

CHAPTER IV

AGRICULTURE AND IRRIGATION

The Bidar district is predominantly an Agricultural district. It is a district of *Are Malenadu* area covered by the Deccan trap flows of the tertiary period under the North-Eastern Transitional Zone with an average rainfall 885.8 mm About 81 per cent of annual rainfall is received during the period from June to September. Agriculture in the district depends mainly upon rainfall. The net area irrigated to net area sown is only 12.62 per cent, below the state average of 24.83 per cent. Karanja and Manjra rivers flow in the district. Medium irrigation project in the district is Karanja Project. Apart from this, the minor projects of Chulkinala, Mullamari are also to be completed.

Agriculture is the core and backbone of the rural economy and the main occupation of the people in the district. The net and gross area sown in the district during 2009-2010 was 3.74 lakhs hectares. Only 0.47 lakh ha. (i.e. 12 per cent) of net sown area is under irrigation. Therefore rain fed agriculture is predominant in this district. For improving productivity and reduce cost of cultivation, promotion of better agricultural technology and introduction of area and climate specific crops is imperative.

Agricultural Population: Agriculture being an important occupation for the rural poor of the district plays a vital role in the economy of the district. About 65 per cent of the working population depends mainly on agriculture. According to 2011 census, population of the district was 17,03,300 comprising of rural (12,77,348) and urban (4,25,952) population. Among the total population only 5,57,603 persons were workers, forming about 32.80 per cent of the total population, out of the 5,57,603 workers, 1,38,792 (i.e about 25.59 per cent) were cultivators, 2,09,047 (i.e about 37.99 per cent) were agricultural labourers and 2,09,764 (i.e about 37.61 per cent) were other workers. Thus the number of persons engaged in agriculture was 3,47,839 constituting about 62 per cent of the total number of workers. The taluk-wise figures of cultivators and agricultural labourers according to the data of Bidar district at a glance 2009-10 were as follows:

Cultivators and Agricultural Labourers

Taluk	Total No. of Workers	No. of Cultivators	No. of Agricultural labourers	Percentage for	
				Column 3 to 2	Column 4 to 2
Aurad	97,237	33,690	38,323	34.65	39.41
Basavakalyan	1,19,383	35,482	42,493	29.72	35.60
Bhalki	1,00,046	30,290	42,751	30.28	42.73
Bidar	1,33,480	18,297	40,288	13.71	30.18
Humnabad	1,07,457	21,033	45,192	19.50	42.05
Total	5,57,603	1,38,792	2,09,047	24.89	37.49

Source: Bidar district at a glance (2009-10)

The above table connotes that the percentage of cultivators to the total number of workers was highest in Basavakalyan taluk, followed by Aurad, Bhalki, Humnabad and Bidar taluks. The percentage of agricultural labourers was highest in Humnabad taluk followed by Bhalki, Basavakalyan, Bidar and Aurad taluks.

Size of Land Holdings: Size of operational (cultivated) land holdings is a basic factor affecting agricultural production, especially in absence of advanced cultivation technologies. The two factors that determine the size of holdings are the pressure of population on land and the area of cultivable land available.

Agricultural Holdings during different Agricultural Censuses - Bidar District (Number in 000); (Area in 000 hectares); (Average size in hectare)

	1970 -71	1976 -77	1980 -81	1985 -86	1990 -91	1995 -96	2000 -01	2005 -06	2010 -11
Number of operational holdings	88	102	119	133	166	195	217	238	251
percentage variations over preceding censuses	NA	16.4	16.2	12.3	24.7	NA	11.3	10	0
Area of Operational holdings	479	470	463	451	465	458	451	467	452
percentage variations over preceding censuses	NA	-2.0	-1.5	-2.5	3.1	NA	-1.5	3	-3.2
Average Size of Operational holdings	5.46	4.61	3.9	3.38	2.8	2.35	2.08	1.96	1.8

Particulars	Individual		Joint		Institutional		Total	
	2010-11	2005 - 06	2010 -11	2005 -06	2010 - 11	2005 -06	2010 - 11	2005-06
Distribution of number of operational holdings according to types of holdings.	246	225	4	13	Neg.	Neg.	251	238
	3.2	3	7.1	24.5			3.2	3.1
Distribution of area operated according to types of holdings	441	438	10	27	1	2	452	467
	3.7	3.6	9.7	32.5	1.4	2.7	3.7	3.8
Distribution of average size of operational holding according to types of holdings	1.79	1.94	2.15	2.07	12.54	2	1.8	1.96

The following table shows the distribution of land holdings according to size as in 2009-10

Sl. No	Size of Holding	Number of Holdings	Total number of holdings (per cent)	Operational area in ha	Total operational area (per cent)
1	Below 1 ha (Marginal)	67,543	28.33	38,491	8.25
2	1-2ha (Small)	92,081	36.62	1,31,175	28.10
3	2-4ha (Semi medium)	57,165	23.98	1,53,022	32.79
4	4-10ha (Medium)	19,035	7.98	1,09,696	23.50
5	4-10ha (Big)	2,585	1.09	34,335	7.36
	Total	2,38,409		4,66,717	

Source: Bidar district at a glance (2009-10)

The table reveals that the largest number of holdings belonged to group of 1-2 ha (36.62 per cent) followed by below 1 ha (28.33 per cent) and 2-4 ha (23.98 per cent) respectively. Least number of holdings belongs to 4-10 ha (1.09 per cent).

Land Utilization: The district total Geographical area is 5,41,765 ha. or 5.41 lakhs ha. Bidar has a net sown area of 3,74,503 ha. (69.31 per cent) of which 78,108 ha are sown more than once. The total forest area in the district is 27,707 ha which is only 5.03 per cent of the total Geographical area of Bidar district. Available forest area of the district is more in Humnabad (39.75 per cent) followed by Basavakalyan (25.78 per cent), Bidar (16.80 per cent), Bhalki (9.32 per cent), Aurad (8.34 per cent). The distribution of cultivable land in the district under various categories of land holdings are as under.

Sl. No	Particulars	Area in ha	Total geographical area (per cent)
01	Total geographical area	5,41,765	100
02	Area under Forest	27,707	5.11
03	Barren and uncultivable land	19,127	3.53
04	Land put into non-agricultural uses	22,006	4.06
05	Cultivable waste	19,382	3.57
06	Permanent pastures and other grazing lands	13,964	2.58
07	Miscellaneous tree crops and grooves not included in the net area sown	10,915	2.01
08	Current Fallow	41,140	7.59
09	Other Fallow	46,738	8.62
10	Net Area Sown	3,40,786	62.90
11	Area sown more than once	60,339	11.13

Source: Bidar district at a glance (2009-10).

Classification of Total Geographical Area in Bidar District during 2011-12, 2012-13 and 2013-14 is as follows, (Area in Hectares)

Sl. No.		2011-12	2012-13	2013-14	
1	Geographical Area				
	a	Professional Survey	5,41,765	5,41,765	5,41,765
	b	Village Papers	5,41,765	5,41,765	5,41,765
2	Forest				
		27,707	27,707	27,707	
3	Classification of Area				
	a	Not available for cultivation			

	i. Land put to non-agricultural uses	22,006	22,006	22,768
	ii. Barren and Uncultivable land	19,127	19,127	19,127
b	Cultivable Waste	19,382	19,382	19,382
c	Uncultivated land excluding fallow land			
	i. Permanent Pastures and other graging land	13,964	13,964	13,964
	ii Miscellaneous Tree Crops Groves	10,915	10,915	10,922
d	Fallow land			
	i. Current Fallows	37,597	36,118	36,295
	ii. Fallow Land	40,275	44,927	41,944
e	Net Area Sown	3,50,792	3,47,619	3,49,656
4	Total Cropped Area	4,15,695	4,34,364	4,50,335
5	Area sown more than once	64,903	86,745	1,00,679

Source: Report on area, production, productivity and prices of agriculture crops in Karnataka 2011-12, 2012-13 and 2013-14, DES No.9 of 2015 DES No.14 of 2016, DES No. 2 of 2017

Talukwise Land Utilization in Bidar District (in 2015-16)

Taluk	Geographical Area in hectares	Forest	Land not available for cultivation		
			Land put to Non-Agri uses	Barren & Uncultivable Land	Total
Aurad	1,21,622	2,311	2,759	3,213	5,972
B'Kalyan	1,19,438	7,143	3,254	7,687	10,941
Bhalki	1,09,259	2,584	5,316	395	5,711
Bidar	92,203	4,655	4,631	2,525	7,156
Humnabad	99,243	11,014	6,808	5,307	12,115
Total	5,41,765	27,707	22,768	19,127	41,895

Other Uncultivated Land				
Taluk	Cultivable Waste	Permanent Pasture	Trees & Groves	Total
Aurad	3,412	1,684	2,754	7,850
Basavakalyan	6,053	3,443	95	9,591
Bhalki	3,115	3,541	7,290	13,946
Bidar	2,085	910	482	3,477
Humnabad	4,717	4,386	312	9,415
Total	19,382	13,964	10,933	44,279

Taluk	Fallow Land			Area Sown		
	Current	Other	Total	Net	More Than once	Total
Aurad	21,056	10,435	31,491	73,998	28,302	1,02,300
B'Kalyan	21,269	9,981	31,250	60,513	7,560	68,073
Bhalki	7,467	3,815	11,282	75,736	24,114	99,850
Bidar	21,606	14,861	36,467	40,448	8,781	49,229

Humnabad	6,229	3,652	9,881	56,818	7,416	64,234
Total	77,627	42,744	1,20,371	3,07,513	76,173	3,83,686

Source: Bidar District At A Glance 2015-16

Soils: The soil types of Bidar district comprising of black soil and laterite soil. Highest area of laterite soil comprises 51.06 per cent and black soil comprises 48.94 per cent, within the medium and deep black soil are good water holding capacity and medium fertility, where as in laterite soil are less water holding capacity and low fertility. The district soils are deficit in nitrogen, phosphorous, sulphur, zinc and boron and high in potassium, Laterite soils are deficit in potassium.

Soil resources and type

Sl No	Name of the block	Soil type	Major and Secondary nutrients which are deficient	Micro-nutrients which are deficient
1	Aurad	Medium and Deep black soils	Nitrogen and Sulphur	Boron and Zinc
2	Basavakalyan	Medium and Deep black soils and Laterite	Nitrogen	Boron and Zinc
3	Bhalki	Medium and Deep black soils	Nitrogen and Phosphorous	Boron and Zinc
4	Bidar	Medium and Deep black soils and Laterite	Nitrogen	Boron and Zinc
5	Humnabad	Medium and Deep black soils and Laterite	Nitrogen and Phosphorous	Boron and Zinc

Source: KSDA, Bidar, Karnataka

Cropping pattern: Bidar district has the advantage of growing a variety of field and horticultural crops owing to its varied soil and climatic conditions. Traditionally crops like redgram, green gram, black gram, soyabean, cowpea, groundnut, sunflower, sesamum etc. are grown under Kharifrainfed situation. While under irrigated situation, the district is known for intensive cultivation of sugarcane and paddy. During Rabi season crops like jowar, bengalgram, safflower and sunflower etc. are grown extensively while paddy and sugarcane under irrigation conditions. Besides in several pockets of the district fruit crops like mango, grapes, papaya, pomegranate, mosambai, banana, sapota and vegetables-cabbage, onion, cauliflower and chilli are grown. The main occupation of the people in the district is agriculture and related operations. There are two main seasons in which agricultural practices are carried out. The two seasons

are Kharif and Rabi. Kharif season commences from June and the crops are harvested in September. Rabi season commences from September and crops harvested in February. The main food crops are Jowar, Paddy, Wheat, Bajra, Maize and pulses. Groundnut, sugarcane and cotton are the cash crops.

Food and Non-Food Crops in Bidar District

		2011-12	2012-13	2013-14	
1	Food Crops				
	a	Area (In Hectares)	3,10,523	3,32,825	3,18,806
	b	percentage to total cropped Area	74.7	76.62	70.79
	c	percentage to State Total	3.42	3.75	3.75
2	Non-Food Crops				
	a	Area (In Hectares)	1,05,172	1,01,539	1,31,529
	b	percentage to total cropped Area	25.30	23.38	29.21
	c	percentage to State Total	3.54	3.53	3.53
3	Total cropped area (in hectares)		4,15,695	4,34,364	4,50,335
4	percentage to State Total		-	3.70	3.70

Source: Report on area, production, productivity and prices of agriculture crops in Karnataka 2011-12, 2012-13 and 2013-14

Area, Production and Productivity of principal crops in Bidar District

1	Cereals and Minor Millets		2011-12	2012-13	2013-14
	a	Area (In Hectares)	97,192	84,407	78,682
	b	Production (Tonnes)	1,29,310	1,29,018	1,06,463
	c	Yield (Kgs/Hectares)	1,400	1,609	1,424
2	Pulses				
	a	Area (In Hectares)	1,72,236	2,04,608	1,95,792
	b	Production (Tonnes)	83,166	1,77,150	1,27,800
	c	Yield (Kgs/Hectares)	508	911	687
3	Foodgrains				
	a	Area (In Hectares)	2,69,428	2,89,015	2,74,474
	b	Production (Tonnes)	2,12,476	3,06,168	2,34,263
	c	Yield (Kgs/Hectares)	830	1,115	898
4	Oil Seeds				
	a	Area (In Hectares)	1,03,456	1,00,243	1,30,460
	b	Production (Tonnes)	1,04,199	1,32,247	1,91,505
	c	Yield (Kgs/Hectares)	1,060	1,389	1,545
5	Cotton				

a	Area (In Hectares)	632	549	319
b	"Production (Bales of 170 kgs in lint form)"	1,286	954	811
c	Yield (Kgs/Hectares)	364	311	455
6	Sugarcane			
a	Area (In Hectares)	25,507	31,522	30,490
b	Production (Tonnes)	17,44,679	21,86,051	21,72,412
c	Yield (Kgs/Hectares)	72	73	75
7	Tobacco			
a	Area (In Hectares)	0	0	0
b	Production (Tonnes)	0	0	0
c	Yield (Kgs/Hectares)	0	0	0

Source: Report on area, production, productivity and prices of agriculture crops in Karnataka 2011-12, 2012-13 and 2013-14

Area under Principal Crops (in Hectares)

Taluk	Area under Cereals (Hectares)						
	Paddy	Jowar	Bajra	Maize	Wheat	Other Cereal & Minor Millets	Total Cereal & Minor Millets
Aurad	87	12,700	1	69	1,014	0	13,871
Basavakalyan	597	9,960	1,732	690	1,117	0	14,096
Bhalki	103	13,590	8	214	852	0	14,767
Bidar	419	6,569	54	187	232	0	7,461
Humnabad	342	7,963	553	222	624	0	9,704
Total	1,548	50,782	2,348	1,382	3,839	0	59,899

SI No	Taluk	Pulses (Hectares)					Avare
		Tur	Horse Gram	Black Gram	Green Gram		
1	Aurad	15,581	84	5,763	6,664		112
2	Basavakalyan	12,892	1	3,755	4,026		84
3	Bhalki	14,796	0	8,710	10,333		135
4	Bidar	7,256	0	3,451	3,734		173
5	Humnabad	10,928	0	3,804	5,197		115
	Total	61,453	85	25,483	29,954		619

SI No	Taluk	Pulses (Hect)				Area Under Total Fruits	Area Under Total Vegetable
		Bengal Gram	Total Pulses including Tur and Bengal Gram	Total Food Grains			
1	Aurad	9,759	38,235	52,106	19	260	
2	Basavakalyan	5,472	26,230	40,326	593	534	

3	Bhalki	15,473	49,496	64,263	214	212
4	Bidar	8,303	23,052	30,513	610	373
5	Humnabad	8,053	28,107	37,811	467	250
	Total	47,060	1,65,120	2,25,019	1,903	1,629

Taluk	Oil Seeds (Hectares)								
	Ground Nut	Sun Flower	Saf flower	Se samum	Niger Seed	Soya bean	Lin -seed	Other Oil Seeds	Total Oil Seeds
Aurad	183	0	2,786	222	19	44,523	67	0	47,800
B' Kalyan	46	1,051	1,340	389	70	19,710	10	30	22,646
Bhalki	70	25	5,120	123	6	24,660	21	3	30,028
Bidar	0	29	1,372	44	21	9,468	23	3	10,960
Humnabad	0	35	1,423	4,939	161	12,957	12	8	19,535
Total	299	1,140	12,041	5,717	277	1,11,318	133	44	1,30,969

Source: Bidar district at a glance 2015-16.

Sources of Irrigation in Bidar District

SI No.		2011-12	2012-13	2013-14
1	Canals			
	Government			
	Number	4	4	4
	Length (Km)	180	180	180
2	Wells			
	a Number of Tube/Borewells			
	i. Government	8	6	6
	ii. Private	9,876	15,259	15,314
	iii. Total	9,684	15,265	15,320
3	b Number of other wells used Irrigation purpose only			
	i Government			
	Masonry	8	2	2
	Non-Masonry		-	-
	ii Private			
	Masonry	6,198	3,833	3,833
	Non-Masonry	10,838	7,890	7,890
	iii Total	17,044	11,725	11,725
3	Lift Irrigation			
	a Government	8	16	16
	b Private	-	2,137	2,137

	c	Total	-	2,153	2,153
4	Number of Wells not in use		2,608	54	82
5	Number of Reservoirs		-	-	1
6	Number of Tanks				
	a	With ayacut of 40 hectares or more	42	74	74
	b	With ayacut of less than 40 hectares	43	57	57
	c	Total	85	131	131
7	Number of Pumpsets				
	a	Electrical	58,583	28,733	28,771
	b	Diesel	45	358	356
	c	Total	56,628	29,091	29,127

Sourcewise Area Irrigated in Bidar District (Area in hectares)

Gross/Net area irrigated by (in Hectares)				
		2011-12	2012-13	2013-14
a	Government canals			
	i Gross	777	1,376	1,446
	ii Net	6,803	1,121	1,140
b	Tanks			
	i Gross	1,262	747	634
	ii Net	953	562	507
c	Wells			
	i Gross	26,747	23,754	24,757
	ii Net	23,373	20,003	21,552
d	Tube/Borewells			
	i Gross	28,257	32,316	32,102
	ii Net	25,983	26,518	27,101
e	Lift Irrigation			
	i Gross	736	306	248
	ii Net	736	306	124
f	Other Sources			
	i Gross	1,474	820	812
	ii Net	1,202	752	612
g	Total			
	i Gross	66,247	59,319	59,999
	ii Net	59,050	49,262	51,036

Source : Report on area, production, productivity and prices of agriculture crops in Karnataka 2011-12, 2012-13 and 2013-14

Gross and Net area irrigated under different sources

	2015-16 Net Area								
	Canals			Tanks			Wells		
	Length in k.m	Gross Irrigated Area	Net Area Irrigated	Total	Gross Irrigated Area	Net Area Irrigated	Total	Gross Irrigated Area	Net Area Irrigated
Aurad	-	-	-	50	-	-	950	1,989	1,389
Basavakalyan	7	-	-	16	-	-	4,302	2,974	2,496
Bhalki	170	-	-	18	-	-	2,090	3,067	2,641
Bidar	-	-	-	34	-	-	1,699	3,410	2,969
Humnabad	3	-	-	13	-	-	2,656	3,112	2,881
Total	180	-	-	131	-	-	11,697	14,552	12,376

Sl. No	Taluks	Tube Wells			Wells		Total	
		Nos	Gross Irrigated Area	Net Area Irrigated	Gross Irrigated Area	Net Area Irrigated	Gross Irrigated Area	Net Area Irrigated
1	Aurad	3,328	3,661	2,085	215	174	5,865	3,648
2	Basavakalyan	6,221	5,693	4,786	-	-	8,667	7,282
3	Bhalki	5,601	6,237	4,692	93	72	9,397	7,405
4	Bidar	6,758	4,729	4,003	96	72	8,235	7,044
5	Humnabad	7,219	4,960	4,342	-	-	8,072	7,223
	Total	29,127	25,280	19,908	404	318	40,236	32,602

Source: Bidar district at a glance. 2015-2016

General cultivation Practices : The land is prepared by ploughing twice and harrowed twice or thrice during the months of April and May for all Kharif crops excepted Kharifjowar for which only one harrowing is done as the crop requires firm seed-bed for growth of plants. After sowing of the Kharif crops one or two inter-cultivations and one or two hand-weedings are done according to the needs. For raising Rabi crops one deep ploughing and two or three harrowing are done. In the lands where Rabi jowar is grown, ploughing is done alternate years and only two harrowing are done before sowing is done during the months of August and September. One or two inter-cultivations and two or three hand-weeding/weeding by using cycle weeders are done as per needs.

Manures : The manures that are in common use in the district are farm-yard manure, green manure, compost and fertilizers. The farm-yard manure available in the cattle seeds is conserved by using sectional filling methods or by the usual methods of dumping it in one place till it is carried for use. Compost is important manure used for crops.

Fertilizer Consumption: Consumption of nitrogenous and phosphate nutrients has steadily increased in the area of cereals and pulses, where as potash consumption has become stagnant over last three years. The increase in consumption of fertilizer has tangible effect on the yield of food grains. During the year 1999-2000 total fertilizer consumption in Bidar district was 18,105 tonnes (Source Joint Director of Agriculture, Bidar) but during 2009-10 it was increased to 30,382 tonnes. This shows that during the gap of 10 years 12,277 tonnes of fertilizer consumption was increased. The quantity of fertilizers distributed during 2009-2010 was 12,529 tonnes of Nitrogenous fertilizers, 13,071 tonnes of phosphorous fertilizers and 4,782 tonnes of Potash fertilizers. The distributors of fertilizers in Bidar District as on 2015-2016.

Distribution of fertilizers (Tonnes) in Bidar District 2015-16

Sl. No	Taluk	Nitrogen(N)	Phosphate(P)	Potash(K)	Total
1	Aurad	1,493.76	1814.8	295.7	3,604.26
2	Basavakalyan	1,907.2	1,831.92	304.62	4,043.74
3	Bhalki	1,643.2	1,994.24	749.44	4,116.88
4	Bidar	3,108.66	2,291.72	780.3	6,180.68
5	Humnabad	2,253.32	1,689.56	496.2	4,439.08
Total		10,406.14	9,622.24	2,356.26	22,384.64

Source: Bidar district at a glance. 2015-2016

Popularization of Trichoderma biofungicide: To popularize the eco-friendly, stable, sustainable approach of organic farming without endangering the resource base of the future generation lot of training programmes and method demonstrations were conducted to practicing farmers, farm women and to extension functionaries about use of Trichoderma biofungicide to combat soil borne diseases in major crops of the district. Apart from that vocational training programmes were conducted to rural youths regarding mass multiplication of Trichoderma at field level. Similarly, demonstration on seed treatment and soil application with Trichoderma are conducted in bengalgram to manage wilt and root rot disease complex and in ginger to manage rhizome rot. Thus, the concerted efforts made by KVK, Bidar over years in the area of integrated management practices for managing soil borne diseases created an impact in such a way that the farmers started using biofungicides viz., Trichoderma. This is visualized

through number of farmers visiting KVK for Trichoderma during the course of sowing season. The impact is seen in the form of increasing sales of Trichoderma over years from the campus, department and private firms in the district.

Agriculture Implements : Farm implements are important aspect as it leads to increased production and productivity. The most important old implement is the wooden plough which is still in use though several modern implements have been introduced. Harrows are commonly used. The improved implements in use are the mould-board ploughs drawn by two bullocks and four bullocks, land-levellers, bund former, seed-cum-fertilizers drills, ridgers, (hand-operate and power-operated). Dusters and sugarcane-crushers. Tractors are being supplied to the farmers on hire-purchase system by the Department of Agriculture, the Agro-Industries Corporation and commercial banks.

Farm Mechanizations : Farm mechanization is an important aspect as it leads to better utilization of irrigation potential and labour and bullock power. Recently, timely availability of agricultural labour is causing lot of inconveniences to the farmers. Thereby many agricultural operations are not carried out precisely. Under such circumstances there is lot of scope for mechanization. Now a days Agro processing has its unique importance. The agro processing is advantageous to farmers in many ways. Due to processing and conversion of raw products in to value added products at village level added to it many farmers will get rid of distress selling and avoid exploitation by the middle men. NAIP, KVK, has introduced mini dal mill , vermicelli machine, Chilli Pounding Machine and Flour Mill by developing synergy with Agriculture department, Bidar. This inturn led to easy accessibility of Dal processing, vermicelli and chilli powder preparation service at local level.

Raith Samparka Kendras (Agri. Clinics): The Department of Agriculture provides services to farmers through 30 Raith Samparka Kendras (Agri. Clinics) located at hobli headquarters. Raith Samparka Kendras serve as pivotal points for dissemination of technology, pre-positioning inputs like seeds, bio-fertilizers, weedicides etc. The Agri-clinics (Raith Samparka Kendras) have been functioning effectively and each Kendra has shown a turnover of about Rs.7-8 Lakhs.

ATMA : Agricultural Technology Management Agency/ATMA is an autonomous body at the district level which has been established for pilot testing of new institutional arrangements. It aims towards integrated extension delivery, adopting bottom up planning procedure, establishment of linkage among research extension farmers NGO's/ corporate sector market, making the technology dissemination farmer drives and farmer accountable, ensure women participation in agriculture and create information connectivity to all blocks with district level ATMA with an ultimate aim of economic emancipation of the farming community.

Suvarna Bhoomi Scheme: Bidar Agriculture Department officials have selected 15 per cent of the 1.21 lakh farmers who had applied for the cash incentive of Rs. 10,000 under the Suvarna Bhoomi scheme. The beneficiaries include 12,502 grain, oilseed and cotton growers, 5,603 organic farmers, and 252 bio-fuel farmers. There are 2,941 beneficiaries from Bidar taluk, 4,381 from Humnabad taluk , 3,664 from Bhalki taluk, 3,330 from Basavakalyan taluk and 4,041 from Aurad taluk.

National Food Security Mission-Pulses (NFSM-Pulses) : National Food Security Mission-Pulses (NFSM-Pulses) is one of the components of the centrally sponsored scheme of National Food Security Mission and is under implementation since Rabi 2007-08 in 171 districts of 14 states. Bidar district is one among them. The objective of NFSM-Pulses is to increase the production of pulses by 2 million tons by the end of Eleventh Plan (2011-12). Pulses component of Integrated Scheme for Oilseeds, Pulses, Oil palm and Maize (ISOPOM) was also under implementation in these 14 states. Initially the NFSM-Pulses was meant only for additional areas but considering the implementation problems and unexploited yield potential in existing districts, it was decided to cover 100 per cent area in the identified NFSM-Pulses districts. It was also decided that the pulses component of the ISOPOM will cease to operate in these NFSM-Pulses districts except for those components which were not covered under NFSM-Pulses such as demonstration, mini kits and water carrying pipes etc. These NFSM-Pulses districts accounts for 80 per cent of pulses area while rest 20 per cent area is in Non-NFSM pulses districts and Non-NFSM states. As a result both the schemes namely NFSM-Pulses and pulse component of ISOPOM were operative in these 14 states with the condition that ISOPOM in NFSM-Pulses

districts was only for those components which were not covered under NFSM-Pulses. In rest of the country pulses production is supported under the Macro Management Mode of Agriculture (MMA). The implementation of both schemes with certain riders in these 14 states had created some confusion as well as operational difficulties. Recently following decision has been taken to further promote the pulses production in the country. These are

- Merger of all pulse components of ISOPOM with NFSM-Pulses
- Coverage of all districts by NFSM-pulses in all the 14 NFSM-Pulse states
- Inclusion of 10 districts of Assam and 15 districts of Jharkhand under NFSM- Pulses.
- Implementation of additional programmes

Bhoochetana: Government of Karnataka has converged all the Government schemes through a mission mode project called as "Bhoochetana" meaning "reviving the soils" to benefit dryland farmers in 30 districts including Bidar. Mission mode project as proposed by ICRISAT has adopted the principle of consortium, convergence, capacity building and collective action to address the issues of efficiency, economics, equity and environmental protection. The consortium partners involved in Bhoochetana are University of Agricultural Sciences Raichur, watershed development department, other line departments of Government of Karnataka, ICRISAT and Department of Agriculture, Bidar.

Krishi Vignana Kendra : Krishi Vignana Kendra Bidar was established in 1985 under University of Agricultural Sciences (UAS), Bangalore. Initially it started at ARS, Halladkeri farm with two scientific staff. Need based demonstration units were established over a period of time for carrying need based training programmes to farmers, farm women and extension functionaries. During 1986 KVK, Bidar came under the umbrella of UAS, Dharwad. It may be seen from the chronological chart that KVK, main building was constructed in the year 1992. The main building included seminar hall, office complex, training halls, staff rooms, soil testing laboratory and library. During the year 1994 farmers and farm women hostels were constructed. In the subsequent years demonstration units, farm developmental works were undertaken. Soil water and plant testing

laboratory came into operation during the year 2005.

Redgram Transplanting Technology: Bidar district is considered as pulse bowl of Karnataka wherein pulses like blackgram, greengram, redgram and bengalgram grown in 2,06,717 ha. Among these pulses, the share of redgram is 65,642 ha. However, farmers facing with low productivity of redgram with a yield gap of 1871 kg/ha. To address this, KVK Bidar organized interface meet between farmers and KVK team wherein emerged the idea of transplanting of redgram. Then, KVK conducted trials on assessment of transplanted redgram during 2004-2006 and standardized the transplanting method of redgram. The same technology was popularized through frontline demonstrations during 2006-2007 wherein recorded an average yield of 34.8q/ha against 15.5q/ha in check plots. From three years data of frontline demonstrations, it was found that there was 69.71 per cent to 138 per cent increase in yield with transplanting technology when compared to farmers practice. Transplanted redgram started growing in Bidar district in an area of 400 ha in 2007-08 which was followed by 2000 ha in 2008-09 and 4000 ha in 2009-10 and harvested with the value of produce Rs 3.48 crore, Rs 24.94 crore and Rs.54.83 crore, respectively. Even under irrigated conditions transplanted redgram emerged as a solution for alternate crop for distressed sugarcane farmers in the district wherein they got a net profit of Rs 1,14,500/ha with redgram as compared to Rs 60,000/ha with sugarcane.

National Agricultural Innovation Project, Component-3, project on "Livelihood Security through resource and entrepreneurship management in Bidar district": "National Agricultural Innovation Project" led by ICAR (GOI) in association with world bank has been sanctioned for 24 backward villages of Bidar district. With the total budget out lay of Rs. 454.67 lakh during the year 2008, University of Agricultural Sciences, Raichur (KVK, Bidar), Karnataka Veterinary, Animal and Fishery Sciences University, Bidar and ORBIT, NGO, Bidar came forward to work as consortium partners for implementation of the project. Presently all the 3 consortium Partners working with the involvement of team of 13 supporting staffs with the objectives like to promote sustainable rural livelihood options by efficient utilization of available natural and human resources.

The project is initiated in Bidar, a backward district of Karnataka. The

district has low productivity of crops and animals, value addition for pulses and milk is nil, cropping intensity is 112 per cent. The crop productivity was low for most of the crops. The productivity of red gram, green gram, black gram, hybrid jowar, soyabean, Bengal gram and sugarcane was 8.42, 7.07, 6.10, 21.13, 18.65, 9.22 and 745.2q/ha respectively. The major interventions carried out during the year and the results were as follows:

Under NAIP project, Bidar 1,200 participants were selected consisting of 300 from each taluk Aurad, Basavakalyan, Bhalki and Humnabad. After this 144 CBO's were formed, initiated thrife and credit activities and all the 5 livelihood activities such as Integrated Farming System, Dairy, Goat rearing, Food processing and Off farm activities were implemented through these CBO's. Linked All the CBO's tonear by banks, by this linkage all banks issued loan of an amount Rs 8,15,000/- to these livelihood groups.

Different inputs were introduced to Integrated Farming System, Dairy, Goat rearing, Food processing and Off farm activity groups and conducted capacity building programmes and trainings, exposure visits. Thus NAIP-3, Bidar has provided livelihood security to the different participants. The implementation of the economic level of the selected participants is increased by 34per cent compared to Baseline value.

Rasthriya Krishi Vikas Yojana (RKVY): Under this project university has purchased different audio-visual equipments and supplied to KVK, Bidar for carrying out mandated activities like Education tour to farmers, training programmes, conducting exhibition and fairs, field demonstrations on recent production technologies, HRD training programmes for scientists.

E-Linkage Project: KVK Bidar is one among 200 KVK's in India where the E-linkage project was sanctioned. From 2008 this project is started functioning with minimal infrastructure, further one by one installation processes were ongoing and now e-linkage lab was established. From this project, the technology module of major crops were prepared and are being disseminated.

On farm IFS project: Integrated farming system module on an area of 1 ha has been established under black soil rainfed farming situation comprising crop production, horticulture, livestock, poultry, agroforestry, water harvesting structure were created.

RKVY on soil fertility: Revalidation of package of practices,

recommended fertilizer doses were conducted as experiments in the farmers field and in research station.

RKVY project on Organic Farming: Organic farming technologies are being demonstrated in farmers field of Ghotala village Tq. Basavakalyan with the following objectives; 1) Establishment of on farm participatory organic production block in farmers' fields and 2) Conversion of organic farming with farmer participatory with an area of 50 ha. in 3 years.

Amla Campaign: Amla (*Embllica officinalis*) is the most valuable Indian medicinal plant with antioxidant properties and is a very rich source of Vitamin 'C'. It is the main ingredient of Chyawanprash and Triphala - the two most popular Ayurvedic preparations. Amla is also said to be the only fruit which can cure Tridosas of vatta, pitta and Kapha according to the Ayurvedic texts. In view of the aforesaid, it is now proposed to launch a campaign to promote usage and planting of Amla in schools and other institutions where this can provide nutrition and health care benefits to school children and other people.

Empowerment of Scheduled Caste and Scheduled Tribe farm households in agroclimatic zones of north karnataka through Integrated Farming System (IFS) approach.

Integrated farming system approach is a complex related matrix of soil, plants, animals, implements, power, labour, capital and other on and off farm inputs influenced to varying degrees by political, economical and social factors that operate at many levels. The farming system therefore, refers to the farm as an entity to interdependent farming enterprises carried out on the farm. For this purpose, the participatory rural appraisal (PRA) techniques and situational analysis methodology has followed . This was helped in planning IFS modules to empower schedule caste (SC) and Schedule Tribes (ST) farm households by providing the missing components and awareness.

Seed village scheme : In this scheme bengalgram variety seed JG-11 of 110 qt was distributed to 536 farmers of Nittur Tq. Bhalki, Hajanal and Kandgul of Tq. Aurad. The performance of this seed variety is excellent. Hence, there is horizontal spread of this seed variety in the entire village

and neighbouring village.

Krishi Sandesha - A SMS Service for Farming Community : In Karnataka KVK, Bidar has pioneered an IT enabled service aiding instant messages from KVK to individual farmers, extension functionaries and NGO's for extending agricultural information through SMS alerts. The service comprises sending Short Message Service alerts on cellular phones. Daily SMS alerts are issued on various agricultural technologies viz. weather forecast, disease forecast, market information, pest and disease management health tips etc., The service is also being used as a medium to send information on important trainings and other programmes to the members of the Farmers Clubs and SHG network under the KVK.

The service is an important milestone in reaching out to farmers at a stroke of a mouse click and enable the farmer to have information access and derive the fruits of technological progress and face the challenge of an upcoming free market. The service is a boon for hundreds of farmers around the KVK within Bidar and neighboring district. There are currently 1573 farmers availing this service from KVK Bidar. In continuing with the KVK's efforts in dissemination of agriculture technological information, the KVK has vision to start the kannada based SMS text delivery for the cellular handsets users within the district.

The service has been well appreciated by the farmers who have said such a service by the KVK is just in the nick of time when farmers have their crops ready for market. The number of farmers coming to the KVK is growing day by day and the KVK expects to add another couple of hundred farmers by the end of this year.

Rapid Roving Survey: Krishi Vijnana Kendra and State department of agriculture jointly constituted two rapid roving teams in the district headed by SMS Entomology. Each team consisted two scientists and one agriculture officer. Regular roving survey was conducted at every 10-15 Kms distance in weekly interval. Usually the survey starts from October onwards. The team will record the incidence of pod borer on crop, at each spot diagonally and criscross 20 plants/acre at random were observed for the podborer incidence and recorded. Based on our survey team recommendations

during 2009-10 Karnataka State Department of Agriculture got sanction for subsidy and pesticide worth Rs. 95 lakh from State and Zilla panchayat grants which directly helped farmers.

Impact of Rapid Roving Survey: Roving survey has made significant achievement in changing the mind set of farmers, before 5-6 years farmers used to spray only Endosulphon, Chloropyriphos and Quinalphos one after the other. They were not following the Integrated Pest Management strategies. Now because of our efforts, timely suggestion through, KVK, SMS service called “Krishi Sandesha”, All India radio, TV, daily news paper, hand outs, leaflets and trainings conducted has changed the pesticide application schedule of farmers from indiscriminate method of application to IPM schedule. At present, 72 per cent of redgram growing farmers are using ovicides viz., profenophas or methomyl or thiodicarb as first spray to manage pod borer. These ovicidal sprays give rescue to 15 days. Apart from this farmers are well versed with different stages of insect based on that farmers will take suitable pesticide application.

District Level Krishi Mela : The Kisan/Krishimela’s are being conducted every year under the umbrella of Universities covering University jurisdiction. Recently, the concept of organizing Krishimela in each district at KVK premises was conceived. On these lines Krishi Mela at KVK, Bidar was conducted during the year 2009 and 2010. Large number of farmers, farm women, children and youth participated in Mela and took benefit of agricultural information. Nearly 100 stalls were put up by fertilizer, pesticide, seeds companies and allied departments. All the stake holders participated in the Krishi Mela. On an average 15,000-20,000 people from different places of north Karnataka participated in 2 days Krishimela. As a part of Krishi Mela, the innovative programme by name “Raitharinda Raitharigagi” was organized. Progressive farmers from Karnataka state,neighbouring states A.P. and Maharashtra were invited to deliver lecture and discuss among the farming community about the success of their farm practices. Group discussions and scientists-farmers interactions, consultancy services, demonstrations, cattle shows, field trips were organized for the benefit of farming community. To bring out the artistic or poetic skills among the farmers “Krishi Kavana Ghoshti” was organized. A book on the poems on agriculture by participants was brought out. The farmers who

have attained significantly higher yield were felicitated and awarded with citation.

Agriculture Research Station (ARS): The ARS is located at Halladkeri which is 9 km away from KVK, Bidar. It serves as a main source for new research findings and plays an important role in developing technologies related to crop production. The proven technologies are implemented by KVK, in the form of OFT and FLD and disseminated to farmers through various training programmes. The ARS has well established laboratory and has an agriculture land of 12.67 ha, and the staff participates in specialized training, seminars, exhibitions etc. The field days, Krishi Melas are conducted in collaboration with ARS.The ARS takes up seed production activities and has well established seed processing unit, KVK utilizes these facilities for implementing the mandatory activities effectively.

Greengram variety-Sel-4

In this zone greengram is cultivated in an area of 40,000 ha during Kharif. The existing variety china moong is high yielding but has disadvantages like shattering of pods at the time of maturity, which causes heavy loss to the farmers. During 1996, Krishi Vijnana Kendra organized FLD on green gram by procuring from KSSCA. This lot exhibited of heterogeneity to make advantage of this crop breeder was invited to make selections. Accordingly breeder identified good charter progenies and put under experimentation for 5-6 years. Finally non- shattering variety Sel-4 was released during 2001 from ARS, Bidar.

KVK, Bidar organized many number of FLD’s training programmes and field days to popularize this variety.

Sale of seeds and area covered from 2002-2006

S.No.	Year	Sale of Seeds (Kg)	Area Covered (ha)
1.	2002-03	2,000	160
2.	2003-04	5,000	400
3.	2004-05	10,000	800
4.	2005-06	15,000	1,200
Total		32,000	2,560ha.

The seeds were made available through Revolving Fund operated by both KVK and ARS horizontal spread of this variety took place by farmers to farmers to the extent of about 2,500 ha. The popularity of this variety has spread to neighboring district like Kalaburgi, Vijayapura, Raichur and Dharwad and similarly neighboring state like Telangana and Maharashtra.

Agromet Advisory Service unit (AAS): The National Centre for Medium Range Weather Forecasting, Department of Science and Technology (DST), Government of India has sanctioned AAS unit at Agriculture Research Station since 1998. Collection and compilation of meteorological and crop data of zone, getting the medium range weather forecasting, discussion with scientists and dissemination of forecast and agro-advisories through print and electronic media are some of the objectives of AAS.

Sugar factories: There are totally three co-operative sugar factories functioning in district. Formed 100 ton/ac sugarcane growers club. Regular meetings need based training program, seminars and exposure trips were organized to sugarcane growers in collaboration with sugarcane factories. The establishment of 100 ton/ac, club has been responsible for maximizing sugarcane yield in district. Apart from this, KVK is imparting trainings with respect to latest technologies in sugarcane production to chief cane development officers.

Co-operation and Agriculture Marketing : In Bidar district, 7 Urban Co-operative Bank branches are there. Among them 4 are situated at Bidar. 2 at Basavakalyan and 1 at Bhalki. Total deposits amount of all the branches was Rs. 4.349 lakhs during the year 2009-10 with highest share from Bidar taluk. The loan advanced was Rs. 5,328 lakh during the same year. Similarly in the District 43 District Co-operative Banks are there, with loan advanced of Rs. 64,717 lakhs. And 5 P.L.D (Primary Land Development Banks) Bank, situated 1 branch in each taluk with loan advanced of Rs. 2,072.06 lakh. On the whole there are 915 Credit Co-operative Societies in the district including of 176 agricultural societies consisting of 187 members, 283 Milk producers consisting of 1,567 members, 456 other societies consisting of 13,717 members. Besides the loans given by agriculture Credit Co-operative Societies in the district constitute the amount of Rs. 28,591 lakhs consisting of Rs. 27,334 lakhs as short term loan and Rs. 1,257 as Medium term loan. The district has 14 Regulated markets including 5 main and 9 sub-markets with turnover of Rs. 199.96 lakhs during the year 2009-10.(For details Refer Chapter - VI)

Co-Operation and Agriculture Marketing

Sl. No.	Taluk	Urban Co-operative Banks			Dist. Co-operative Banks		P.L.D. Banks	
		Branches	Deposits (Rs.in Lakhs).	Loan Advanced (Rs.in Lakhs).	No.	Loan Advanced (Rs. In Lakhs).	No.	Loan Advanced (Rs.in Lakhs).
1	Aurad	0	0	0	6	7,690	1	412.81
2	B,Kalyan	2	90	241	7	6,215	1	352.86
3	Bhalki	1	818	1,052	8	10,944	1	436.77
4	Bidar	4	3,441	4,035	12	26,375	1	344.67
5	Humnabad	0	0	0	10	13,493	1	525.85
Total		7	4,349	5,328	43	64,717	5	2,072.06

Source: Bidar district at a glance, 2009-2010.

Co-Operation and Agriculture Marketing

Sl. No.	Taluk	Credit Co-operative Societies		Agricultural Milk Producers		Others		Total		Liquidated
		Num bers	Mem bers	Num bers	Mem bers	Num bers	Mem bers	Num bers	Mem bers	
1	Aurad	37	103	64	379	47	336	148	818	9
2	B,Kalyan	33	71	42	332	64	627	139	1,030	23
3	Bhalki	37	106	52	216	77	6,789	166	7,111	4
4	Bidar	40	144	60	531	173	4,448	273	5,123	20
5	Humnabad	29	63	65	109	95	1,517	189	1,689	31
Total		176	487	283	1,567	456	13,717	915	15,771	87

Source: Bidar district at a glance, 2009-2010.

Co-Operation and Agriculture Marketing

Sl. No.	Taluk	Loans given by Agri. Credit Co-opeSocities (Rs. In Lakhs)			Regulated Markets			Turnover (Rs.in Lakhs)
		Short Term	Medium Term	Total	Main	Sub	Total	
1	Aurad	5,238	193	5,431	1	3	4	6.17
2	B,Kalyan	4,463	186	4,649	1	2	3	18.26
3	Bhalki	5,989	248	6,237	1	1	2	22.21
4	Bidar	5,584	306	5,890	1	1	2	142.32
5	Humnabad	6,060	324	6,384	1	2	3	11.00
Total		27,334	1,257	28,591	5	9	14	199.96

Source: Bidar district at a glance, 2009-2010.

HORTICULTURE

The Agro climatic condition of Bidar District is congenial for the development of horticulture. Horticulture sector which includes fruits, vegetables, plantation crops, floriculture and medicinal and aromatic plants has proved to be the best diversification for land use. The sector has established its creditability for improving productivity of land. Generating employment, improving economic condition of the farmers and entrepreneurs, enhancing exports and above all providing nutritional security to the people. Therefore attention in terms of investment to horticulture has been given. The Horticulture sector is moving dynamic and is in crucial phase of development. The scenario which has proved potential of horticulture in Agri business has encouraged the private sector activities. However there are many constraints which continue to impede the desired growth. Apart from production adequate marketing infrastructure, policy environment and relevant mechanism for articulating the technological need for producers and processors are priorities for harnessing the potential of horticulture in the district, keeping in view the scope, potential and constraints.

Area under Horticulture in the district is low compared to that at the state level. With the introduction of drip irrigation system some enterprising pioneering and progressive farmers are raising high yielding Mango, Pomegranate, Papaya, Citrus in addition to Banana and high yielding hybrid vegetables. Farmers of the villages adjoining and towns are growing commercial flowers.

Area under Horticulture crops

Sl.No	Crops	2005-2006		2010-2011	
		Area(Ha)	Production(Ton)	Area(Ha)	Production(Ton)
1	Mango	767	7,670	1,676	10,710
2	Grapes	152	2,280	327	5,172
3	Pomegranate	22	220	181	1,440
4	Sapota	44	500	108	1,080
5	Citrus	26	650	222	3,888
6	Papaya	914	7,280	168	10,920
7	Flowers	62	496	297	2,376
8	Ginger	1,300	13,000	2,088	20,880
9	Cashew	152	268	199	298.5
Total		3,707	40,404	5,913	72,026.5

As the data indicated in the above table Area under Horticultural crops has been increased from the year 2005-06 to 2010-11. In Bidar district major area was under Ginger production (2,088 ha), followed by Mango (1,676 ha) and Sapota was grown in least area (108 ha) during the year 2010-2011.

Taluk - wise abstract of Area, Production, yield and value of Horticulture Crops in Bidar district 2013-14

Sl. No.	Taluk	I) Fruit Crops				II) Vegetable Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	389	5,434	13.97	803	882	12,815	14.53	880
2	Basavakalyan	1,112	15,967	14.36	2,087	2,403	38,143	15.87	2,618
3	Bhalki	715	11,127	15.56	1,531	1,735	27,474	15.84	1,832
4	Bidar	1,157	12,943	11.19	2,056	2,283	33,095	14.50	2,216
5	Humnabad	1,443	24,640	17.08	3,119	3,088	50,541	16.37	3,365
District Total		4,816	70,111	14.56	9,596	10,391	1,62,068	15.60	10,911

Sl. No.	Taluk	III) Spice Crops				IV) Plantation Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	425	1,090	2.56	465	22	27	1.23	22
2	Basavakalyan	951	5,469	5.75	2,595	92	43	0.47	56
3	Bhalki	1,019	7,034	6.90	3,631	64	54	0.84	51
4	Bidar	1,319	7,818	5.93	3,658	124	123	0.99	94
5	Humnabad	1,442	11,031	7.65	5,296	52	50	0.96	44
District Total		5,156	32,442	6.29	15,645	354	297	0.84	267

Sl. No.	Taluk	V) Commercial Flowers				Grand Total - All Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	43	325	7.56	33	1,762	19,691	11.18	2,203
2	Basavakalyan	41	257	6.27	44	4,600	59,879	13.02	7,400
3	Bhalki	241	1,871	7.76	171	3,779	47,560	12.58	7,216
4	Bidar	154	848	5.51	303	5,039	54,827	10.88	8,327
5	Humnabad	84	533	6.35	107	6,117	86,795	14.19	11,931
District Total		563	3,834	6.81	658	21,297	2,68,752	12.62	37,077

Note: Area: Hectares; Production: M.Tons; Yield: M.Tons/Hectares; value: Rs In lakhs

Sl. No.	Groups	2013-14			
		Area: Hectares	Production: In m.Tons	Yield: M.Tons/ Hectare	Value: Rs. In Lakhs.
1	Fruit Crops	4,816	70,111	14.56	9,596
2	Vegetable Crops	10,391	1,62,068	15.60	10,911
3	Spice Crops	5,156	32,442	6.29	15,645
4	Plantation Crops	354	297	0.84	267
5	Commercial Flowers	563	3,834	6.81	658
6	Medicinal Plants	17	-	-	-
7	Aromatic Plants	-	-	-	-
District Total		21,297	2,68,752	12.62	37,077

Source: Department of Horticulture: Horticulture Crops Statistics of Karnataka state at a glance 2013-14

Taluk - wise abstract of Area, Production, yield and value of Horticulture Crops in Bidar district 2014-15

Sl. No.	Taluk	I) Fruit Crops				II) Vegetable Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	411	6,216	15.13	814	954	14,001	14.68	1,036
2	Basavakalyan	1,221	20,188	16.53	2,315	2,634	39,793	15.11	2,714
3	Bhalki	639	11,214	17.55	1,421	2,141	36,096	16.86	2,461
4	Bidar	1,193	13,122	11.00	2,480	2,318	33,257	14.35	2,225
5	Humnabad	1,416	19,982	14.11	2,674	3,231	50,997	15.78	3,579
District Total		4,880	70,722	14.49	9,704	11,278	1,74,144	15.44	12,015

Sl. No.	Taluk	III) Spice Crops				IV) Plantation Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	422	1,112	2.64	369	22	27	1.23	20
2	Basavakalyan	817	4,977	6.09	1,886	91	16	0.18	34
3	Bhalki	779	9,242	11.86	4,450	74	52	0.70	53
4	Bidar	1,327	8,216	6.19	3,668	120	120	1.00	99
5	Humnabad	1,444	15,971	11.06	5,686	54	50	0.93	29
District Total		4,789	39,518	8.25	16,059	361	265	0.73	235

Sl. No.	Taluk	V) Commercial Flowers				Grand Total - All Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	49	373	7.61	40	1,859	21,729	11.69	2,279
2	Basavakalyan	28	180	6.32	36	4,792	65,154	13.60	6,985
3	Bhalki	201	1,551	7.72	143	3,839	58,155	15.15	8,528

4	Bidar	161	897	5.57	245	5,121	55,612	10.86	8,717
5	Humnabad	79	493	6.24	80	6,224	87,493	14.06	12,048
District Total		518	3,494	6.74	544	21,835	2,88,142	13.20	38,557

Taluk - wise abstract of Area, Production, yield and value of Horticulture Crops in Bidar district 2015-16

Sl. No.	Taluk	I) Fruit Crops				II) Vegetable Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	271	3,529	13.02	351	729	10,200	13.99	749
2	Basavakalyan	1,479	25,259	17.08	2,472	2,756	41,797	15.17	2,913
3	Bhalki	681	11,658	17.12	1,229	2,221	34,718	15.63	2,433
4	Bidar	1,287	14,329	11.13	2,276	2,509	32,139	12.81	2,297
5	Humnabad	1,480	23,249	15.71	2,309	3,286	51,292	15.61	3,567
District Total		5,198	78,024	15.01	8,637	11,501	1,70,146	14.79	11,959

Sl. No.	Taluk	III) Spice Crops				IV) Plantation Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	123	665	5.41	201	4	6	1.40	0
2	Basavakalyan	894	5,458	6.10	1,656	90	183	2.03	74
3	Bhalki	977	10,374	10.62	3,314	69	158	2.28	221
4	Bidar	1,424	8,949	6.28	2,846	123	259	2.10	48
5	Humnabad	1,518	16,889	11.13	5,694	44	69	1.56	19
District Total		4,936	42,334	8.58	13,710	330	674	2.04	363

Sl. No.	Taluk	V) Commercial Flowers				Grand Total - All Crops			
		Area	Prodn.	yield	value	Area	Prodn.	yield	value
1	Aurad	8	48	6.00	5	1,135	14,448	12.73	1,307
2	Basavakalyan	32	195	6.09	22	5,251	72,893	13.88	7,136
3	Bhalki	213	1,636	7.68	151	4,161	58,544	14.07	7,348
4	Bidar	177	987	5.58	124	5,520	56,663	10.26	7,591
5	Humnabad	169	1,245	7.37	117	6,497	92,743	14.27	11,706
District Total		599	4,111	6.86	419	22,564	2,95,290	13.09	35,088

Successful Ginger Cultivation

Ginger is major commercial spice crop of the district cultivated on an area of 2,100 ha with yield potentiality of 25 ton/ha and district average yield of 9.5 ton/ha, this yield gap is due to several biotic and abiotic factors. Among these factors ginger rhizome rot is a major constraint for getting higher yield.

For combating this major constraint this Krishi Vijnana Kendra designed OFT on Integrated Management of Ginger rhizome rot during 2002

and 2003, looking into encouraged results FLD on Integrated Management of Ginger rhizome rot has been implemented during 2004, at the end of demonstration field day and farmers exposure trip has been organized, among the farmers participated in these activities. The IDM technologies were implemented through on Farm trials are selection of healthy seed material, early planting, soil application with neem cake and Trichoderma, avoiding water logging, seed treatment, rouging of disease infected plants and soil drenching with fungicides. After implementing this technology there is a two fold increase in yield around 20-25 ton/ha and getting maximum profit by selling his rhizomes as healthy seed material to the ginger growing farmers of the state of Karnataka, Madhya Pradesh, Andhra Pradesh, Maharashtra and Chattisgarh. Every year he is growing 4 ha of ginger. During 2007-08 he harvested 22.5 ton/ha and got economic benefit of Rs. 9,00,000 per ha and in total he got net revenue of or Rs. 36 lakh from ginger only. At present in the district this IDM technology is adopted in an area around 25-30 per cent.

Dev Vana (Botanical Garden): An Eco Tourism center, located at 6 KM away from Bidar town on Bidar - Hyderabad highway. With more than 200 medicinal plants, this vana is believed to be something of a unconventional temple of plants.

Girija B Kudre's Farm House: B. S. Kudre a great visionary and a social reformer from Bidar has developed an Organic Mangoes / Amla plantation in about 65 acres (2,60,000 m²) of land at Andura. Having developed a cold storage along with it, exporting the Mangoes and Grapes to US, UK and Middle Eastern Countries. By adopting the primitive method of Agriculture / Horticulture, their Medicinal values in day to day life, made a benchmark for all the researcher's to visit at least once in life.

Bidar Horticulture College : College of Horticulture (Bidar) is affiliated to University of Horticultural Sciences, Bagalkote and was established during the year 2007. College offers M.Sc. (Horticulture) and Ph.D. in Horticulture, PG diploma in wine technology, precision farming and high- tech horticulture, post harvest processing and value addition, production of bio-agents, Certificate courses in nursery management, seed production, plant protection, post harvest processing and value addition, flower cultivation and arrangements courses. The research

findings of the scientists working in the college are utilized for imparting knowledge for extension functionaries and farmers. The infrastructure like Hi-tech horticulture structures erected at college campus are utilized as demonstrations unit for extension officers.

National Horticulture Mission-Plant Health Clinic: In spite of improvement in production technologies of various horticultural and field crops, diseases, pests and abiotic soil factors restrict the productivity of horticulture and field crops to a great extent. According to one estimate, it is reported that pest, diseases and weeds hamper the yields of crops by 35 per cent. Hence, it is utterly essential to diagnose the exact cause of loss in productivity. The biotic and abiotic factors have to be diagnosed accurately so that management will become appropriate and effective. With this background well equipped plant health clinic was established in KVK, Bidar during 2007.

Due to use of recent reliable techniques for detection of cause of the malady and various awareness creation programmes, the following major impact created in the district.

- Progressive farmers are well versed with symptoms of major diseases of their crop grown, so that management will become appropriate and effective.
- There was drastic reduction in wrong usage of pesticides in the district in turn reduced cost of cultivation.
- Reduction in misuse of pesticides thereby reduction in environmental hazards.

Disease Forecasting Unit : Activities undertaken

- Purchase of equipments related to pest and disease forecasting
- Monitoring survey for pest and disease incidence of major crops
- Issuing of suitable advisory through agro-advisory services.

Impact of Pest and Disease forecasting centre : In recent times several of the new pesticides have been introduced to manage pests and diseases in horticulture and field crops. Pesticides recommended or otherwise are being used by the farmers but are introduced in the ecosystem at wrong times creating severe problems.

These pests and diseases are often influenced by weather parameters. After establishment of pest and disease forecasting centre at KVK, Bidar during 2007, for past 4 years regular monitoring survey has been carried out to know pest and disease status of major crops of the district and based information issuing suitable advisory to the farmers through agro advisory service. Through this centre disseminated the available effective forwarning system for any outbreak pest and diseases in major crops, by this farmers of the district will get idea for development of management strategies for major pest and diseases in their locality.

Mango growers association : “Vatsalya Mango Growers Association Bidar” was established by Krishi Vijnana Kendra, Bidar on 7th July 2010 with strong belief of “Unity is the Strength”. In Karnataka mango grown in Bidar is famous and it is called proverb “Bidar ki Aam, Kohir ka Jam”, this indicates the importance of Bidar Mango quality and Bidar is most suited for Mango growing. The area of ‘Kesar’ mango variety is increasing as it is exportable variety of the nation, it is the intervention of KVK and earlier, area was covered with Beneshan, Dashaharim Mallika etc. Mango is growing in 2000 ha of land in Bidar district with many problems as below.

- i) Lack of good horticultural practices or updated knowledge
- ii) Lack of information dissemination
- iii) Emergence of weather forecast and health requirement i.e Sanitary and Phytosanitary gave rise to technical barrier.

These problems can be solved by the growers association by discussion, by visits, by training on all type of knowledge by the experts.

Organic Farmers Club: Due to indiscriminate use of chemical fertilizers and pesticides, the soil health is degrading at an alarming rate and water and air are getting polluted enormously. Besides this, health hazards are reported every now and then from all corners of the world. Apart from these, the usage of these chemicals will add more to cost of cultivation. To avoid all these, organic farming is given importance. To popularize the organic farming in the district “Organic Farmers Club” was formed during 2002 by KVK, Bidar. So far, 27 meetings were held and 546 farmers have enrolled their names as members.

IRRIGATION

Irrigation Practices : In the district, the irrigation takes place from surface water and ground water. The surface water irrigation is through canals, tanks and from medium and minor irrigation projects. Major irrigation dam has been constructed across the Karanja river and medium irrigation dam constructed across Chulkinala and Mullamari rivers. From ground water the irrigation is through dug wells, dug cum borewells and borewells. Taluk wise irrigated area from different sources is shown in area irrigated by different sources in each taluk of Bidar district

Sl. No	Taluk	Net Irrigated Area (as per ASCR 2009-10) Hectares						
		Canals	Tanks	Dug wells	Bore wells	Lift irrigation	Other Sources	Total
1	Aurad	0	325	991	1,145	25	461	2,947
2	Basavakalyan	103	38	6,556	2,869	0	0	9,566
3	Bhalki	4,159	380	3,838	2,995	240	769	12,381
4	Bidar	0	272	4,790	6,060	40	155	11,317
5	Humnabad	44	21	7,475	5,344	0	0	12,884
Total		4,306	1,036	23,650	18,413	305	1,385	49,095

Net Irrigated Area (As per ASCR – 2015-2016) Hectares.

TALUK	Canals	Tanks	Wells			Tubewells			Other sources		Total	
			No	Gross	Net	No	Gross	Net	Gross	Net	Gross	Net
Aurad		50	950	1,989	1,389	3,328	3,661	2,085	215	174	5,865	3,648
Basavakalyan	7	16	4,302	2,974	2,496	6,221	5,693	4,786	-	-	8,667	7,282
Bhalki	170	18	2,090	3,067	2,641	5,601	6,237	4,692	93	72	9,397	7,405
Bidar	-	34	1,699	3,410	2,969	6,758	4,729	4,003	96	72	8,235	7,044
Humnabad	3	13	2,656	3,112	2,881	7,219	4,960	4,342	-	-	8,072	7,223
District Total	180	131	11,697	14,552	12,376	29,127	25,280	19,908	404	318	40,236	32,602

There is nearly five TMC ft of water in the Karanja dam. Its storage capacity is seven TMC ft. Water release began on December 10 and will go on till March 15. Dam gates will be opened on alternate weeks. Release will depend on availability of water. The irrigation advisory committee had recommended farmers to grow jowar, wheat, Bengal gram, sunflower, safflower and tur.

Fields situated till the 31st km on the left bank, 82nd km on the right and the fifth km on the banks of the lift irrigation facility will get water. The reservoir is full with the water level at 584.6 metre. Villages on the

right bank such as Kherda (B) and Dhannur (R) in Basavakalyan taluk, and Kinni Sadak, Jhor Jamaga, Gobbar Wadi, Honnalli, Moramnalli, and Sont in Kalaburgi taluk will get water. Villages on the left bank such as Kherda, Dhannur (R) in BasavaKalyan, Hallikhed (K) and Chittakot in Humnabad taluk Gobbarwadi, Nelkod, Honnalli, Patoda and Mallapur will get irrigation facility.

Drainage: Major parts of the district is covered by Godavari basin, drained by its two major tributaries, the Manjra and the Karanja rivers. The Manjra river is perennial river flows over a distance of 155 km in the central parts of the district and flows eastern direction with a meandering course. The Karanja river flows in northern-western direction for 74km with karanja reservoir being major water source. The river Mullamari takes its origin near Mathala village of Basavakalyan taluk flows from west to east length of 38 sq.km and then flows into Kalaburgi district and joins the river Kagna. The Kagna river is one of the main tributary of Bhima river. Besides, there are several streams, which are of ephemeral in nature. The drainage pattern in the district varies from sub-dendritic to dendritic and some streams have a sub parallel drainage to the main river.

Karanja Project : Karanja Irrigation project envisages construction of storage reservoir across river Karanja, tributary of river Manjra in Godavari Basin near Byalhalli village, Bhalki Taluk of Bidar District. The gross storage capacity of the reservoir is 7.691 TMC. The utilisation under this project is 9.27 TMC. The area covered for irrigation under this project is 35,614 hectares. The revised estimated cost of the project is Rs. 522.00 Crores as per the schedule rates of 2008-09. The Dam works comprising of earthen dam, C. C. Spillway, R.C.C. Sluices and parapet wall are completed. Works of LIS in the backwaters of the dam like rising main, intake canal, pump house, cistern, delivery chamber are completed. *Canals:* Works of left bank canal upto 31.00 km and right bank canal upto 124.00 km are completed. Works in Km 3.00 are under progress.

A Severe Natural Calamity i.e famine has fell in all over India in that famine of 1971-72 Year, Bidar district has also effected. All the Khariff and Rabbi crops have withered away in early stage of vegetation in some Pockets. But in Major Portion of the district even sowing operation was not taken place. This famine has badly effected animal population, there

was human starvation due to this famine however there were no reports of death, in 1983 district has experienced another natural calamity i.e. heavy rain fall which created havoc and affected to the life of man, many houses have collapsed in rural area, so many minor irrigation tanks have been breached, soil erosion was taken place.

Chulki Nala: Fields on 479.37 acres on the right bank and 469.49 acres on the left bank will get water in Muchalamba, Gorta and Togalur villages in BasavaKalyan taluk.

Check dams in Bidar : A boon to Bidar farmers: New generation check-dams built to increase groundwater levels across Bidar district have changed the lives of farmers in the hot and dry taluk of Aurad. The taluk receives less than 700 mm of rain, the lowest in the district. There are over 200 check-dams built across streams and watershed areas in the region, which have helped recharge groundwater and ensure that open wells and borewells do not dry up. Besides, some have even been turned into ponds that provide irrigation facilities for farmers.

Famines and Floods: Flood in Manjra River, following heavy rains in the catchment areas in Maharashtra, has left more than 13 villages cut off partially in Bhalki taluk of Bidar district, on the either side of Karnataka and Maharashtra Border. As per heavy rains for two days during the month of August, 2011 in river basin in Maharashtra and release of excess water from Dhanegaon Reservoir, had flooded the villages. A flood water was flowing over the low lying Saigaon Bridge, which connects 25 villages in the area. The villagers were using another minor route, which was a little longer to reach the main land. The affected villages include Mehkar, Shrimali, Alawai and Kongali.

During the month of August 2011, Saigaon village of Bhalki taluk of Bidar district received around 100mm rainfall and due to this movement of people was affected and bus services to some villages along the Karnataka and Maharashtra border were suspended after the Saigaon bridge over the Manjra river in Bhalki taluk was submerged. There was nearly one feet of water above the bridge. Many farmers experienced crop loss along the river bed. Hence some farmers grown crops on the non-cultivation buffer zone along the riverbed and some of them have encroached land and started unauthorized cultivation.

Thus heavy rainfall and subsequent submergence of many bridges has affected people life and movement of people in Mehkar, Kongali, Attarga, Alavai, Srimali, Halasi.

Drought Condition: Northern part of Karnataka, Bidar district experienced severe drought situations during Kharif 2009, as a result Kharif crop such as Greengram, Blackgram, Redgram, Sorghum etc was not taken up in major area in some cases where sowing was taken up crop withered at vegetative phase. The drought situation has caused major to livestock population.

Suicides as Symptomatic of Agrarian Distress: Between December 1997 and May 1998 twenty-three cases of suicides related to agricultural crop loss were reported from the North Karnataka districts of Bidar and Kalaburgi. Of these, thirteen suicides were by agriculturists in the district of Bidar, and a significant proportion of these was from Bhalki taluk. Though this study was initiated in response to reports of suicides in the district, the study does not focus on the actual cases/households in which distress-related suicides were reported. Rather, the study considers the suicides to be symptomatic of larger and more pervasive crises in the region. The crises are ecological, economic and social; each inter-linked with the other and combining to produce distress in the region.

ANIMAL HUSBANDRY AND VETERINARY SERVICES

The livestock population of the district consists of cattle, buffaloes, sheep, goats, pigs, rabbits, dogs and other animals. Bidar district has a livestock population of 77, 48,115 out of which the cattle accounted for 2,77,524 {Consisting of indigenous - 2,63,884, Exotic-1, Cross breed 13,639} buffaloes-1,76,809, Sheep-84,651, Goats-1,88,998, pigs-18,619, Rabbits-48, Dogs-27,194 and others-3,392 including poultry-1,61,954 in 2007. Category wise livestock population (2009-10) in Bidar district is given in following table.

Sl.No	Category	No. of animals
1	Cattle	2,77,524
2	Buffaloes	1,76,809
3	Sheep	84,651
4	Goats	1,88,998
5	Pigs	18,619

6	Rabbits	48
7	Dogs	27,194
8	Others	3,392
9	Poultry	1,61,954
Total		77,48,115

Source: Bidar District at a glance, 2009-10.

Animal Husbandry Livestock Census 2012 (in Nos)

Sl No	Taluks	Livestock Census 2012						
		Cattle			Buffaloes	Sheep		
		Indigenous	Exotic	Total		Indigenous	exotic	Total
1	Aurad	56,771	1,066	57,837	29,089	34,490	0	34,490
2	Basavakalyan	54,351	3,395	57,746	24,170	15,664	0	15,664
3	Bhalki	47,623	2,393	50,016	23,988	13,426	4	13,430
4	Bidar	23,589	3,870	27,459	30,040	15,807	355	16,162
5	Humnabad	37,630	3,831	41,461	23,494	8,656	0	8,656
Total		2,19,964	14,555	2,34,519	1,30,781	88,043	359	88,402

Sl No	Taluks	Indigenous	Exotic	Total
1	Aurad	29,488	3,220	3,220
2	Basavakalyan	32,668	2,515	2,515
3	Bhalki	24,705	4,523	4,589
4	Bidar	29,622	3,019	3,074
5	Humnabad	29,459	5,314	5,314
Total		1,45,942	18,591	18,712

Sl No	Taluks	Rabbits	Dogs	Others	Total Livestock	Poultry
1	Aurad	4	2,299	2,497	1,58,920	38,241
2	B'Kalyan	0	2,365	8	1,35,136	20,196
3	Bhalki	1	1,569	250	1,18,547	18,570
4	Bidar	10	1,988	62	1,08,407	40,132
5	Humnabad	0	1,074	20	1,09,478	2,85,522
Total		15	9,295	2,837	6,30,488	4,02,661

It is possible to improve livestock productivity both in quantity and quality. Since cattle and other domesticated animals thrive well in the favourable climate of the district, landless agricultural labourers and small farmers rear more than 70 per cent of livestock. Animal Husbandry and Veterinary Services (AH and VS) Department plays a key role in raising the standard of living of rural population. In most instances, animal husbandry

activities like rearing of cows, buffaloes, sheep, goat, swine, poultry etc. are taken up by the farmers as a subsidiary activity and source of employment and income. Thus, promotion of scientific animal husbandry activities is an essential component of rural development and poverty alleviation. The AH and VS Department provides service in the form of health care, disease control, diagnostic aids, artificial insemination (A.I) facilities, fodder seed distribution, implementation of schemes benefiting disadvantaged classes, training of farmers and other extension activities.

Veterinary Institutions: In 2010, on the whole there were 111 veterinary institutions in Bidar district which includes 8 veterinary hospitals, 82 dispensaries, 11 primary veterinary centres, 5 mobile dispensaries, 5 Artificial Insemination centers. During the same year total quantity of fish catch was 4,147 m.tonnes.

Veterinary Institutions in Bidar district as an 2009-2010

Sl. No	Taluk	Hospitals	Dis pensaries	Primary Veterinary centres	Mobile Dis pensaries	Artificial In semination	Total
1	Aurad	1	17	1	1	0	20
2	Basavakalyan	2	17	0	1	0	20
3	Bhalki	2	15	6	1	0	24
4	Bidar	1	14	3	1	3	22
5	Humnabad	2	19	1	1	2	25
Total		8	82	11	5	5	111

Source: Bidar District at a glance, 2009-10.

Veterinary Institutions in Bidar district as an 2015-2016

Sl. No	Taluk	Hos pitals	Dis pensaries	Primary Veterinary centres	Mobile Dis pensaries	Artificial In semination	Other	Total
1	Aurad	5	14	1	1	0	0	21
2	Basavakalyan	6	13	0	1	0	0	20
3	Bhalki	6	13	5	1	0	0	25
4	Bidar	4	10	6	1	3	0	24
5	Humnabad	6	16	2	1	1	1	27
Total		27	66	14	5	4	1	117

Source: Bidar District at a glance, 2015-16.

Karnataka Veterinary, Animal and Fisheries Sciences University (KVAFSU)

Karnataka Veterinary, Animal and Fisheries Sciences University with headquarters in the northern district of Karnataka, Bidar was created by the passing of the Karnataka Veterinary, Animal and Fisheries Sciences University Bill, 2004 in the Karnataka State Legislative Assembly on 10 February 2004. The university was established on 28 February 2005. KVAFSU is an autonomous academic institution governed by its board of management that regulates the policies of the university. KVAFSU ties-up with some of the universities abroad for exchange programmes in teaching and research. The university has seven constituent colleges namely Veterinary College, Bangalore; Veterinary College, Bidar; Veterinary College, Shimoga; Fisheries College, Mangalore; Dairy Science College, Bangalore; Dairy Science College, Gulbarga; and Veterinary College Hospital, Hassan.

‘Regional Agriculture Fair for Southern Zone’: A mega “Regional Agriculture Fair for southern Zone” (“Animal and Fish Fair”) was organized during December 18-21, 2009 at Karnataka Veterinary Animal and Fishery Sciences University, Bidar Campus for the first time for the benefit of farming community. The Fair was co-sponsored by the Directorate of Extension, DAC, Ministry of Agriculture, New Delhi; National Fisheries Development Board, Hyderabad; State Departments of Agriculture, Animal Husbandry, Fisheries, KMF and other organizations. The Fair (mela) was inaugurated by Shri. RevuNaikBelamagi, Hon’ble Minister for Animal Husbandry and Pro-Chancellor of the University.

In this mela, more than 300 stalls were setup and displayed research and extension activities by different Agricultural Universities, State Departments, Bidar Zilla Panchayat namely, Animal Husbandry, Fisheries, Agriculture, KMF, Watershed Development and other Departments of the State in addition to stalls organized by the KVAFSU. Further, a good number of stalls from private entrepreneurs and industries were also set up and displayed the activities. More than 2.00 lakh farmers attended during these three days and benefited by this mela organized as a means of transfer of technology in Agriculture, Animal Husbandry, Dairy, Fisheries and other related areas. The main attraction of the mela was exhibition of different breeds of livestock namely, cattle (Deoni, Hallikar, Amruthmahal, Ongole,

Red Kandari, Gir etc.), buffaloes (Murra, Surti, Jefferbadi etc.), horses, camels, dogs, sheep, goat, rabbit and different poultry birds including some of the rare breeds, fodder crops and fishes namely, food fishes and ornamental fishes etc.

Technical Consultancy Cell was established in the mela to give technical guidance on different aspects of Agriculture, livestock farming and dairy science and technology, aquaculture and fisheries during the mela for the benefit of farming community. Interesting gog skill shows were also arranged during all the three days for the benefit of children, farmers and public. To popularize fish eating habit among the population. Fish stalls for sale of fish fry, fish kabab and other value added fish products were set up by the KFDC. The programme was well received by the farmers and public as per the feedback received and a good awareness was created about integrated farming involving agriculture, animal husbandry and fisheries; livestock farming activity as a source of livelihood security and fish and its utility.

Strengthening of Veterinary Hospital Complex at Veterinary College, Bidar: The veterinary college at Bidar has an attached teaching veterinary hospital complex with specialities like Veterinary Medicine, Animal Reproduction, Gynaecology and Obstetrics, Veterinary Surgery and Radiology and Veterinary Preventive Medicine with highly qualified technical faculty. This centre is rendering free clinical services to the livestock of this region for the last 18 years. Presently Government of Karnataka has taken a decision to establish a separate Veterinary, Animal and Fisheries Sciences University at Bidar. Specialized treatment is being rendered through this complex for the veterinarians of district and state, especially for the complicated cases referred for treatment. Due to the financial constraints, the complex lacks essential modern diagnostic equipments that help in speedy diagnosis and effective advanced treatment of the livestock. Hence, Rs 25.00 lakhs is proposed for equipping the Veterinary Hospital Complex with essential modern diagnostic equipment and to improve the existing operation theater for livestock.

Deoni Breed of cattle : The Deoni breed of cattle also sometimes known as Dongari (which means “of the hills”), has been evolved within the last 200 years. It is claimed that it has been developed from a strain

descended from the mixture of Gir, Dangi and local cattle. A contribution from the Gir type of cattle is quite evident in the formation of the head and ears, and also of the horns to a certain extent. They also show a great similarity in general conformation and ruggedness to the Dangi cattle of Bombay State, an area which is not far from the Deoni cattle breeding area.

The Deoni is a medium-sized animal which resembles the Gir in physical structure to a large extent. The body color is usually spotted black and white. The face is also similarly patchy and spotted with black and white. The forehead is convex and bulging, though breeders have not paid the same scrupulous attention to this trait as the breeders of Gir cattle, and though the ears are long and open forward they lack the leaf like structure and also the notch at the tip of the ear that is typical of the Gir. The horns in typical animals take a characteristic outward and backward curve similar to that generally to be seen in Gir cattle.

The skin is loose and of medium thickness. The dewlap is heavy and the sheath is usually pendulous. The hair is soft and short. The cows have a fairly well-developed udder. The body is massive and upstanding with considerable depth. The hooves are well-made and shapely and of a black color. The body structure gives appearance of strength. The herd strength of pure breed of Deoni cattle has been improved with present herd strength of 46 (25 adults—8 female and 11 male). After the formation of the new University, 14 calves of pure Deoni breed have been produced. Average milk yield of 3-4 kg / day is being obtained from milking cows and attention is being given to feeding calves with milk.

Establishment of polyclinic of Veterinary Hospitals : On the whole Rs.36.00 lakhs has been spent under this scheme to provide infrastructural facilities like surgical equipment/X-ray instruments/laboratory equipment and instruments and provide building etc., in Bidar Districts. Animal Health camps help farmers get their animals checked and treated at their villages. Many more activities like mass vaccination programme which will prevent the disease outbreak and mortality can be performed. 150 camps are proposed at a total cost of Rs. 15 Lakhs (Rs. 0.10 Lakh per Camp).

FISHERIES

The district of Bidar being inland one, fishing is confined to the reservoirs, rivers, tanks and wells. Bidar district has made steady progress in inland fisheries in recent years. The revenue of the department of fisheries has doubled every year in the past two years. From the fishery point of view, there are over 250 major tanks in five taluks in the district, of these 175 tanks are considered suitable for fish farming. Fish farmers are allowed to use them and harvest fish at the end of the season. The yearlong fishing season starts in June. Fish eggs and fingerlings are released in tanks. One thousand fingerlings cost between Rs. 210 and Rs.260. Each of them grows to weigh between 1 kg and 4kg in less than a year. Aquarium setting up Bal Bhavan in Bidar district is useful for public entertainment. In Bidar district, there are 14 (Fourteen) Fisheries Co-operative Society.

During the year 2007-2008, fish production of Bidar district was 1,343.39 metric tonnes which was increased to 2,586.85 metric tonnes in 2008-2009. This shows that in one year 1,243.46 metric tonnes of fish production was increased. On the whole there is 2,842 ha reservoir area in Bidar district consisting of 2 reservoirs having an area of <1000ha and 1 reservoir having an area of 1000-5000 ha Besides this, there are 8 tanks covering an area of 2,508 ha Thus both tanks and reservoirs occupies an area of 5,350 ha in the district. Manjira and Karanja are two important river structure of Bidar district flowing through Aurad, Bhalki and Humnabad taluks, there are not major rivers and are long seasonal. In addition, a few streams of seasonal nature also drain the district. The total length of the river and nalas is about 580 Km. Tanks are the main resources for fisheries development.

SI.No	Particulars	Water spread area (inHectares)
1	Karanja Reservoir	5,672
2	Chulki Nala	737
3	Mulla Mari	277

Fish Fauna: The most popular varieties of fish grown in Bidar and surrounding areas are Rohu, Kattla and Mrugal. Rohuis popular, variety and has a huge market. Katla is among the fastest growing varieties in the country.

Fish fauna of the district are as follows.

Sl. No.	Local Names	Scientific Names
1	Chappali menu (Chambani)	Notopterusnotopterus
2	Ta rameenu	Osteobrannacotia
3	Bale meenu	Wallagoattu
4	MagurMeenu	Clariasbatrachus
5	PhoolMurrel	Ophiocephalusmaralius
6	Murrel	Ophiocephalusstriatus
7	Murrel	Ophiocephaluspunctatus
8	Shengal	Mustusseenghala
9	Haomeenu	Mastocembelusarmatus
10	Bombameenu (Malagemeenu)	Anguilla bengolensis
11	GogaliMeenu	Ompakbimaculatus
12	Kattarnameenu	Puntiuscurmuka
13	Rahumeenu	Labeorohita
14	Catlameenu	Catlacatla
15	Mirgalmeenu	Cirrhinusmrigala

Total fish catch in Bidar district during the year 2009-2010

SI.No	Taluk	Fish Catch (M.tonnes) (2009-2010)
1	Aurad	950
2	Basavakalyan	1,147
3	Bhalki	400
4	Bidar	1,350
5	Humnabad	300
Total		4,147

As per the data indicated in the above table fish catch in Bidar taluk was highest (i.e 1,350 m.tonnes), followed by Basavakalyan (i.e1,147 m.tonnes) and least quantity of fish catch was in Humnabad taluk (i.e 300 m.tonnes),

Total fish catch in Bidar district during the year 2015-2016

SI.No	Taluk	Fish Catch (M.tonnes) (2015-2016)
1	Aurad	600
2	Basavakalyan	600
3	Bhalki	600
4	Bidar	600.88
5	Humnabad	500
Total		2,900.88

Lake rejuvenation helps fish farming: In Bidar district, the rejuvenation of lakes by the Jala Samvardhana Yojana Sangha (JSYS) is leading to a revolution in fisheries development in Bidar district. Lakes that were unable to sustain any marine life due to silt or shallow water levels were developed to support large scale fish farming. Inland fisheries have a huge potential in the district as the temperature inside the tanks is between 32-38 degree Celsius.

Thirty-six tanks in three taluks have been developed this way. Heavy monsoon rains last year ensured that all these tanks were overflowing. A total of 84 youth, eight from each tank development society, were trained in inland fish farming. They were given some seed money and materials like fish nets. As many as five lakh fingerlings were dropped in the tanks. They contain edible varieties like Common Carp, Rahu, Katla and Mrugal. The number of common carp fingerlings was twice that of other varieties, owing to its demand in the market.

FORESTRY

Bidar Forest division is the northern most division of Karnataka encompassing the whole of Bidar district and 31 villages of the adjoining Kalaburgi district. Forest areas of Bidar division are classified as Reserve forests, protected forests and Unclassified forests. Bidar Forest division is having 43,592 ha of Forest area including Reserve Forests, Protected forests and Unclassified forests. This area is about 8.5per cent of total geographical extent of the district.

Total forest area and its division

Sl. No	Name of the Range	Reserve forests in Ha	Protected forests in Ha	Unclassified forests in Ha	Total
1	Bidar	1,966.65	3,225.06	3,235.85	8,427.56
2	Bhalki	--	922.46	1,929.09	2,851.55
3	Aurad	--	832.87	1,456.95	2,289.82
4	Humnabad	2,488.45	7,695.86	11,509.09	21,693.40
5	Basavakalyan	489.44	551.54	7,289.65	8,330.63
Total		4,944.54	13,227.79	25,420.63	43,592.96

The total forest area of the division is 43,592.94 ha comprising of 4,874.04 ha of reserve forests, 12,802.90 ha of protected forests and

28,881.00 ha of unclassified forests. Most of the RF areas are in Bidar and Humnabad ranges. Originally the forests in Bidar Division consisted of Dry deciduous and Scrub type vegetation. Over the years almost all the forest areas have been worked at one or more times resulting in large expanses of manmade forests comprising mostly of Eucalyptus, Acacia auriculiformis, Glyricidia and miscellaneous species like Hardwickia, Albizzia, Azadirachta and Pterocarpus etc. Majority of these plantations are successful. Due to the sustained efforts of the forest department, the forest cover in the district has increased by about 4per cent as reported by the Hyderabad based National Remote Sensing Agency.

Demonstration Plots: This experiment was also started from the last year. The idea was to create some nuclei of farm forestry where people could come and see for themselves the benefits of the farm forestry, the species available, the different models and the overall economy of farm forestry and take it up in their own lands. To begin with a number of big farmers having irrigated lands have been motivated to practice farm forestry on their lands. Free seedlings of their choice have been provided and planted on these plots. In a number of cases these farmers have responded enthusiastically investing in raising a barbed wire fence and in some cases even drip irrigation.

During the current year, 12 Demonstration plots have been established all over the division and about 10,000 seedlings of Tamarind, Mango (grafted), Drumsticks, Curry Leaves, Lime, Teak, Madival bamboo etc., were planted. It is hoped that these twin schemes of adopted villages and Demonstration Plots will help in Green Revolution by taking the forestry to the doorstep of each villager.

JFPM in the Division : The total number of the Village Forest Committees registered in the division is 21. In all these VFCs elections have been held and Management Committees established. Out of these PRA exercise has been completed in 10 VFCs and the Management Plans prepared, in close interaction with the villagers. In these VFCs, where Management Plans have been finalized, entry point activities are being taken up. They include forestry as well as non-forestry activities. To ensure

the viability of the VFCs they are being involved in activities like village planting and decentralized nurseries etc. 2 fruit orchards have been raised in T. Mirzapur and Shahpur villages to be handed over to the VFCs. In addition, wherever VFCs are not viable, the villagers are being involved in OECF works through regular interaction.
