II. Result of the Evaluation**

1 Relevance
<p>&lt;Consistency with the Development Policy of India at the Time of Ex-Ante Evaluation &gt;</p> <p>At the time of ex-ante evaluation, this project was consistent with the “11<sup>th</sup> Five-Year Plan (2007-2012)”, which stated that it was necessary to improve the agricultural research and to develop the appropriate agricultural technologies to respond to the local needs and expected that state agriculture universities should play a major role as the regional research institutes, which also referred that the revitalization of agriculture sector was considered as one of the most important issues.</p> <p>&lt;Consistency with the Development Needs of India at the Time of Ex-Ante Evaluation &gt;</p> <p>At the time of ex-ante evaluation, this project was consistent with India’s development needs to develop the soybean production strategy which led to the establishment of soybean cultivation system designed for small and poor farmers as described in “Background” above.</p> <p>&lt;Consistency with Japan’s ODA Policy at the Time of Ex-Ante Evaluation&gt;</p> <p>The project was consistent with “Japan’s Country Assistance Program for India (May 2006)”, in which the Government of Japan committed to the assistance for the local development as one of the three pillars, and which stated that it was necessary to increase incomes of residents in rural areas through the introduction of technology for improving agricultural productivity, to develop intensive irrigation facilities and improve roads providing access to markets and communication system in the rural areas, etc.</p> <p>&lt;Evaluation Result&gt;</p> <p>In light of the above, the relevance of the project is high.</p>
2 Effectiveness/Impact
<p>&lt;Status of Achievement of the Project Purpose at the time of Project Completion&gt;</p> <p>By the end of the project completion, the project achieved its purpose: “Soybean cultivation system designed for small and poor farmers is established”. Three technological components (cultivation, fertilization and seed treatment) of recommended technologies were</p>

confirmed as effective through the results of 2015 Kharif season<sup>1</sup>. It is likely that cultivation technology system was proved effective compared with conventional cultivation methods (Indicator 1). No assessment was made on how many pilot farmers were willing to continue to adopt the technologies (Indicator 2). Considering the continuation status of this indicator, however, it is presumed that at the time of project completion, there must have been some willingness among pilot farmers to continue adopting the recommended technologies introduced by the Project. The cultivation manuals, namely “Soybean Production Field Book (Manual)” and “Soybean Production and Utilization Guide book” (hereinafter referred to as “Soybean Cultivation Manuals”) and “Diagnosis Book on Pests and Diseases in MP”, were approved at the Joint Coordinating Committee (JCC) meeting in 2017 and were adopted by DoFWAD by the project completion (Indicator 3).

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

After the project completion, the project effects have continued. According to the questionnaire survey and interviews with pilot farmers, the effectiveness of recommended technologies has been proven by their responses. Three out of four recommended technologies have been continuously adopted by 70% or more than 70% of those pilot farmers. Lack of financial resources to purchase necessary machineries, such as sub soilers<sup>2</sup> is the major reason for those pilot farmers who discontinued applying the recommended cultivation technologies. The cultivation manuals developed by the Project have been utilized in trainings and workshops and Agricultural Science Centres (KVKs). These manuals are also disseminated through DoFWAD website, etc.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

It is observed that the Overall Goal, “Soybean cultivation technology for small and poor farmers is disseminated by the DoFWAD, JNKVV and RVSKVV” has been achieved. According to the JNKVV and RVSKVV, Soybean Cultivation Manuals, and “Diagnosis Book on Pests and Diseases in MP”, have been utilized in trainings and workshops on related topics which are conducted at KVKs, universities, State Department and ICAR (Indian Council of Agricultural Research) through face-to-face or online. These manuals are also disseminated through DoFWAD website, KVK Social Networking Services (SNS) (i.e. Whatsapp), YouTube, leaflets, pamphlets, etc. KVK is currently providing crop production advisory services through the SNS in which more than 70,000 farmers are registered (Indicator 1). Though the data is not available, it is presumed that the number of farmers adopting the soybean cultivation technology introduced by the project has increased considering the fact that more than 70% of pilot farmers under survey have continued adopting one or more cultivation technology systems developed by the Project and that the manuals developed by the project have been widely disseminated and more than 65,000 farmers have been trained in 2020 and 2021 (Indicator 2).

<Other Impacts at the time of Ex-post Evaluation>

It was identified through the survey that the project contributed to the increase of the income of pilot farmers to some extent. The average income (net return of soybean cultivation) of pilot farmers in 10 districts during 2 years of the project implementation period (from 2016 to 2017) was Rs.56,664 per hectare. Although the data was exclusive to the pilot areas and was affected by other various measures (i.e. government support programs), the same average income during 2 years (from 2019 to 2020) increased to Rs.72,402 per hectare; 28% increase since the project completion.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is high.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results												
(Project Purpose) Soybean cultivation system designed for small and poor farmers is established.	Indicator 1: Cultivation technology system is proved effective compared with conventional cultivation methods in pilot farms.	<p>Status of the Achievement: achieved (continued) (Project Completion)</p> <ul style="list-style-type: none"> <li>On-Farm-Trial/Testing (OFT) was conducted for three technological components (cultivation, fertilization and seed treatment) with several pilot farmers each in 9 selected districts for the period of 2012 to 2015. The results of 2015 Kharif season showed that the yield of recommended practices in all three technological components was higher than the other treatment in all the districts.</li> </ul> <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> <li>Questionnaire survey and interviews conducted in 10 districts<sup>3</sup> where 136 pilot farmers were targeted revealed the effectiveness of recommended technologies. As shown below, pilot farmers surveyed were convinced with benefits of adopting the cultivation technology system established by the project and lack of financial resources to purchase machineries is the major reason for them not to adopt the recommended technologies.</li> </ul> <table border="1"> <thead> <tr> <th>Recommended technology</th> <th>Reasons for using the recommended technologies</th> <th>Reasons for not using the recommended technologies</th> </tr> </thead> <tbody> <tr> <td>Cultivation using Ridge &amp; Furrow Feeder and Broad Bed and Furrrow (BBF) Planter</td> <td>It improves drainage and crop productivity.</td> <td>Do not have the financial sources to purchase the machines.</td> </tr> <tr> <td>Seed treatment with fungicide, pesticide and bio fertilizers</td> <td>Highly convinced with benefits of developed seed treatment.</td> <td>N/A</td> </tr> <tr> <td>Fertilizer use for NPK<sup>4</sup>/Micro Nutrient</td> <td>Convinced that it will reduce cost of cultivation for the same amount of production.</td> <td>Unknown about the recommended technology</td> </tr> </tbody> </table>	Recommended technology	Reasons for using the recommended technologies	Reasons for not using the recommended technologies	Cultivation using Ridge & Furrow Feeder and Broad Bed and Furrrow (BBF) Planter	It improves drainage and crop productivity.	Do not have the financial sources to purchase the machines.	Seed treatment with fungicide, pesticide and bio fertilizers	Highly convinced with benefits of developed seed treatment.	N/A	Fertilizer use for NPK <sup>4</sup> /Micro Nutrient	Convinced that it will reduce cost of cultivation for the same amount of production.	Unknown about the recommended technology
Recommended technology	Reasons for using the recommended technologies	Reasons for not using the recommended technologies												
Cultivation using Ridge & Furrow Feeder and Broad Bed and Furrrow (BBF) Planter	It improves drainage and crop productivity.	Do not have the financial sources to purchase the machines.												
Seed treatment with fungicide, pesticide and bio fertilizers	Highly convinced with benefits of developed seed treatment.	N/A												
Fertilizer use for NPK <sup>4</sup> /Micro Nutrient	Convinced that it will reduce cost of cultivation for the same amount of production.	Unknown about the recommended technology												

<sup>1</sup> Kharif season (rainy seasons) varies by crop and region, starting at the earliest in May and ending at the latest in January. In India the season is popularly considered to start in June and end in October.

<sup>2</sup> Subsoiler: a tractor-mounted farm implement used for deep tillage, loosening and breaking up soil at depths below the levels worked by moldboard ploughs, disc harrows, or rototillers.

<sup>3</sup> The number of districts for pilot farmers increased since the Project was implemented for 2 years in Dhar district and for 3 years in Dewas district and thus making 10 districts.

<sup>4</sup> NPK: Nitrogen, Phosphors and Potash

		Use of sub soiler	N/A	Do not have the financial sources to purchase the machines.																																
	Indicator 2: More than 70% of pilot farmers are willing to continue to adopt one or more technologies in the cultivation system established by the Project.	<p>Status of the Achievement: not verifiable (continued) (Project Completion)</p> <ul style="list-style-type: none"> <li>No survey was conducted for assessing how many pilot farmers were willing to continue to adopt the recommended technologies.</li> </ul> <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> <li>Among 4 recommended technologies, 3 recommended technologies have been continuously adopted by 70% or more than 70% of pilot farmers surveyed at the time of ex-post evaluation.</li> </ul> <p>Percentage of pilot farmers who adopted the recommended technologies introduced by the project</p> <table border="1"> <thead> <tr> <th colspan="2">Technologies</th> <th>At the time of Project Completion (2017)</th> <th>At the time of ex-post Evaluation (2021)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Cultivation</td> <td>Conventional cultivation method</td> <td>N/A</td> <td>30%</td> </tr> <tr> <td>Recommended technology (using Ridge &amp; Furrow Feeder and BBF Planter)</td> <td>N/A</td> <td>70%</td> </tr> <tr> <td rowspan="2">Seed treatment</td> <td>Conventional cultivation method</td> <td>N/A</td> <td>11%</td> </tr> <tr> <td>Recommended technology (Seed treatment with pest management)</td> <td>N/A</td> <td>89%</td> </tr> <tr> <td rowspan="2">Fertilizer</td> <td>Conventional cultivation method</td> <td>N/A</td> <td>21%</td> </tr> <tr> <td>Recommended technology (NPK/Micro nutrient)</td> <td>N/A</td> <td>79%</td> </tr> <tr> <td rowspan="2">Soil</td> <td>Conventional cultivation method</td> <td>N/A</td> <td>82%</td> </tr> <tr> <td>Recommended technology (using subsoiler)</td> <td>N/A</td> <td>18%</td> </tr> </tbody> </table>			Technologies		At the time of Project Completion (2017)	At the time of ex-post Evaluation (2021)	Cultivation	Conventional cultivation method	N/A	30%	Recommended technology (using Ridge & Furrow Feeder and BBF Planter)	N/A	70%	Seed treatment	Conventional cultivation method	N/A	11%	Recommended technology (Seed treatment with pest management)	N/A	89%	Fertilizer	Conventional cultivation method	N/A	21%	Recommended technology (NPK/Micro nutrient)	N/A	79%	Soil	Conventional cultivation method	N/A	82%	Recommended technology (using subsoiler)	N/A	18%
Technologies		At the time of Project Completion (2017)	At the time of ex-post Evaluation (2021)																																	
Cultivation	Conventional cultivation method	N/A	30%																																	
	Recommended technology (using Ridge & Furrow Feeder and BBF Planter)	N/A	70%																																	
Seed treatment	Conventional cultivation method	N/A	11%																																	
	Recommended technology (Seed treatment with pest management)	N/A	89%																																	
Fertilizer	Conventional cultivation method	N/A	21%																																	
	Recommended technology (NPK/Micro nutrient)	N/A	79%																																	
Soil	Conventional cultivation method	N/A	82%																																	
	Recommended technology (using subsoiler)	N/A	18%																																	
	Indicator 3: The cultivation manual developed by the Project is adopted by the DoFWAD.	<p>Status of the Achievement: achieved (continued) (Project Completion)</p> <ul style="list-style-type: none"> <li>The cultivation manuals, namely Soybean Cultivation Manuals (a set of “Soybean Production Field Book (Manual)” and “Soybean Production and Utilization Guide book”) and “Diagnosis Book on Pests and Diseases in MP” were approved at the JCC meeting, then adopted by DoFWAD in 2017.</li> </ul> <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> <li>The Soybean Cultivation Manuals and “Diagnosis Book on Pests and Diseases in MP” were published and 3,000 copies and 500 copies were printed respectively. Although the number of printings is limited, manuals have been copied and utilized in trainings and workshops on related topics which are conducted at universities and KVKs. These manuals are also disseminated through DoFWAD website, KVK SNS (i.e. WhatsApp), YouTube, leaflets, pamphlets, etc. KVK is currently providing crop production advisory services through Social Networking Services (SNS) (i.e. Advisory services using “Whatsapp” which is one of the most prevalent SNS in India) in which more than 70,000 farmers are registered.</li> </ul>																																		
(Overall Goal) Soybean cultivation technology for small and poor farmers is disseminated by the DoFWAD, JNKVV and RVSKVV.	Indicator 1: Manual compiled by the Project is utilized by KVKs in trainings for dissemination staff and farmers.	<p>(Ex-post Evaluation) achieved</p> <ul style="list-style-type: none"> <li>Various institutions such as ICAR, Universities, KVKs and State department are delivering training programs to farmer using Soybean Cultivation Manuals developed by the project. More than 65,000 farmers were trained through webinar during 2020-21 as shown below.</li> </ul> <p>No. of farmers attending the Training Program using Soybean Cultivation Manuals developed by the project (2020-21)</p> <table border="1"> <thead> <tr> <th>Institution/Department</th> <th>Farmers trained per year through webinar and video conference</th> </tr> </thead> <tbody> <tr> <td>ICAR-Indian Institute of Soybean Research (IISR)</td> <td>5,000</td> </tr> <tr> <td>KVK Indore</td> <td>400</td> </tr> <tr> <td>KVK, Ujjain</td> <td>300</td> </tr> <tr> <td>KVK, Dhar</td> <td>200</td> </tr> <tr> <td>KVK, Hoshangabad</td> <td>100</td> </tr> <tr> <td>KVK, Chhindwara</td> <td>150</td> </tr> <tr> <td>Department of Agriculture (DOA), Indore</td> <td>25,000</td> </tr> <tr> <td>DOA, Dhar</td> <td>10,000</td> </tr> <tr> <td>DOA, Ujjain</td> <td>15,000</td> </tr> <tr> <td>DOA, Jabalpur</td> <td>5,000</td> </tr> <tr> <td>DOA, Chhindwara</td> <td>2,500</td> </tr> <tr> <td>DOA, Hoshangabad</td> <td>1,000</td> </tr> <tr> <td>JNKVV, Jabalpur</td> <td>300</td> </tr> <tr> <td>RVSKVV, Indore</td> <td>500</td> </tr> <tr> <td><b>Total</b></td> <td><b>65,450</b></td> </tr> </tbody> </table>			Institution/Department	Farmers trained per year through webinar and video conference	ICAR-Indian Institute of Soybean Research (IISR)	5,000	KVK Indore	400	KVK, Ujjain	300	KVK, Dhar	200	KVK, Hoshangabad	100	KVK, Chhindwara	150	Department of Agriculture (DOA), Indore	25,000	DOA, Dhar	10,000	DOA, Ujjain	15,000	DOA, Jabalpur	5,000	DOA, Chhindwara	2,500	DOA, Hoshangabad	1,000	JNKVV, Jabalpur	300	RVSKVV, Indore	500	<b>Total</b>	<b>65,450</b>
Institution/Department	Farmers trained per year through webinar and video conference																																			
ICAR-Indian Institute of Soybean Research (IISR)	5,000																																			
KVK Indore	400																																			
KVK, Ujjain	300																																			
KVK, Dhar	200																																			
KVK, Hoshangabad	100																																			
KVK, Chhindwara	150																																			
Department of Agriculture (DOA), Indore	25,000																																			
DOA, Dhar	10,000																																			
DOA, Ujjain	15,000																																			
DOA, Jabalpur	5,000																																			
DOA, Chhindwara	2,500																																			
DOA, Hoshangabad	1,000																																			
JNKVV, Jabalpur	300																																			
RVSKVV, Indore	500																																			
<b>Total</b>	<b>65,450</b>																																			

Indicator 2: Number of farmers adopting cultivation technology system established by the Project increased.	(Ex-post Evaluation) achieved • At the time of project completion, no survey was conducted to pilot farmers whether they had adopted the cultivation technology system established by the project. Hence it is not possible to make a comparison between the situation at the time of completion and that of at the time of ex-post evaluation. However, considering the survey results such that 3 out of 4 recommended technologies have been continuously adopted by 70% or more than 70% of pilot farmers, the manuals developed by the project have been widely disseminated via website of DoFWAD etc. and more than 65,000 farmers have been trained annually in 2020 and 2021, it is presumed that the number of farmers adopting cultivation technology system established by the project has increased.
--	--

Source: JICA documents, Questionnaires with pilot farmers, interviews with KVKs, RVSKVV, JNKVV and DoFWAD

### 3 Efficiency

Both of project period and project cost exceeded the plan (ratio against plan: 113% and 149%, respectively). The extension of 8 months was agreed at the Terminal Evaluation Study to implement the supplementary activities in another Kharif season. The project cost increased to cover the operation of the extended period. The Outputs of the project were produced as planned.

Therefore, the efficiency of the project is fair.

### 4 Sustainability

#### <Policy Aspect>

Under the strategy, namely “Doubling Farmers’ Income (2017-2022)” which falls under the previously known “Five-Year Plan”, the Government of India (GOI) has committed to enhance the agricultural development and to achieve a doubling of the farmer’s income by 2022 especially in the rural areas. As a part of the strategies, GOI has aimed to increase agricultural productivity by promoting research and development for increased production and supply of quality seeds; by promoting balance use of fertilizers and pesticides; and by disseminating newly developed farming systems to farmers through agriculture institutions such as universities with its network of KVKs.

#### <Institutional /Organizational Aspect>

DoFWAD bears the overall responsibility of soybean production in MP having the established system of agriculture extension network. About 40 staffs are deployed at district level for the extension works. While research on soybean cultivation has been carried out mostly by State Agricultural Universities including JNKVV and RVSKVV, an extension work is done through KVKs which were affiliated under those universities as well as State Department of Agriculture. Apart from the state government structure, autonomous organizations under the central government, India Council of Agricultural Research (ICAR) and its affiliate, Directorate of Soybean Research (DRSoy) have supported “All India Coordinated Research Project on Soybean (AICRP)<sup>5</sup>” to provide the funding and coordination operation for the research and development on soybean production.

With regards to research and development and the extension activities, JNKVV has a comprehensive system of research and development and dissemination of agricultural technologies as it has 21 KVKs<sup>6</sup>, which conduct field trials for the technology developed by AICRP and provide trainings for farmers. It was identified from the survey at the time of ex-post evaluation that the organizational structure of JNKVV including KVKs is sufficient for extension work. Under RVSKVV, there are 22 KVKs in total, and the organizational structure is sufficient for extension work as well.

#### <Technical Aspect>

Regular training on soybean production technologies has been imparted by various KVKs and the content of the training is mainly related to the improved package of technologies of soybean production. This type of training is organized just before the sowing of soybean and is participated by 30 to 40 farmers on average. Training to the farmers and state departmental staff including extension workers is also provided by the Agriculture Technology Management Agency (ATMA)<sup>7</sup> whose trainers are trained as Master Trainers by the State Agricultural Universities including JNKVV and RVSKVV. Furthermore, the dissemination and demonstration of soybean production technologies are also conducted under AICRP and other promotional programs. It was identified by the ex-post evaluation study that the soybean techniques acquired through this project have now been disseminated by extension workers who had gone through such training. Therefore, there are no major difficulties to disseminate the soybean techniques even though almost half of CPs (researchers) at JNKVV and RVSKVV have been involved in research projects for other crops.

#### <Financial Aspect>

The budget of DoFWAD for soybean production in MP for the past three years has seen marginal increase. Both of JNKVV and RVSKVV receive the funds from the AICRP only and use it for research and dissemination of extension work at the university. The amount has been decreasing for JNKVV. For RVSKVV, the data is available for the year 2016-17 only.

Budget of DoFWAD on soybean production in MP Currency Unit: Indian Rupees (Rs.)

2018-19	2019-20	2020-21
160,545,000	195,314,000	180,962,000

Source: DoFWAD

Budget for soybean project by JNKVV and RVSKVV (research/ dissemination) Currency Unit: Indian Rupees (Rs.)

University	2016-17	2017-18	2018-19	2019-20
JNKVV <sup>(1)</sup>	5,733,333	4,980,667	4,473,333	4,560,000
RVSKVV <sup>(2)</sup>	470,000	na	na	na

Source: JNKVV and RVSKVV

Note: (1) The budget reduction represents the reduction of payroll costs due to that the retirement of two principal scientists were replaced

<sup>5</sup> JNKVV has played as a focal point of AICRP.

<sup>6</sup> KVK is positioned under the JNKVV but supervised by Zonal/Regional Agricultural Research Station (RARS).

<sup>7</sup> ATMA is supported by the funding from the central government (90%) and the state government (10%).

by lower grade scientists.

- (2) The budget includes the RVSKVV Gwalior alone for extension work. The budget for research has been allocated separately from AICRP of which data is not available.

<Evaluation Result>

In light of the above, some problem has been observed in terms of the financial aspect. Therefore, the sustainability of the effects through the project is fair.

5 Summary of the Evaluation

The project achieved the Project Purpose, "Soybean cultivation system designed for small and poor farmers is established." The effects of the project have continued after the project completion, and the Overall Goal, "Soybean cultivation technology for small and poor farmers is disseminated by the DoFWAD, JNKVV and RVSKVV." has been achieved.

As for the sustainability, there are no problems in the policy, institutional/organization and technical aspects, but some problems have been observed in terms of the financial aspect. As for the efficiency, both of project cost and project period exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Recommendations to the implementing agency:

To: DoFWAD

- It is proved that cultivation technologies established by the project have been effective compared with the conventional cultivation methods. However, about 20% of pilot farmers surveyed have not adopted one of recommended technologies that requires the use of machineries, such as subsoilers because they cannot afford to buy the machineries. It is recommended that DoFWAD and the State Government explore the possibility of providing supporting schemes to marginal farmers (such as subsidy or affordable rental services), so that expensive machinery such as subsoilers become accessible and adopted by the small and marginal farmers.

To: JNKVV/RVSKVV

- More than 70% of the farmers interviewed continue to apply at least one or more cultivation technologies developed under the project, and farmers' income has increased. It is recommended that JNKVV and RVSKVV should continue to work closely with KVKs to impart important soybean cultivation technologies developed under the project to marginal farmers as some farmers had returned to the conventional method.

Lessons Learned for JICA:

- JICA, DoFWAD, and JNKVV/RVSKK shall discuss and confirm the methodology to conduct an end-line survey before the project completion. If it is not feasible to conduct an end-line survey and make an evaluation based on the indicators according to the project design framework, it shall be reviewed among the stakeholders so that project outcome at the time of project completion and at the time of ex-post evaluation can be compared.
- It is important to carefully determine the relevance of cultivation technologies to be developed under the project, especially if the introduction cost of the technologies is costly for the marginal farmers. Though most of the recommended technologies introduced by the project have been continuously used by farmers, one of recommended technologies that requires the subsoiler has not been well adopted because the equipment was hardly affordable for them.

Photos



Cluster demonstrations on Soybean concerning insect pest management have been conducted.



Demonstration plot of Soybean has been conducted in Hoshangabad.