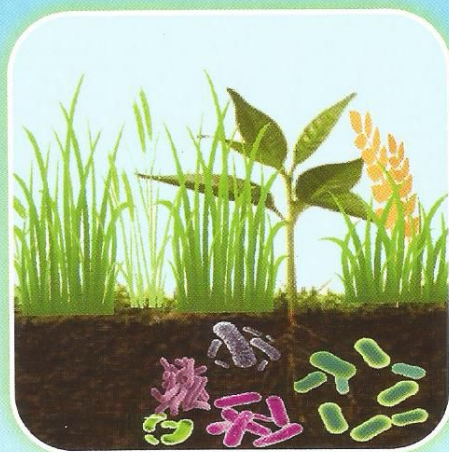


SUCCESS STORY

# Biofertilizer Production under All India Network Project on Soil Biodiversity-Biofertilizers



हर कदम, हर डगर  
किसानों का हमसफर  
भारतीय कृषि अनुसंधान परिषद

*AgriSearch with a human touch*

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## Introduction

Biofertilizers are preparations of living microorganisms that are useful for promotion of plant growth and soil health through a variety of mechanisms like biological nitrogen fixation, solubilization of insoluble phosphates and other nutrients, production of growth hormones and combating plant diseases. These include specific strains of bacteria, fungi and blue-green algae. By using biofertilizers farmers have most commonly reported earlier seed germination, more greenness, greater tillering and healthy crop stand. Biofertilizers are attractive as a supplement as well as a compliment to chemical fertilizers as they are applied in small quantities, are cheap and when used along with small doses of organic manures and reduced dose of chemical fertilizers, give synergistic benefits on productivity, nutrient use efficiency, crop quality, soil health and disease suppression.

The ICAR All India Network Project on Soil Biodiversity and Biofertilizers (AINP SBB) is set up with the mandate to enhance the productivity, soil and crop quality and supplement a part of the chemical fertilizer needs of crops through exploiting the soil biodiversity extant, for Biofertilizers in diverse cropping systems and agro-ecological zones in India, improve Biofertilizer technology and extend the Biofertilizer applications to disadvantaged areas. Through this project biofertilizers is produced at different centres. During 2016-17, liquid biofertilizers production earned revenue of Rs. 10.53 lakhs at MAU, Parbhani. Similarly, biofertilizer production was 93.8 lakhs at JNKVV, Jabalpur. Carrier based biofertilizers (209 metric tonnes) and liquid Biofertilizers (33 metric tonnes) worth Rs.182 lakhs was produced at ANGRAU, Amaravathi and supplied to farmers of Andhra Pradesh.

This document details the biofertilizer production at Microbes Research & Production Center (MRPC) located at JNKVV, Jabalpur. The erstwhile AICRP on BNF now the All India Network Project on Soil Biodiversity and Biofertilizers (AINP SBB) is continually supporting the research, testing and demonstration of biofertilizers since 1978. The AINP SBB is also funding for front line demonstration trials in farmer's field under tribal sub plan programme. The authenticated strains developed by AINP SBB's coordinating centre (IISS, Bhopal) are also transferred to the MRPC for mass culture production to serve the farming community. The centre is being significantly contributing in the field of research and applications of various quality assured biofertilizers of traditional and newly innovated types in different formulations viz., carrier based and liquid formulations. Demand of biofertilizers, in Madhya Pradesh is given below.

### Biofertilizer demand in M.P. (in tonne)

S. No.	Crop	Rhizobium	Azotobacter / Azospirillum	PSB	PGPR	Trichoderma	Total
1.	Cereals (83.18)	-	8318	8318	8318	-	24954
2.	Pulses (51.79)	5179	-	5179	5179	5179	20716
3.	Oil Seeds (72.02)	6497	705	7202	7202	7202	28808
		(legumes)		(mustered, linseed)			
4.	Fruits, Vegetables, Spices and Flowers (76.50)	-	765	765	765	-	2295
5.	Cash crops (71.70)	-	717	717	717	-	2151
	<b>Total</b>	<b>11676</b>	<b>10505</b>	<b>22181</b>	<b>22181</b>	<b>12381</b>	<b>78924</b>

Data shown in parenthesis are cultivable area in lakh hectare under the crop.

There is over 900 tonnes of total installed production capacity and over 12902.29 tons of the total biofertilizers production in the state. However, the total installed production capacity of these units is still very low compared to potential demand of 66021.71 tons (against 78924 ton) of bacterial biofertilizers. (Source: DIT, Govt. of Madhya Pradesh 2013).



## Biofertilizer production in MP

S. No.	Production unit	Annual production capacity (MT)	Biofertilizer production (MT)						Total Production (MT)
			Rhizobium	Azotobacter	Azospirillum	PSB	Trichoderma	Others	
1	JNKVV	650.00	128.50	63.50	60.50	255.50	126.50	-	1284.50
2	Others (19 Companies)	10250.00	189.16	211.62	3.28	510.41	-	453.32	11617.79
<b>Total</b>		<b>10900.00</b>	<b>317.66</b>	<b>275.12</b>	<b>63.78</b>	<b>765.91</b>	<b>126.50</b>	<b>453.32</b>	<b>12902.29</b>

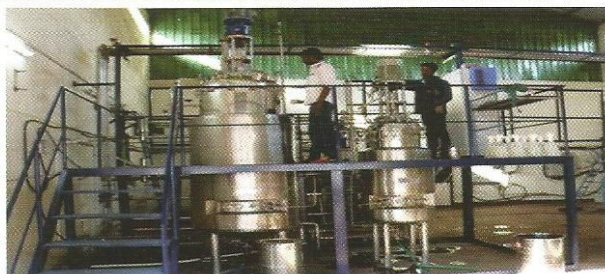
Source: mpgovt.org (2015).

## Biofertilizers produced at MRPC, JNKVV, Jabalpur

S.No	Biofertilizers (type/group)	Organisms	Crop	Strains developed under AINP SBB
1	Jawahar legume nitro	Rhizobium	Legumes	R <sub>33</sub> , R <sub>35</sub>
2	Jawahar non-legume/cereal nitro	Azotobacter, Azospirillum	Cereals	Az <sub>2</sub> , Az <sub>2-5</sub> , Azp <sub>11</sub>
3	Jawahar Arthrobacter	Arthrobacter spp.	All crops	Ar <sub>6</sub> , Ar <sub>12</sub>
4	Jawahar BGA	BGA (soil based)	Paddy	
5	Jawahar cash nitro	Acetobacter	Sugarcane	
6	Jawahar phospho	PSB, Bacillus sp.	All crops	P <sub>3</sub> , P <sub>10</sub> , P <sub>25</sub>
7	Jawahar mycorrhiza	VAM	All crops	
8	Jawahar potash	KSB- Fraturia	All crops	
9	Jawahar micro	MSB (for Zn)- Pseudomonas	All crops	
10	Jawahar PGPR	Pseudomonas	All crops	
11	Jawahar Actinomycetes	Streptomyces spp.	All crops	A <sub>10</sub> , A <sub>16</sub>
12	Jawahar plant stimulator	Lactobacillus	All crops	
13	Jawahar protector	Trichoderma	All crops	
14	Jawahar biodigester	Consortia	Waste materials	
15	Jawahar enriched bio-organic	Microbial organic matter	All crops	

Agencies purchasing biofertilizers from MRPC :Madhya Pradesh State Agriculture Departments, MP State Marketing Society Federation Corp, Krishi Vigyan Kendras, Research Stations of JNKVV, Farms of JNKVV, Farmers, Other states including Gujarat, Maharashtra, Chhattisgarh and Andhra Pradesh.

## Facilities at the Biofertilizer Production Centre at MRPC



Fermenters



Machine for bottling of liquid biofertilizers



High pressure horizontal autoclave



Products : liquid biofertilizers



## Impact of Biofertilizers on Agricultural Productivity and Socio Economic Development of farmers

District	No of farmers trained	No of farmers adopted Biofertilizer recommendation	Crops evaluated at the farmers field	Economic benefit by farmers
Mandla	100	65	Maize, Soybean,	16%
Dindori	100	65	Paddy, Wheat, Chickpea,	12%
Jabalpur	50	40	Pea and Lentil	18%
Balaghat	40	30		10%
Seoni	40	35		14%
Chhindwada	100	70		18%

### Biofertilizer production and profit at MRPC under AINP SBB

Biofertilizers	2012-13	2013-14	2014-15	2015-16	2016-17
Total production (In tonne)	119.17	57.31	49.57	94.95	105.391 + 3004 ltr
Profit (Rs in lakhs)	10.05	5.00	3.63	7.71	9.37

Conclusion : AINP SBB is contributing significantly towards increased awareness of using biofertilizers among framers of central India. Adoption of biofertilizer has enhanced farmers' economic benefit by 10 -18 %. The project holds promising key for sustainable agriculture and to boost the farmers' income.

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