

**KRISHI VIGYAN KENDRA  
CICR, NAGPUR**



**ANNUAL PROGRESS REPORT**  
(April, 2012 to March, 2013)



**KRISHI VIGYAN KENDRA**  
**Central Institute for Cotton Research**  
**Post Bag No. 2, Shankar Nagar P.O.,**  
**Nagpur 440010 , Maharashtra**

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# ANNUAL REPORT – 2012-2013

## 1. GENERAL INFORMATION ABOUT THE KVK, NAGPUR

### 1.1. Name and address of KVK with phone, fax and e-mail

Address	Telephone		E mail
Krishi Vigyan Kendra Central Institute for Cotton Research (ICAR), Post Bag No. 2, Shankar Nagar P.O., <b>Nagpur – 440010</b> <b>(Maharashtra)</b>	Office 07103 – 275549 / 275617 / 275536	FAX 07103 – 275529	<a href="mailto:kvkciernagpur@gmail.com">kvkciernagpur@gmail.com</a> , <a href="mailto:kvk_cicr2007@rediffmail.com">kvk_cicr2007@rediffmail.com</a> Website: www.kvkciernagpur.org.in

### 1.2. Name and address of host organization with phone, fax and e-mail

Address	Telephone		E mail
	Office	FAX	
Central Institute for Cotton Research (ICAR), Post Bag No. 2, Shankar Nagar P. O., Nagpur – 440 010 (Maharashtra)	07103 – 275549 / 275617 / 275536	07103 – 275529	<a href="mailto:cicrngp@rediffmail.com">cicrngp@rediffmail.com</a>

### 1.3. Name of the Programme Coordinator with phone & mobile No

Name	Telephone / Contact		
	Residence	Mobile	Email
Dr. R.B. Singandhupe	Anjali Apartment, Plot No. 180 (F2), Trimurtinagar, Nagpur-440022	09421660322	<a href="mailto:rbsingandhupe@gmail.com">rbsingandhupe@gmail.com</a>

### 1.4. Year of sanction:

The Indian Council of Agriculture Research has sanctioned the Krishi Vigyan Kendra (KVK) at the Central Institute For Cotton Research (ICAR) at Nagpur for the Nagpur District of Maharashtra State vide letter No. F.No. 5(28)/93-KVK-AE-II dated October 4, 1994.

### 1.5. Staff Position (as on 31<sup>st</sup> March, 2013)

Sl. No	Sanctioned post	Name of the incumbent	Designation	Discipline	Pay Scale (Rs.)	Present basic (Rs.)	Date of joining	Permanent /Temporary	Category (SC/ST/OBC/ Others)
1	Programme Coordinator	Dr.R.B. Singandhupe	Pr. Sci & I/c KVK	Agronomy	52610	37400-67000	01.06.2011	Permanent	OBC
2	Subject Matter Specialist	Sh.Gulbir Singh	SMS	Horticulture	28560	15600-39100+5400	30.09.1996	- do -	Others
3	Subject Matter Specialist	Dr. A.S. Tayade	SMS	Agronomy	*Selected as Sr. Scientist, SBI, Coimbatore since Oct. 2012		30.09.1996	- do -	SC
4	Subject Matter Specialist	Sh. S.S Patil	SMS	Extension	28560	15600-39100+5400	30.09.1996	- do -	OBC
5	Subject Matter Specialist	Dr.U.V. Galkate	SMS	Veterinary Sci.	31240	15600-39100+5400	10.01.1997	- do -	ST

6	Subject Matter Specialist	Dr.R.R. Gupta	SMS	Plant protection	27650	15600-39100+5400	30.09.1996	- do -	Other
7	Subject Matter Specialist	Smt.S.N. Chauhan	SMS	Home Science	26450	15600-39100+5400	07.01.1997	- do -	Other
8	Farm Manager	Dr.P.B. Deulkar	Farm Manager	Veterinary Science	21500	9300-34800+4200	07.04.1997	- do -	SC
9	Programme Assistant	Mr.Harish Kumbulkar	Programme Assistant	Soil Science	10130	9300-34800+4200	01.10.2010	- do -	OBC
10	Computer Programmer	Smt. Vandana Satish	Programme Assistant (Computer)	Computer Science	9710	9300-34800+4200	29.01.2011	- do -	Other
11	Accountant / Superintendent	Ejaj Ahmed	Office Suptd.	-	12760	9300-34800+4200	07.12.2010	- do -	Others
12	Stenographer	Sh.S.S. Chalkhuore	Stenographer	-	16020	5200-20200+2400			
13	Driver	A. K. Sherkar	T-1 (Driver)	-	10610	5200-20200+2400	10.02.1998	- do -	ST
14	Driver	Naresh Raut	T-1 (Driver)	-	6990	5200-20200+2400	29.12.2010	- do -	OBC
15	Supporting staff	Sh.Shalik Sahare	SS. Grade-1	-	9080	5200-20200+2400	31.12.2008	- do -	SC
16.	Supporting staff	Shm.S.N. Godghate		-	--	-	Retired	-	Post Vacant

1.6. Total land with KVK (in ha) :

S. No.	Item	Area (ha)
1	Under Buildings	511.88 sq. m.
2.	Under Demonstration Units	6.60 ha
3.	Under Crops	7.40 ha
4.	Orchard/Agro-forestry	6.00 ha
5.	Others (specify)	-
		20 ha

1.7. Infrastructural Development:

A) Buildings

S. N	Name of building	Source of funding	Stage					
			Complete			Incomplete		
			Completion Date	Plinth area (Sq.m)	Expenditure (Rs.)	Starting Date	Plinth area (Sq.m)	Status of construction
1.	Administrative Building	ICAR	19/03/1999	511.88	-	Completed	-	-
2.	Farmers Hostel	-	-	-	-	-	-	-
3.	Staff Quarters (6)	-	-	-	-	-	-	-
4.	Demo Units : -Goat (Temporary shed)	CICR	Dec 1998	26.6 ' X 13.6'	10000	Completed	-	-
	-Vermicompost unit (Portable)	CICR	Feb 2006	25'X30'	40000	Completed	-	-

	-Nutrition garden unit	CICR	July 1998	18 X 44 m	-	Completed	-	-
	-Guava garden unit	CICR	July 1996	2 acres	10000	Completed	-	-
	- Fruit cafeteria	CICR	July 1999	1.5 acres	7000	Completed	-	-
	- Teak plantation	CICR	July 1999	Field Border	-	Completed	-	-
5	Fencing	-	-	-	-	-	-	-
6	Rain Water harvesting system – Farm ponds - 1	CICR	June 2001	60mX45mX 3.5 m Capacity- 95 lakh litres	3.5 lakhs	Completed	-	-
7	Threshing floor	-	-	-	-	-	-	-
8	Farm godown -2 rooms	CICR	1996	10'X15' each	80000	Completed	-	-
9	Farmers Hostal	KVK	2012			Under construction	-	-

#### B) Vehicles

Type of vehicle	Year of purchase	Cost (Rs.)	Total kms. Run	Present status
TATA Sumo Victa	March 2007	4.30 lakh	100000 km	Running condition
Tractor – Mahindra (Arjun)	March 2009	4.86 lakh	831.7 km	Running condition

#### C) Equipments & AV aids

Name of the equipment	Year of purchase	Cost (Rs.)	Present status
Establishment of soil testing lab			
1. pH meter	2007	12094	Working condition
2. Chemical balance	2007	8437	Working condition
3. Physical balance	2007	7312	Working condition
4. Ultra pure water system	2007	180000	Working condition
5. Refrigerator	2007	140800	Working condition
6. Flame photometer	2007	41490	Working condition
7. Lab benches	2008	1,53,000	Working condition
8. Computer table with chair	2008	7,200	Working condition
9. Rotary shaker	2008	30,750	Working condition
10. Hot air oven, Hot plate	2008	34,144	Working condition
11. Fume hood chamber	2008	94,900	Working condition
12. Computer with printer	2008	79,916	Working condition
13. Palvalizer	2008	44,651	Working condition
14. Spectrophotometer	2008	2,93,288	Working condition
15. Online UPS	2009	2,37,543	Working condition
16. LCD Projector	2009	89,026	Working condition
17. Soil testing Mobile Van	2013		Working condition

1.8. A). Details SAC meeting\* conducted in the year

Sl.No.	Date	Name and Designation of Participants	Salient Recommendations	Action taken
1	13/07/2012	<ol style="list-style-type: none"> <li>1. Dr. J.V. Singh, PS Chairman of the meeting</li> <li>2. Dr. R.B. Singandhupe, PS &amp; P C, KVK, CICR,</li> <li>3. Dr. P.G. Ingole, Assoc. Dean College of Agriculture, Dr. PDKV, Nagpur</li> <li>4. Dr.(Mrs.) Harsha Jharia Vice Principal &amp; Assoc. Prof., Dept. of Home Science, LAD &amp; SRP College, Nagpur</li> <li>5. Dr.(Mrs.) Rita Rawat, HOD, Nutrition, LAD &amp; SRP College, Nagpur</li> <li>6. Dr. A.D. Huchche, Principal Scientist, Horticulture, NRCC, Nagpur</li> <li>7. Dr. R.M. Bhojane, Asstt commissioner of Animal Husbandary, Office of Dy. Commissioner of Animal Husbandary, Nagpur</li> <li>8. Dr. S.S. Meshram, Live Stock Development Officer, Office of DAH, ZP, Nagpur</li> <li>9. Dr. R.L. Rathod, Dist. Dairy Dev. Officer, Office of the Dairy Development, Civil Lines, Nagpur</li> <li>10. Dr. G.R. Tidke Prof. of Extn. Education, College of Agriculture, Dr. PDKV, Nagpur</li> <li>11. Smt. Sangita Arajpure Dept. of Agric, AIR, Nagpur</li> <li>12. Shri Madhukar N. Patil, Progressive farmer ,village Manori,</li> </ol>	<p>.KVK programmes should be conducted in coordination with State Agril. Departments, ICAR institutes, SAUs ,banking &amp; other line departments. KVK, should take feedback from farmers regularly for technologies disseminated. Adoption rate and impact assessment of the technologies disseminated through various programmes of KVK should be worked out. Success stories should be published. Action plan of KVK should be presented in SAC meeting for getting further collaboration with other departments. Linkage with other departments for organizing extension activities should be increased .</p> <p>2.New technologies should be disseminated to the farmers at the earliest by the coordination with other line departments, Honorable Chairman advised the farmers to adopt in- situ moisture conservation, getting short duration intercrops, bio-mulching of pulse crop, making coal or compost by cotton stalks and not to burn the crop residue, getting horticultural crops for getting higher productivity &amp; profitability</p> <p>3.Experiments on Ragi (Nachani), nutritious minor millet should be undertaken &amp; the use of the same should be promoted for minimizing malnutrition</p> <p>4.Kisan Mela on Citrus may be organized by KVK. Nursery of citrus plants should be developed by KVK after getting required mother plants/other planting material from NRCC, Nagpur.</p> <p>5.Animal health camp like vaccination, deforming, infertility camps should be organized by KVK in collaboration with Live Stock Dev. Deptt.</p>	<p>01 The KVK Programmes are be Conducted in coordination with SDA officials SAUs and other lines departments. We also get associated with financial agency. Linkage with ATMA and other department already being increased continuously.</p> <p>02 -----As per dissemination of new technologies to the farmers, the formers are being mobilized to adopt in-situ moisture conservation practices, mulching of drops, etc. training of farmer on charcoal making from cotton stalks and crop residue his been organized</p> <p>03 ....The use of ragi (Nachani) is being promoted in the diet of women and children in adopted as other villages. The trial for adoption will be initiated at KVK farm during ensuing rabi season</p> <p>04 ...A nursery has been established at KVK farm in July 2012 including 130 plants of Nagpur Mandan received then NRCC, Nagpur.</p> <p>05 ...KVK is already organizing animal health camp time to time. Live stock Dev. Dept. officials will be invited in the next animal health camp for effective</p>

		<p>P.O. Pipra, Taluka, Umred, Distt. Nagpur</p> <p>13. Shri Shantaram Keshav Arade, Progressive farmer, village Manori., P.O. Pipra, Taluka Umred, Distt. Nagpur</p> <p>14. Shri Tejasvi Zhade, Innovative farmer, village Boruzwada. P.O. Malegaon, Taluka Saoner, Distt. Nagpur</p> <p>15. Smt. Shamim Bano, President, Tulsi Mahila Bachat Gat, Kamptee, Nagpur</p> <p>16. Shri Rajendra L. Mahant Progressive Dairy Farmer, village Gondi,-Digras, P.O. Yenwa, Taluka Katol, Distt. Nagpur</p> <p>17. Mrs Jyoti R. Mahant, Progressive Dairy Farmer, village Gondi-Digras, P.O. Yenwa, Taluka Katol, Distt. Nagpur</p>	<p>6. Success stories of adopted progressive &amp; innovative farmers/SHGs should be given to AIR, Nagpur for publicity by getting interviews with the help of KVK. Advisory Messages on AIR on the different crops and animal problems should be given by KVK.</p> <p>7: Expertise help is needed to the cotton growing farmers for demonstrating drip irrigation, water utilization, spacing maintenance, etc. Advisory on semiloopers on soybean should be given to the farmers.</p> <p>8: Motivate few more Dairy farming farmers in a circle and their visit may be conducted to successful dairy entrepreneurship of the district. For green fodder availability perennial grasses (like Napier) cultivation should be promoted and training of the farmers in this regard may be conducted in collaboration with Animal Husbandry Department. Similarly organic farming should be promoted and for this purpose Kisan Mela should be organized by KVK at least at Taluka level.</p> <p>9: The trainings on poultry rearing is being conducted every month by their department, therefore, the farmers of KVK adopted villages may be nominated to participate in these training programmes.</p>	<p>implementation of the programme</p> <p>6... Success stories of progressive/innovative farmers and advisory messages are being prepared and will be provided to AIR shortly. Advisory on mobile messages has been sent to more than 500 farmers, The same will also be provided to the AIR from next Kharif season.</p> <p>7... The expertise on drip irrigation, fertigation, water conservation and utilization, plant sparing is being given through field visits, lectures in exhibitions, and training programmes and through mobile advisory, etc.</p> <p>8... Farmers have already motivated for dairy farming entrepreneurship development, visits of farmers to dairy farmers are being arranged. Farmers are being advised to cultivate and feed perennial grasses in field visits and training programmes, field days and kisan melas, etc.</p> <p>9... Efforts have already been made to train desired poultry unit farmers /rural youths. We are sending farmers to live department.</p>
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## **2. DETAILS OF DISTRICT (2012-13)**

### **2.1 Major farming systems/enterprises (based on the analysis made by the KVK)**

<b>S. No</b>	<b>Farming system/enterprise</b>
1	Agri – Horti – Livestock farming system

### **2.2 Description of Agro-climatic Zone & major agro ecological situations (based on soil and topography)**

<b>S. No</b>	<b>Agro-climatic Zone</b>	<b>Characteristics</b>
1	AESR-6.3 - Hot moist, semi-arid eco-sub region	Eastern Maharashtra Plateau. Hot moist, semi-arid eco - sub region with medium and deep clayey black soils (shallow, loamy to clayey black soils as inclusions), medium to high AWC and LGP of 120 to 150 days

<b>S. No</b>	<b>Agro ecological situation</b>	<b>Characteristics</b>
1	Hot semi-arid eco region	Hot semi-arid eco region with shallow and medium (with inclusion of deep) black soils, GP 90 – 150 days

### **2.3 Soil type/s**

<b>S. No</b>	<b>Soil type</b>	<b>Characteristics</b>	<b>Area in ha</b>
1	Very shallow	Low in N, P, organic matter & rich in K	2.05 lakhs
2	Shallow	Low in N, P, organic matter & rich in K	0.64 lakhs
3	Medium deep	Medium in N & P, low in OC & rich in K	0.96 lakhs
4	Very deep	Medium in N & P, low in OC & rich in K, high clay content	2.80 lakhs
<b>Total</b>			<b>6.45 lakhs</b>

### **2.4. Area, Production and Productivity of major crops cultivated in the district**

<b>S. No</b>	<b>Crop</b>	<b>Area (ha)</b>	<b>Production (M. tone)</b>	<b>Productivity (kg /ha)</b>
1	Kharif Jowar	33000	344000	1041
2	Rabi Jowar	2900	1500	532
3	Rice	46000	69100	1502
4	Tur	52900	33500	634
5	Gram	73700	45300	615
6	Cotton	67500	84000	212
7	Soybean	263500	346600	1315
8	Wheat	65200	73000	1119
9	Groundnut (K)	6100	5800	945
10	Groundnut (Sum)	600	500	915
11	Sunflower	2500	2100	850

**Sources: O/o SAO, Nagpur**

## 2.5. Weather data

Weather Data during the crop season(2012-13) KVK , CICR, Nagpur

Location of the weather station : CICR, Nagpur

Date & Month	Met. week	Rainfall (mm)	No. of rainy days	Wind velocity(Km/hr)	Sun shine hrs	Temperature (°c)		R.H. (%)	
						Max.	Min.	Mor.	Even.
4-10 June,2012	23	0	0	9.0	6.5	42.0	30.6	44.1	22.4
11-17	24	41	4	6.7	5.0	39.0	26.2	76.4	39.1
18-24	25	21	2	6.5	1.6	32.7	25.5	78.1	57.4
25-01 July	26	0	0	7.0	7.1	39.0	25.0	64.1	42.6
<b>Total</b>		<b>62</b>							
02-08 July	27	44	2	6.2	5.4	31.0	24.4	89.0	72.0
09-15	28	26	3	4.3	3.0	33.0	25.0	89.4	64.5
16-22	29	62	5	4.7	2.0	32.0	24.3	89.4	68.1
23-29	30	192	5	5.0	0.0	27.5	23.5	91.0	87.2
30-05 Aug.	31	111	6	4.1	0.0	27.2	23.0	91.2	85.0
<b>Total</b>		<b>435</b>							
06-12 Aug.	32	4	4	5.1	1.0	27.6	24.0	92.0	85.0
13-19	33	1	1	4.4	7.0	29.4	24.0	89.4	77.2
20-26	34	30	3	3.5	7.5	30.5	24.1	89.0	77.0
27-02 Sept.	35	16	2	3.0	5.0	32.1	25.0	91.0	68.0
<b>Total</b>		<b>51</b>							
03-09 Sept.	36	135	4	3.8	3.8	30.7	23.6	93.1	82.3
10-16	37	30	1	2.4	7.4	31.5	24.6	88.3	58.3
17-23	38	11	2	2.2	7.1	32.5	24.4	89.9	61.1
24-30	39	4	1	2.9	8.2	34.1	23.1	81.7	50.6
<b>Total</b>		<b>180</b>							
1-7Oct	40	15	1	2.7	7.5	33.5	21.4	85.3	53.3
8-14	41	0	0	2.4	9.1	33.8	19.1	75.3	43.6
15-21	42	0	0	1.9	9.1	33.4	17.3	74.6	40.0
22-28	43	0	0	2.3	9.0	32.7	18.2	76.1	45.1
29-04Nov	44	10	1	4.4	5.1	29.2	16.8	77.0	48.3
<b>Total</b>		<b>25</b>							
5-11	45	0	0	2.6	9.3	30.4	15.3	75.9	34.1
12-18	46	0	0	2.1	9.2	30.1	12.0	72.6	26.3
19-25	47	0	0	2.4	8.5	31.0	13.0	63.0	35.9
26-02Dec	48	0	0	1.8	7.2	30.9	15.4	81.3	39.3
<b>Total</b>		<b>00.0</b>							
3-9	49	0.0	0	1.9	8.5	31.1	13.3	73.3	24.0
10-16	50	0.0	0	1.8	7.9	31.3	15.6	83.3	36.0
17-23	51	0.0	0	2.4	8.6	29.8	11.2	73.0	26.7
24-31Dec 2011	52	0.0	0	2.2	9.8	28.6	8.2	75.6	20.3
<b>Total</b>		<b>00.0</b>							
01-07Jan2012	01	0.0	0	3.3	7.6	29.5	13.6	73.9	42.4
8-14	02	0.0	0	2.9	8.5	27.3	8.8	56.4	24.7
15-21	03	0.0	0	4.0	9.4	30.3	13.9	73.9	40.3
22-28	04	2.0	1	3.2	5.3	25.9	11.5	76.4	48.3
29-04Feb2012	05	0.0	0	2.4	8.7	29.3	11.5	76.0	34.0
<b>Total</b>		<b>02.0</b>							
<b>Total Rainfall</b>		<b>755.0 mm</b>		-					

## 2.6. Production and productivity of livestock, Poultry, Fisheries etc. in the district

Category	Population	Production	Productivity
<b>Cattle</b>			
<i>Crossbred</i>	88180	2500-3000 l/lactatiion	-
<i>Indigenous</i>	890755	800-900 l/lactatiion	-
<b>Buffalo</b>	103965	1500-1800 l/lactation	-
<b>Sheep</b>			
<i>Crossbred</i>	-	-	-
<i>Indigenous</i>	9168	Wool prod.: 200-250 g/shearing	-
<b>Goats</b>	336219	Avg. Milk yield: 750 ml/day Avg. Body wt. at market age: 20 kg/8 months	-
<b>Pigs</b>			
<i>Crossbred</i>	<b>239</b>	Avg. Body wt. at market age: 90-100 kg in 5 to 6 months	-
<i>Indigenous</i>	<b>9258</b>	Avg. Body wt. at market age: 50-70 kg in 5 to 6 months	-
<b>Rabbits</b>	-	-	-
<b>Poultry – Chicken (Excluding farm chicken)</b>			
<i>Desi</i>	170326	Egg Prod. (Annual): 60 Body wt at market age: 1.5 kg/1.5 yr	-
<i>Improved</i>	14916	Egg Prod. (Annual): 110 Body wt at market age: 1.5 kg/6 month	-
Ducks	-	-	-
Quails	-	Egg Prod. (Annual): 250-280 Body wt at market age: 150-180 g in 5 wks	-

Category	Area	Production	Productivity
Fish			
<i>Marine</i>			
<i>Inland</i>			
Prawn			
Scampi			
Shrimp			

## 2.7 Details of Operational area / Villages (2012-13)

S. No.	Taluka	Name of the block	Major crops & enterprises	Major problems identified
1	Umred & Bhivapur	Umred & Bhivapur	Soybean, Cotton, pigeonpea, wheat, chickpea, jowar, vegetable crops like tomato, chilli, brinjal, okra & tinda, orchard- Nagpur mandarin	<p><b>Crop Production:</b></p> <p><b>Low productivity of cotton, Soybean, Pigeonpea &amp; chick pea under rainfed situation :</b></p> <ol style="list-style-type: none"> <li>1. Imbalance use of nutrients in cotton</li> <li>2. Water stress in cotton and soybean.</li> <li>3. Poor germination and low plant population in soybean.</li> <li>4. Weed menace.</li> <li>5. Fusarium wilt in pigeonpea and chickpea.</li> <li>6. Reddening of leaves in cotton.</li> <li>7. Phosphorous fixation in vertisol</li> </ol>
2				<p><b>Horticulture :</b></p> <p><b>Low yield &amp; poor fruit quality of Nagpur mandarin and low productivity of vegetables &amp; flowers.</b></p> <ol style="list-style-type: none"> <li>1. Non availability of disease free saplings of citrus</li> <li>2. Irregular bearing in Nagpur mandarin.</li> <li>3. Scarcity of water &amp; poor management</li> <li>4. Unawareness of inter cropping cultivation in orchards</li> <li>5. Improper fertilizer schedule.</li> <li>6. Low production in tomato due to damping off disease.</li> <li>7. Low production &amp; poor quality in Okra due to Yellow vein Mosaic virus &amp; fruit borer respectively.</li> <li>8. Poor flower quality in roses due to improper pruning &amp; thrips &amp; mites incidence.</li> <li>9. Low productivity &amp; poor fruit quality in brinjal due to sucking pests &amp; fruit borer.</li> <li>10. Water logging condition in citrus orchard during rainy season.</li> <li>11. Low productivity in chilly due to sucking pest incidence.</li> </ol>
3				<p><b>Plant Protection :</b></p> <p><b>Low productivity &amp; poor quality in rainfed cotton, pigeonpea, soybean, vegetables, chickpea and citrus</b></p> <ol style="list-style-type: none"> <li>1. Incidence of sucking pests and bollworms in cotton.</li> <li>2. <i>Fusarium</i> wilt in chickpea and pigeonpea.</li> <li>3. Incidence of <i>Helicoverpa armigera</i> in pigeonpea &amp; chickpea</li> <li>4. Incidence of girdle beetle, semiloopers, stemborer and hairy caterpillars in soybean</li> <li>5. Incidence of <i>Phytophthora</i>, Thrips, mites, , psylla and fruit moth in citrus.</li> <li>6. Incidence of shoot and fruit borer in brinjal</li> </ol>
4				<p><b>Veterinary Science :</b></p> <p><b>Low productivity in Cattle, Buffaloes &amp; goats.</b></p> <ol style="list-style-type: none"> <li>1. Low genetic potential of indigenous livestock.</li> <li>2. Poor/ conventional management practices adopted by farmers.</li> <li>3. Lack of awareness regarding disease, ecto &amp; endo parasites management in livestock.</li> </ol>

				<p>4. Decreasing area of grazing land.</p> <p>5. Non-availability of quality roughage during summer.</p> <p>6. Poor reproductive performances of livestock due to protein &amp; micronutrient deficiency in diet.</p>
5				<p><b>Home Science :</b></p> <p><b>Lack of technical know - how in different enterprises in agriculture &amp; allied fields, malnutrition in children &amp; women, value addition, drudgery in farmwomen.</b></p> <ol style="list-style-type: none"> <li>1. Practicing conventional methods in weeding, fertilizer application and harvesting of crops.</li> <li>2. Practicing conventional techniques in back yard poultry, goat rearing and milk production.</li> <li>3. Malnutrition in farmwomen &amp; children.</li> <li>4. Lack of awareness about value addition.</li> <li>5. Woman's facing drudgery while weeding and harvesting of crops.</li> <li>6. Unawareness regarding use of non-conventional fuel conservation devices among rural women.</li> <li>7. Lack of involvement of farmwomen in decision making.</li> </ol>
6				<p><b>Extension :</b></p> <ol style="list-style-type: none"> <li>1. Lack of knowledge about improved technologies in agriculture and allied fields.</li> <li>2. Lack of knowledge regarding recycling of farm waste.</li> <li>3. Unawareness regarding rainwater harvesting.</li> <li>4. Lack of marketing knowledge.</li> </ol>

## 2.8 Priority/thrust areas

Crop/Enterprise	Thrust Area
Cotton	Plant density optimization, Integrated nutrient management and in situ water conservation and sucking pest management
Soybean	Weed management, IPM and INM
Pigeonpea and chickpea	Disease management, <i>Helicoverpa</i> management, INM
Santra Orchards	Pests & Disease management , Nursery management and INM
Onion	Nursery management
Tomato ,Brinjal and chilly	Insect pests & disease management , Nursery management and INM
Cotton ,Soybean , Rice, Wheat harvesting tool	Drudgery Reduction ,skill development
Anaemic child, Nutrition Garden,	Nutrition management
Soybean, Aonla , Karvand , Rose Petals Processing	Value Addition, Income generative Activity
Use of Non conventional devices	Skill Development ,Energy resource management
NADEP Compost Making	Conservation of Agro Waste
Dairy Cow	Nutrition management
Jersey cross bred	Disease management
First calf heifer	Nutrition management and deworking
Cross bred cows	Feed management
Goats	Ecto & endo parasitic management

### 3. TECHNICAL ACHIEVEMENTS

#### 3.A. Details of target and achievements of mandatory activities by KVK during 2012-13

OFT (Technology Assessment and Refinement)				FLD (Oilseeds, Pulses, Cotton, Other Crops/Enterprises)			
1				2			
Number of OFTs		Number of Farmers		Number of FLDs		Number of Farmers	
Targets	Achievement	Targets	Achievement	Targets	Achievement	Targets	Achievement
Crop Production							
1	1	20	20	1	1	12	12
Crop protection							
2	2	14	14	4	4	88	88
Home Science							
2	2	20	20	4	4	64	64

Training (including sponsored, vocational and other trainings carried under Rainwater Harvesting Unit)					Extension Activities			
3					4			
Number of Courses			Number of Participants		Number of activities		Number of participants	
Clientele	Targets	Achievement	Targets	Achievement	Targets	Achievement	Targets	Achievement
Farmers	51	55	1500	1695	80	94	5314	5314
Rural Youth	20	26	500	697	42	47	3360	3360
Extn	10	12	350	505	33	39	740	740

Seed Production (Qtl.)			Planting material (Nos.)	
5			6	
Target	Achievement		Target	Achievement
--	67 quintals wheat (Raj-4037) seed produced on three adapted farmer's field on 3.2 ha. Land in Manori village of Nagpur district during 2012-13, for further seed multiplication in 2013-14 on farmer's fields.		Marigold seedlings 50,000	Marigold seedlings 50,000

#### 3.B. Abstract of interventions undertaken

S. No	Thrust area	Crop/Enterprise	Identified Problem	Interventions					
				Title of OFT if any	Title of FLD if any	Title of Training if any	Title of training for extension personnel if any	Extension activities	Supply of seeds, planting materials etc.
1	IPM	Soybean	Semiloop-ers incidence	Biocontrol of semiloop-ers	-				-

2	IPM	Nagpur Mandarin	Thrips and mites incidence	Management of thrips and mites	Gummosis management in Nagpur Mandarin	Gummosis, thrips and mites management in Nagpur Mandarin	-	Field visits and diagnostic surveys	-
3	IPM	Bt cotton	Incidence of sucking pests	-	Sucking pests management in Bt cotton	Sucking pests management in Bt cotton	Sucking pests management in Bt cotton	Field visits and diagnostic surveys	-
4	Prod. Tech.	Redgram	Low productivity	-	Prod. Technology in Redgram	Seed treatment, wilt and pest management	-	Field visits and diagnostic surveys, field day	Seed, DAP, urea, zinc sulphate, sulphur Gr, PSB, Rhizobium, Trichoderma, a vault and quinalphos
4	Prod. Tech.	Bengalgram	Low productivity	-	Prod. Technology in bengalgram	Seed treatment, wilt and pest management	-	Field visits and diagnostic surveys, field day	Seed, DAP, urea, zinc sulphate, sulphur Gr, PSB, Rhizobium, Trichoderma, a vault and quinalphos
5	Drudgery reduction	Women labourer	Drudgery	Drudgery reduction	-				Improved cotton picking bags, Serrated sickle, Bhidi plucker
6	Drudgery reduction	Women labourer	Drudgery	Drudgery reduction through cotton picking bag	-	Clean cotton picking method	-	Women In Agriculture day	Improved cotton picking bag
7	Nutrition management	Anganwadi children	Nutritional deficiency	Use of soybean products for improvement in Hb%	-	Preparation of locally available iron rich laddu	-	-	Soybean & wheat flour, jaggary fat

### 3.1 Achievements on technologies assessed and refined

#### A.1 Abstract of the number of technologies assessed\* in respect of crops/enterprises

Thematic areas	Cereals	Oilseeds	Pulses	Commercial Crops	Vegetables	Fruits	Flower	Plantation crops	Tuber Crops	TOTAL
Varietal Evaluation										
Seed / Plant production	1									1
Weed Management										
Integrated Crop Management										
Integrated Nutrient Management										
Integrated Farming System										
Mushroom										

cultivation										
Drudgery reduction										
Farm machineries										
Value addition										
Integrated Pest Management		01								
Integrated Disease Management						01				
Drudgery reduction										
<b>TOTAL</b>										

\* Any new technology, which may offer solution to a location specific problem but not tested earlier in a given micro situation.

### A.2. Abstract of the number of technologies refined\* in respect of crops/enterprises

Thematic areas	Cereals	Oilseeds	Pulses	Commercial Crops	Vegetables	Fruits	Flower	Plantation crops	Tuber Crops	TOTAL
Varietal Evaluation										
Seed / Plant production										
Weed Management										
Integrated Crop Management										
Integrated Nutrient Management										
Integrated Farming System										
Mushroom cultivation										
Drudgery reduction										
Farm machineries										
Post Harvest Technology										
Integrated Pest Management										
Integrated Disease Management										
Resource conservation technology										
Small Scale income generating enterprises										
<b>TOTAL</b>										

\* Technology that is refined in collaboration with ICAR/SAU Scientists for improving its effectiveness.

### A.3. Abstract of the number of technologies assessed in respect of livestock / enterprises

Thematic areas	Cattle	Poultry	Sheep	Goat	Piggery	Rabbitary	Fisheries	TOTAL
Evaluation of Breeds		1						1
Nutrition Management	1			1				2
Disease of Management								
Value Addition								
Production and Management								

Feed and Fodder								
Small Scale income generating enterprises								
<b>TOTAL</b>	1	1		1				3

#### A.4. Abstract on the number of technologies refined in respect of livestock / enterprises

Thematic areas	Cattle	Poultry	Sheep	Goat	Piggery	Rabbitry	Fisheries	TOTAL
Evaluation of Breeds								
Nutrition Management								
Disease of Management								
Value Addition								
Production and Management								
Feed and Fodder								
Small Scale income generating enterprises								
<b>TOTAL</b>								

#### B. Details of each On Farm Trial to be furnished in the following format

##### A. Technology Assessment

##### Trial 1 (Crop Production)

1. Title : High Density Planting System (HDPS) in Cotton
  2. Problem diagnose/defined : Low productivity of rainfed cotton in Vidarbha region.
  3. Details of technologies selected for assessment  
/refinement :
- T-1 : Farmers Practice (90 cm x 90 cm)  
T-2 : Recommended Practice (45 cm x 10 cm)
4. Source of technology : Central Institute for Cotton Research, Nagpur.
  5. Production system : Rainfed cotton based system
  6. Thematic area : Plant Density
  7. Performance of the Technology with performance indicators : Sowing of Non-Bt straight varieties of cotton at plant spacing of 45 cm x 10 cm recorded significantly higher seed cotton yield of 12.50 q/ha than 90 cm x 90 cm plant spacing of Bt cotton in rainfed areas of Vidarbha.
  8. Final recommendation for micro level situation : Under HDPS at 45 cm x 10 cm spacing , Non-Bt straight varieties of cotton having compact growth habit and zero monopodia may be grown under light, shallow/marginal soil of Nagpur district in rainfed condition.
  9. Constraints identified and feedback for research : At flowering and boll formation stage control measures against spotted bollworm and American bollworm is necessarily required for effective

seed cotton yield in Non-Bt straight varieties under High Density Planting System Programme.

**10.** Process of farmers participation and their reaction :

Farmers were involved in planning, executing, monitoring and evaluation of the trials and in the upcoming years they are very much eager to increase the area under this technology.

11). Results of On Farm Trials

Crop/enterprise	Farming situation	Problem Diagnosed	Title of OFT	No. of trials*	Technology Assessed	Parameters of assessment	Data on the parameter of assessment Seed cotton yield (q/ha)	Results of assessment	Feedback from the farmer
1	2	3	4	5	6	7	8	9	10
Non-Bt Cotton Varieties	Rainfed	Low productivity rainfed cotton in Vidarbha region	High Density Planting System (HDPS) in Cotton	20	T-1 : Farmers Practice (90 cm x 90 cm) T-2 : Recommended Practice (45 cm x 10 cm)	No. of bolls/plant, Plant height, Seed cotton yield	T-1 : 10.75 T-2 : 12.50	Higher seed cotton yield was recorded by planting cotton at 45 cm x 10 cm spacing	This planting can easily adopted in non-Bt straight varieties of cotton

\* No. of farmers

Technology Assessed	Production per unit (kg/ha)	Net Return (Profit) in Rs/ha/unit	BC Ratio
11	12	13	14
T-1 : Farmers Practice (90 cm x 90 cm)	1075	14425	1.52
T-2 : Recommended Practice (45 cm x 10 cm)	1250	26250	2.16

\*Field crops – kg/ha, \* for horticultural crops -= kg/t/ha, \* milk and meat – litres or kg/animal, \* for mushroom and vermi compost kg/unit area.

\*\* Give details of the technology assessed or refined and farmer's practice

## **A. Technology Assessment**

### **Trial 1. Crop Protection**

- 1) Title : Assessment of the effect of management practices of Gummosis in Nagpur Mandarin
- 2.) Problem diagnosed : Reduction in yield and quality of fruits and yield, slow decline of orchards .
- 3 ) Details of technologies selected for assessment:  
T-1 : Farmers Practice :a) Conventional flood irrigation, b) application of Bordeaux paste once after rainy season , c)indiscriminate use of chemical pesticides  
T-2 : Recommended Practice : a) Double ring system of irrigation b) ) application of Bordeaux paste twice before and after rainy season
- 4) Source of technology : NRCC,, Nagpur.
- 5) Production system : Irrigated,perriniel with or without intercrops
- 6) Thematic area : Disease Management
- 7) Performance of the : Yield:42.15q(LC), 56.50(Demo.),
- 8) Increase in yield : 30.04% , Cost of cultivation  
Technology with performance indicators :-(LC), Rs.32,000/-(Demo.)  
Gross profit : LC Rs.91466/-(@) Rs 2170/-), Demo.-Rs.1,24,017/-/-  
(@)Rs 2195/-), C:B ratio: LC-2.99, Demo- 3.88 Net  
Profit:LC-Rs.62,534/-,Demo.- Rs.92,017/-
- 9) Final recommendation for : micro level situation Under T2 encouraging results have been observed in terms of continuous over-all health improvement of affected plants, reduction in gummosis, in comparison with last years results and farmers practice (T1). With following the recommended practices the gummosis problem can be control upto minimum level.
- 10) Constraints identified and : Constrainta : NIL  
Feedback for research :Feedback : Majority of farmers showed their keen interest for adopting this technology
- 11) Process of farmers :

**A. Technology Assessment**

**Trial 2. Crop Protection**

- 1) Title : Biocontrol of semiloopers in Soybean
- 2) Problem diagnosed : Low productivity of soybean due to heavy incidence of semiloopers
- 3) Details of technologies selected for assessment : T1 : Farmers practice : Indiscriminate use of chemical insecticides  
T2 : First foliar spray of Beauveria bassiana @ 1.0 kg/ha followed by 2<sup>nd</sup> spray of Azadiractin 1500 ppm @ 25ml/10 litres of water after 15 days interval
- 4) Source of technology : Dr. PDKV., Akola.
- 5) Production system : Rainfed – Soybean – Cotton cropping system
- 6) Thematic area : Pest Management

Performance of the Technology with performance indicators: a) Yield – T1 (LC) – 15.92 q/ha  
T2 (Demo) - 17.50 q/ha, Increase in yield = 9.92 % :  
Gross profit : Demo.-Rs.56,875/-(@)Rs3250/-), LC :  
Rs.51,740/- , Net Profit:LC-Rs.29,490/-,Demo.-  
Rs.34,575/-  
b) C:B ratio – LC= 2.32 Demo = 2.55 :Cost on PP:LC-  
1250/- , Demo.-1300/-  
c) AV. Semiloopers population /metre row length :

7)

No. of Spray	Before spray (Nos)		After spray (Nos)	
	Demo	LC	Demo	LC
1 <sup>st</sup> Spray	9.2	10.2	4.7	5.1
2 <sup>nd</sup> Spray	4.9	5.4	2.2	3.0

- 8) Final recommendation for micro level situation: Biocontrol of semiloopers should be done at right time as per ETL at 70 % or above RH
- 9) Constraints identified and : Constrainta : Time period is limited for biocontrol  
feedback for research :Feedback : Majority of farmers showed their keen interest for adopting Entomopathogenic fungal pesticide.

- 10) Process of farmers : Farmer participation was taken in working out ETL (i.e. 3-4 larvae/metre row length) Meeting with farmers and training was organized before start of the trial.

### **Trial 1 (Home Science)**

1. Title : Assessment of charcoal Briquettes: An alternative cooking fuel
  2. Problem diagnose/defined: Decreasing availability of fuel wood causing health hazards &  
Drudgery
  3. Details of technologies selected for assessment : T-1 : Farmers Practice ( Use of charcoal)  
T-2: Refined Practice (Bio–Briquettes)
  4. Source of technology : CIRCOT, Mumbai.
  5. Production system : Rainfed cotton based system
  6. Thematic area : Recycling of Agro waste
- Technology with
7. performance indicators : Home makers found Bio –Briquettes more eco friendly, economical and cooks food faster by 29 & 18% respectively as compared to coal.
  8. Final recommendation for micro level situation:  
Bio Briquetrtes made from cotton stalk or other unused agro residue may be used for cooking in place of coal/wood.
  9. Constraints identified and feedback for research: At flowering and boll formation stage control measures against spotted bollworm and American bollworm is necessarily required for effective seed cotton yield in Non-Bt straight varieties under High Density Planting System Progamme.
  10. Process of farmers participation and their reaction Farmers were involved in planning, executing, monitoring and evaluation of the trials and in the upcoming years they are very much eager to increase the area under this technology.

11). Results of On Farm Trials

Crop/enterprise	Farming situation	Problem Diagnosed	Title of OFT	No. of trials*	Technology Assessed	Parameters of assessment	Data on the parameter of assessment Seed cotton yield (q/ha)	Results of assessment	Feedback from the farmer
1	2	3	4	5	6	7	8	9	10
Bio-Briquettes	Rainfed	Decreasing availability of fuel wood causing health hazards & drudgery.	Assessment of charcoal Briquettes: An alternative cooking fuel	10	T-1 : (Use of wood/charcoal) T-2 : Recommended Practice (Bio – Briquettes)	Cost of coal, cooking time required, Ash produced, Drudgery	cost of coal (Rs) Time Required (min) Ash produced (g)	Bio Briquettes having higher thermal value saves time, economical and ecofriendly	This is income generative unit can easily be adopted by cotton cultivators.

\* No. of farmers

Technology Assessed	cost of coal (Rs)	Time Required (min)	Ash produced (g)	Quantity of food cooked(g)
11				
T-1 : Farmers Practice (Use of wood/charcoal)	07	40	11.5	250
T-2 : Recommended Practice (Bio –Briquettes)	05	34	4.5	250
Increase in Parameter as compared with T I(%)	29	18	-	-

### **Trial 1 (Home Science)**

1. Title: Assessment of soy –laddu for reducing protein calorie malnutrition of 3-6 year old children.
2. Problem diagnose/defined : Children consuming traditional nature of diet & insufficient Consumption of protein , calorie food leads to less weight gain , very slow increase in Hb level.
3. Details of technologies selected for assessment :  
T-1 : Farmers Practice ( Normal daily Diet ) **T-1 Normal daily diet** – Cereals -125 g , pulses 30 g , Green leafy vegetable 25 g , other vegetables – 25 g, Fruits-20 g, milk & its products 75 ml , fat and oil 30 ml, sugar and jaggary 30 g .  
**T-2-** Cereals -250 g , pulses -50g , Green leafy vegetables 75 g, other vegetables – 50 g, fruits – 50 g , milk -250ml , fats 30g, Sugar & jaggary 50gm . ( ICMR)
4. Source of technology : ICMR
5. Production system : Rainfed cotton based system
6. Thematic area : Nutritional management
7. Technology with performance indicators : The refined practice of diet fortification has improved the haemoglobin Percentage by 0.6 % to 1.2 & increase in weight by 1 to 2 kg per compared with local method of consumption of food.

**Final recommendation for micro level situation:** Cereals -230 g , pulses -30g , Green leafy vegetables 75 g , other vegetables – 50 g , fruits – 50 g , milk -250ml , fats 30g, Sugar & jiggery 10gm. Soyladdu ( Soybean flour 20g + Wheat flour 20g, g, Jaggary 20g + fats 15), improves the body weight and haemoglobin % of 3-6 year old children school going children leads to increase in Hb%.

**Process of farmers participation and their reaction & feedback:** The participation/ cooperation of Anganwadi worker , children ( 3-6 years) and family members is found satisfactory. They cooperated in bringing participation and their reaction awareness inclusion of iron rich diet in their daily diet during observation period. Anganwadi worker & family members willingly enrolled their names for giving information on daily intake pattern, Hb% and cooperated in giving anthropometric measurement during three months treatment. The adoptability of refined intervention was found 80% during 3 months treatment trial

### Results of On Farm Trials

Technological Options	No.of Trials	Result and Recommendation			Acceptability in existing farming system	
		Age (Yrs)	Increase in Body Weight(Kg)	Increase in Hb%		
<b>T-1 Normal daily diet –</b> Cereals -125 g , pulses 30 g , Green leafy vegetable 25 g , other vegetables – 25 g, Fruits-20 g, milk & its products 75 ml , fat and oil 30 ml, sugar and jaggary 30 g .	18	3.6	2.58	.48	Cereals -230 g , pulses -30g , Green leafy vegetables 75 g , other vegetables – 50 g ,fruits – 50 g , milk -250ml , fats 15g,Sugar & jaggary 10gm. ICMR)SoyLaddu/meal (Soyflour 20 g+ Wheat flour 20 g,, Jaggary 20 g +fats 10g) consumed by 3-6 year old children for 3 months treatment helped significantly in weight gain & improved haemoglobin percentage	Refined treatment is low in cost, highly nutritious which was locally available.
<b>T-2- Recommended treatment</b> Cereals -250 g , pulses -50g , Green leafy vegetables 75 g , other vegetables – 50 g ,fruits – 50 g , milk -250ml , fats 30g,Sugar & jaggary 50gm . ( ICMR)		3.6	2.90	.53		
% increase in parameter			15.0	10.0		

### 3.2 Achievements of Frontline Demonstrations (Kharif 2012, Rabi & Summer 2012-13)

a. Follow-up for results of FLDs implemented during previous years

List of technologies demonstrated during previous year and popularized during 2012-13 and recommended for large scale adoption in the district

Sr. No.	Crop/ Enterprise	Thematic Area*	Technology demonstrated	Details of popularization methods suggested to the Extension system	Horizontal spread of technology		
					No. of villages	No. of farmers	Area in ha
1	Linseed	Varietal	NL-260	Demonstration, field visits, field days	5	12	2.4
2	Redgram	ICM	Prod. Technology	Demos.,trg., diagnostic field visits, field days	16	185	175
3	Chickpea	ICM	Prod. Technology	Demos.,trg., diagnostic field visits, field days	15	190	210
4	Bt cotton	IPM	IRM	Demos.,trg., diagnostic field visits, kisan melas	20	235	255
5	Nagpur Mandarin	IDM	Gummosis management	Demos.,trg., diagnostic field visits	7	26	15
6	Onion	Varietal	Prod. Technology	Demos.,trg., diagnostic field visits	2	10	4.0

\* Thematic areas as given in Table 3.1 (A1 and A2)

a.Details of FLDs implemented during 2012-13 (Information is to be furnished in the following three tables for each category i.e. cereals, horticultural crops, oilseeds, pulses, cotton and commercial crops.)

Sr. No.	Crop	Thematic area	Technology Demonstrated	Season and year	Area (ha)		No. of farmers/ demonstration			Reasons for shortfall in achievement
					Proposed	Actual	SC/ST	Others	Total	
1	Linseed	Varietal	NL-260	Rabi-2012	2.4	2.4	3	9	12	--
2	Redgram	ICM	Prod. Technology	Kharif 2012	12.0	12.0	13	17	30	NA
2	Bengalgram	ICM	Prod. Technology	Rabi 2012-13	12.0	12.0	7	23	30	NA

3	Bt cotton	IP M	IRM	Kharif 2012	8	8	6	14	20	NA
4	Nagpur Mandarin	ID M	Gum mosis manag ement	Kharif -rabi 12-13	3.2	3.2	2	6	8	NA
5	onion	Va rie tal	Pro. Tech.	rabi 12-13	4.0	4.0	1	9	10	NA

Details of farming situation

Crop	Season	Farming situation (RF/Irrigated)	Soil type	Status of soil			Previous crop	Sowing date	Harvest date	Seasonal rainfall (mm)	No. of rainy days
				N	P	K					
Redgram	Kharif 2012	Protect ive irrigati on	Mediu m black	low	low	high	Cotton, chickpea,soya	16-26 <sup>th</sup> June,12	22/1- 12/2/12	755	48
Bengalgr am	Rabi 2012- 13	Protect ive irrigati on	Mediu m black	low	low	high	soybean	15- 24Nov., 12	16- 27Marc h,13	755	48
Bt cotton	Kharif 2012	Protect ive irrigati on	Mediu m black	low	low	high	chickpea,soya	18- 38June. ,12	Feb.,13	755	48
Nagpur Mandarin	Kharif- rabi 12013	Protect ive irrigati on	Mediu m black	low	low	high	Perenial+pulse as intercrop	-		755	48

Performance of FLD

Sl.No.	Crop	Technology Demonstrated	Variety	No. of Farmers	Area (ha.)	Demo. Yield Qtl/ha			Yield of local Check Qtl./ha	Increase in yield (%)	Data on parameter in relation to technology demonstrated	
						H	L	A			Demo	Local
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Linseed	Varietal	NL-260	12	2.4	8.5	7.5	8.0	6.5	18.75	4.00	3.25
2	Redgram	Prod. Technology	BSMR 736	30	12.0	20.50	14.50	17.11	13.40	27.69		( grain rate=3250/q)
3	Bengalgram	Prod. Technology	Vijay	30	12.0	18.75	14.50	16.33	12.42	31.48		(grain rate=4000/q)
4	Bt cotton	IRM	Mallik.a 207	20	8.0	25.0	19.5	22.00	18.00	22.22	1.8(Av. No. ofsprays)	2.7(seedcotton rate=4200/q)
5	Nagpur Mandarin	Gummosis management	Nagpur Mandarin	08	3.2	44.7	61.3	56.50	42.15	30.04	2.0(Av. No. ofsprays)	2.0(Av. No. ofsprays)
6	Onion	Varietal	Akola Safad	10	4.0	95.5	78.0	86.18	72.0	19.69	3.17	2.84

**NB: Attach few good action photographs with title at the back with pencil**

Performance of FLD during (2012-13) Home Science

Sr. No	Name of Technology	No of farmers	Crop	Performance of technology on different parameters.								Result increase in Output(%)	Percent reduction in drudgery
				$\Delta$ HR beats min <sup>-1</sup>		Strokesmin <sup>-1</sup>		Area covered/m <sup>2</sup> /hr		Output m <sup>2</sup> /h			
				Demo	Local check	Demo	Local check	Demo	Local check	Local check	Local check		
1	Gujarat sickle	16	Soybean	17	15	38	34	Nil	Nil	34	35	34	13
2	Gujarat sickle	16	Rice	11	13.9	43	39	Nil	Nil	39	28	08	16
3	Improved cotton picking bag	16	Cotton	11	16.1	Nil	Nil -	42.9	35.2	5.2	4.0	30	30
4	Bhindi plucker	16	Okra	17	15	Nil -	Nil -	Nil -	Nil	21	18	17	15

Economic Impact (continuation of previous table)

Average Cost of cultivation (Rs./ha)		Average Gross Return (Rs./ha)		Average Net Return (Profit) (Rs./ha)		Benefit-Cost Ratio (Gross Return / Gross Cost)
Demonstration	Local Check	Demonstration	Local Check	Demonstration	Local Check	
14	15	16	17	18	19	20
10000	9500	400000	32500	30000	23000	4.00
25,046	23,430	68,440	53,600	43,394	30,170	2.73(demo),2.28(LC)
31,036	29,363	53,072	40,365	22,036	11,002	1.71(demo),1.37(LC)
32,715	33,750	92,400	75,600	59,685	41,850	2.82(demo),2.24(LC)
30,550	32,000	1,24,017	91,466	92,017	62,534	3.88(demo),2.99(LC)

Analytical Review of component demonstrations (details of each component for rainfed / irrigated situations to be given separately for each season).

Crop	Season	Component	Farming situation	Average yield (q/ha)	Local check (q/ha)	Percentage increase in productivity over local check
Cotton	Kharif	High Density Planting System (HDPS)	Rainfed	12.50	10.75	14.00
Linseed	Rabi	Varietal	Rainfed	8.0	6.5	18.75
Redgram	Kharif	Prod. technology	Rainfed	17.11	13.40	27.69
Bengalgram	Rabi	Prod. technology	Rainfed	16.33	12.42	31.48
Bt cotton	Kharif	IRM	Rainfed	23.00	19.00	21.05
Nagpur Mandarin	Kharif/Rabi	Gummosis management	Protective irrigation	56.50	42.15	30.04

Technical Feedback on the demonstrated technologies

S. No	Feed Back
1	Maintaining the spacing of 45 cm x 45 cm in Non-Bt straight varieties of cotton was found beneficial in improving the productivity of cotton by 14 percent over Bt cotton in light, shallow/marginal soils under rainfed farming situation in Vidarbha region.
2	Linseed variety NL-260 recorded higher yield by 18.75 percent over local variety.
3	Use of pheromone traps was found helpful in monitoring the pests.
4	Av. No. of sprays for sucking pests have been reduced.

Farmers' reactions on specific technologies

S. No	Feed Back
1	Among three varieties under HDPS cotton, Suraj and NH-615 were the best varieties in case of seed cotton yield.
2	NL-260 was high yielding linseed variety having higher no. of branches than local check
3	Eight farmers of village Sukli got additional av. yield of soybean as intercrop 12.0q/ha worth Rs.38,400/- per ha @Rs.3200/- per q and were very happy.
4	Farmers with facility of protective irrigation were ready to cultivate sole redgram crop.
5	Farmers like chickpea variety vijay over others.
6	After priming of seed farmers feel difficulty in sowing of chickpea seed by their conventional equipment TIFFAN.
7	Farmers realize that grains should be sold after few months of threshing to get good price of grains.
8	Cotton farmers were easily ready not to spray chemical pesticides 60 days after sowing.
9	Gummosis affected orange orchard growers that the preventive measures are important to manage gummosis.

Extension and Training activities under FLD

Sl.No.	Activity	No. of activities organised	Date	Number of participants	Remarks
1	Field days	02			
2	Farmers Training				
3	Media coverage				
4	Training for extension functionaries				

**c. Details of FLD on Enterprises**

(i) Farm Implements

Name of the implement	crop	No. of farmers	Area (ha)	Performance parameters / indicators	* Data on parameter in relation to technology demonstrated		% change in the parameter	Remarks
					Demon.	Local check		

*\* Field efficiency, labour saving etc.*

(ii) Livestock Enterprises

Enterprise	Breed	No. of farmers	No. of animals, poultry birds etc.	Performance parameters / indicators	* Data on parameter in relation to technology demonstrated		% change in the parameter	Remarks
					Demon.	Local check		

*\* Milk production, meat production, egg production, reduction in disease incidence etc.*

(iii) Other Enterprises

Enterprise	Variety/ breed/Species/others	No. of farmers	No. of Units	Performance parameters / indicators	Data on parameter in relation to technology demonstrated		% change in the parameter	Remarks
					Demon.	Local check		
Mushroom								
Apiary								
Sericulture								
Vermi compost								



Training and Pruning										
Layout and Management of Orchards										
Cultivation of Fruit										
Management of young plants/orchards										
Rejuvenation of old orchards										
Export potential fruits										
Micro irrigation systems of orchards										
Plant propagation techniques										
<b>c) Ornamental Plants</b>										
Nursery Management										
Management of potted plants										
Export potential of ornamental plants										
Propagation techniques of Ornamental Plants										
<b>d) Plantation crops</b>										
Production and Management technology										
Processing and value addition										
<b>e) Tuber crops</b>										
Production and Management technology										
Processing and value addition										
<b>f) Spices</b>										
Production and Management technology										
Processing and value addition										
<b>g) Medicinal and Aromatic Plants</b>										
Nursery management										
Production and management technology										

Post harvest technology and value addition										
<b>III Soil Health and Fertility Management</b>										
Soil fertility management										
Soil and Water Conservation										
Integrated Nutrient Management										
Production and use of organic inputs										
Management of Problematic soils										
Micro nutrient deficiency in crops										
Nutrient Use Efficiency										
Soil and Water Testing	4	108	12	120	61	9	70	169	21	190
<b>IV Livestock Production and Management</b>										
Dairy Management	1	40	-	40	5	-	5	45	-	45
Poultry Management										
Piggery Management										
Rabbit Management										
Disease Management										
Feed management										
Production of quality animal products	1	15	-	15	11	-	11	26	-	26
<b>V Home Science/Women empowerment</b>										
Household food security by kitchen gardening and nutrition gardening										
Design and development of low/minimum cost diet										
Designing and development for high nutrient efficiency diet										

Minimization of nutrient loss in processing										
Gender mainstreaming through SHGs										
Storage loss minimization techniques										
Value addition	1	0	08	08	0	03	03	-	11	11
Income generation activities for empowerment of rural Women										
Location specific drudgery reduction technologies	2	0	20	20	03	34	37	03	54	57
Rural Crafts										
Women and child care										
<b>VI Agril. Engineering</b>										
Installation and maintenance of micro irrigation systems										
Use of Plastics in farming practices										
Production of small tools and implements										
Repair and maintenance of farm machinery and implements										
Small scale processing and value addition										
Post Harvest Technology										
<b>VII Plant Protection</b>										
Integrated Pest Management	09	258	06	264	58	04	62	316	10	326
Integrated Disease Management										
Bio-control of pests and diseases										
Production of bio control agents and bio pesticides										
<b>VIII Fisheries</b>										

Integrated fish farming										
Carp breeding and hatchery management										
Carp fry and fingerling rearing										
Composite fish culture										
Hatchery management and culture of freshwater prawn										
Breeding and culture of ornamental fishes										
Portable plastic carp hatchery										
Pen culture of fish and prawn										
Shrimp farming										
Edible oyster farming										
Pearl culture										
Fish processing and value addition										
<b>IX Production of Inputs at site</b>										
Seed Production										
Planting material production										
Bio-agents production										
Bio-pesticides production										
Bio-fertilizer production										
Vermi-compost production										
Organic manures production										
Production of fry and fingerlings										
Production of Bee-colonies and wax sheets										
Small tools and implements										
Production of livestock feed and fodder										
Production of Fish feed										
<b>X Capacity Building and Group Dynamics</b>										
Leadership development										

Group dynamics										
Formation and Management of SHGs	1	0	21	21	0	38	38	0	59	59
Mobilization of social capital										
Entrepreneurial development of farmers/youths	1	0	16	16	0	15	15	0	31	31
WTO and IPR issues										
<b>XI Agro-forestry</b>										
Production technologies										
Nursery management										
Integrated Farming Systems										
<b>TOTAL</b>	24	539	97	636	186	111	297	725	208	933
<b>(B) RURAL YOUTH</b>										
Mushroom Production										
Bee-keeping										
Integrated farming										
Seed production	1	15	-	15	10	-	10	25	-	25
Production of organic inputs										
Integrated crop management	1	12	0	12	4	0	4	16	0	16
Planting material production										
Vermi-culture	1	13	18	31	0	0	0	13	18	31
Sericulture										
Protected cultivation of vegetable crops										
Commercial fruit production	2	10	4	14	4	-	4	14	4	18
Repair and maintenance of farm machinery and implements										
Nursery Management of Horticulture crops										
Training and pruning of orchards										
Value addition	02	0	26	26	0	12	12	1	38	38
Production of quality animal products										
Dairying	1	37	-	37	28	-	28	65	-	65
Sheep and goat rearing	1	6	-	6	5	-	5	11	-	11

Quail farming										
Piggery										
Rabbit farming										
Poultry production										
Ornamental fisheries										
Para vets										
Para extension workers										
Composite fish culture										
Freshwater prawn culture										
Shrimp farming										
Pearl culture										
Cold water fisheries										
Fish harvest and processing technology										
Fry and fingerling rearing										
Small scale processing	02	0	26	26	0	12	12	1	38	38
Post Harvest Technology	01	0	12	12	0	13	13	0	25	25
Tailoring and Stitching										
Rural Crafts										
<b>TOTAL</b>	12	93	86	179	51	37	88	146	123	267
<b>(C) Extension Personnel</b>										
Productivity enhancement in field crops	1	25	3	28	5	2	7	30	5	35
Integrated Pest Management	01	20	02	22	05	02	07	25	04	29
Integrated Nutrient management	1	20	2	22	7	1	8	27	3	30
Management of ambia bahar in Nagpur mandarin	1	16	11	27	8	5	13	24	16	40
Protected cultivation technology										
Formation and Management of SHGs	1	0	30	30	0	21	21	0	51	51
Group Dynamics and farmers organization										
Information networking among farmers										

Capacity building for ICT application										
Care and maintenance of farm machinery and implements										
WTO and IPR issues										
Management in farm animals	3	38	23	61	18	11	29	56	34	90
Livestock feed and fodder production										
Household food security										
Women and Child care										
Low cost and nutrient efficient diet designing										
Production and use of organic inputs										
Gender mainstreaming through SHGs										
<b>TOTAL</b>	8	119	71	190	43	42	85	162	113	275

- **OFF Campus**

Thematic area	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>(A) Farmers &amp; Farm Women</b>										
<b>I Crop Production</b>										
Weed Management	2	26	6	32	11	1	12	37	7	44
Resource Conservation Technologies										
Cropping Systems										
Crop Diversification										
Integrated Farming										
Water management	2	28	8	36	16	4	20	44	12	56
Seed production										
Nursery management										
Integrated Crop Management	3	121	16	137	25	10	35	146	26	172
Fodder production										
Production of organic inputs										
<b>II Horticulture</b>										
<b>a) Vegetable Crops</b>										
Production of low volume and high value crops	3	48	-	48	9	-	9	57	-	57
Off-season vegetables										
Nursery raising	1	13	-	13	4	-	4	17	-	17
Exotic vegetables like Broccoli										
Export potential vegetables										

Grading and standardization										
Protective cultivation (Green Houses, Shade Net etc.)	1	35	-	35	15	-	15	50	-	50
<b>b) Fruits</b>										
Training and Pruning										
Layout and Management of Orchards										
Cultivation of Fruit	3	54	-	54	20	-	20	74	-	74
Management of young plants/orchards										
Rejuvenation of old orchards	1	18	-	18	9	-	9	27	-	27
Export potential fruits										
Micro irrigation systems of orchards										
Plant propagation techniques										
<b>c) Ornamental Plants</b>										
Nursery Management	1	12	-	12	3	-	3	15	-	15
Management of potted plants										
Export potential of ornamental plants										
Propagation techniques of Ornamental Plants										
<b>d) Plantation crops</b>										
Production and Management technology										
Processing and value addition										
<b>e) Tuber crops</b>										
Production and										

Management technology										
Processing and value addition										
<b>f) Spices</b>										
Production and Management technology										
Processing and value addition										
<b>g) Medicinal and Aromatic Plants</b>										
Nursery management										
Production and management technology										
Post harvest technology and value addition										
<b>III Soil Health and Fertility Management</b>										
Soil fertility management										
Soil and Water Conservation										
Integrated Nutrient Management										
Production and use of organic inputs										
Management of Problematic soils										
Micro nutrient deficiency in crops										
Nutrient Use Efficiency										
Soil and Water Testing	4	80	5	85	22	3	25	102	8	110
<b>IV Livestock Production and Management</b>										
Dairy Management	2	40	7	47	7	1	8	47	8	55

Poultry Management	2	11	2	13	15	8	23	26	10	36
Goat management	1	12	4	16	5	-	5	17	4	21
Piggery Management										
Rabbit Management										
Disease Management										
Feed management	3	35	11	46	29	14	43	64	25	89
Production of quality animal products										
<b>V Home Science/Women empowerment</b>										
Household food security by kitchen gardening and nutrition gardening										
Design and development of low/minimum cost diet										
Designing and development for high nutrient efficiency diet										
Minimization of nutrient loss in processing										
Gender mainstreaming through SHGs										
Storage loss minimization techniques										
Value addition										
Income generation activities for empowerment of rural Women	2	0	15	15	06	31	37	06	46	52
Women and child care										
<b>VI Agril. Engineering</b>										
Installation and maintenance of micro										

irrigation systems										
Use of Plastics in farming practices										
Production of small tools and implements										
Repair and maintenance of farm machinery and implements										
Small scale processing and value addition										
Post Harvest Technology										
<b>VII Plant Protection</b>										
Integrated Pest Management	06	89	13	102	26	04	30	115	17	132
Integrated Disease Management										
Bio-control of pests and diseases										
Production of bio control agents and bio pesticides										
<b>VIII Fisheries</b>										
Integrated fish farming										
Carp breeding and hatchery management										
Carp fry and fingerling rearing										
Composite fish culture										
Hatchery management and culture of freshwater prawn										
Breeding and culture of ornamental fishes										
Portable plastic carp										

hatchery										
Pen culture of fish and prawn										
Shrimp farming										
Edible oyster farming										
Pearl culture										
Fish processing and value addition										
<b>IX Production of Inputs at site</b>										
Seed Production										
Planting material production										
Bio-agents production										
Bio-pesticides production										
Bio-fertilizer production										
Vermi-compost production										
Organic manures production										
Production of fry and fingerlings										
Production of Bee-colonies and wax sheets										
Small tools and implements										
Production of livestock feed and fodder										
Production of Fish feed										
<b>X Capacity Building and Group Dynamics</b>										
Leadership development	01	0	20	20	0	31	31	0	51	51
Group dynamics										

Formation and Management of SHGs										
Mobilization of social capital										
Entrepreneurial development of farmers/youths	01	0	20	20	3	34	37	3	54	57
WTO and IPR issues										
<b>XI Agro-forestry</b>										
Production technologies										
Nursery management										
Integrated Farming Systems										
<b>TOTAL</b>	39	622	127	749	225	141	366	847	268	1115
<b>(B) RURAL YOUTH</b>										
Mushroom Production										
Bee-keeping										
Integrated farming	2	88	4	92	19	3	22	107	7	114
Seed production	1	22	-	22	5	-	5	27	-	27
Production of organic inputs										
Integrated crop management	06	91	14	105	25	05	30	116	19	135
Planting material production										
Vermi-culture										
Sericulture										
Protected cultivation of vegetable crops	1	28	0	28	8	0	8	36	0	36
Commercial fruit production										
Repair and maintenance of farm machinery and implements										

Nursery Management of Horticulture crops										
Training and pruning of orchards										
Value addition	02	0	26	26	0	12	12	1	38	38
Production of quality animal products	01	0	12	12	0	13	13	0	25	25
Dairying	2	21	4	25	11	1	12	32	5	37
Sheep and goat rearing	2	41	5	46	9	2	11	50	7	57
Quail farming										
Piggery										
Rabbit farming										
Poultry production										
Ornamental fisheries										
Para vets										
Para extension workers										
Composite fish culture										
Freshwater prawn culture										
Shrimp farming										
Pearl culture										
Cold water fisheries										
Fish harvest and processing technology										
Fry and fingerling rearing										
Small scale processing										
Post Harvest Technology										
Tailoring and Stitching										
Rural Crafts										
<b>TOTAL</b>	17	291	65	356	77	36	113	369	101	469
<b>(C) Extension Personnel</b>										
Productivity enhancement in field crops	1	28	2	30	8	2	10	36	4	40
Integrated Pest										

Management										
Integrated Nutrient management										
High yielding varieties of vegetables	1	25	10	35	10	5	15	35	15	50
Protected cultivation technology										
Formation and Management of SHGs	1	0	12	12	0	7	7	0	19	19
Group Dynamics and farmers organization										
Information networking among farmers										
Capacity building for ICT application										
Care and maintenance of farm machinery and implements										
WTO and IPR issues										
Management in farm animals										
Livestock feed and fodder production										
Household food security										
Location specific Drudgery reduction technology	0	21	21	0	38	38	0	59	59	59
Low cost and nutrient efficient diet designing										
Production and use of organic inputs										
Gender mainstreaming through SHGs	2	20	16	36	34	18	52	54	34	88
<b>TOTAL</b>	<b>5</b>	<b>94</b>	<b>61</b>	<b>113</b>	<b>90</b>	<b>70</b>	<b>84</b>	<b>184</b>	<b>131</b>	<b>256</b>

**C) Consolidated table (ON and OFF Campus)**

Thematic area	No. of courses	Participants								
		Others			SC/ST			Grand Total		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>(A) Farmers &amp; Farm Women</b>										
<b>I Crop Production</b>										
Weed Management	4	52	9	61	36	3	39	88	12	100
Resource Conservation Technologies										
Cropping Systems										
Crop Diversification										
Integrated Farming										
Water management	2	28	8	36	16	4	20	44	12	56
Seed production										
Nursery management										
Integrated Crop Management	4	193	24	217	38	12	50	231	36	267
Fodder production										
Production of organic inputs										
<b>II Horticulture</b>										
<b>a) Vegetable Crops</b>										
Production of low volume and high value crops	4	68	3	71	19	4	23	87	7	94
Off-season vegetables										
Nursery raising	1	13	-	13	4	-	4	17	-	17
Exotic vegetables like Broccoli										
Export potential vegetables										
Grading and standardization										
Protective cultivation (Green Houses, Shade Net etc.)										
<b>b) Fruits</b>										
Training and Pruning										
Layout and Management of										

Orchards										
Cultivation of Fruit	3	54	-	54	20	-	20	74	-	74
Management of young plants/orchards										
Rejuvenation of old orchards	1	18	-	18	9	-	9	27	-	27
Export potential fruits										
Micro irrigation systems of orchards										
Plant propagation techniques										
<b>c) Ornamental Plants</b>										
Nursery Management	1	12	-	12	3	-	3	15	-	15
Management of potted plants										
Export potential of ornamental plants										
Propagation techniques of Ornamental Plants										
<b>d) Plantation crops</b>										
Production and Management technology										
Processing and value addition										
<b>e) Tuber crops</b>										
Production and Management technology										
Processing and value addition										
<b>f) Spices</b>										
Production and Management technology										
Processing and value addition										
<b>g) Medicinal and Aromatic Plants</b>										
Nursery management										
Production and management technology										
Post harvest technology and value addition										

<b>III Soil Health and Fertility Management</b>										
Soil fertility management										
Soil and Water Conservation										
Integrated Nutrient Management										
Production and use of organic inputs										
Management of Problematic soils										
Micro nutrient deficiency in crops										
Nutrient Use Efficiency										
Soil and Water Testing	8	188	17	205	83	12	95	271	29	300
<b>IV Livestock Production and Management</b>										
Dairy Management	3	80	7	87	12	1	13	92	8	100
Poultry Management	2	11	2	13	15	8	23	26	10	36
Sheep & goat rearing	1	12	4	16	5	1	5	17	4	21
Piggery Management										
Rabbit Management										
Disease Management										
Feed management	3	35	11	46	29	14	43	64	25	89
Production of quality animal products	1	15	-	15	11	-	11	26	-	26
<b>V Home Science/Women empowerment</b>										
Household food security by kitchen gardening and nutrition gardening										
Design and development of low/minimum cost diet										
Designing and development for high nutrient efficiency diet										
Minimization of nutrient loss										

in processing										
Gender mainstreaming through SHGs										
Storage loss minimization techniques										
Value addition	1	0	8	8	0	3	3	-	11	11
Income generation activities for empowerment of rural Women	2	0	15	15	6	31	37	6	46	52
Location specific drudgery reduction technologies	2	0	20	20	3	34	37	3	54	57
Rural Crafts										
Women and child care										
<b>VI Agril. Engineering</b>										
Installation and maintenance of micro irrigation systems										
Use of Plastics in farming practices										
Production of small tools and implements										
Repair and maintenance of farm machinery and implements										
Small scale processing and value addition										
Post Harvest Technology										
<b>VII Plant Protection</b>										
Integrated Pest Management	15	347	19	366	84	08	92	431	27	458
Integrated Disease Management										
Bio-control of pests and diseases										
Production of bio control agents and bio pesticides										
<b>VIII Fisheries</b>										
Integrated fish farming										

Carp breeding and hatchery management										
Carp fry and fingerling rearing										
Composite fish culture										
Hatchery management and culture of freshwater prawn										
Breeding and culture of ornamental fishes										
Portable plastic carp hatchery										
Pen culture of fish and prawn										
Shrimp farming										
Edible oyster farming										
Pearl culture										
Fish processing and value addition										
<b>IX Production of Inputs at site</b>										
Seed Production										
Planting material production										
Bio-agents production										
Bio-pesticides production										
Bio-fertilizer production										
Vermi-compost production										
Organic manures production										
Production of fry and fingerlings										
Production of Bee-colonies and wax sheets										
Small tools and implements										
Production of livestock feed and fodder										
Production of Fish feed										
<b>X Capacity Building and Group Dynamics</b>										
Leadership development										

Group dynamics										
Formation and Management of SHGs										
Mobilization of social capital										
Entrepreneurial development of farmers/youths										
WTO and IPR issues										
<b>XI Agro-forestry</b>										
Production technologies										
Nursery management										
Integrated Farming Systems										
<b>TOTAL</b>	58	1126	147	1273	393	135	527	1519	281	1800
<b>(B) RURAL YOUTH</b>										
Mushroom Production										
Bee-keeping										
Integrated farming	2	88	4	92	19	3	22	107	7	114
Seed production	2	37	-	37	15	-	15	52	-	52
Production of organic inputs										
Integrated crop management	7	103	14	117	29	5	34	132	19	151
Planting material production										
Vermi-culture	1	13	18	31	0	0	0	13	18	31
Sericulture										
Protected cultivation of vegetable crops	1	28	0	28	8	0	8	36	0	36
Commercial fruit production	2	14	4	18	-	-	-	14	4	18
Repair and maintenance of farm machinery and implements										
Nursery Management of Horticulture crops										
Training and pruning of orchards										
Value addition	2	0	26	26	0	12	12	1	38	38
Production of quality animal products										
Dairying	4	98	4	102	44	1	45	142	5	147
Sheep and goat rearing	2	25	5	30	14	2	16	39	7	46

Quail farming										
Piggery										
Rabbit farming										
Poultry production										
Ornamental fisheries										
Para vets										
Para extension workers										
Composite fish culture										
Freshwater prawn culture										
Shrimp farming										
Pearl culture										
Cold water fisheries										
Fish harvest and processing technology										
Fry and fingerling rearing										
Small scale processing	02	0	26	26	0	12	12	1	38	38
Post Harvest Technology	01	0	12	12	0	13	13	0	25	25
Tailoring and Stitching										
Rural Crafts										
<b>TOTAL</b>	26	406	113	519	129	48	177	537	161	696
<b>© Extension Personnel</b>										
Productivity enhancement in field crops	2	53	5	58	13	4	17	66	9	75
Integrated Pest Management	1	20	2	22	5	2	7	25	4	29
Integrated Nutrient management	1	20	2	22	7	1	8	27	3	30
Rejuvenation of old orchards	2	41	21	62	18	10	28	59	31	90
Protected cultivation technology										
Formation and Management of SHGs	2	0	42	42	0	28	28	0	70	70
Group Dynamics and farmers organization										
Information networking among farmers										
Capacity building for ICT										

application											
Care and maintenance of farm machinery and implements											
WTO and IPR issues											
Management in farm animals	3	38	23	61	18	11	29	56	34	90	
Livestock feed and fodder production											
Household food security											
Location specific Drudgery Reduction technologies	0	21	21	0	38	38	0	59	59	59	
Low cost and nutrient efficient diet designing											
Production and use of organic inputs											
Gender mainstreaming through SHGs	2	20	16	36	34	18	52	54	34	88	
<b>TOTAL</b>	13	213	132	303	133	112	169	346	244	531	

**Note: Please furnish the details of above training programmes as Annexure in the proforma given below**

Date	Clientele	Title of the training programme	Discipline	Thematic area	Duration in days	Venue (Off/ On Campus)	Number of other participants			Number of SC/ST			Total number of participangs		
							Male	Female	Total	Male	Female	Total	Male	Female	Total
20.4.12	PF	Quality production of flowers	Horticulture	Flower production	1	OFF	12	-	12	3	-	3	15	-	15
11.5.12	PF	Weed management in cotton	Crop Production	ICM	1	ON	26	3	29	25	2	27	51	5	56
28.5.12	PF	Rejuvenation of moderate decline orange trees	Horticulture	Fruit production	1	OFF	18	-	18	9	-	9	27	-	27
12.6.12	RY	Seed production in pignon pea	Crop Production	Seed Production	1	ON	15	-	15	10	-	10	25	-	25
19.6.12	PF	Production	PP	ICM	1	OFF			17			3			20

		Technology in Pigeonpea													
28.6.12	RY	House hold technology of Food grains storage	Home Science	Post Harvest Technology	1	ON	0	12	12	0	13	13	0	25	25
28.6.12	EF	Improved production practices for cotton	Crop Production	ICM	1	ON	25	3	28	5	2	7	30	5	35
6.7.12	PF	Weed management in cotton and soybean	Crop Production	ICM	2	OFF	26	6	32	11	1	12	37	7	44
18.7.12	EF	Integrated nutrient management in cotton	Crop Production	ICM	1	ON	20	2	22	7	1	8	27	3	30
21.7.12	RY	Pesticide Application Technology	PP	IPM	1	OFF	13	5	18	6	1	7	19	6	25
24.7.12	PF	Pest Management in Soybean	PP	IPM	1	OFF	15	4	19	4	2	6	19	6	25
28.7.12	RY	Identification of pests and natural enemies in cotton	PP	IPM	1	OFF	13	5	18	3	1	4	16	6	22
7.4.12	PF & RY	Soil Health Campaign, Soil sampling technique, Importance of soil testing and Integrated Nutrient Management in Cotton	Soil Science	Soil Testing	4	OFF	108	12	120	61	9	70	169	21	190
10.8.12															
29.8.12															
8.10.12															
3.8.12	PF	Nursery	Horticulture	Vegetable	1	OFF	13	-	13	4	-	4	17	-	17

		management of chilli		Production											
10.8.12	PF	Management of fruit drop in Nagpur mandarin	Horticulture --	Fruit production	1	OFF	21	-	21	7	-	7	28	-	28
24.8.12	PF	Pest Management in Brinjal	PP	IPM	1	OFF	13	4	17	4	1	5	17	5	22
24.8.12	PF	Irrigation management in wheat	Crop Production	Water Management	2	OFF	28	8	36	16	4	20	44	12	56
28.8.12	PF	Intercropping in citrus orchards	Horticulture	Fruit production	1	OFF	19	-	19	6	-	6	25	-	25
29.8.12	RY	Management of sucking pests in Bt cotton	PP	IPM	1	OFF	18	4	22	4	2	6	28	0	28
11.9.12	RY	Seed production in Chickpea	Crop Production	Seed Production	1	OFF	22	-	22	5	-	5	27	-	27
17.9.12	RY	Management of Phytophthora in Nagpur Mandarin	PP	IPM	1	OFF	13	0	13	3	0	3	16	0	16
28.9.12	PF	Preparation of charcoal briquettes from Agro residue	Home Science	Income generation	2	OFF	0	15	15	6	31	37	6	46	52
4.10.12	PF	Pest Management in pigeonpea	PP	IPM	1	OFF	10	4	14	2	1	3	12	5	17
4.10.12	PF	Scientific cultivation of onion	Crop Production	Veg-Prod	1	OFF	18	-	18	2	-	2	20	-	20
11.10.12	PF	Demonstration of clean cotton picking	Home Science	Drudgery Reduction	2	ON	0	20	20	3	34	37	3	54	57
17.10.12	EF	High yielding varieties of vegetables and	Crop Production	Veg-Prod	1	OFF	25	10	35	10	5	15	35	15	50

		their management														
23.10.12	RY	Seed treatment, root rot and wilting management in chickpea	PP	IPM	1	OFF	13	5	18	5	1	6	18	6	24	
26.10.12	PF	Use of bio-fertilizer in chickpea	Crop Production	ICM	1	ON	72	8	80	13	2	15	85	10	95	
31.10.12	RY	Seed treatment, root rot and wilting management in chickpea	PP	IPM	1	OFF	14	2	16	4	0	4	18	2	20	
17.5.12	PF & RY	Soil testing and INM in Cotton, Soil sampling technique, Benefits of soil testing and Soil test based fertilizer recommendations to crops.	Soil Science	Soil Testing	4	ON	80	5	85	22	3	25	102	8	110	
28.7.12																
14.9.12																
19.1.13																
27.11.12	PF	Production technology of garlic	- Horticulture	Veg-Prod	1	OFF	18	-	18	4	-	4	22	-	22	
28.11.12	PF	Scientific cultivation of Vegetables	Horticulture -	Veg-Prod	2	ON	20	-	3	10	4	14	37	-	37	
30.11.12	PF		Horticulture													
30.11.12	RY	Management of fruit Nursery	Horticulture -	Fruit production	1	ON	9	-	9	-	-	-	9	-	9	
4.12.12	PF	INM in Citrus	Horticulture	Fruit production	1	OFF	14	-	14	7	-	7	21	-	21	
11.12.12	RY	Improved Varieties of	Horticulture	Fruit production	1	ON	5	4	9	-	-	-	5	4	9	

		Fruits and vegetables for Vidharbha region														
9.1.13	PF	Green house Cultivation	Horticulture	Green house technology	1	OFF	35	-	35	15	-	15	50	-	50	
23.1.13	EF	Management of ambia bahar	Horticulture	Fruit production	1	ON	16	11	27	8	5	13	24	16	40	
8.2.13	EF	High Density Planting System in Cotton	Crop Production	ICM	1	Off	28	2	30	8	2	10	36	4	40	
19.2.13	PF	Irrigation management in citrus	Horticulture	Fruit production	1	OFF	23	0	23	14	0	14	37	0	37	
2.3.13	PF	Production technology of Bhendi	Horticulture	Veg-Prod	1	OFF	12	-	12	3	-	3	15	-	15	
6.3.13	RY	Production technology for Bt Cotton	Crop Production	ICM	2	Off	88	4	92	19	3	22	107	7	114	
12.3.13	PF	Seed inoculation technique in Soybean	Crop Production	ICM	3	Off	121	16	137	25	10	35	146	26	172	
20.4.12	PF	Tips for higher milk production	Veterinary Science	Dairy management	1	OFF	11	7	18	3	1	4	14	8	22	
16.5.12	RY	Upgradation of local goats by crossing with Osmanabadi breed	Veterinary Science	Sheep & goat rearing	1	ON	6	-	6	5	-	5	11	-	11	
28.7.12	EF	Supply chain management in dairy production	Veterinary Science	Management in farm animals	1	ON	13	-	13	7	-	7	20	-	20	
3.8.12	PF	Introduction of Swarnadhara deshi breed in rural Back Yard	Veterinary Science	Poultry management	1	OFF	9	1	10	6	3	9	15	4	19	

		Poultry													
10.8.12	RY	Use of mineral mixture & common salt in the diet of cows & buffaloes	Veterinary Science	Feed management	1	OFF	11	-	11	5	-	5	16	-	16
28.8.12	PF	Supplementary feeding & deworming to avoid infertility in cattle	Veterinary Science	Feed management	1	OFF	16	-	16	4	-	4	20	-	20
5.9.12	PF	Leadership Development	Extension	Leadership Development	1	OFF	0	20	20	0	31	31	0	51	51
11.10.12	RY	Detection & control of mastitis in milch cows	Veterinary Science	Dairying	1	OFF	10	4	14	6	1	7	16	5	21
12.10.12	PF	Low cost feed formulation within available feed resources	Veterinary Science	Feed management	1	OFF	11	5	16	8	2	10	19	7	26
12.10.12	RY	Techniques of soybean processing for making soy flour and soynut	Home Science	Small Scale processing	3	ON	0	26	26	0	12	12	1	38	38
10.11.12	PF	Techniques of Aonla candy & Murabba preparation	Home Science	Value Addition	1	ON	0	8	8	0	3	3	0	11	11
18.10.12	EF	Management of SHG,s	Extension	Management of SHG's	1	ON	0	30	30	0	21	21	0	51	51
19.10.12	RY	Vermiculture production technology	Extension	Vermiculture	1	ON	13	18	31	0	0	0	13	18	31
12.11.12	RY	Preparation technique of soy laddu for	Home Science	Value Addition	3	ON	5	15	20	0	20	20	0	40	40

		anaemic person													
17.11.12	PF	Fodder cultivation & its conservation	Veterinary Science	Feed management	1	OFF	8	6	14	17	12	29	25	18	43
27.11.12	PF	Scientific goat farming for rural area	Veterinary Science	Goat management	1	OFF	12	4	16	5	-	5	17	4	21
29.11.12	EF	Sucking pests management in Bt cotton	PP	IPM	1	ON	21	0	21	8	0	8	29	0	29
7.12.12	RY	Para-veterinary aids for general diseases in livestock	Veterinary Science	Disease management	1	ON	37	-	37	28	-	28	65	-	65
10.12.12	PF	Entrepreneurship development of farmer & Youth	Extension	Entrepreneurship development	1	OFF	20	0	20	34	03	37	54	03	57
4.01.13	PF	Entrepreneurship development of farmer & Youth	Extension	management of SHG's	1	ON	0	16	16	0	15	15	0	31	31
09.01.13	PF	Formation and management of SHG's	Extension	Management of SHG's	1	ON	0	21	21	0	38	38	0	59	59
17.1.13	RY	Dairy and goat farming as a supplementary entrepreneurship	Veterinary Science	Sheep & goat rearing	1	OFF	22	-	22	-	-	-	22	-	22
19.1.13	PF	Dairy farming for sustainable agriculture	Veterinary Science	Dairy management	1	ON	40	-	40	5	-	5	45	-	45
23.1.13	EF	Livestock breeding strategies for genetic improvement	Veterinary Science	Management in farm animals	1	ON	16	11	27	8	5	13	24	16	40
2.2.13	PF	Feed & disease management of deshi breed in	Veterinary Science	Poultry management	1	OFF	2	1	3	9	5	14	11	6	17

		Back Yard Poultry (BYP)													
6.2.13	RY	Scientific goat farming for rural area	Veterinary Science	Sheep & goat rearing	1	OFF	19	5	24	9	2	11	28	7	35
08.02.13	EF	Women friendly improved tools & equipments	Home Science	Drudgery reduction	2	OFF	0	21	21	0	38	38	0	59	59
08.02.13	EF	Formation & Management of SHG,s	Extension	Formation & Management of SHG,	1	OFF	0	12	12	0	07	07	0	19	19
16.2.13	EF	Integrated livestock farming system	Veterinary Science	Management in farm animals	1	ON	9	12	21	3	6	9	12	18	30
20.3.13	PF	Dairy farming & Azolla as a cattle feed	Veterinary Science	Dairy management	1	OFF	29	-	29	4	-	4	33	-	33
25.3.13	PF	Paneer making	Veterinary Science	Production of quality animal product	1	ON	15	-	15	11	-	11	26	-	26

(D) Vocational training programmes for Rural Youth

Crop / Enterprise	Date	Training title	Thematic Area	Duration (days)	No. of Participants			Self employed after training			Number of persons employed elsewhere
					Male	Female	Total	Type of units	Number of units	Number of persons employed	
Horticulture	16.2.13	Establishment of nursery for self employment	Nursery management	1	16	5	21	-	-	-	-

Veterinary Science	16.5.1 2	Goat Production Technology	Sheep & goat rearing	2	11	-	11	Goat unit	4	4	-
Veterinary Science	20.3.1 3	Azolla as a cattle feed	Dairy management	3	33	-	33	Azolla production	2	-	-
Home Science	22.10. 12	Biomass charcoal Briquetting	Re-cycling of Agro-waste	2	05	65	70	Bio-Briquettes	1	3	-
Home Science	5.11.1 2	Soybean Processing Technology	Income Generation	5	0	09	09	Soy processing unit	1	9	-
Plant Protection	13.2.1 3	Pest management in vegetable crops in shednet	IPM	1	10	0	10	Shednet veg. cultivation	3	3	-

## (E) Sponsored Training Programmes

Sl. No	Date	Title	Discipline	Thematic area	Duration (days)	Client (PF/RY/EF)	No. of courses	No. of Participants									Sponsoring Agency	Amount of fund received (Rs.)
								Others			SC/ST			Total				
								Male	Female	Total	Male	Female	Total	Male	Female	Total		
1	5.9.12	Soil sampling technique and IPM	Soil Science	Crop Production	1	RY	1	150	40	190	40	20	60	190	60	250	NGO World Vision, Umrer	--
2	14.9.12	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	27	0	27	3	0	3	30	0	30	ATMA, Amreli, Gujarat	-
3	21.11.12	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	16	0	16	6	0	6	22	0	22	RCF, Amravati	-
4	30.11.12	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	30	0	30	5	0	5	35	0	35	ATMA Cotton Project	-
5	1.12.12	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	45	0	45	12	0	12	57	0	57	Ambuja Foundation	-
6	7.12.12	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	58	0	58	17	0	17	75	0	75	Indian Soc Agro Business Proffnls, Amravati	-

7	22.1.12	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	21	0	21	5	0	5	26	0	26	RCF Haryana	-
8	6.2.13	Bt cotton production and Importance of soil testing	Soil Science	Crop Production	1	RY	1	12	8	20	8	2	10	20	10	30	ATMA, State Deptt., Nagpur	--
9	6.2.13	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	17	0	17	3	0	3	20	0	20	Sr Scientist TOT Guntur	-
10	16.2.13	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	25	0	25	6	0	6	31	0	31	Krishnavelley Foundation Kanhan Nagpur	-
11	20.3.13	Sucking pests management in Bt cotton	PP	IPM	1	PF	1	25	0	25	5	0	5	30	0	30	SDA Sihor MP	-
12	25.3.13	Sucking pests management in Bt cotton	PP	IPM	1	RY	1	12	0	12	4	0	4	16	0	16	Arvind Ltd., Akola BCI Project	-



12.	Extension Literature	Bio Briquettes making technology, Milibug	3	0	0		0	0	0	0	0	0	0	0	3
13.	Advisory Services	Agriculture & allied fields	-	1200	625	<b>1825</b>	300	100	400	0	0	0	1500	725	2225
14.	Scientific visit to farmers field		30	470	150	<b>620</b>	110	120	230	0	0	0	580	270	850
15.	Farmers visit to KVK	Visit to technology park & goat unit	10	300	120	<b>420</b>	40	10	50	0	0	0	340	130	470
16.	Diagnostic visits	Root rot in chilli, Nagpur mandarin, Agriculture & allied fields n	60	450	220	<b>670</b>	65	98	163	0	0		515	318	833
17.	Exposure visits	<b>green house</b> , Soybean processing, drudgery reduction tools	<b>1</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	10	0	10
18.	Visit of farmers to					<b>0</b>			0	0	<b>0</b>	0	0	0	0
19.	Ex-trainees Sammelan	Goat farming, Citrus	2	52	0	0	10	0	0	0	<b>0</b>	0	62	0	62
20.	Soil health Camp	Awareness camp	2	156	21	<b>177</b>	15	2	17	0	<b>0</b>	0	171	23	194
21.	Animal Health Camp	Vaccination & Deworming	1	115	15	<b>130</b>	20	2	22	0	<b>0</b>	0	135	17	152
22.	Agri mobile clinic	-	0	0	0	0	0	0		0	<b>0</b>	0	0	0	0
23.	Soil test campaigns	-	0	0	0	0	0	0	0	0	<b>0</b>	0	0	0	0
24.	Farm Science Club Conveners meet	IPM in cotton Bt. production technology	1	67	20	<b>87</b>	15	12	27	0	<b>0</b>	0	82	32	114
25.	Self Help Group Conveners meetings	Soybean processing	2	0	26	<b>26</b>	0	0	0	0	<b>0</b>	0	0	26	26
26.	Mahila Mandals Conveners meetings	Mahila Mandals Conveners meetings	1	4	210	214	4	157	161	4	<b>190</b>				
27.	Celebration of important days (specify)	Women in Agriculture Day,	1	3	30	<b>33</b>	1	12	13	0	<b>0</b>	0	4	42	46
28.	Grand total		<b>180</b>	<b>6181</b>	<b>2347</b>	<b>8528</b>	<b>691</b>	<b>544</b>	<b>1235</b>	<b>21</b>	<b>190</b>	<b>211</b>	<b>6893</b>	<b>3081</b>	<b>9414</b>



Participation in Mega Agro -Tech 2012 Exhibition at Dr. PDKV, Akola



Sh. Prithviraj Chauhan, CM, Maharashtra visited in KVK, CICR stall during Innovative farmers meet



Participation in 'AGROWON EXPO-2012' at Pune



Participation in 'AGROTECH-2012' at Akola



SMS addressing the participants during Vidarbha Kisan Mela



**Training on Non-conventional energy sources at Umred Tehsil**



**Training on Income Generation activity for SHG at Bhivapur tehsil**



**Bio-briquettes production technology at KVK, CICR on 12 Feb. 2013**

### Kisan Mobile Advisory Services

Major Group	Category	Crop/enterprise	Thematic Area	Date	Name of the message	No. of Messages	No. of Farmers								
							Others			SC/ST			Total		
							Male	Female	Total	Male	Female	Total	Male	Female	Total
Horticulture	Commercial Crop	Orange, chilli, garlic	Integrated management of crops	30.7.12 4.7.12	Drainage channel in orange gardens, deepening of vegetable seedlings in 1% bavistin solution	2	25	07	32	0	0	0	25	07	32
Livestock	Poultry*	Chicken	Disease management	15.10.2012	Vaccinate against bird flue	1	5	20	25	1	4	5	6	24	30
Livestock	Poultry*	Chicken	Disease management	15.10.2012	Vaccinate against bird flue	1	5	20	25	1	4	5	6	24	30
Soil Science	soil testing		soil testing		different crops and about Integrated Nutrient Management	18	28	07	35	0	0	0	28	07	35
Home Science	Hygiene	Rural women	Women & child care	13.07.12	Remedies for housefly nuisance	1	04	18	22	04	10	14	8	28	36

**Details on Technology Week Celebrations**

Types of Activities	Title/topic/technology	Date	No. of Activities/quantity	No. of participants/beneficiaries		
				Male	Female	Total
Gosthies	Marketing of flowers HDPS in Cotton	29.11.12.	02	60	-	60
Lectures organized						
Exhibition						
Film show						
Fair						
Farm Visit						
Diagnostic Practical's						
Distribution of Literature (No.)						
Distribution of Seed (q)						
Distribution of Planting materials (No.)						
Bio Product distribution (Kg)						
Bio Fertilizers (q)						
Distribution of fingerlings (No)						
Distribution of Livestock specimen (No.)						

### 3.5 Production and supply of Technological products

#### SEED MATERIALS

Major group/class	Crop	Variety	Quantity (qtl.)	Value (Rs.)	Provided to No. of Farmers
CEREALS	Wheat	Raj-4037, Vimal, MACS-6222	0.66	700	To be use in KVK farm
OILSEEDS	Linseed	NL-260	0.50	300	To be use in KVK farm
PULSES					
FLOWER CROPS	Tube rose	Local	58 kg (bulbs)	3000	To be use in KVK farm and distributed in farmers
OTHERS (Specify)	Dhaincha	Local	0.70	400	To be use in KVK farm

#### SUMMARY

Sl. No.	Major group/class	Quantity (qtl.)	Value (Rs.)	Provided to No. of Farmers
1	CEREALS	0.66	700	To be use in KVK farm
2	OILSEEDS	0.50	300	To be use in KVK farm
3	PULSES			
4	VEGETABLES	58 kg (bulbs)	3000	To be use in KVK farm
5	FLOWER CROPS	0.70	400	To be use in KVK farm
6	OTHERS	300 kg	4,900	
<b>TOTAL</b>				

Major group/class	Crop	Variety	Quantity (Nos.)	Value (Rs.)	Provided to No. of Farmers
SPICES					
VEGETABLES (Seedlings)	Tomato	PKM-1	5000	-	6
	Brinjal	Pusa P-Round	5000	-	7
FOREST SPECIES					
ORNAMENTAL CROPS					
PLANTATION CROPS					
Others (specify)	Marigold	African	50,000	500	32

#### PLANTING MATERIALS

\*An example for guidance only

#### BIO PRODUCTS

Major group/class	Product Name	Species	Quantity		Value (Rs.)	Provided to No. of Farmers
			No	(kg)		
BIOAGENTS						

<b>BIOFERTILIZERS</b>						
1						
2						
3						
4						
<b>BIO PESTICIDES</b>						
1						
2						
3						
4						

### SUMMARY

Sl. No.	Product Name	Species	Quantity		Value (Rs.)	Provided to No. of Farmers
			Nos	(kg)		
1	BIOAGENTS					
2	BIO FERTILIZERS					
3	BIO PESTICIDE					
	<b>TOTAL</b>					

### LIVESTOCK

Sl. No.	Type	Breed	Quantity		Value (Rs.)	Provided to No. of Farmers
			(Nos)	Kgs		
Cattle	Buffalo*	Murrah*				
	Buffalo*					
SHEEP AND GOAT	Goat*	Osmanabadi*	9 bucks	250 kg	31250	6 farmers
POULTRY	Hen*	Whiteleghorn*				
Others (Specify)						

\* An example for guidance only

### SUMMARY

Sl. No.	Type	Breed	Quantity		Value (Rs.)	Provided to No. of Farmers
			Nos	Kgs		
1	CATTLE					
2	SHEEP & GOAT	Osmanabadi	9 bucks	250 kg	31250	6 farmers
3	POULTRY					
4	FISHERIES					
5	OTHERS					
	<b>TOTAL</b>					

### 3.6. Literature Developed/Published (with full title, author & reference)

(A) KVK News Letter ((Date of start, Periodicity, number of copies distributed etc.)

(B) Literature developed/published

Item	Title	Authors name	Number of copies
Popular Article	Adhik utpadanasathi Bhaiipalayacha Vikasit Jati (Improved vegetable varieties for higher production) (28 <sup>th</sup> Jan, 2013)	Singh Gulbir & Kumbhalkar Harish	Not applicable
Popular Article	Falzada madhe Suksham Annadravyanche Mahatva (Importance of micronutrient in fruit crops) (4 <sup>th</sup> Feb, 2013)	Singh Gulbir & Kumbhalkar Harish	Not applicable
Popular Article	Biyanyanche Wargikaran wa kharedi kartanachi kalji (Classification of seed and care while purchasing from market) (5 <sup>th</sup> May, 2012)	Kumbhalkar Harish	Not applicable
Popular Article	Krishi Kshetra mein mahilawonka sashaktikaran kaise ho".(Women empowerment through Agriculture)(13Aug,2012)	Chauhan Sunita	Not applicable
Popular Article	Utility of Soybean and processing technology(12Oct 2012)	Chauhan Sunita	Not applicable
Popular Article	Harbhara lagwadiche Sudhrit tantra (Baliraja Oct ) pp88-91	Gupta . R.R	Not applicable
Total	6		
Booklet	Bio –Briquettes making technology	Chauhan,S.N and Rokade, S.N	1000
	Kapas mein milibug kaprakop aur iska prabandhan	Gupta RR&Nagrare ..et al	1000
	Lapasivarill milibug che vayavasthapan	Nagrare , V., Tayade, A.S, Gupta , R.R,Kranthi, S, & Kranth, K.R	1000
Total	3		
<b>GrandTOTAL</b>	<b>9</b>		<b>3000</b>

\* an example for guidance only

N.B. Please enclose a copy of each. In case of literature prepared in local language please indicate the title in English

### (C) Details of Electronic Media Produced

S. No.	Type of media (CD / VCD / DVD / Audio-Cassette)	Title of the programme	Number

3.7. Success stories/Case studies, if any (two or three pages write-up on each case with suitable action photographs)

#### Brief success story of an Innovative Cotton Farmer (2011-12)

**Name of the farmer::**Tejaswi Shivram Jhade; **Village :** Boruzwada; **Taluka:** Saoner, **Distt.** Nagpur

**Total land holding =** 1.62 ha.; **Soil type :** light calcareous

**Bt. Hybrids grown:** Mallika-207Bt., Ajit-155Bt.

**Yield of seed cotton Kharif (2012-13) =** 92 q/ha.

**Gross Income =** Rs. 3,68,000/- per ha.

**Expenditure** = Rs. 1,08,000/- per ha.

**Net Income** = Rs. 2,60,000/- per ha.

The following management practices followed by this farmer: Cotton cultivation made on raised bed of 15" height and 24" width with drip irrigation. **Spacing:** 150 x 30 cm; **No. of plants :** 22,222 / ha.

**Seed Treatment :** Wonder ST (germinator) @ 5 ml/2.5 kg seed and liquid PSB + Azotobactor + KMB (Potasium based) @ 100 ml each /5 kg seed.

**Weed Management :** a) Soil application of Pendimethalin before sowing + hand weeding - twice.

**Nutrient Management :**

**a. Soil application of fertilizers/ha** – City- compost before bed formation - 463 kg; 10:26:26 – 154.32 kg (equivalent to N:P:K 15.43 : 40.12 : 40.12 Kg/ha ); ZnSO<sub>4</sub> – 9.26 kg; Humic Acid Gr. – 9.26 kg + MgSO<sub>4</sub>-- 15.43 kg; Vizard (sulphur bio) -463g; Mycorrhiza (VAM)– 3.09 kg/ha each.

**b. Fertigation :** Since 1<sup>st</sup> week of Oct. to Nov. 2012- Urea 20.73 kg; 19:19:19 – 15.43 kg; 12:61:0 -21.6 kg; 13:0:45 – 24.69 kg; White Potash – 30.86 kg, Sulphate of Potash – 12.35 kg, liquid Sulphur (20%) – 12.35 lit., 0:52:34-24.6kg, urea-14.2 kg (equivalent to N:P:K 36.21 : 29.41 :44.52 Kg/ha ); ; humic acid – 9.88 lit./ha each

**Use of growth Regulators & nutrients:** Waranty–Tech(80% humic acid) 5 g + 19:19:19 foliar spray at 20 DAS; at 50 DAS., Biozyme – 100 ml; , at 100 DAS-Nitrobenzene @ 40 ml/15 Lit. + Livosin @ 3ml/15 lit + foliar application of micronutrients @ 50 ml/15 lit.; at 125 DAS foliar spray of KNO<sub>3</sub> (13:0:45) + Ca(NO<sub>3</sub>)<sub>2</sub> (20:12) @ 100gm/15 lit; foliar spray of GA-3.

**Plant Protection :** Foliar application of Thiomathoxam @ 10g /15 lit at 50 DAS; at 80- DAS Healine( Parachlotrobin (20%) @ 30 g /15 lit. + Acetamiprid @ 5g/15 lit; ; Propaconzol @ 1 ml/lit + Wonder (nitrobenzene)@ 10g/15 lit; Diafenthuron (Polo) @ 20g/15 lit + microla.

## Success Story 2

### Self Help Group Installed Soy-Cow Plant

Self help group of backward class named as TULSI MAHILA BACHAT GAT has established in year 2011. All the members of this group are previously doing labour work they are in search of some income generative activity.

Hence Home Science SMS had motivated them to learn the skill of preparing soymilk, tofu, soyflour, soynuts and okara based soygulab jamun and soysev in Feb, 2011.

They had applied for loan in Nagar Parishad, Kamtee. Their application was processed SBI, Nagpur. They had received loan of Rs. Seven lakh from "Swarna Jayanti Shahari Swa-Rojgar Yojna". They had started this unit in Jan, 2012. They are preparing 12000 to 14000 bottles (200 ml capacity each) per month and gaining profit of Rs. 40000 to 50000 per month.



Impact of Soy processing training -SHG Established Soy-cow plant

**3.8 Give details of innovative methodology/technology developed and used for Transfer of Technology during the year**

- Adoption of high yielding variety of wheat i.e. AKW-3722 & NIW-917
- Use of marigold as trap crop in cotton for *Heliothis* management.
- Use of pheromone trap in cotton, pigeonpea and chickpea.
- Use of bio-fertilizers for cotton, soybean and chickpea.
- Demonstration of Bt. cotton varieties BNBt. & hybrid NHH-44 Bt.
- Adoption of AKT 8811 pigeonpea high yielding variety.
- Adoption of new variety of chickpea Saki-9516.
- Adoption of new variety of chilli Jayanti.
- Adoption of new variety of Onion – Akola safed
- Adoption of new variety of Bhindi – Akola bahar
- Use of HNPV in chickpea.
- Adoption of JS-335 soybean high yielding variety.
- Processing technique of soybean for preparation of soynut and soymilk
- Use of *Trichoderma viridae* in composting.
- Use of Osmanabadi bucks to improve genetic potential of local goats.
- Use of chelated mineral mixture and salt in the diet of cattle to enhance milk production and to avoid infertility.
- Washing of lesions by using 2% copper sulphate or alum solution and local application of turmeric, butter/coconut oil on scabby lesions around muzzle and lips in case of contagious *echthyma*.
- Budding of local ber by Umran & Gola variety
- Bio -briquettes production from cotton stalk

**3.9 Give details of indigenous technology practiced by the farmers in the KVK operational area which can be considered for technology development (in detail with suitable photographs)**

S. No.	Crop / Enterprise	ITK Practiced	Purpose of ITK
1	Cotton & Pigeonpea	Spray of extract of garlic, chilly, tobacco and kerosene	To control bollworm
2	Cotton, Pigeonpea, chickpea, etc.	Spray of Amrutpani	For sucking pest & nutrient enrichment
3	Cotton	Spray of extract of <i>Ipoemia</i> (Besharum), <i>Lantana camera</i> leaves & tobacco	To control bollworm
4	Chickpea	Sowing by deshi plough rather than seeddrill.	For placing seeds in deeper soil zone
5	Cotton, soybean, chickpea	Crop rotation for two years (Cotton-soybean-chickpea)	For restoring soil fertility

**3.10 Indicate the specific training need analysis tools/methodology followed for**

- damaged/infested material, coloured photographs, charts, etc. were shown to the farmers. Folders were supplied to the beneficiaries. Working out of ETL in various crops was taught to the trainees.
- **Identification** – Based on surveys, needs were identified on priority basis and accordingly courses for practicing farmers/farmwomen were designed and then live demonstrations were conducted
- **Rural youth** –On the basis of need based surveys priority areas were identified and accordingly skill oriented training programmes followed by demonstrations were conducted.
- **In service personnel** - Group discussion and individual contact with in-service personnel in various training areas were identified and conducted.

### 3.11 Field activities

- i. Number of villages adopted : 05
- ii. No. of farm families selected :240
- iii. No. of survey/PRA conducted :04

### 3.12. Activities of Soil and Water Testing Laboratory

Status of establishment of Lab : Soil and Water Testing Lab – KVK, CICR, Nagpur

1. Year of establishment : 2008 Onwards
2. List of equipments purchased with amount :

Sl. No	Name of the Equipment	Qty.	Cost (Rs.)
1	Soil Sampling Auger, Screw type, 50 mm diameter	1	2500
2	Soil Auger Outfit, Post Hole type, 100 mm diameter blade	1	2400
3	Core Cutter Apparatus, consisting cylindrical core cutter made of steel 100 mm diameter with steel rod.	1	1590
4	Repairing of Double beam spectrophotometer	1	7865
<b>Total</b>			<b>14355</b>

3. Details of samples analyzed so far :

Details	No. of Samples	No. of Farmers	No. of Villages	Amount realized
Soil Samples	236	210	11	Soil samples were collected from fields of adapted farmers from different villages of the district and from fields FLD/OFT beneficiaries.
Water Samples	--	--	--	
Plant Samples	380 (Leaf and Burr samples)	Institute Sample	Field Expt. Samples	
Petiole Samples	--	--		
<b>Total</b>	<b>616</b>	<b>210</b>	<b>11</b>	

Two hundred and thirty six soil samples were collected from adopted villages of Nagpur district and analyzed for different soil testing parameters and 210 soil health cards were distributed among the beneficiaries suggesting soil test based fertilizer recommendation for their kharif and rabi crops. Four off-campus and four on-campus training programmes were conducted for 300 farmers/rural youths of the district, depicting importance of soil testing.

#### Functioning of Mobile Soil Testing Van in Nagpur District :

A well equipped mobile soil testing van delivered to KVK, CICR, Nagpur under “Human Development Programme” has start functioning, specially in Ramtek and Katol blocks of the Nagpur district for soil sampling, soil testing and analysis. Subsequently, the other blocks of the Nagpur district will also be cover under this programme for soil testing and analytical work and will provide the soil test based fertilizer recommendation to the farmers in the form of soil health cards.

#### Visit of beneficiaries/cotton grower to KVK soil testing lab :

More than 250 farmers/rural youths/students visited to soil testing laboratory and got benefited about soil sampling technique, soil health, integrated nutrient management, fertilizer application and crop production technologies of the kharif and rabi crops.

### 3.13. Activities under rainwater harvesting (for those KVKs)

Date	Nature of Activity	Title	Client (PF/RY/EF)	No. of Courses	No. of Participants including SC/ST			No. of SC/ST Participants			Total Participants		
					Male	Female	Total	Male	Female	Total	Male	Female	Total
20.05.2011	Training*	Rain water harvesting methods for increased crop yield*	PF	1	20	0	20	5	0	5	25	0	25
25.06.2011	Demonstration*	Farm Ponds and utility	PF	1	10	0	10	0	0	0	10	0	10

## 4.0 IMPACT

### 4.1. Impact of KVK activities (Not to be restricted for reporting period).

Name of specific technology/skill transferred	No. of participants	% of adoption	Change in income (Rs.)	
			Before (Rs./Unit)	After (Rs./Unit)
IPM	155	85	12,000	18,000
INM in Cotton	25	60	10000	16000
Use of Gujarat Sickle for harvesting soybean, wheat, chickpea and rice	108	82%	Required more draft, constant sharpening of sickle	Reduction of farm women drudgery, saving in time, utilizing their energy in other activity (Bishop & Carlott scale)
Picking Techniques of Cotton through KVK, CICR DESIGNED – IMPROVED COTTON PICKING BAG	65	60%	Bending, stooping while picking cotton, back pain,	Reduction of farm women drudgery, saving in time, utilizing their energy in other activity (Bishop & Carlott scale)
Processing Technique of soybean for Soynut and Soymilk Production	23	56%	Unaware about soy processing, low body weight & Hb%	Skill improvement and increase in body weight

**NB:** Should be based on actual study, questionnaire/group discussion etc. with ex-participants.

### 4.2. Cases of large scale adoption (Please furnish detailed information for each case)

### 4.3 Details of impact analysis of KVK activities carried out during the reporting period

Impact were analysed on the basis of structured questionnaire, field processing unit visit.

## **5.0 LINKAGES**

### **5.1 Functional linkage with different organizations**

<b>S.No</b>	<b>Name of the Orgainsation</b>	<b>Nature of linkage</b>
1.	Veterinary College, Nagpur	For imparting training and technical know how
2.	College of Agriculture Nagpur	For imparting training & technical know how
3.	Doordarshan	Publicity/TV talk
4.	All India Radio	Publicity/Radio Talk
5.	Panchayat Samiti & Zilla Parishad, Nagpur	Information and imparting training to extension functionaries
6.	NRCC Nagpur	Information, imparting training & technical know how
7.	NBSS & LUP, Nagpur	For imparting training & technical know how
8.	State agriculture department	For imparting training & know how, participation in world food day, meetings
9.	Press Information Bureau	Publicity
10.	Indian Institute of Youth Welfare, Nagpur	Imparting training & other know-how
11.	Community food & nutrition office	Involvement in training
12.	Vanrai	For development of social forestry
13.	Magnum Foundation	Participation in Scientific Advisory Committee
14.	Rural Institute for Science	Know How
15.	District Sericulture Office	For technical know-how & SAC
16.	Regional Biofertilizer Station	Information and supply of biofertilizers
17.	Rashtriya Chemical & Fertilizers Ltd.	Farmers mobilization for KVK activity
18.	District Forest Officer	Member of Sclietific Advisory Committee
19.	District Fisheries Office	- do -
20.	State agriculture polyclinic, Gondkhairi	Know How
21.	Centre of science for villages, Wardha	Supply of material and Know-how on honey bees
22.	Office of DAHO, Z.P., Nagpur	HRD of Extension functionaries
23.	Cattle breeding farm, Nagpur	For collecting Technical Information
24.	Maharashtra Technical Education Training Centre, Nagpur	For imparting training to rural youths on goat production technology
25.	State Govt. nursery, Kaim Bagh Nagpur	Supply of seedlings
26.	CIRCOT (ICAR), Nagpur	Know How and Other Systems
27.	LAD & SRP college for Women , Seminary Hills , Nagpur	Vocational training for P.G Home – Science Extension students on Women in Diversified Agriculture
28.	Central Integrated Pest Management Centre, Nagpur	Training in IPM in cotton for extension functionaries of different states.

NB The nature of linkage should be indicated in terms of joint diagnostic survey, joint implementation, participation in meeting, contribution received for infrastructural development, conducting training programmes and demonstration or any other

**5.2 List special programmes undertaken by the KVK, which have been financed by State Govt./Other Agencies**

Name of the scheme	Date/ Month of initiation	Funding agency	Amount (Rs.)
NIL			

**5.3 Details of linkage with ATMA**

a) Is ATMA implemented in your district Yes/No

S. No.	Programme	Nature of linkage	Remarks
1	Bench mark survey	As a member AES team	Survey conducted
2	Trainings	Imparting training	Training imparted to farmers
3	Monthly workshop with district collector	Participation in meeting	District cropping plan

**5.4 Give details of programmes implemented under National Horticultural Mission**

S. No.	Programme	Nature of linkage	Constraints if any
	NIL		

**5.5 Nature of linkage with National Fisheries Development Board**

S. No.	Programme	Nature of linkage	Remarks
	NIL		

**6. PERFORMANCE OF INFRASTRUCTURE IN KVK**

**6.1 Performance of demonstration units (other than instructional farm)**

S. No.	Demo Unit	Year of estt.	Area	Details of production			Amount (Rs.)		Remarks
				Variety	Produce	Qty.	Cost of inputs	Gross income	

**6.2 Performance of instructional farm (Crops) including seed production**

Name Of the crop	Date of sowing	Date of harvest	Area (ha)	Details of production			Amount (Rs.)		Remarks
				Variety	Type of Produce	Qty.	Cost of inputs	Gross income	
Cereals									
Wheat	Nov. 12	Feb.13	0.1	HI-1544	Cereals	25 kg	-	450/-	
Wheat	Nov. 12	Feb.13	0.1	NIAW-917(Tapovan)	Cereals	17 kg	-	306/-	
Pulses									
Pigeonpe	July.	Feb.1	0.4	Vipula	Pulse	91 kg	500/	2685/	

a	12	3					-	-	
Gram	Nov. 12	Feb. 13	0.1	Vijay	Pulse	6 kg	-	120/-	
Oilseeds									
Soybean	June 12	Oct. 12	0.4	JS-9305	Oilseed	1.0q	1200/-	2800/-	
Linseed	Nov. 12	Feb. 13	0.1	NL-260	Oilseed	5 kg	-	250/-	
Fibers									
Cotton	June 12	Jan. 13	0.4	Ankur 5642-BG-II	Lint	2.16 q	1000/-	8072/-	
Spices & Plantation crops									
Floriculture									
Merigold	July 12	Oct. 12	0.1	African	flower	35 kg	200/-	500/-	
Fruits									
Gauva	-	-	200 plant	L-49	Fruits	Auctioned	-	31000/-	
Mango	-	-	5 plant	Keshar	Fruits	24 kg	-	600/-	
Custard Apple	-	-	5 plants	Balanga	Fruits	13 kg	-	520/-	
Lemon	-	-	5 plants	Local	Fruits	-	-	320/-	
Vegetables									
Onion	Oct. 12	Feb. 13	0.1	Akola safed	Bulb	54 kg	150/-	432/-	
Okra	July 12	Sep. 12	0.1	Akola bahar	Pods	80 kg	300/-	1593/-	
Tomato	Aug. 12	Oct. 12	0.1	PKM-1	Fruits	69 kg	200/-	568/-	
Others (specify)									
Fodder jowar	July 12	Oct. 12	0.2	SSG	Fodder	10 ton	500/-	10000/-	
Fodder maize	July 12	Oct. 12	0.2	M.G Chara	Fodder	8 ton	500/-	8000/-	
Berseem	Nov. 12	Jan. 13 to April 13	0.2	Mescavi	Greens	9 ton	1000/-	9000/-	

### 6.3 Performance of production Units (bio-agents / bio pesticides/ bio fertilizers etc..)

Sl. No.	Name of the Product	Qty	Amount (Rs.)		Remarks
			Cost of inputs	Gross income	

--	--	--	--	--	--

**6.4 Performance of instructional farm (livestock and fisheries production)**

Sl. No	Name of the animal / bird / aquatics	Details of production			Amount (Rs.)		Remarks
		Breed	Type of Produce	Qty.	Cost inputs	Gross income	

**6.5 Rainwater Harvesting**

**Training programmes conducted by using Rainwater Harvesting Demonstration Unit**

Date	Title of the training course	Client (PF/R/Y/E F)	No. of Courses	No. of Participants including SC/ST			No. of SC/ST Participants		
				Male	Female	Total	Male	Female	Total

**6.5 Utilization of hostel facilities**

Accommodation available (No. of beds):60

Months	Title of the training course/Purpose of stay	No. of trainees stayed	Trainee days (days stayed)	Reason for short fall (if any)
April 2012	Nursery management	25	125*	
	Improved farm implements			
Total				
May 2012				
Total				
June 2012				
Total				
July 2012				
Total				
August 2012				
Total				
September 2012				
Total				
October 2012				
Total				
November 2012				
Total				

December 2012				
Total				
January 2013				
Total				
February 2013				
Total				
March 2013				
Total				
Grand total				

4 X 25= 125 (Duration of the training course X No. of trainees)

## 6.6 Utilization of hostel facilities : Under construction

### FINANCIAL PERFORMANCE

#### 7.1 Details of KVK Bank accounts

Bank account	Name of the bank	Location	Account Number
With Host Institute	State Bank of India	Ramdaspath, Nagpur	01000005041
With KVK	-do-	-do-	-do-

#### 7.2 Utilization of funds under FLD on Oilseed (Rs. In Lakhs)

Item	Released by ICAR		Expenditure		Unspent balance as on 1 <sup>st</sup> April 2013
	Kharif 2012-13	Rabi 2012-13	Kharif 2012-13	Rabi 2012-13	
Inputs					
Extension activities					
TA/DA/POL etc.					
<b>TOTAL</b>					

#### 7.3 Utilization of funds under FLD on Pulses (Rs. In Lakhs)

Item	Released by ICAR		Expenditure		Unspent balance as on 1 <sup>st</sup> April 2013
	Kharif 2012-13	Rabi 2012-13	Kharif+Rabi 2012-13		
Inputs+Drip Irrigation	1,40,000	1,20,000			22
contractual services	60,000				
TA/DA/POL etc.					
<b>TOTAL</b>	<b>2,00,000</b>	<b>1,20,000</b>	<b>2,64,000</b>		<b>56,000</b>

#### Utilization of funds under FLD on Cotton (Rs. In Lakhs)

N.A

Item	Released by ICAR		Expenditure		Unspent balance as on 1 <sup>st</sup> April 2013
	Kharif 2012-13		Kharif 2012-13		
Inputs					

Extension activities			
TA/DA/POL etc.			
<b>TOTAL</b>			

**7.5 Utilization of KVK funds during the year 2011-12 and 2012-13 (upto March, 2013) (year-wise separately) (current year and previous year)**

S. No.	Particulars	Sanctioned	Released	Expenditure
<b>A. Recurring Contingencies</b>				
.1	<b>Pay &amp; Allowances</b>	104.00		10397027
2	<b>Traveling allowances</b>	1.25		122024
3	<b>Contingencies</b>	<b>10.00</b>		
A	Stationery, telephone, postage and other expenditure on office running, publication of Newsletter and library maintenance (Purchase of News Paper & Magazines)	961885		10.00
B	POL, repair of vehicles, tractor and equipments			
C	Meals/refreshment for trainees (ceiling upto Rs.40/day/trainee be maintained)			
D	Training material (posters, charts, demonstration material including chemicals etc. required for conducting the training)			
E	Frontline demonstration except oilseeds and pulses (minimum of 30 demonstration in a year)			
F	On farm testing (on need based, location specific and newly generated information in the major production systems of the area)			
G	Training of extension functionaries			
H	Maintenance of buildings			
I	Establishment of Soil, Plant & Water Testing Laboratory			
J	Library			
<b>TOTAL (A)</b>		<b>115.25</b>	<b>11487212</b>	<b>11480936</b>
<b>B. Non-Recurring Contingencies</b>				
1	<b>Works</b>			
2	<b>Equipments including SWTL &amp; Furniture</b>			
3	<b>Vehicle</b> (Four wheeler/Two wheeler, please specify)			
4	<b>Library</b> (Purchase of assets like books & journals)			
<b>TOTAL (B)</b>				
<b>C. REVOLVING FUND</b>		<b>100000</b>	<b>37788*</b>	
<b>GRAND TOTAL (A+B+C)</b>		<b>115.25</b>	<b>11525000</b>	

**7.5 Status of revolving fund (Rs. in lakhs) for the three years**

Year	Opening balance as on 1 <sup>st</sup> April	Income during the year	Expenditure during the year	Net balance in hand as on 1 <sup>st</sup> April of each year
April 2010 to March 2011				
April 2011 to March 2012				
April 2012 to March 2013				

**05.0. Traning/Capacity building programme attended by the KVK staff during the year under report (01.04.2012 to 31.03.2013)**

S.No.	Name of the training programme	Name of the Institute	Duration		Name of the staff along with designation
			From	To	
1	Planning And Of Management Sustainable Rural Livelihoods	MANAGE, Hyderabad At SAMETI, Civil Lines, Nagpur.	10.07.12	12.07.12	Sunita Chauhan (SMS-H.Sc)
2	How to become a Plant Doctor	Dr..M.S. Swaminathan Foundation &CABI, London ,UK	24.09.12	29.09.12	R.R.Gupta (SMS-PP)
3	Plant parasitic Nemetode and their management	M.P.K.V. Rahuri	15.01.13	17.01.13	R.R.Gupta(SMS-PP)

**1.0 Please include information which has not been reflected above (write in detail).**

**9.1 Constraints**

- (a) Administrative Nil
- (b) Financial Nil
- (c) Technical Nil

**1. District Profile****1. General census**

Population (000's) (2001 Census)

Sr. No.	Particular	Population		
		Male	Female	Total
1	Rural	746	698	1444
2	Urban	1349	1258	2607
3	Total	2095	1956	4051

Sr. No.	Population Information	
2	Population Density/ Sq.km	331
3	Population Below Poverty Line (families in Lakhs)	1.09
4	Schedule Caste Population & Percentage	619 (18.84 %)
5	Schedule Tribes Population & Percentage	458 (13.92% )
6	Sex ratio	1000 : 934
7	Literacy	84.18 %

**Agricultural and allied census****I. Area and Land Statistic**

1	Total Geographical Area	: 9892 Sq. Km
2	Forest	: 2947 Sq. Km
3	Cultivable Land	: 680400 ha
4	Kharif Cropping Area	: 548200 ha
5	Rabi and Summer Cropping Area	: 148645 ha

**II. Human Population**

1	Total Population	: 4051444
2	Male	: 2095489
3	Female	: 1955955
4	Rural Population	: 1044082
5	Urban Population	: 3007362
6	Population density/Sq. Km	: 331
7	SC Population	: 619000
8	ST Population	: 458000
9	Total Taluka	: 14
10	Total villages	: 1892

**III. Livestock Population**

1	Cows and Bullocks	: 638650
2	He and She Buffaloes	: 94334
3	Sheep and Goats	: 345688
4	Poultry	: 676080

**Source:** Directorate of Economics & Statistics.

## 2. Agro-climatic zones

Nagpur district is mainly divided into 2 Agroclimatic Zones based on soil types, rainfall, growing period and suitability for certain range of crops.

### 1. Central Vidarbha region :-

This includes Nagpur, Kamthi, Hingna, Saoner, Katol, Narkhed & Kalmeshwar tahsils of Nagpur district. Soils of these tahsils ranges from medium black, medium heavy to light. Medium black soils are found mainly in Nagpur, Kamthi, Hingna, Saoner & Kalmeshwar tahsils & are suitable for cotton crop. Medium to light soils are best suited for orange cultivation.

Main crops grown in this regions are Cotton, Jowar, Soybean, Tur, Mung, Urid and Paddy.

### 2. Eastern Vidarbha region :-

This region includes Ramtek, Parshivni, Mouda, Umred, Bhiwapur & Kuhi tahsils of the district. Soils of this region are heavy to medium, average rainfall of this region is 1200 mm.

Main crops grown in this regions are Paddy, Jowar, Soybean, Tur, Mung and Urid.

## 3. Agro-ecosystems

S. No	Agro- ecosystem	Characteristics
1	Hot semi-arid eco region	Hot semi-arid eco region with shallow and medium (with inclusion of deep) black soils, GP 90 – 150 days

## 4. Major and micro-farming systems

Major farming systems/enterprises (based on the analysis made by the KVK)

S. No	Farming system/enterprise
1	Agri – Horti – Livestock farming system

## 5. Major production systems

Major area of Nagpur district is under mono-crop. The cropping pattern is dictated by erratic monsoon. Agriculture is mostly based on rainfed and to a limited extent under irrigation. The irrigation intensity of the district is to be considered as more of subsistence irrigation rather than the usual intensity of irrigation available elsewhere. Production system is Cotton, Soybeans, Rice and Redgram, based cropping system.

## 6. Major agriculture and allied enterprises

Vidarbha region of Maharashtra is agrarian in character, farming being the predominant section of economy. Nagpur district is one of the nine districts of Vidarbha having Nagpur as a District Head Quarter as well as the second capital of the State. Agriculture takes the prime place among the occupation of the people in the district followed by horticulture, livestock, handlooms and other occupations.

At present there are 11 APMCs spread over 13 blocks in the district. Besides there are 12 sales and purchase co-operative societies in the district for handling the agriculture inputs and produce. Nagpur is the major trading centre for spices and is ranked first by virtue of volumes. There is tremendous potential for export of agro-food products, horticulture, floriculture; International Cargo-hub proposed at Nagpur will boost the exports of these products.

Nagpur is one of the industrial cities of Maharashtra State. Most of the industries of the district are observed in urban area. Cotton ginning, pressing, spinning, handlooms, food products, sugar factories, seed processing, insecticide formulation, fertilizer and micro nutrient manufacturing are the main agro-industries in the district.

Cotton is the important cash crop of the district. There are 7 cotton ginning and pressing units run by Maharashtra State Cotton Federation. In the season of 2005-06, around 39218 Qt. cotton was purchased and ginned in these units. There are 7 spinning mills in the district. There are 454 cotton weavers societies which operate handlooms in the district.

There are 3 sugar factories established in the district but are not running at the full strength. In the production of agro-inputs, 3 insecticides formulation units, 2 seed producing companies, 1 mix fertilizer unit and 3 micronutrient manufacturing units are operating in the district.

There are about 14 food processing units where processing and packaging of fruits, spices and vegetables are done. Processing of Papaya and tomato is mostly done in these processing units. Also there are 6 distillation units established for the extraction of aromatic substances from aromatic plants.

## **2. Agro-ecosystem Analysis of the focus/target area**

### **1. Names of adopted villages : Ranmangali, Pipra, Manori and Saisar**

Agro-Eco system analysis was carried out with the help of space, time, and flow analysis. Over and above, the decision analysis with the involvement of groups of the farmers by applying PRA (Participatory Rural Appraisal) tools.

### **2. Survey methods used: Participatory Rural Appraisal (PRA)**

#### **Selection of villages**

Agro ecosystem analysis forms the important aspect of understanding how the people are sustained for many years when the population is increasing in the static ecosystem. It is all the more important to know about the changing trends that the farmers adopted for their sustenance. They understand the problems and are waiting for the solutions by adopting participatory rural appraisal to meet basic demands. It is necessary for ensuring peaceful coexistence for all the people in developing society.

Selector of villages undertakes Technology Assessment and Refinement through KVK with regards to the technologies so far developed under rainfed ecosystem for the cotton and soybean based production system. Krishi Vigyan Kendra has been actively engaged in the dissemination of technologies developed through trainings, demonstration, OFT & FLD etc. in and around Nagpur.

While conducting the survey all the important ingredients about the development were considered. Pipra, Manori, and Saisar in Umred taluka of Nagpur district about 20 km from the Taluka head quarter and village Ranmanagali in Bhivapur Taluka is 10 km from Taluka Head Quarter were observed to be less influenced by the urbanization since the people living in the villages depend on agriculture for their livelihood and the number of absentee landlords is minimum. The farming system is complex diverse and risk oriented due to the undulated lands, there are marginal lands and also the better fertile lands. The farmers were found to have spirit of utilizing every opportunity of making best use of the resources at their command. However, they continued with subsistence living due to poor productivity for want of technological adoption.

KVK team therefore considered the cluster as most suitable site for implementing the KVK activities as there is lot of scope for creating awareness for commercial cultivation in the diverse situation which could bring about radical changes in the life style of the villagers. All these factors were the criteria for selection the cluster of villages in the Umred and Bhivapur Taluqas.

### **3. Various techniques used and brief documentation of process: Rapport Building**

KVK team visited the villages and contacted people from all walk of the life including the Sarpanch of Grampanchayat and in three four visits tried to understand whether there is urge for knowing new technologies. The farmers were found to be amenable to new technologies. Accordingly whole programme was discussed with them, after hearing from us, they extend all cooperation.

#### **Transact**

Transact was conducted with the help of the young people. KVK team built up excellent rapport with the farmers. Team of KVK scientists collected information from the farmers while conducting the transact crossing the fields. The villages Pipra, Manori and Saisar are on the Bela road in cluster within 3 km distance. Village Ranmangli is on Bhivapur road. The topography of the area in which the villages are situated is undulated with hillocks and the soils are coarse yellow to medium yellow and in the plains medium to deep light black soils. The rainfed ecosystem is typically characterised by the cropping system with soybean, cotton + pigeon pea (as strip intercrop). Since this area happens to be orange tract where ever ground water potential exists, orange plantation is prominently seen to the extent it can be maintained in irrigated horticulture system.

Under irrigated system farmers have started cultivation of chilli, brinjal, tomato and cowpea as there is taluka headquarters within 15 km distance and Nagpur city at 50- 55 km distance which provide markets.

Hillocks are covered with perennial grasses, shrubs and trees. The small fields are clearly demarcated with field boundaries where different shrubs, grasses and other vegetation suitable for grazing are seen. The level of ground water has gone down below 70ft. mostly the dug wells form the major irrigation system.

Sizeable live stock population of the local breeds comprising of bullock pair, cows, buffaloes and Goats grazes on the naturally occurring grasses, bushes and crop residues. Poultry in villages are exists as back yard poultry

ranging the numbers from 3 to 5. Due to non adoption of soil and water conservation technologies the sloppy lands and hillocks have badly eroded.

The total geographical area of Pipra, Ranmangli, Manori, and Saisar villages is 3272.49 ha. Of which 2018.15 ha is under cultivation. Rainfed area is 1514.65 ha while 409.36 ha is under irrigation and currently 109.31 ha fallow. Kharif crops are grown in 1492.00 ha area while 11165.51 ha area is under Rabi crops, 21.13 ha area is under vegetable crops and orange plantation is in 47.70 ha.

Soybean is the major crop grown in 1127.65 ha area followed by Cotton and Pigeonpea.

### Wealth Ranking

By and large the farming families are generally ranked based on the size of farm holding, level of education, type of farming (irrigated / rainfed) the category of the land and number of family members who are in government jobs. Accordingly wealth ranking can be done irrespective of whether they are genuinely wealthy by urban standards.

### Information of adopted villages:

Sr. No.	Description	Name of adopted villages			
		Pipra	Ranmangli	Manori	Saisar
<b>I</b>	<b>POPULATION CHARACTERISTICS</b>				
2	Male population of the village	1353	517	432	381
3	Female population of the village	1109	455	404	357
4	Children population of the village	623	186	138	122
5	Schedule cast population	482	98	68	61
6	Schedule tribe population	638	186	126	121
7	Others	1342	678	642	556
<b>II</b>	<b>LIVESTOCK POPULATION:</b>				
1	Local cows	173	122	98	71
2	Cross breed cows	28	10	04	02
3	Buffalo	52	28	21	16
4	Goat	382	210	168	128
5	Hen	236	66	62	82
<b>III</b>	<b>LAND USE PATTERN</b>				
1	Total geographical area	1194	1232	438.04	408.45
2	Total Cultivated area	1098	215.25	378	326.9
3	Irrigated area	236	59.10	46	68.26
4	Un irrigated area	862	119.65	332	201.60
5	Fallow land	38	115.15	43.08	32.00
6	Area under forest	58	902.46	--	--
7	Orchards	5.2	36.50	1.80	2.4
8	Cotton	124	--	54.26	35.60
9	Soybean	729	90.45	184.66	123.60
10	Arhar	72	4.65	153.80	86.72
11	Wheat	162	9.70	13.26	42
12	Chickpea	674	4.65	153.80	80.72
13	Brinjal	1	--	1	1.26
14	Cowpea	1.5	--	--	0.80
15	Chilli	1	13.5	1	2.12
16.	Linseed	--	5.90	--	--
17.	Paddy	--	19.4	--	--
<b>IV</b>	<b>LAND HOLDING</b>				
1	Land holders	628	163	246	239
2	Below 5 acres	438	102	164	169
3	Above 5 acres	190	61	82	70
4	Landless labours	118	98	94	83

5	Below poverty level	68	83	62	69
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#### 4. Analysis and conclusions:

##### Space Analysis

###### A. Social

Pipra, Manori, Saisar and Ranmangali villages are situated in the Eastern part of Nagpur district, receiving annual rainfall of 1000 mm. The semi-structured interview revealed that the population of Pipra, Ranmangali, Manori and Saisar are 2462, 972, 836 and 738 respectively.

The farm holding ranges between marginal, and small 403 and 873, respectively, to total cultivated area in the village is 2018.15 ha of which 1514.65 ha is under rainfed followed by 409.36 ha under irrigation and 228.23 ha is fallow land.

There are 261 bullock pairs in the village and sizeable number of animals of which 508 cows, 117 buffaloes and 888 goats.

Farming in the village is very diverse; soybean occupies maximum area followed by cotton, pigeonpea under kharif season. While orange crop dominates the horticulture sector occupying 45.9 ha area. Wheat & chickpea is cultivated in 1146.13 ha as Rabi crops. Vegetable crops like, cowpea, chilli, tomato are also cultivated under irrigated condition of which chilli is the main crop occupies 15.62 ha area.

Majority of the farmers have the livestock especially bullocks, cows, however, there are some families exclusively depend on goats as a major source of earning.

###### B. Social Setting

The social maps of the villages prepared by the farmers indicate various demographic and institutional features of the villages.

Other backward communities comprising of *kunbi*, *тели*, *mali* dominates the population to the extent of 64.25 % while scheduled caste consists of *mahar* and *Matang*, have 14.15 % population and scheduled tribes particularly *Gond*, *Gowari* and *koli* (Fishermen) are 21.30 % of the population. In addition to above there is one family of *Muslim*, *Marwari* and *Brahmin* each. The people from all the social categories are randomly distributed in the villages, is the testimony of healthy and cordial relations among themselves. There is temple, vihar and Omosque as places of worships.

sixty eight percent family's hold, marginal & 31.5 % are small holdings.

Out of 1505 families 336 families do not have any livestock with them to supplement income from their production systems.

###### C. Flow Analysis

Participatory planning is a PRA tool used for identification of various problems in the village settlement, where farmers identified their problems which impeded their crop production system from touching the target and live stock managements as a result the progress in the villages could not become visible and also there is no improvement seen in the living standards. Once the problems are identified with clean conscious they are encouraged for prioritizing them It becomes easy for them to understand the significance of the possible solutions those can solve their problems. Interventions at this stage become operational.

There is no much variation in the annual rainfall over the years however; the pattern has changed off let. In the past three four years substantial rains were received in the months of October to January. Late rains had been the main reason for the low yields of soybean, cotton and sorghum. Area of soybean has come down due to low yields and price, low productivity was due to rust. Area under irrigation has gone up as a result ground water level has gone down up to 120 feet. Sunflower was grown in 1978 but now farmers are not cultivating it due to bird problem and inadequate irrigation facility.

Educated young people who could not see employment in the urban sector seem to have latent interest in agriculture and if they are convinced as to how the adoption of technologies can increase the production under small farming system, they can join hands with the working family members to bring stability.

###### D. Seasonal analysis

Seasonal analysis was done with regards to rainfall pattern and distribution, vis-à-vis the cropping pattern, availability of fodder, labour and the live stock. Cotton, Soybean, pigeonpea and field beans are the major crops during the kharif season. Sowing is completed in the month of June to first week of July. Cotton continues up to Dec.-Jan. along with pigeonpea as intercrop. Wheat, vegetables and chickpea are the crops grown in the rabi season. Sucking pests and bollworms are the major pests of cotton. Among the diseases bacterial blight, grey mildew and bollrot are major. Water logging conditions increase the physiological shedding of fruiting bodies in cotton during Aug. and Sept. Early withdrawal of rains impairs the fibre quality. July-August is the months of continuous and heavy rains which do not allow many farm operations in time, including pest management.

Orange crop suffers due to erratic monsoon and irregular bearing due to faulty nutrient management. Live stock suffers during April to June as the free grazing is not possible and non availability of fodder leads to shortage of milk production.

#### E. Livelihood Analysis

Rainfed farming system contributed to very small extent to the livelihood of marginal farmers and therefore all family members have to work, also the children during the holidays work to meet the livelihood demands livestock particularly the goats contributed to the income of marginal farmers.

Small dry land farmers meet about 1/3<sup>rd</sup> livelihood from farming and remaining from the livestock and labour. The irrigated farming system of the large holdings receives income up to 70 % required for livelihood. However the diverse farming and better investment of family income in cash crops provide better living. Such farmers spending are more on social functions, education and maintaining standard. Small & marginal dry land farmers spend more on food than clothing and education & are at subsistence level.

#### F. Gender Analysis

Participatory farmers in the gender analysis have frankly admitted that ladies devote more time in the various activities in the dry land small production system. It may be up to 70 %. All operation of removal of farm residue, sowing, fertiliser application, weeding, harvesting are attended by the females. Weeding and harvesting are the operations where they are subjected to drudgery and implements which are traditionally used have not helped them to reduce drudgery.

It is note worthy to place an record that girls have to join their parents in the farm activities as against their male counter parts boys, who are speared from such activates to facilitate them to attend school. Males attend farming with regards to land preparation, sowing, intercultivation, threshing and watch & ward. Major activity of marketing is done by males & they do not take into confidence their spouses. Ladies even today have no major say in decision making.

#### Technology Inventory and Activity Chart

Sl. No	Technology	Crop/ enterprise	Year of release or recommendation of technology	Source of technology	Reference/ citation
<b>Discipline: Crop Production</b>					
1	Application of half RDF+5t FYM+ 20 kg S+2.5 Kg Zn Rhizobium and PSB inoculation	Soybean	2003-04	Dr.PDKV Akola	Krishisavandini 2005 (Dr.PDKV Krishi Margadarshika va daindini 2005 pp342)
2	20:60-80 :20:20 kg NPKS/ha Check this grade	Soybean	2003	NRCS Indore	Prasar bulletin-7 2003
3	Seed treatment with Bradyrhizobium + Soybean +PSB (5 gm each)	Soybean	2003	NRCS Indore	Prasar bulletin-7 2003

4	Recomeneded dose of fertilizer for soybean 30:75:0	Soybean	2001-2002	Dr.PDKV Akola	Krishisavandini 2002 (Dr.PDKV Krishi Margadarshika va daindari 2002 pp)
5	Application of reduced dose of fertilizer supplemented with seed dressing with rhizobium and PSB (25 g/kg seed each ) and ammonium molybdate (4 g/kg seed ) is recommended for soybean	Soybean	-	Dr.PDKV Akola	Major research achievements of DR.PDKV,Akola.
6	For yield maximization of soybean foliar sprayof 2% Urea(50 and 70 DAS) along with soil application of RDF is recommended	Soybean	2007	Dr.PDKV	Krishisavandini 2008 (Dr.PDKV Krishi Margadarshika va daindari 2008 pp125)
7	Open furrow after every 3 <sup>rd</sup> row in soybean	Soybean	2001-2002	Dr.PDKV Akola	Krishisavandini 2005 (Dr.PDKV Krishi Margadarshika va daindari 200 8 pp241)
8	Cv. AKW 3722	Wheat	2003-04	Dr.PDKV Akola	Krishisavandini 2005 (Dr.PDKV Krishi Margadarshika va daindari 2005 pp241)
9	Six irrigation at critical growth stages i.e. CRI,tillering ,jointing,boot leaf ,milk and dough stages should be given to irrigated wheat. However, CRI and flowering are the most critical growth stages of wheat hence, irrigation at this should not be missed.	Wheat	-	Dr.PDKV Akola	Major research achievements of DR.PDKV, Akola.
10	AKW-1071 variety suitable late sowing of irrigated wheat up to 15 january	Wheat	2001-2002	Dr. P.D.K.V., Akola	Krishi Margadarshika vadainandini 2003(pp295)
11	Application of 80 kg N and 40 kg P <sub>2</sub> O <sub>5</sub> kg/ha supplemented with seed treatment of azospirillum and p.solubilser @ 25 g/kg of seed is recommended for wheat crop.	Wheat	-	Dr.PDKV Akola	Major research achievements of DR.PDKV,Akola.
12	SYE 116-53-22-8 (PKV Khamang) short stature ,non lodging and short duration paddy variety	Paddy	2006-07	Dr.PDKV Akola	Major research achievements of DR. PDKV, Akola.
13	NL 260- high yielding, alternaria	Linseed	2006-07	Dr.PDKV	Major research

	blight and powdery mildew disease tolerance linseed variety			Akola	achievements of DR.PDKV, Akola.
14	CV. Jaki 9516	Chickpea	2005	Dr.PDKV	Krishisavandini 2008 Dr.PDKV Krishi Margadarshika va daindari 2008 (pp153)
15	Two irrigations, first at flowering and another at early pod initiation are recommended	Chickpea	-	Dr.PDKV Akola	Major research achievements of DR.PDKV, Akola.
16	For tur pod borer management IPM approach with a)NSKE 5% at ETL b) Endosulfan0.07after 15 days of NSKE application c)HaNPV 250 LE/ha after 15 days of Endosulfan spray and d) Methyl parathion 2 % dust @ 20 kg/ha15 days HaNPV spray are recommended	Pigeonpea	-	Dr.PDKV Akola	Major research achievements of DR.PDKV, Akola.
17	Three sprays of HaNPV250 LE alternated with one spray NSKE 5% at an interval of 15 days starting from 50%flower is recommended for effective management of of tur pod borer.	Pigeonpea	-	Dr.PDKV Akola	Major research achievements of DR.PDKV, Akola.
18	The spraying of Metarhizium anisopliae( $10^{10}$ or $10^9$ ) conidia/ml fungal suspension) 2to 3 ml+Ranipal(0.01%)ml in one litre of water at 50 % flowering is recommended for the management of of tur pod borer.	Pigeonpea	-	Dr.PDKV Akola	Major research achievements of DR.PDKV, Akola.
19	High yielding mid late of wilt resistance pigeon-pea Cv. PDKV 9303	Pigeonpea	2007-08	Dr.PDKV Akola	Major research achievements of DR.PDKV, Akola.
20	For effective control of wilt /rot of mung,tur and gram ,seed treatment with bioagent viz. <i>T.harzanium</i> or <i>T. viridae</i> @ 4g/kg seed before sowing is Pigeonpearecommended	Pigeonpea	-	Dr.PDKV Akola	Major research achievements of DR.PDKV, Akola.
21	Seed inoculation with PSB and supply Phosphorous through DAP rather than Rock Phosphate	Pigeonpea	2006	Dr.PDKV Akola	Krishisavandini 2007 (Dr.PDKV Krishi Margadarshika va daindari 2007 pp

					363)
22	Application of FYM@5t/ha+100%RDF(90:45:45 kg NPK/ha)	Cotton	2005-06	AICCIP (Dr.PDKV, Akola)	Recommendation of AICCIP
23	Application of RDF (90:45:45 kg NPK/ha) +2-3 foliar sprays of 2 % urea +1% MgSO <sub>4</sub>	Cotton	2007	AICCIP (CICR,Nagpur)	Zonal Recommendation of All India Coordinated cotton improvement Project
24	Foliar spray of 2 % Urea(at flowering) +2% DAP(Boll development stage) in cotton	Cotton	2001-2002	Dr.PDKV Akola	Krishisavandini 2002 (Dr.PDKV Krishi Margadarshika va daindari 2002 pp)
25	BN Bt cotton straight variety	Cotton	2008	CICR ,Nagpur	GEAC approval No.12/130/2007-08/02-05-2008
26	planting of cotton 90 x 45 cm		2009	Dr.PDKV Akola	RRC Agronomy ,Dr.PDKV recommendation
27	Use of cono weeder in SRI method of paddy cultivation	Paddy	-	ANGRU	
<b>Discipline: Plant protection</b>					
1	<b>IPM in cotton</b> Use of Bt cotton, summer deep ploughing, field sanitation, crop rotation, selection of Bt cotton cultivars tolerant/ resistant to jassid with high yield potential, early sowing, use of recommended spacing and fertilizers, use of inter crop (medium or late tur variety) / border crop ( cowpea/ pulses)/ trap crop/ indicator crop of castor for Spodoptera, gap filling of cotton with maize/ sorghum, monitoring of sucking pests and natural enemies, installation of yellow sticky traps for attracting white flies and aphids, sucking pests control at early crop growth phase (need based) at ETL with 5% NSKE or conventional insecticides,	Cotton	-	CICR, Nagpur	-
9	<b>Management of <i>Phytophthora</i></b> <b>Cultural practices: 1) Timely pests and diseases management 2)</b>	Nagpur Mandarin	-	NRCC Nagpur	-

	<p>Timely application of recommended nutrients 3) Double ring system of irrigation or drip.4) To keep soil well drained 5) To avoid injuries to trunk in roots during farm operations6) Pruning of dry and infected twigs/branches.</p> <p><b>Chemical control measures:</b>  1)Application of Bordeaux paste(1:1:10 )on tree trunk twice before (May-June) and after monsoon (Oct.) after scrapping out of foot rot or gummosis affected portions by sharp knife and on cut portions of pruned twigs/ branches.  2) Two sprays( wetting) of Metalaxyl MZ-72 @ 2.7g and Fosetyl-al @ 2.5g/lit alternatively before monsoons on tree trunk and drenching of tree basin soil at 40 days interval 3) Foliar application of the above fungicides at same dose twice at 40 days interval alternatively</p>				
	<p><b>a.)Gummosis :</b> Sterilize the effected portion by 1 %KMnO4 @ 100 grm per 10 liters of water after removing the bark and gum of affected portion and then apply bordeaux-paste.. Spray on the effected portion and foilar spray by ridomil M-Z-72 or eliat @ 0.2% ( 20 g either of each+ 10 liters of water )</p> <p><b>b.) Foot-rot and Root-rot :</b> Apply ridomil M-Z-72 @ o.2 % Or Captain @ o.4 % after removing rotted roots by removing the plant basin soil and then drench the above fungicide in the soil after covering the roots..</p> <p><b>c.)Die-back:</b> Cut and burn the dry and effected twigs/branches before monsoon. Foliar spray of Carbendazim o.1 % or copper oxychloride @ o.3 % or bordo mixture @ o.6 %. Follow 2 foliar sprays after 15 to 20 days interval</p>	Nagpur Mandarin	-	Dr PDKV	Krishi Samvadani 2009, 238,239 p
11	<p>a) Apply Bordeaux paste on affected gummosis portion.  b) Foilar spray of copper oxychloride 50 WP @ 1250 g + 500 l water/ ha</p>	Nagpur Mandarin	-	MAU	Krishi Dainandani
12	<p><b>For Fusarium wilt.</b>  a) Cultivation of fusariun wilt</p>	Chickpea	-	MPKVDr	Krishi Darshini

	resistant varieties, like ICCV-2, ICCV-10, <b>Vijay</b> , Vishal, Jaki-9218, Saki-9516.S <b>For Root rot. and wilt control</b> a) Seed treatment with <i>T. viridae</i> or <i>T. harzinum</i> @ 4g/ Kg seed before sowing  <b>Root rot - 1)</b> Treat the seed with Captain @ 3 g / kg seed and <i>Trichoderma</i> @ 4g /kg seed 2) Destroy affected plant residues by burning			PDKV  Dr PDKV	Inventory, No 4(11)   Krishi Samvadani 2009, p 164
13	<b>Podborer Management</b> 1)Two applications of Bt(k)8L @ 750 ml/ha or HaNPV 250 LE/ha at an interval of 15 days starting from flower initiation 2) Two foliar sprays alternatively either of ( 1st spray at 40-50% flowering& 2nd spray after 15 days) 5 % Neem seed extract or endosulfan 20 ml or formothion 25 EC 20 ml or Quinalphos 25 EC 20 ml or Phosalone 35 EC 14 ml or Triazophos 35 EC + Deltamethrin 1 EC (mixture )25 ml in 10 lit. of water <b>or</b> 1st spray of HaNPV @ 250 LE + 50 g ranipal/ha and 2nd spray of Endosulfan @ 20 ml in 10 lit. of water after 15 days interval	Chickpea	-	Dr PDKV Akola  Dr PDKV Akola	Inventory, 2008 No 4(14)  (Krishi Samvadani 2009 p-161
14	Spray of Bt @ 750 ml/ ha at ETL.	Chickpea	-	Dr PDKV	Inventory No 4(16)
15	Spray Ha NPV @ 250 LE/ha + Teepol 0.1 % + Jaggery 0.5% 1 Kg/ha thrice at 10-15 days interval on egg-laying or 1 <sup>st</sup> instar stages <b>OR</b> Release <i>Trichogramma chilonis</i> 2 1.5 lac/ha 4 times. Apply chemical when population cross ETL i.e endosulfan @ 1000 ml / ha or deltamethrin 2.8 EC @ 750 ml/ha or quinalphos 25 EC @ 1000 ml/ha of chlorpyriphos 20 EC @ 200 ml + acephate 100 ml / ha or polytrin C 44 EC @ 1000 ml/ha or profenophos 50 EC @ 1500 ml/ha	Chickpea	-	JNKVV Jabalpur	WWW
<b>Discipline: Horticulture</b>					
1	<b>Akola safed</b> Less joined bulbs, less bolting , high TSS and good storage quality	Onion	2004	Dr. PDKV, Akola	Major Research achievement, Director of Research, Dr.

					PDKV, Akola
2.	<b>Akola bahar</b> Early maturity, having slender fruits and high yeilding	Okra	2004	Dr. PDKV, Akola	Major Research achievement, Director of Research, Dr. PDKV, Akola
3	<b>Jayanti</b> Suitable in irrigated condition for green and red chilli, tolerant to major diseases	Chilli	1994	Dr. PDKV, Akola	Major Research achievement, Director of Research, Dr. PDKV, Akola
4	<p><b>Recommended dose of fertilizer</b></p> <p>i.} 800 g N+300 g P+300 g K+ 50 kg FYM+7.5 kg neem cake + 200 g PSB per tree</p> <p>ii.} 600 g N + 200 g P + 400 K + 50 kg FYM per tree</p> <p>iii} soil application of 200 g ZnSo4 per tree &amp; foliar spray of 0.25% ZnSo4 +0.2% boron &amp; 0.5% FeSo</p> <p><b>Nursery management</b> Treated seed shown on raised beds in line , apply 200 g N+ 10 g P2O5+ 10g K2O, half dose of fertilizer at the time seed sowing and half after 20-25 days after sowing, 2 kg FYM / Sq. M.</p> <p>Treated seed sown in raised beds and soil treatment with furadon { 5-6 g per Sq. M } and spray of carbosulfan 2 ml. per lit. of water in nursery after 15 days of sowing and spray of neem seed oil in field.</p> <p><b>Rejuvenation of old santra trees</b> i.} Improved cultivation practices + rejuvenation + bordeaux paste on operated part.</p> <p>ii.} application of 50 kg FYM+ 7.5 g. Neem cake+ 500 g N+500 g.+ P500g K per plant.</p> <p><b>Steps:</b> ❖ Removal of dry/diseased woods before onset of mansoon in June</p>	<p>Nagpur Mandarin</p> <p>Brinjal/ Tomato</p> <p>Brinjal/ Tomato</p> <p>Nagpur mandarin</p> <p>Nagpur mandarin</p>		<p>Dr. PDKV, Akola</p> <p>NRCC, Nagpur</p> <p>CVRI, Banaras</p> <p>CVRI, Banaras</p> <p>Dr. PDKV, Akola</p> <p>NRCC, Nagpur</p>	<p>Major Research achievement, Director of Research, Dr. PDKV, Akola</p> <p>Krishi Savadini, 2008</p> <p>Citriculture</p> <p>Technical bulletin no. 5.</p> <p>Technical bulletin no. 5.</p> <p>Research achievement Dr. PDKV, Akola.</p>

<ul style="list-style-type: none"> <li>❖ Apply Bordeaux paste on operated parts (1:1:10)+ FYM+Neemcake</li> <li>❖ Apply RDF in October</li> <li>❖ Pruning after one year</li> </ul> <p>Improve cultivation practices+ removal of dry woods+ foliar spray of fungicide+ 2 bordeaux paste application.</p> <p><b>Management of pre-harvest fruit drop in ambia bahar</b>  I)Spray of 2-4D,15ppm + Bemonyl 1000 ppm + Urea 1 % or GA3 15 ppm + Bemonyl 100 0ppm + 1% Urea/lit.of water in the month of Aug, Sept and Oct.  II)3 spray of bavistin @1 gm /lit at 15 day interval before harvesting</p> <p>Application of NAA 10 ppm (10mg/lit of water )from August to October + 1 % Urea</p> <p><b>Improvement in bulb size</b>  Spraying of lihocin (6ml/lit) after 60 and 75 days after planting alongwith RDF</p>	Onion		NRCC, Nagpur  Dr.PDKV Akola  NRCOG, Rajguru nagar	Citriculture  Citriculture Krishi savadini-2009  Annual report(2006-07) of NRCOG, Rajgurunagar
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**Discipline: Veterinary Science**

1	Use of chelated minerals	Cattle rearing	-	NDRI, Karnal	Recommendations of NDRI
2	Urea treatment of low quality roughage	Cattle	-	NDRI, Karnal	Recommendations of NDRI
3	Supplementation of mineral mixture	Cow	-	MAFSU, Nagpur	Recommendations of MAFSU, Nagpur
4	Use of ecto & endoparasiticial drugs	Goats	2004	Div. of parasito., Vet. Sci. & Anim. Husban., Jammu	Recommendations of Div. of parasito., Vet. Sci. & Anim. Husban., Jammu
5	Vanraja deshi breed	Poultry	-	PDP, Hyderabad	Rural poultry farming published by PDP, Hyderabad
6	Giriraja deshi breed	Poultry	-	UAS, Bangalore	Rural poultry farming published by PDP, Hyderabad

**Discipline Home science**

1	Iron rich diet	Pregnant	Nutrition Expert	Nutrition Expert	Nutritive
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		women school going children	Group , ICMR	Group , ICMR	value of Indian Food stuffs , 1999
2	Improved Cotton Picking bag	Cotton	2003	MAU, Parbhani	AGROSCO 2003
3	Improved Cotton Picking bag	Cotton	2004	CCSHAU, Fabricated	AICRP, 2004
4	Gujarat Sickle	Improved Farm Implement	CIAE, Bhopal 2006	Gujarat Agro Industries Corporation & CIAE (ICAR) , Bhopal	CIAE, Bhopal

### Activity Chart

Crop/ Animal/ Enterprise	Problem	Cause	Solution	Activity	Reference of Technology
<b>Discipline: Crop production</b>					
Cotton	Low productivity of cotton under rainfed medium black soils of Nagpur	1) Imbalance fertilizer application 2) Sub-optimal plant density 3) high cost of Bt cotton hybrids	1) Application of recommend dose of Nutrients 2) optimization of plant population in Bt cotton 3) Introduction of BN Bt cotton straight variety	1) Single component FLD to demonstrate effect of recommended dose of nutrients 2) OFT on optimization of plant density 3) OFT on assessment of BN Bt	1. Sl. No. 23 of Technology Inventory 2. Sl. No.26 of technology Inventory 3. Sl. No. 25 of Technology inventory
Soybean	Low productivity of cotton under rainfed medium black soils of Nagpur	1) Imbalance and suboptimal fertilizer use	1) Application recommended dose of fertilizer along with FYM and micronutrient	1) FLD on INM in soybean	1 Sl. No. 1 of Technology Inventory inventory
Pigeonpea	Low productivity of pigeonpea under rainfed medium black soils of Nagpur	1 ) Heavy incidence of fusarium wilt 2) incidence of Bollworm	1) Use of wilt resistant varieties PDKV TAT 9329 2) Seed treatment with bioagent viz. <i>T.harzanium</i> or <i>T. viridae</i> @ 4g/kg seed before sowing 3) Integrated pest management	1) Single component FLD to demonstrate yield potential of recommended wilt resistant variety 2) Diagnostic Field Visit under FLD	1 Sl. No. 19 of Technology Inventory 2 Sl. No.20,21 of technology Inventory 3 Sl. No. 16, 17, 18 of Technology inventory

Medium deep vertisol	Poor fertility status of medium deep soil in Nagpur district	1) Phosphorous fixation 2) Non adoption soil management practices	1) Soil test based fertilizer recommendation 2) Use of PSB in Kharif and rabi crop	1) soil testing campaign 2) Demonstration on use of Biofertilizers	1 Sl. No. 21 of Technology inventory
Wheat	Low productivity of wheat	1) Low yielding wheat variety 2) Suboptimal use of Nutrients 3) Limited irrigation	1) Use of high wheat variety 2) Nutrient management 3) Scheduling irrigation as per critical growth stages	1) Single component FLD to demonstrate yield potential of recommended variety 2) OFT on nutrient management wheat 3) Training on irrigation management	1 Sl. No. 8 of Technology Inventory 2 Sl. No.11 of technology Inventory 3 Sl. No. 9 of Technology inventory
Paddy	Low yield of paddy	1) Use of non descript paddy varieties 2) Weed menace	1) Use of SYE 116-53-22-8 (PKV Khamang) short stature ,non lodging and short duration paddy variety 2) Use of cono weeder	1) Single component FLD to demonstrate yield potential of recommended variety 2) OFT on weed management in SRI method	1 Sl. No. 12 of Technology Inventory
Linseed	Low yield of linseed	Incidence of alternaria blight and powdery mildew	Use of NL 260-high yielding, alternaria blight and powdery mildew disease tolerance linseed variety	1) Single component FLD to demonstrate yield potential of recommended variety	1 Sl. No. 13 of Technology Inventory
Chickpea	Low productivity of cotton under rainfed medium black soils of Nagpur	1) Heavy incidence of fusarium wilt 2) Limited irrigation	1) Use of wilt resistant varieties 2) Scheduling irrigation as per critical growth stages	1) Single component FLD to demonstrate yield potential of recommended wilt resistant variety 2) Training on irrigation management	1 Sl. No. 14 of Technology Inventory 2 Sl. No.15 of technology Inventory
<b>Discipline: Plant protection</b>					

Cotton	Low productivity of cotton under rainfed medium black soils of Nagpur region	a) Sucking pests incidence & b) Bollworms incidence	a) Seed treatment + use of NSE/ conventional insecticides at ETL b) Use of Bt Cotton	a) Single component FLD b) Training and field programmes on IPM. c) Diagnostic visits	Ser No 1 of Technology Inventory
Pigeonpea	Low productivity of pigeonpea under rainfed medium black soils of Nagpur region	a) wilt incidence b) <i>Helicoverpa</i> , Podfly incidence c) Moisture stress	a) Use of resistant varieties b) Seed treatment with <i>Trichoderma</i> spp. c) Need based spray of chemical insecticides.	a) Single component FLD b) Training for seed treatment . c) Field programmes d) Diagnostic visits	Sl. No. 12,13(2) of Technology Inventory
Chickpea	Low productivity of chickpea under rainfed medium black soils of Nagpur region	a) Root rot/ wilt incidence b) Podborer incidence c) Moisture stress	a) Use of resistant varieties b) Seed treatment with <i>Trichoderma</i> spp. c) need based spray of insecticides.	a) Single component FLD b) Training for seed treatment and use of pheromone traps. c) Field programmes d) Diagnostic visits	Sl. No. 12,13(2) of Technology Inventory
Nagpur Mandarin	Low productivity in Nagpur Mandarin under Nagpur region	a) Incidence of <i>Phytophthora</i>	a) Single component OFT. b) IDM c) Application of recommended dose of fertilizers and other nutrients	a) Single component FLD b) Training c) Field programmes d) Diagnostic visits	Sl. No. 9 of Technology Inventory
Cotton	Low productivity of cotton under rainfed medium black soils of Northern Amaravati	1) Imbalance fertilizer application 2) Pest and disease occurrence 3) Flower and fruit	1. Application of recommend dose of Nutrients 2. Integrated Pest control 3. Micro-nutrient i.e boron	1. Single component FLD to demonstrate effect of recommended dose of nutrients 2. Training and FLD programme on integrated pest management of cotton pest 3. OFT on management	1. Sl. No. 6 of Technology Inventory 1. Sl. No. 45 of technology Inventory 2. Sl. No.

		drop due to micro-nutrient deficiency	application to control flower and fruit drop	boron deficiency to control flower and fruit drop	99 of Technology inventory
<b>Discipline: Horticulture</b>					
Nagpur mandarin	Decline in yield & quality of fruit	1. Poor management practices 2. Heavy crop load 3. Inadequate pruning practices	1. Improved cultivation practices 2. Rejuvenation of old trees 3. Application of Bordeaux paste 4. Recommended dose of fertilizer	1. Training on improved cultivation practices 2. FLD on rejuvenation of old trees 3. Training on Application of Bordeaux paste & recommended dose of fertilizer	Dr.PDKV, Akola
Nagpur mandarin	Pre harvest fruit drop in Ambia bahar	1. Physiological 2. Pathological 3. Entomological (fruit flies)	a. Adoption of improved inter culture operations b. Application of growth hormones Integrated disease & pest management	1. Training on citrus orchard management 2. Training on Integrated disease & pest management <b>3. FLD on Management of preharvest fruit drop</b>	Dr.PDKV, Akola
Okra	Low productivity & incidence of YVMV	1. selection of low yielding & YVMV susceptible varieties 2. Long duration varieties 3. Imbalance fertilizer application	1. Selection of high yielding YVMV resistant short duration varieties Application of recommended dose of fertilizers	<b>1. FLD on high yielding YVMV resistant short duration varieties of okra { Akola bahar }</b> 2. Training on INM in okra	Dr.PDKV, Akola
Chilli	Low productivity	1. Faulty selection of variety 2. Poor nursery management 3. Improper fertilizer schedule 4. Poor management of disease	1. Selection of improved variety 2. Nursery management 3. Application of recommended dose of fertilizers 4. Disease management	<b>1. FLD on improved variety { Jayanti }</b> 2. Training on scientific nursery management 3. Training on fertilizer schedule & disease management	DR.PDKV, Akola
Onion	Low	1. Faulty	1. Selection of	1. OFT on spray of	NRCOG, Raj

	productivity & poor % of uniform size of bulb	selection of variety 2. Poor nursery management 3. Improper fertilizer schedule 4. Bolting in onion	improved variety 2. Nursery management 3. Spray of lihocin 4. Application of recommended dose of fertilizers	lihocin to improve the % uniform size of bulb 2. Training on proper nursery management & 3. nutrient management	gurunagar
<b>Discipline: Veterinary Science</b>					
Cows, crossbred cows & buffaloes	Low productivity	1. Nutritional deficiencies due to imbalanced nutrition 2. Scarcity of feeds & fodders 3. Traditional/ Poor management practices	1. Enrichment of diet with protein & micronutrients 2. Cultivation of fodder crops & their conservation 3. Adoption of improved/scientific management practices	1. OFT on use of chelated minerals and FLD on supplementation of mineral mixture in the diet of cows & <b>training</b> on low cost feed formulation 2. <b>FLD on urea treatment, Training &amp; demonstration</b> on fodder crops production 3. <b>Training &amp; health camps</b> for livestock	NDRI, Karnal & MAFSU, Nagpur  NDRI, Karnal  MAFSU, Nagpur
Goats	Low body weight gain, low milk yield, low prolificacy	1. Low genetic potential of local goats 2. Lack of balanced nutrition due to extensive method of rearing 3. Ecto & endoparasitic infestation 4. High mortality during monsoon	1. Upgradation of local goats by crossing with productive pure breed. 2. Inclusion of concentrate feed in their diet 3. Ecto & endoparasitic control by using new generation ecto-endoparasiticidal drugs 4. Adoption of strict schedule for vaccination, deworming &	1. <b>Training</b> on improvement of genetic potential 2. <b>Training</b> on low cost feed formulation for goats 3. <b>FLD &amp; training</b> on effective use of ecto & endoparasiticidal drugs 4. Organizing <b>treatment, vaccination &amp; ecto-</b>	MPKV, Rahuri  MAFSU, Nagpur  Div. of Parasitology, Vet. Sciences & A.H., Jammu  MAFSU, Nagpur

		season	dipping	<b>endoparasitic control camps</b>	
Back yard Poultry	Low egg production, slow growth rate, high mortality.	1. Low genetic potential 2. Poor management practices & High incidence of diseases 3. Inadequate/ poor feeding	1. Introduction of improved deshi breeds 2. Adoption of prophylactic measures for disease control 3. Inclusion of balanced feed	1. <b>Training</b> on improved deshi breed/breeds. 2. <b>Training</b> on improved management practices & 3. <b>Training</b> on balanced feeding	PDP, Hyderabad  UAS, Bangalore  PDP, Hyderabad
<b>Discipline: Home Science</b>					
Anganwadi /School going children	Low Hb%, weight gain & deficiency	Deficiency of iron	Use of locally available Iron rich food crops, vegetable	Training and OFT	Sl. No. 1 of Technology Inventory
Cotton	Drudgery in cotton picking	Bulk harvesting and carrying within field of Bt cotton in shortest duration	Method of Cotton picking  Use of Improved cotton picking bag while harvesting	OFT and Training on reduction of Farm Women drudgery in cotton picking	Sl. No.2 and3 of Technology Inventory
Soybean	Drudgery while harvesting	Use of local sickle	Use of improved harvesting aids	Training & FLD	Sl. No. 4 of technology inventory

## 7. Details of each of the technology under Assessment, Refinement and demonstration

- Detailed account on varietal/breed characters for each of the variety/breed selected for FLD and OFT
- Details of technologies that may include formulation, quantity, time, methods of application of nutrients, pesticides, fungicides etc., for technologies selected under FLD and OFTs
- Details of location/area specificity of recommended technology viz., for each of the variety/breed/technology selected for FLD and OFT

### Crop production

Sr. No.	Type of activity	Name of Variety/technology	Prominent Features	Recommendation
<b>Discipline: Crop production</b>				
1	OFT	BN Bt cotton straight variety	Straight variety seed can be used up to three years. Seed cost is comparatively less as compared to other variety. Early maturing suitable under double cropping system.	Recommended for Central Zone

2	FLD	AKW 3722(Vimal)	Better resistance to rust. High protein with good chapatti making quality	Recommended for Vidarbha region
3	FLD	High yielding mid late of wilt resistance pigeon-pea Cv. PDKV 9303 + pod borer management	For tur pod borer management IPM approach with a)NSKE 5% at ETL b) Endosulfan0.07after 15 days of NSKE application c)HaNPV 250 LE/ha after 15 days of Endosulfan spray and d) Methyl parathion 2 % dust @ 20 kg/ha15 days HaNPV spray are recommended	Recommended for Vidarbha region
4	FLD	Jaki -9218	Suitable under minimum tillage / no tillage	Recommended for Vidarbha region
5	FLD	INM in soybean	Application of half RDF+5t FYM+ 20 kg S+2.5 Kg Zn Rhizobium and PSB inoculation	Recommended for Vidarbha region
6	FLD	SYE 116-53-22-8 (PKV Khamang)	Short stature ,non lodging and short duration paddy variety	Recommended for Vidharbha region
7	FLD	NL 260	High yielding, alternaria blight and powdery mildew disease tolerance linseed variety	Recommended for Vidarbha region
8	OFT	Management of weed in SRI method of paddy cultivation	Use of cono weeder	Recommended under SRI method paddy cultivation (ANGRU)
9	FLD	INM in cotton	Application of FYM@5t/ha+100%RDF(90:45:4 5 kg NPK/ha)	Recommended for central zone by AICCIP
10	OFT	Optimization of plant density of Bt cotton	Planting Bt cotton at 90 x45 cm	RRC 2009 Recommendation of DR.PDKV AKOLA.
11	OFT	IPNS in soybean –wheat cropping system	Application of 50 % RD of N P K S Zn + 5 t FYM + Rhizobium to soybean crop in kharif and 75 % RD of N P K + azospirillum to Wheat	Dr.PDKV recommendation for wheat –soybean cropping system
<b>Discipline: Veterinary Science</b>				
1	OFT	Chelated minerals	Increases bioavailability of minerals. Improves fertility, reproductive performance, and immunity & herd health.	Recommended by NDRI, Karnal for cows and buffaloes
2	FLD	Urea treated poor quality roughage	Urea acts as a low cost protein source. Cellulose makes available to take part in digestion process. Animals yielding milk up to 6 litres/day can be maintained without concentrate feed.	Recommended by NDRI, Karnal for large ruminants
3	FLD	Use of anthelmintics and ectoparasiticides	Anthelmintics acts against roundworm, tapeworm and liver flukes, while ectoparasiticides acts against ticks, mites and lice	Recommended by Division of parasitology, Veterinary

			resulting in increased production performance	Sciences & Animal Husbandry, Jammu
4	FLD	Mineral mixture	Compensates the losses of minerals especially calcium & phosphorus secreted through milk and increases milk production.	Recommended by Maharashtra Animal & Fisheries Sciences University, Nagpur