F.No. 3-2/2017/Oilseeds/CA  
Govt. of India  
Ministry of Agriculture & Farmers’ Welfare  
Department of Agriculture, Cooperation & Farmers’ Welfare  
(Oilseeds Division)

To,

Prof. Vijay Singh Tomar,  
Vice-Chancellor,  
JNKKV, Krishinagar Aadhatral,  
Jabalpur -482004, MP

Sub: Proceeding of Brainstorming workshop on Soybean Research and Cultivation in India Vis-a-Vis Brazil and Japan Held on 21.01.2017 at JNKKV, Jabalpur -reg.

Sir,

I am forwarding herewith a copy for the Proceeding of Brainstorming Workshop on Soybean Research and Cultivation in India Vis-a-Vis Brazil and Japan held at Jawaharlal Nehru Krishi Vishwa Vidyalaya (JNKKV), Jabalpur on 21st January, 2017.

(Dr. Anupam Barik)  
Addl. Commissioner (Oilseeds)

Distribution:

1. Director of Agriculture, MP, Chhattisgarh, Gujarat, Karnataka, Telangana, Maharashtra, Rajasthan
2. Director, Directorate of Pulses Development, GOI, Vindhyachal Bhavan, Bhopal
3. Director, ICAR-IISR, Khandwan Road, Indore

Copy to:

1. PPS to Joint Secretary, Oilseeds, DAC&FW, Krishi Bhawan, New Delhi  
2. Director (Oilseeds) DAC&FW, Shastri Bhawan, New Delhi  
3. Programmer (Oilseeds) DAC, Shastri Bhawan, New Delhi
PROCEEDINGS OF BRAINSTORING WORKSHOP ON SOYBEAN RESEARCH AND CULTIVATION IN INDIA V/S A/VIS BRAZIL AND JAPAN HELD ON 21.1.2017 AT JNKVV, JABALPUR

The braining storing workshop on Soybean research and cultivation in India via-a-vis Brazil and Japan was organized at Jawaharlal Nehru Krishi Vishwa Vidyalaya (JNKVV), Jabalpur on 21st January 2017, under the joint auspices of Ministry of Agriculture and Farmers Welfare, Govt. of India, Department of Agriculture, Cooperation and Farmers Welfare (Oilseed Division), New Delhi and Govt. of Madhya Pradesh, Bhopal under the chairmanship of Prof. Vijay Singh Tomar, Hon’ble Vice Chancellor, JNKVV, Jabalpur and Dr. Ken Taniwaki, Chief Advisor, MP-JICA Project, Indore as chief guest. About 75 participants were attended this workshop. The following Officers/Prominent personalities were present in the Workshop:

1. Dr. S. K. Rao, Director Research Services, JNKVV, Jabalpur
2. Dr. Anupam Barik, Additional Commissioner (Oilseeds), DAC&FW, GOI, New Delhi.
3. Subroto Talukdar, Representative, JICA India Office, New Delhi.
4. Dr. A. K. Tiwari, Director, Directorate of Pulses Development, DAC&FW, Bhopal.
5. Dr. S. S. Tomar, Ex-DRS & Project Manager, MP-JICA Project.
6. Dr. Anupam Mishra, Director, ATARI, ICAR, Jabalpur,
7. Shri. A. K. Ingle, Registrar, JNKVV, Jabalpur
8. Dr. (Smt) Om Gupta, Dean, College of Agriculture, Jabalpur.
9. Dr. D.K. Mishra, Director Farms, JNKVV, Jabalpur
10. Dr. Sharad Tiwari, Director Biotechnology, JNKVV, Jabalpur
11. Dr. A.N. Shrivastava, Pt. Sci.(Soybean), Deptt of Plant Breeding and Genetics, JNKVV.
12. Dr. Sanjay Gupta, Principal Scientist, Indian Institute of Soybean Research, ICAR, Indore,
13. Dr. S.R. Ramgiri, Associate Director of Research Services, RVSKVV, Gwalior
14. Dr. A.K. Bhowmick, Prof, & Head, Deptt of Entomology, JNKVV, Jabalpur,
15. Dr. S. B. Nahatkar, Associate Director Research (HQ) & PI JICA (JNKVV)
16. Dr. Amit Jha, Scientist, Agronomy, JNKVV, Jabalpur
17. Dr. S.B.Das, Principal Scientist, Entomology, JNKVV, Jabalpur
18. Dr. Atul Shrivastava, Prof & Head, College of Agricultural Engineering, JNKVV, Jabalpur.
19. Dr. (Smt.) P. Parihar, Food Science, JNKVV, Jabalpur
20. Dr. (Smt.) Alpana Singh, Food Science, JNKVV, Jabalpur
21. Dr. M. Khan, Food Science, JNKVV, Jabalpur

The eminent scientists of the JNKVV, representatives of Department of Agriculture from the state of Madhya Pradesh, Maharashtra, Karnataka, Gujarat, Rajasthan were also present in the workshop. At the outset Dr. S. K. Rao, Director Research Services welcomed Hon’ble Vice-Chancellor, all the Guests, Head & scientists of JNKVV, JICA Officials from Indore & New Delhi, Officers from Dept. of Agriculture Cooperation and Farmers Welfare and officials from various state departments.

Dr. Rao, addressed about the contribution of production technologies including soybean varieties developed by JNKVV, Jabalpur helped in enhancing the productivity of soybean in the country. But still there is a yield gap by 5 quintals/ha. He informed that 37 scientists from JNKVV, RVSKVV, policy makers of GOI & Govt. of M.P. have been visited Japan, Brazil and
other countries with an objective to identify the technological interventions which are responsible for enhancing the production of soybean in the Brazil and Japan including ongoing soybean research programmes, infrastructures and to identify the practices which can be relevance for cultivation of Soybean in India with particular reference to Madhya Pradesh.

Prof. V. S. Tomar, Hon’ble Vice Chancellor, JNKVV. Jabalpur in this inaugural speech, expressed the strength of agriculture in Madhya Pradesh especially in Soybean production. During last 35 years MP have not faced many problems in soybean production. But from last 3 years facing lot of problems in soybean production resulting in huge loss to soybean growers. Soybean crop has changed the economy of farmers, growers and merchants associated with the soybean trades. Scientists, have to work hard in coming years to develop high yielding, disease resistant varieties including improved technologies and farm machineries. He emphasized on need of value addition in soybean products. Hon’ble Vice Chancellor is kind enough to agree with organization of world Soybean Symposium in the month of October 2017. He also appreciated the efforts made by scientists/researchers extension experts of JNKVV and RSKVV under MP-JICA program in maximization of soybean production in Madhya Pradesh during last 5 years.

Dr. Ken Taniwaki, Chief Advisor, MP-JICA Project, Indore shared his six years experience of Soybean Research under MP-JICA Technical Collaboration Project. He stated that MP-JICA Project is the longest collaborative programme/communication between India and Japan. He emphasized on strategies for improving soybean production/cultivation, fertilization and development of improved machineries for small and marginal farmers. He suggested that discipline wise work should be done by the scientists of JNKVV, Jabalpur and RVSKVV, Gwalior. He suggested technologies like proper date of sowing, nutrition with less phosphorus, research on marker assistance biotechnology for control of YMV in the future. Further he advocated on use of vibrating type sub soiler especially in dry soil in the month of May.

Sh. Subroto Talukdar, representative from JICA-India office, New Delhi presented about JICA activities in India. JICA provides assistance in Agriculture and Water Resources sector in India. According to him India is the largest partner in the World for JICA (Rs. 2340 Billion), with Rs. 262 Billion in Agriculture sector only. He presented JICA operational flow chart, technical cooperation strategy for India, ongoing JICA supported projects in Agriculture and Agro-Forestry Sector, snapshots of JICA intervention and glimpses of JICA-India operations. He gave emphasis on some of the issues like low productivity, India yields ½ of the World yield, low water use efficiency, weak institutional frame work for water management etc. He presented JICA priority areas and future direction of JICA support. He ask the scientists to work on post harvest techniques in soybean from field to store, market and emphasis on value addition in soybean.

Dr. Anupam Barik, Additional Commissioner (OS), DAC&FW expressed his gratitude to Hon’ble VC, JNKVV and DRS. JNKVV for giving their consent to host the meeting at JNKVV Campus. He explained that the scientists, administrators of MP and GOI visited Brazil and Japan during 5 years implementation of JICA-MP project and gained enough experiences on soybean research and development in these countries. At this platform all of them will share their
experiences among state agricultural officers and those involved in extension activities on soybean.

Globally USA contributes 35% followed by Brazil (28%), Argentina(17%) and India (3%) of the total soybean production. The per day productivity of USA is 17 kg per ha, Brazil 19.30 kg per ha while in India it is 12.30 kg per ha. Among the nine oilseed crops, soybean contributes 39% of the national oilseeds production and therefore has significant importance in vegetable oil sector. Madhya Pradesh, Maharashtra Rajasthan are major soybean growing States. In India we follow long sowing period, single variety JS-335 without seed treatment, flat bed sowing, intercropping, less use of fertilizers and no water management techniques. As per FLDs report the yield gap of soybean is about 62% in M.P, 64% in Maharashtra and 77% in Rajasthan.

In Brazil about 50% of total area is occupied by soybean. Holding size is 2000 to 30000 ha. In last thirty years the area under soybean has increased by 3.3 times and grain production increased by 5.3 times. More than 60% of the farmers are following no till technology. Farmers are using herbicide resistance GM soybean (70-80%). Sowing to harvesting is done mechanically. The farmers are paying 5-10% tax on agriculture and 27% in case of employee.

In Japan out of total population (12 crores) only 4.6% depends on agriculture. More than 50% of the food grain is met from import. Total agricultural area is 4.4 million ha, mainly rice (24.58 lakh ha), Soybean (1.31 lakh ha) and Wheat (2.13 lakh ha). The productivity of rice is 5.4 tons/ha, wheat 4.0 tons/ha, and soybean yield is 1.5 - 2.3 tons/ha. Soils are black and acidic in nature. Liming are done once in three years. Ridge planting system are being practiced to avoid excess moisture stress. The technology for sub-irrigation and drainage system for soybean production has been developed. Weed is the major problem and therefore herbicide usages are essential.

Dr. S. S. Tomar, Ex-DRS, JNKVV presented the MP-JICA project scenario as Project Manager. According to him summer cultivation of pulses created major problem for soybean YMV disease. In his presentation he showed the strong research support for soybean in the Brazil, having number of Research and extension institutions for soybean. Brazil has world largest research center in Londrina. He also gave emphasis on role of cooperatives in Brazil as facilitator for farmers for input and output market development.

Dr. S. K. Rao, DRS, JNKVV addressed regarding research status of Soybean in India vis-a-vis in Japan. According to him globally soybean is a very sensitive crop, we can achieve the required level of productivity by the management practices. Due to climatic change, soybean has affected a lot. He showed the potential areas and major constraints for soybean cultivation. He narrated that precision farming techniques are not available in India and due to continuous cropping of soybean required more nutrients inspite of 111 improved varieties of soybean have been released (85% area is covered by JNKVV varieties in the country). He also presented Japan Scenario of soybean farming. Japan has small farm holdings 1.2 ha (3 acres), Japan is able to develop intensive cultivation and they have 300 local varieties of soybean and maximum is being utilized in food uses. Many non GMO varieties were released by Japan and effective machines for land preparation and broad bed planting is adopted at Japan. Precise seed drills were developed for no tillage and farmers are following scientific crop rotation. He also
presented future research strategies giving emphasis on development of climatic resilient varieties, photo and thermo insensitive varieties, high yielding and wider adoptable varieties, tagging pyramid of useful genes to provide insulation. According to him host plant resistance can play vital role for pest management. Development of precision seed drills for accurate seed rate and planting depth is required.

Dr. A. K. Tiwari, Director, Directorate of Pulses Development, DAC&FW Bhopal expressed that mechanization played an important role in soybean production inspite of adverse climatic conditions. He gave emphasis on study of assessment of causes of outbreak of YMV. Dr. Anupam Mishra, Director ATARI (ICAR unit), JNKVV. Jabalpur stated that ridge and furrow system is effective and even precession planting method can be promoted for enhancing soybean production by using precession planter. He informed the house about the involvement of KVKs system on extension activities.

Dr. Amit Jha in his presentation showed international scenario of mechanization in soybean. Dr. S. B. Das presented soybean Entomological research in Japan and Brazil and role of Pheromone traps to attract female insects. He reported that there is 24 distinct populations of white flies. He gave emphasis on development of future strategies for management of white fly. Dr. A. N. Shrivastava presented scenario of Soybean breeding in Brazil, Japan and India. Breeding objectives adopted like productivity, stability, plant height, type of growth, long juvenile period. 33 varieties are in seed chain at present and 85% indent of JNKVV varieties. Dr. Sharad Tiwari presented the information, on use of Biotechnological methods for development of soybean varieties resistant to YMD at Japan.

Dr. Sanjay Gupta, IISR, Indore presented future research strategies for sustainable soybean production in India. He introduced the future research requirements in the country. He reported that about the 5000 germplasm of soybean in India. He gave emphases on the development of strategies to overcome the drought and high temperature. G. Soja, and UPSM 534 will be used for YMV tolerant varieties in future

The state representatives of the different states presented their views and expressed their problems of soybean cultivation. Mr. M. S. Prajapati from Gujarat reported that soybean is mainly grown in marginal soils.

Representative from Rajasthan reported that Kota and Udaipur are major soybean growing areas with 10-12 lakh hectare area under 2-3 districts with 11 q./ha average productivity and SRR is 18.51% in 2015-16. He reported that they are mainly dependent on Madhya Pradesh and Maharashtra for soybean seed.

The representative from Karnataka reported that farmers are mainly growing JS 335 variety and during 2015-16 very low productivity was due to flood and droughts. They are mainly depended on State of Madhya Pradesh for seed.

Representative from Maharashtra state reported that soybean is grown over an area of 32.0 lakhs hectare. Vidarbha and Marathwada are the main growing areas with 10-11 q/ha yield. 60-
70% area is covered by JS 335 variety. He suggested to import small Japanese/Brazil machinery for cultivation of soybean in India and Maharashtra.

Officials, from Deptt. of Agriculture, Chhattisgarh state expressed bitter experience of soybean cultivation during last 3 years, because the pods of variety PK 1042 were not set, the variety JS 90-05, JS 95-60 heavily damaged due to rains. Dr. A. N. Shrivastava clarified that the varieties which are not recommended for Chhattisgarh should not be recommended to farmers like JS 95-60.

At the end Dr. Anupam Barik expressed his sincere thanks for fruitful organization of Brain Storming Workshop. He proposed that during 2017 a Kisan Mela on Soybean may be organized at JNKVV, Jabalpur in collaboration with Oilseeds Division, Department of Agriculture, Cooperation and Farmers Welfare. He suggested that after termination of JICA project (February, 2017) the development of small farm implements suitable for Indian conditions may be formulated by JNKVV for its consideration by JICA/MP Govt/DAC&FW. The booklet on soybean production and utilization developed by JNKVV may be reprinted in different regional languages for its use by other states. If required NMOOP will support the same.

Dr. Manoj Shrivastava, Dr. Shiv Ratan and Dr. B.S. Diwvedi acted as a reparroteurs for recording the proceedings of this workshop and at the end, Vote of thanks has been given by Dr. A. N. Shrivastava. The Programme was conducted by Dr. Moni Thomas, Scientist, Krishi Vigyan Kendra, JNKVV, Jabalpur.

Major recommendations and action points are as follows:

1. Formulation of project of 3 years on zero tillage fabrication of Japanese farm machineries for small farmers of soybean growing areas of the state of Madhya Pradesh Maharashtra, Rajasthan by JNKVV: (Action: Prof & Head Farm Machinery and Scientist, Agronomy, JNKVV).

2. Submission of Proposal to DAC&FW for organization of National Level Farmers Fair on Soybean at JNKVV, Jabalpur during October 2017 (Action: Director of Extension Services, JNKVV).

3. Reprinting of reading and farm level materials for IPM in soybean in different regional languages (Action: Prof & Head, Department of Entomology).


5. Technology validation for system of soybean intensification (Action: Prof & Head Agronomy, Soil Science and Farm Machinery).
6. Submission of project to JICA.

6.1 Submission of projects on farm mechanization for small farmers of soybean growing areas of Madhya Pradesh, Maharashtra, Rajasthan through Department of Farmers Welfare and Agriculture Development, Government of Madhya Pradesh Dr. Ken Taniwaki will help in preparation of this project (Action: Prof & Head Farm Machinery and Scientist. Agronomy, JNKVV).

6.2 Submission research & development project on Post harvest management and value addition of soybean through Department of Farmers Welfare and Agriculture Development, Government of Madhya Pradesh (Action Prof. & Head, Post Harvest Technology and Food Science and Technology, JNKVV).

6.3 Submission of projects on long term experiment on effect of no till and climate change for soybean growing areas of the country for funding from suitable agencies (Action: Prof & Head Agronomy, Plant Physiology and In-charge Scientist Agro-Metrology, JNKVV).

6.4 Continues financial support is required from State / Central Government of develop YMV/YMD resistant varieties of soybean (Action: Department of Agri. Govt. of MP & Govt. of India)

7. Japanese technology specially farm machinery are more suited to Indian condition as compared to Brazilian situation and therefore efforts should be made to bring some of the Japanese machineries (specially seeding machines and small harvesters) for testing at large scale in soybean growing states. (Action: State Department/DAC&FW).

8. The seed treatment with insecticides, fungicide and biofertilizers should be made mandatory for selling the certified seed of soybean in the country (Action: Plant Protection Division, Ministry of Agriculture, Cooperation and Farmers Welfare, GOI, New Delhi).

9. Submission of proposal on development of soybean varieties for food industries (Action: Director, Indian Institute of Soybean Research, ICAR, Indore, Department of Food Science / Post harvest technology / Soybean Breeder JNKVV, Jabalpur and Soybean Breeder, RVSKVV, Gwalior).

10. The technology demonstrations should be GPS based, with ADHAR and Soil Health Card as mandatory requirement (State Department of Agriculture ).

11. Development of Pheromone trap containing male insects for attracting female insects (Action: Prof & Head, Department of Entomology, JNKVV).
12. Technology validation for YMV virus detection (Prof & Head, Plant Pathology, Entomology, Biotechnology, JNKVV, Senior Scientist, College of Agriculture, Sehore, RVSKVV).

13. Conversion of released soybean varieties of JNKVV must be converted for MYMV resistant using conventional / biotechnology approach (Action: JNKVV/RVSKVV/IISR Indore)


15. Adoption of no tillage, ridge & furrow concept of soybean cultivation helped to increase soil organic content and water holding capacity of the soil along with moisture conservation. Extensive demonstrations in these aspects can be initiated (Action: DAC&FW/State Govt./ KVKs/SAUs).

16. Japanese model of Soybean Producers Organization (SPO) or Farmers Producers Company (FPC) on pilot basis can be started in selected states in India (DAC&FW/ Agriculture Departments of MP, Maha and Raj).

17. Development and popularization of precision planting machinery for planting of soybean on ridge and furrow is required especially for soils of central India (Action: Prof & Head Farm Power and Machinery & Agronomy, JNKVV, Jabalpur).

(Anupam Barik)  
Additional Commissioner (Oilseeds)  
DAC&FW, GOI, New Delhi

(S.K. Rao)  
Director of Research Services  
J.N.K.V.V., Jabalpur (M.P.)

Copy for information and required action to:

1. PA to Vice-Chancellor, JNKVV, Jabalpur
2. Additional Commissioner (Oilseeds), DAC&FW, GOI, Krishi Bhawan, New Delhi
3. Principal Secretary, Government of Madhya Pradesh, Department of Farmers Welfare & Agriculture Development, Mantralaya, Bhopal
4. Director, Indian Institute of Soybean Research, ICAR, Khandwa Road, Indore
5. Chief Advisor, JICA, Indore
6. Country Representative, JICA, New Delhi
7. Director of Extension Services, JNKVV, Jabalpur
8. Director of Research Services, RVSKVV, Gwalior
9. Director of Agriculture, MP, Bhopal
10. Director of Agriculture, Chhattisgarh State
11. Director of Agriculture, Gujarat State
12. Director of Agriculture, Karnataka State
10. Director of Agriculture, Telangana State
11. Director of Agriculture, Maharashtra State
12. Director, Directorate of Pulses Development, GOI, Vindhyanchal Bhavan, Bhopal
13. Dr. Atul Shrivastava, Prof & Head Farm Machinery, JNKVV, Jabalpur
14. Dr. Amit Jha, Scientist. Agronomy, JNKVV, Jabalpur
15. Dr. A. K. Bhowmick, Prof & Head, Department of Entomology, JNKVV, Jabalpur
16. Dr. S. B. Nahatkar, Associate Director of Research Services, JNKVV, Jabalpur
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19. Prof. & Head Food Science and Technology, JNKVV, Jabalpur.
20. Prof & Head, Plant Physiology JNKVV, Jabalpur
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24. Dr. S. R. Ramgiri, Soybean Breeder, RVSKVV, Gwalior.
25. Dr. Sharad Tiwari, Director Biotechnology, JNKVV, Jabalpur
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27. Dr. Moni Thomas, Scientist, Krishi Vigyan Kendra, JNKVV, Jabalpur.

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