

# Contribution of Krishi Vigyan Kendra in Rangareddy District



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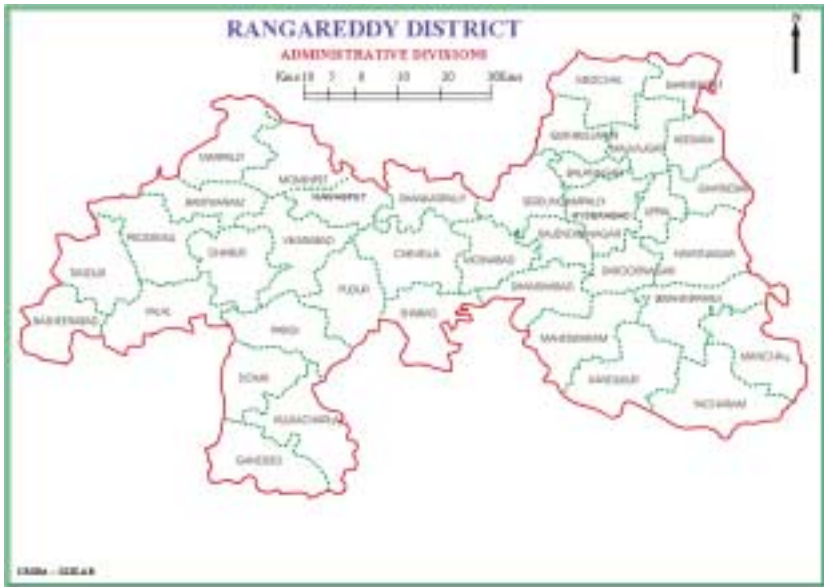


## INTRODUCTION

Agriculture continues to be the backbone of Indian economy. A vast majority of India's population depends on agriculture for subsistence. However, ever increasing population and decreasing resource base are posing severe challenge for enhancing agricultural production and productivity. This calls for adoption of better production practices and resource conservation technologies by large number of farmers. In order to achieve this, the Indian Council of Agricultural Research (ICAR) initiated the Krishi Vigyan Kendras (KVK) or Farm Science Centres in the early Seventies as innovative institutions for educating farm families. KVK is conceived as a Knowledge Centre for imparting need-based skill oriented training programmes to farmers. It works on the principles of 'learning by doing' and 'teaching by doing' through training programmes involving experiential learning. The KVK attached to the Central Research Institute for Dryland Agriculture (CRIDA) started functioning since 1977 to cater to farmers' training needs in the drought-prone Rangareddy district of Andhra Pradesh. The major objective of the KVK is to extend need-based and skill oriented training to practicing farmers, rural youth and extension functionaries of the district. The other important objectives are laying out frontline demonstrations, on-farm trials and extension education activities for popularizing improved farm technologies. Livelihood programmes were initiated subsequently for improving the quality of rural life. This bulletin gives an overview of the progress and achievements of the KVK during last thirty years.

## PROFILE OF RANGAREDDY DISTRICT

Rangareddy district was formed on 15<sup>th</sup> August, 1978 by putting together the areas surrounding the twin cities of Hyderabad and Secunderabad. The district has 37 mandals (clusters of villages as administrative units) grouped into three revenue divisions. In all, there are 1055 villages in the district. It is located in the heart of the Deccan plateau of the Indian subcontinent and lies between 16°19' to 18°20' North latitude and 70°30' East latitude. The total population of the district is about 35.1 lakhs (2001 Census) of which 47% lives in urban areas. The illiterates constitute 66% of the total population. A little over 40% of the population is actively engaged in work. Agriculture, service and manufacturing sectors are the major employment providing sectors.



The district has about 7.48 lakh ha land. About 40% of land is cropped and only 9% is under forestry. Red soils are predominant (56%) followed by black cotton soils. Red soils are neutral whereas black soils are slightly alkaline with pH ranging from 6.5 to 8.5. The soils are heavily deficient in Nitrogen, low to medium in available Phosphorus and high in available Potash. Zinc deficiency is commonly observed in all the mandals (deficiency ranges from 16-90%). The average annual rainfall of the district is about 781 mm. The climate of the district is generally dry except during the southwest monsoon that brings 75% of total normal rainfall (June – September). The district is largely rainfed with only 26% of the sown area having access to irrigation as against the state average of 40%. Wells followed by tanks are the major sources of irrigation and there are no river-based major irrigation projects in the district. The major crops grown in this district are sorghum, castor, maize, rice, pigeonpea, cotton and turmeric. The district has a livestock population of 9.9 lakhs and 81.4 lakhs of poultry birds. Based on agro-climatic features, eight farming situations are delineated for the district. Six out of eight represent red soils and black soils with pockets of areas irrigated by borewells and tanks. Of the remaining two, one represents the medium irrigation project in light soils and the other one Musi irrigation project in light soils covering three mandals (Table-1).



**Table 1: Farming situations in Rangareddy district**

<b>Farming situation</b>	<b>No. of mandals</b>
Medium irrigation - Project light soils	03
Red soils – under bores and wells irrigation	19
Black soils – under bores and wells irrigation	16
Red soils – under tankfed irrigation	19
Black soils – under tankfed irrigation	17
Rainfed – red soils	19
Rainfed – black soils	16
Irrigation – Musi sewage	03

The KVK has a major role to play in this district where dylands are predominant with less than 26% under irrigation. However, it has been able to cover almost all mandals except Rajendranagar and Saroornagar mandals, despite compelling challenges.

## **LOCATION OF THE KVK**

Krishi Vigyan Kendra, Rangareddy district is attached to CRIDA. KVK office and Farm are located in between Mahaveer Deer Park and Hayathnagar on the National Highway - 7 and is about 11 km from Hyderabad city.

## **PLANNING FOR DEVELOPMENT PROGRAMMES - PROBLEM DIAGNOSIS**

The problems faced by the farming community are identified and analyzed by understanding the local situation and prospects through Participatory Rural Appraisal (PRA), Rapid Rural Appraisal (RRA) and surveys. Information generated through farmer participatory surveys is used to identify the technology gaps and related training needs and develop proposal for on-farm testing trials. The problems identified through PRA survey and analysis are mentioned below:

- The district receives below normal rainfall. Most often its distribution is erratic. Late onset, intermittent long dryspells and early withdrawal of monsoon often result in low and unstable crop yields

- Soils are degraded due to severe soil erosion and poor water retention capacity. Improved crop production practices and soil and water conservation techniques are not followed due to poor risk bearing capacity of farmers
- Limited draught power results in untimely sowing and poor crop stand
- Inadequate and improper nutrition and heavy incidence of pests and diseases result in low and unstable crop yields
- Shortage of labour resources due to high out-migration has resulted in high wages and scarcity of labour
- Most of the farming operations are carried out by women and only hard jobs like ploughing, threshing, carting, etc., are carried out by men
- Limited irrigation (borewell, tank) facilities coupled with growing of water intensive crops like paddy has led to depletion of groundwater
- Acute shortage of fodder particularly in drought years results in selling of livestock. Milk yields are low due to poor management of dairy animals. Small ruminants are also suffering from malnutrition and nutrition related diseases
- Lack of availability of appropriate farm implements also hinders farm operations and adds to cost of cultivation
- Lack of off-season employment avenues for women especially during winter leading to low family income.



## METHODOLOGY AND OPERATION

The problems faced by the farmers are more or less the same in the majority of the villages of the district. However, degree and intensity vary from village to village or farmer to farmer. Based on this, the KVK has identified suitable technologies and skills required to address the problems. Based on the information gathered through PRA / benchmark survey and consultations with the subject matter experts and extension specialists, various thrust areas for the district have been identified (Table-2). These are divided into several sub-areas for designing and implementing major programmes of the KVK. Appropriate extension methods, viz., trainings, demonstrations, frontline demonstrations of major crops, group meetings, field visits are employed in addition to on-farm trials. The KVK is expected to cover the entire district over a period of time. Therefore, it has adopted a cluster approach. In this, 3-5 revenue villages are selected as focal points with 2-3 surrounding villages as satellite villages in a cluster of 10-15 villages. Thus at any point of time KVK activities will have a bearing on a cluster of 10-15 linkages in a contiguous area. As a result of this, a significant number of mandals and villages have been covered in the district during the last thirty years. After acquainting itself with the needs of its clientele, the process of participatory technology dissemination is initiated through activities, such as

- Training programmes
- Frontline demonstrations
- On-farm trials
- Extension education
- Livelihood activities

**Table 2: Thrust areas of the KVK, Rangareddy**

Major area	Sub areas
Crop production	<ul style="list-style-type: none"> <li>• Soil and water conservation</li> <li>• Soil testing and Integrated Nutrient Management</li> <li>• Improved crop production techniques of cereals, pulses and oilseeds</li> <li>• Improved crops and cropping systems</li> <li>• Integrated Pest Management</li> </ul>
Farm implements and machinery	<ul style="list-style-type: none"> <li>• Improved implements for tillage, seeding, interculture operations and top dressing</li> <li>• Improved post harvest equipments</li> <li>• Implements for plant protection</li> <li>• Farm mechanization and custom hire services</li> </ul>
Horticulture production	<ul style="list-style-type: none"> <li>• Propagation techniques of horticulture plants</li> <li>• Improved floriculture</li> <li>• Improved cultivation and management methods for fruit crops</li> </ul>
Introduction of new vegetable crops, varieties	<ul style="list-style-type: none"> <li>• Improved vegetable production techniques</li> </ul>
Livestock production and management	<ul style="list-style-type: none"> <li>• Promoting better breeds of buffaloes and small ruminants</li> <li>• Improved management of dairy animals</li> <li>• Improved forage production techniques</li> <li>• Preparation of good quality feed</li> <li>• Improved management of small ruminants (sheep and goats)</li> <li>• Animal disease management</li> </ul>

<p>Women empowerment through livelihood programmes for income and employment generation</p>	<p><b>Farm based</b></p> <ul style="list-style-type: none"> <li>• Self help groups formation</li> <li>• Plant propagation techniques</li> <li>• Preparation and use of biopesticides</li> <li>• Preparation and use of vermicompost</li> <li>• Raising of vegetable nurseries</li> <li>• Use of improved implements for seeding, weeding and interculture</li> <li>• Backyard poultry</li> </ul> <p><b>Non-farm</b></p> <ul style="list-style-type: none"> <li>• Preparation of <ul style="list-style-type: none"> <li>- Detergents, phenyl, vaseline, pain balm, candles, etc.</li> <li>- Fruit and vegetable preserves</li> <li>- Bakery products</li> <li>- Handicrafts</li> </ul> </li> <li>• Tailoring and embroidery</li> <li>• Nutrition and education</li> <li>• Family health care</li> <li>• Improvement of village sanitary conditions</li> <li>• Improving the existing skills of village artisans</li> </ul>
<p>Extension activities</p>	<ul style="list-style-type: none"> <li>• Field Days, Farmers' Days, Animal Health Programmes</li> <li>• Exposure visits to Research Institutions / Organizations in the surrounding area and nearby Institutes</li> <li>• Distribution of pamphlets, bulletins, books, supply of magazines to adopted villages</li> <li>• Film shows on different crops and livestock management</li> </ul>

## TRAINING PROGRAMMES

Training is regarded as one of the integral components of the capacity building process as part of any development programmes. Conducting need-based and skill oriented training to farmers and farmwomen is one of major activities of the KVK. Since its inception, the KVK has conducted several training programmes on various aspects of improved technologies related to agriculture and allied activities (Table 3 & 4) to different clientele including practicing farmers, farmwomen, rural youth and extension functionaries. Training programmes for the farmers / farmwomen are organized as both on-campus as well as off-campus. Medium / long duration training courses on vocational aspects are also conducted. The duration of such courses varies from 10 to 90 days. Courses on tailoring, preparation of bakery products, preparation of fruit and vegetable preserves, electric motor repairing, tractor driving, fabrication of implements are conducted for rural youth, school dropouts and women.



**Table 3: Details of the training programmes conducted by the KVK (1977-2006)**

Year	No. of programmes	No. of trainees
1977-82	191	5780
1982-87	247	6729
1987-92	370	10378
1992-97	254	5543
1997-02	254	6029
2002-06	431	15097
<b>Total</b>	<b>1747</b>	<b>49556</b>

**Table 4: Training courses organised by the KVK (discipline wise) and participation (1977-2006)**

Discipline	Year(s)							Total
	1977-82	1982-87	1987-92	1992-97	1997-02	2002-05	2005-06	
Agronomy	143 (4509)	103 (2422)	178 (4364)	90 (1922)	48 (1262)	37 (1346)	25 (1100)	624 (16925)
Horticulture	8 (304)	15 (315)	34 (537)	31 (563)	24 (545)	21 (351)	20 (640)	153 (3255)
Soil & Water Conservation	16 (316)	18 (413)	10 (185)	15 (372)	28 (699)	7 (1170)	16 (553)	110 (3708)
Home Science	23 (640)	69 (1511)	45 (1009)	81 (1913)	75 (1883)	67 (1557)	56 (1930)	416 (10443)
Agricultural Engineering	1 (11)	23 (573)	27 (394)	23 (471)	19 (366)	32 (784)	11 (355)	136 (2954)
Agricultural Extension	-	13 (1196)	57 (3444)	2 (64)	11 (239)	27 (1652)	13 (590)	123 (7185)
Animal Sciences	-	6 (299)	19 (445)	7 (124)	15 (322)	25 (1000)	4 (110)	76 (2300)
Plant protection	-	-	-	5 (114)	34 (713)	42 (869)	28 (1090)	109 (1805)
Total	191 (5780)	247 (6729)	370 (10378)	254 (5543)	254 (6029)	258 (8729)	173 (6368)	1747 (49556)

Figures in the parentheses indicate number of persons trained

Some training courses lay special emphasis on imparting specific skills to trainees. They are:

- Making and use of 'A' frame (contour cultivation)
- Calibration and operation of CRIDA drill plough
- Operation and maintenance of plant protection equipments
- Collection of soil samples
- Preparation and use of bio-pesticides like NSKE
- Post harvest handling and grading of horticultural produce
- Plant propagation techniques
- Precision farm operations
- Nursery management skills
- Feed mixing and seeding practices for livestock management

The emphasis of training programmes is on imparting skills required to practice profitable farming. However, required information is also passed on to the trainees through interactive lectures where opportunities are given to learners to interact with trainers / experts. The trainees are exposed to skills through different methods of demonstrations for better comprehension. Audio-visual aids, handouts, field visits, exposure visits, are usually employed to increase the effectiveness of training. Emphasis is also on imparting skills required for the new practices, improving the knowledge base to help better decision-making by trainees.

Evaluation is an integral part of KVK training programme. The knowledge gain of trainees as a result of training is usually assessed through pre and post evaluation techniques. The learning opportunities are provided to the clientele for easy adoption of technologies on their farms. KVK regularly takes up the follow-up evaluation of training for identifying the gaps in adoption and tries to improve the performance of trainees by providing handholding whenever required. Self-Help Groups, Vikas Voluntary Vahini Clubs have been playing significant role in spreading technologies vertically and horizontally.



## DEMONSTRATIONS FOR ACHIEVING FULL YIELD POTENTIAL OF CROPS

Laying out field demonstrations on farmers' fields is an important tool for technology dissemination based on the philosophy of 'seeing is believing' and 'learning by doing'. A field demonstration offers farmers and extension functionaries a complete learning opportunity. Frontline demonstration (FLD) is concept evolved by the ICAR during mid-eighties in which field demonstrations are conducted under the close supervision of the scientists. Here the technologies are demonstrated for the first time by the scientists and KVK staff before being fed into the main extension system of the State Department of Agriculture. The main objective of FLD is to demonstrate newly evolved crop production technologies and management practices in the farmers' fields under different agro-climatic regions and farming situations. The FLDs differ from routine demonstrations conducted by the extension functionaries.



In order to introduce new crops, varieties, cropping systems with improved production practices such as crop geometry balanced fertilizer application, soil enrichment, improved production technologies and IPM, measures are considered under FLDs. Improved varieties / hybrids, viz., CSH-5, CSH-6, SPV-462, CSV-15, CSH-16 (sorghum); DCS-9, GCH-4, PCS-4, PCS-124 (castor); LRG-30, ICPL-332, ICPL-84031, PRG-100, PRG-158 (pigeonpea); MSFH-8, Morden, KBSH-1 (sunflower); ML-267, WGG-2, K-851 (greengram); TU94-2, T-9 (blackgram); ICCV-10, ICCV-2, Annigeri (chickpea); YLM-17 (sesame); JS-335 (soybean); JNC-6 (niger) and Hamsa and BPT (paddy) have been introduced by the KVK in different villages of Rangareddy district. Yield and income advantages obtained by adopting the new varieties of different crops are detailed in the following tables (Table 5 & 6a,6b,6c).

**Table 5: FLDs laidout by the KVK (1977-2006)**

Year	No. of FLDs
1977-81	358
1982-86	540
1987-91	277
1992-96	286
1997-01	440
2002-06	2702
Total	4063

**Table 6 a: Yield and income advantages shown by FLDs on improved oilseed varieties**

Year	Crop	Variety	Mean yield (kg/ha)		Yield Increase (%)	Cost of cash inputs (Rs/ha)		Gross returns (Rs/ha)		Addl. Net returns	B:C ratio
			Demo	local check		Demo	local check	Demo	local check		
1996	Castor	DCS-9	300	50	500	1620	350	2700	450	980	1:1.67
	Sunflower	MSFH-8	650	250	160	1550	700	6500	2500	5200	1:4.20
1997	Castor	DCH-30	296	50	492	1660	570	2664	450	1124	1:1.6
	Castor	DCS-9	368	50	436	1560	570	2412	450	972	1:1.55
	Sunflower(R)	MSFH-8	950	700	64.28	700	400	11400	6000	5100	1:16.28
1998	Castor	DCS-9	130	24	442	757	550	910	168	537	1:1.20
	Sunflower	Morden	812	180	62.4	1710	400	9744	2160	6274	1:5.70
	Sunflower(R)	Morden	600	200	200	735	455	7200	2400	4520	1:9.79
1999	Castor	DCS-9	126	40	215	1168	600	1890	600	722	1:1.62
	Sunflower	MSFH-8	500	200	66.67	1700	700	7500	3000	3500	1:4.41
	Sunflower(R)	MSFH-8	900	600	38.46	1735	1170	10800	7200	3035	1:6.2
	Sunflower(R)	KBSH-1	725	450	61.11	1700	1080	8700	5400	2680	1:5.12
2000	Castor	PCS-4	700	400	75	650	425	7810	4400	3185	1:12
	Sunflower(R)	MSFH-8	1040	700	48.57	2345	1650	13520	9100	3725	1:5.76

Year	Crop	Variety	Mean yield (kg/ha)		Yield Increase (%)	Cost of cash inputs (Rs/ha)		Gross returns (Rs/ha)		Addl. Net returns	B:C ratio
			Demo	local check		Demo	local check	Demo	local check		
2001	Castor	PCS-4	740	305	132	2400	1000	7400	3050	2950	1:3.08
2002	Castor	PCS-4	670	300	123	2225	975	8495	3825	3420	1:3.8
	Castor	DCS-9	700	330	112	2300	975	9100	4290	3485	1:3.95
2003	Castor	PCS-124	630	280	82	2180	975	8190	3360	3625	1:3.75
	Castor	PCS-136	680	300	126	2180	975	8840	3600	4035	1:4.05
2004	Castor	PCS-124	800	250	220	2186	875	10400	3250	5839	1:4.75
2005	Castor	DCS-9	900	500	80	1750	1000	9900	5500	3650	1:5.67
	Castor	PCS-124	850	500	70	1750	1035	9350	5500	3135	1:5.39
	Sunflower	KBSH-1	743	400	85.75	2150	1325	10774	5800	4149	1:5.01
	Sesamum	YLM-17	416	250	43.50	2175	1320	9568	5570	3143	1:4.40

**Table 6 b: Yield and income advantages shown by FLDs on improved pulse varieties (1996-2005)**

Year	Crop	Variety	Mean yield (kg/ha)		Yield Increase (%)	Cost of cash inputs (Rs/ha)		Gross returns (Rs/ha)		Addl. Net returns	B:C ratio
			Demo	local check		Demo	local check	Demo	local check		
1996	Pigeonpea	LRG-30	684	333	105	1500	750	10260	5000	4510	1:6.84
	Greengram	ML-267	255	200	27.5	975	400	2550	2000	-25	1:2.61
1997	Greengram	ML-267	170	60	185	950	450	2550	900	1150	1:2.68
	Pigeonpea	LRG-30	300	120	150	1295	560	6000	2400	2865	1:4.63
1998	Greengram	ML-267	320	146	219	804	420	4480	2044	2052	1:5.57
	Pigeonpea	LRG-30	270	180	150	880	600	3780	2520	980	1:4.30
1999	Greengram	WGG-2	175	40	331	901	325	3500	800	2124	1:3.88
	Pigeonpea	ICPL-84031	270	100	170	944	385	6750	2500	3691	1:7.15
2000	Pigeonpea	ICPL-84031	310	200	55.5	680	355	3720	1920	1475	1:5.47
		ICPL-332	370	200	85	680	300	4440	1920	2140	1:6.53
		PRG-100	460	200	130	680	300	5520	1920	3220	1:8.12
2001	Pigeonpea	ICPL-332	600	200	165	1400	410	8160	2400	4770	1:5.83
2002	Pigeonpea	ICPL-87119	540	220	145	2000	850	5400	2200	2050	1:2.70
		ICPL-85062	495	225	120	1600	800	4950	2250	1900	1:3.09

Year	Crop	Variety	Mean yield (kg/ha)		Yield Increase (%)	Cost of cash inputs (Rs/ha)		Gross returns (Rs/ha)		Addl. Net returns	B:C ratio
			Demo	local check		Demo	local check	Demo	local check		
2003	Pigeonpea	PRG-158	650	200	135	2440	760	9100	2800	4620	1:3.73
2004	Pigeonpea	PRG-100	730	215	240	2465	740	10220	3010	5485	1:4.15
2005	Pigeonpea	ICPL-87119	1836	1146	60.21	15452	12827	30296	19000	8671	1:1.96
		ICPL-7035	1667	1190	40.08	15243	15005	27514	19635	7641	1:1.80
		ICPL-96058	1579	1160	35.34	14768	12150	25905	18950	4337	1:1.75
	Greengram	K-851	780	551	41.56	4910	5736	14827	10469	5184	1:3.02
	Blackgram	TU94-2	832	525	58.47	5719	6419	16624	13124	4200	1:2.90
	Soybean*	JS-335	1325	-	-	8384	-	17225	-	8841	1:2.05
	Chickpea(R)	ICCV-2	2567	1705	50.56	9603	8903	42398	28162	13536	1:4.41
		Annegiri	2454	1803	36.10	3871	3527	16196	11900	3952	1:4.18

\* New introduction

**Table 6 c: Yield and income advantages shown by FLDs on cereals and vegetables**

Year	Crop	Variety	Yield (kg/ha)		Yield Increase (%)	Cost of cash inputs (Rs/ha)		Gross returns (Rs/ha)		Addl. Net returns	B:C ratio
			Demo	local check		Demo	local check	Demo	local check		
1996	Sorghum	CSH-5	2200	600	266	1200	500	17600	4800	12100	1:14.60
		CSH-6	2050	550	272	1150	500	16400	4400	11350	1:14.26
	Bajra	BJ-104	2000	600	233	1100	450	12000	3600	7750	1:9.80
1997	Sorghum	SPV-462	1500	500	200	1225	500	12096	4000	7371	1:9.87
2000	Sorghum	SPV-462	20250	10600	91	2350	1200	10500	5250	4100	1:4.46
		CSH-16	900	350	157	1950	600	9000	2450	5200	1:4.62
		CSV-13	800	450	78	2050	850	8000	3150	3650	1:3.90
	Tomato	Arkavikas	750	420	79	1950	1150	7500	4200	2500	1:3.85
2001	Sorghum	CSV-15	1700	680	150	1850	765	10200	4080	5035	1:5.51
		CSV-16	1500	700	114	1760	875	9000	4200	3915	1:5.11
		SPV-462	1500	650	131	1760	770	9000	3900	4110	1:5.11
	Pearl millet	ICMV-22	1100	800	37.5	1400	1050	8800	6400	2050	1:6.28
	Tomato	Arkavikas	19400	10100	92	2050	1100	19400	10100	8350	1:9.46
2002	Sorghum	CSV-15	288	80	160	1325	500	2880	800	1255	1:2.17
	Tomato	Arkavikas	20600	10500	96	2250	1175	20600	10500	9025	1:9.15
2003	Tomato	Arkameghali	19850	10300	93	570	350	19850	10500	9130	1:34.8

Year	Crop	Variety	Yield (kg/ha)		Yield Increase (%)	Cost of cash inputs (Rs/ha)		Gross returns (Rs/ha)		Addl. Net returns	B:C ratio
			Demo	local check		Demo	local check	Demo	local check		
2004	Maize	DHM-105	2592	1263	167.85	5738	4545	15220	6568	7459	1:7.24
		EPH-3	1990	1263	57.56	5731	4545	13050	6568	5296	1:5.43
		Harsha	1945	1263	53.99	5738	4545	12888	6568	5127	1:5.29
	Tomato	Arkavikas	23100	18000	22	870	700	46200	36000	10030	1:53
2005	Maize	Navjot	3690	2650	39.25	9289	8950	22307	16020	5948	1:2.40
		KH-517	4408	2880	53.05	9456	9100	26304	17410	8538	1:2.78
		Kargil-900M	5137	3050	68.43	10415	10200	30239	18437	11587	1:2.90
		Bio-9681	4512	3000	50.40	9850	9450	26872	18135	8337	1:2.73
		Ganga-5	3840	2800	37.14	9255	8925	23237	16944	5963	1:2.51
	Sorghum	CSV-15	1012	693	46.03	5130	3734	5566	4125	45	1:1.08
		CSV-16	1334	1025	30.14	5300	4525	5670	4290	605	1:1.07
		Cotton	Brahma	2564	2165	18.43	22915	23397	51281	43209	8554
	Bt.		4100	3787	8.26	27850	28725	73800	68175	6500	1:2.65
	Dassera		2641	2331	13.30	23602	24195	52822	46622	6793	1:2.24
	Paddy	Bunny	2808	2486	12.95	24240	24588	56155	49720	6783	1:2.32
		MTU-1010	5459	3808	43.35	15628	13186	29019	19931	6646	1:1.85
		Tella Hamsa	5942	4549	30.62	13894	12265	34297	30823	1845	1:2.46
		Krishna Hamsa	5960	4432	34.47	13409	12344	35436	26234	8132	1:2.64
		Triguna	6250	4595	36.01	14208	12515	37500	27570	8237	1:2.64
Shanti		6140	5060	21.34	14627	13005	36850	30360	4868	1:2.52	
	BPT-5204	4668	4277	9.14	14787	14171	27865	25461	1788	1:1.88	



Efforts are made by the KVK to train the farmers in production of their own seed in order to ensure the availability of good quality seed in the village. Saturation of village with improved crop varieties was encouraged by the KVK by supplying required quantities of seed to farmers either from its own research farm or by procuring from different government seed agencies. These were accepted by farmers upto 2005. Now farmers prefer to have their choice of seeds only.

## **VILLAGE SEED PRODUCTION PROGRAMME**

An isolated patch of area covering about 35 acres of land belonging to 26 farmers was earmarked and foundation seed (Jyothi-DCS-9) was supplied to farmers in June 2005. Isolation, rouging method and judicious management techniques were followed which resulted in about 125 q seeds from the entire area. The price of such seed received Rs.4-6 per kg more compared to bulk castor seeds. This venture soon was popular in villages. This led to more farmers taking up seed production and higher seed production during the year 2006. As a result they did not get remunerative price for the seed produced. This venture however needs better institutional support.

## **DEMONSTRATIONS**

The demonstrations are conducted on proven technologies for transferring such technologies to farmers' fields. Initiatives made in this direction are given in Table-7. The KVK usually conducts programmes in different phases, viz., before start of season (pre-season), during crop season (mid-season) and flowering stage. Such training programmes help the farmers to procure the right type of inputs at right time and to take corrective measures during crop season and flowering period. Demonstration as an effective training method is being used for facilitating participant farmers and other potential adopters. Demonstrations are interactive and used in different phases of training intended to inculcate skill practicing among trainees. These are conducted in the classrooms, open fields and community halls in villages. The KVK usually conducts demonstrations on interactive mode in the following areas.

- Pest / disease preventive measures in cereals, millets, oilseeds, pulses, vegetables, orchards, etc.
- Timeliness and precision farming techniques
- Operation of implements like drill ploughs, etc.
- Technique of collecting soil samples and application of fertilizers / organic manures
- Preservation of fruits and vegetables
- Raising nursery plants
- Pruning techniques
- Techniques of plant propagation
- Preparation of biopesticides like NSKE, etc.
- Feeding of balanced feeds and fodders and micro-nutrients to dairy animals



These demonstrations provide farmers with an opportunity for development of essential skills to carryout various field operations and for obtaining benefits of higher productivity from improved technologies.

**Table 7: Demonstrations conducted in villages**

<b>Demonstration</b>	<b>Results</b>
Broad bed and furrows in maize	Farmers accepted. It increased yield due to moisture conservation techniques
Ridging due to intercultivation in maize	Farmers in marginal and small farmers accepted it as it can be practiced with the resources available with them
Varieties, fertilizers, spacing and contingency planning in maize, sorghum, pearl millet, fodder crops, vegetables and cotton	Farmers accepted high yielding varieties. Hence, latest varieties were used in farmers' fields. The use of chemical fertilizers and organic fertilizers has increased in farmers' fields. The optimum / higher plant population is preferred based on rainfall and soil conditions.
System of Rice Intensification (SRI)	Accepted due to high productivity and reduction in water use.
Marker and Rotary Weeder in rice, Dryland Manual Weeder, Six Row & Nine Row Tractor Drawn Planter, Maize Sheller	Farmers accepted. It gained momentum and spreading in farmers' fields as it reduces drudgery and saves labour.
Dryland fruit crops, floriculture crops, medicinal and aromatic plants, vegetable fodder crops, etc., with all package of practices	There is a change in cropping systems. Area under pearl millet, sorghum and some of the pulse crops is declining. Area under maize, vegetables, dryland fruit crops, etc., has been increasing.
Livelihood programmes such as preparation of bakery foods, detergents and food items.	Rural women have accepted these for supplementary income
Demonstrations on proven technologies on all aspects	Conducted as per the need of the villagers.

## INSTRUCTIONAL FARM

The KVK instructional farm has several demonstration units in an area of 17.3 ha separately for annual crops, horticulture crops, agri-horti systems, nutrition garden, medicinal plants, floriculture, livestock units, organic composting, vermicomposting, zero energy cool chamber, etc. The land demonstration units are put up based on queries of farmers in Rangareddy district for training farmers and farmwomen on maintaining different enterprises to higher income to family. The farm serving as 'live lab' for conducting skill oriented training programmes. Details of various demonstration units of KVK farm are given in Table-8.



**Table 8: Details of various demonstration units of KVK**

Demonstration Unit	Area / No. of animals / birds
Poultry birds	100 no.
Quails	200 no.
Emu birds	2 Units
Guenea fowls	1 Unit
Rabbits	12 Units
Sheep	30+2 no.
Goat	4+1 no.
Floriculture	300 mt.sq. mt.
Nutritional garden	1000 sq.mt.
Medicinal plants	250 sq.mt.
Organic compost	300 sq.mt.
Farm implements shed	300 sq.mt.
Cereal crops	3 ha
Pulses	2 ha

Oilseed crops	3 ha
Mango orchards	2 ha
Guava	2 ha
Amla	2 ha
Sapota, citrus, fig, phalsa, lemon, etc.	1.5 ha
Custard apple	1.5 ha
Vegetable crops	1.3 ha

Note: Different pulse crops (cowpea, pigeonpea and horsegram); oilseeds (niger, sesame and castor) and cereals (foxtail, finger millet) are grown as intercrops in dryland fruit crops.

Different demonstration units are maintained at Instructional Farm to train farmers and farmwomen in addition to explaining to visitors and earning additional income to KVK. This helps in developing confidence among farmers to diversify their farming systems for assured income.

## TECHNOLOGY VERIFICATION / ON-FARM TRIALS

One of the major tasks of the KVK is to search for suitable solutions for solving the problems faced by the farmers in managing crops, etc. The problem may be either non-suitability of technology or in compatibility with a farming situation. The researcher has to find a way out to reduce the level of risk in the adoption of new techniques and make it a part of the existing farming environment. The solution should satisfy the farmer and improve his decision making ability for adopting a new technology / practice. KVK has organized several on-farm research activities for assessing and refining technologies suitable to a given micro-farming situation. The following steps are usually followed.

- Problem identification
- Present situation / assessment
- Problem analysis
- Solution / refinement
- Experimentation
- Assessment of results
- Recommendation and diffusion of technologies in right prospective

On-farm trials (OFTs) are conducted on the following aspects for finding out optimum technical interventions.



Problem	Technical intervention through OFTs
Low plant population and inadequate area coverage	Introduction of new seeding devices like CRIDA drill plough / Six or Nine row Planter
High cost of weeding	Introduction of improved manual weeders
Yield loss due to pests and diseases in castor and pigeonpea	<i>Helicoverpa</i> control in pigeonpea Semi-looper control in castor.
Male flowers in castor due to prolonged drought and high temperature	Fertility management and moisture conservation
Low yields in castor	<i>Botrytis</i> management in castor
Low yield potentiality of existing genotypes	Introduction of high yielding genotypes of cereals, oilseeds, pulses and other crops
Soil loss due to erosion resulting in low productivity of rainfed crops	Introduction of suitable soil and water conservation measures like CRIDA terrace, graded bund, etc.

Lack of suitable paddy varieties, under saline conditions	Introduction of saline resistant varieties, viz., MTU-1010.
Low water use efficiency and non-availability of sufficient irrigation water for paddy cultivation	Introduction of System of Rice Intensification (SRI) method / opting for alternate crops like sunflower, maize, fodder crops, etc.
Lack of suitable paddy varieties in place of existing ones like <i>Tella Hamsa</i>	Introduction of high yielding varieties, viz., <i>Krishna Hamsa</i> , <i>Triguna</i> and <i>Shanti</i> .
Delayed or irregular monsoon	Contingency cropping of sunflower and greengram underlate sown <i>kharif</i> conditions
Alternate crops for rainfed conditions in place of sorghum	Introduction of crops like maize with low risk and higher yields

On-farm trials have been successfully providing satisfactory solutions to the problems faced by the farming community and helping farmers' find place for new practice in their farming system. The results of some of the OFTs conducted by the KVK are in the following table.

On-farm trial	Result
Performance of low cost soil and water conservation techniques on productivity of rainfed crops	CRIDA terrace and graded bund of 0.5 sq.m. in watershed area enhanced the castor yield by 20% over farmers' practice of sowing the crop along the slope
Use of manual weeder	The use of manual weeder resulted in 65% reduction in cost of cultivation due to saving of labour
Paddy varieties for saline soil conditions	Out of two varieties tried, viz., MTU-1010 and <i>Tella Hamsa</i> , MTU-1010 performed better by registering 16.14% more yield
SRI method vs. farmers' method	Increase in yield over farmers' method ranged from 21.34 to 36.98% with significant reduction of water use and cost of cultivation

Testing and evaluation of seeding devices	Use of CRIDA drill plough increased the coverage of castor seeding by 1.5 times over the traditional method. CRIDA planter covered 4-6 times higher area than local practices
Contingency cropping	Sunflower and greengram were found to be economical compared to castor under late sown conditions in kharif.
Potentials of improved crop genotypes of castor	Castor variety DCS-9 proved better for wilt prone areas
<i>Helicoverpa</i> control in pigeonpea	Use of neem based pesticides and pheromone traps proved better for controlling pod borer
Potentials of improved chickpea varieties	Among seven varieties, viz., Annegiri, ICCV- 2, ICCV-10, ICCV-37, Jyothi, etc., Annigeri performed better registering 43.82% increase in yield over control
Performance of paddy varieties	Out of three varieties, viz., <i>Krishna Hamsa</i> , <i>Triguna</i> and <i>Shanti</i> , variety <i>Shanti</i> performed better (15% increase over local)
Introduction of green manure crops (pillipesara, sunhemp) in paddy fields	Increased the fertility and humus status in soil
Bed & furrow system in maize Increase plant population (60000-90000/ha)	Increased yield to the tune of 15% Increased the yield to the tune of 25%
Botratis management in castor	Increased to the tune of 40% yield
Effect of prolonged dry spells/ high temperature	Nutritional status correction increased 30% of yield
Depth of planting of maize	Placement of seed at a depth of 10 cm controls lodging and the vigor is on higher side



Depth of sowing of seeds of greengram, blackgram, horsegram	Placement of seed at a depth of 2-3 cm in the soil causes better germination and crop stand
Alternate land use systems suggestion	Crops like maize, soybean, sugarcane, some of improved vegetables, fodder crops, crossbred cows, plantations, etc., were introduced
Dairy cattle management	Mineral mixture in feed, 2% urea or 5% jaggery in dry fodder during summer increased the milk yield

Technology refinement through on-farm testing has provided the KVK the required confidence for advocating right type of technology and crop enterprises for varied farming situations.

## EXTENSION EDUCATION

The farmers need to have knowledge not only about the improved farming techniques, but also need to be well informed about markets, institutions, policies, government schemes, etc. In order to create awareness about all these aspects, KVK has been conducting various extension activities like Farmers Days, Field Days, film shows, study tours, exhibitions, etc. for the benefit of farming community of the district (Table-9).



**Table 9: Details of extension activities conducted by KVK**

Activity	Number / period (years)		
	1990-95	1996-2000	2001-06
Farmers' Day	05	05	02
Field Day	09	09	04
Study tour / exposure visit to far off places	-	01	07
Local institution visits	-	-	20
Radio talk	31	43	13
T.V. show	-	-	04
Film show	20	36	-
Seminar	-	04	04
Kisan Ghosthi	-	10	-
Kisan Diwas	-	-	01
Exhibition / Agri. Trade Fair	-	08	09
Horticulture show	-	01	01
World Food Day	-	-	03
Women in Agriculture Day	-	-	01
Animal Health Camp	-	01	02
News paper coverage	-	04	40
National Science Day	-	-	01
VVV Club	-	05	28
Self Help Groups	-	05	28
Rythu Samakhya meeting – first Monday of every month since January, 2005	-	-	13

The KVK with the help of host institute CRIDA, organises Farmers' Days during the cropping season every year. All research institutions of ICAR at Hyderabad, Acharya NG Ranga Agricultural University (ANGRAU) and other line departments are invited to participate in the Field Days, Farmers' Days, etc. Large number of farmers from surrounding districts of Mahaboobnagar, Medak and Nalgonda participate in the event. This provides farmers of Rangareddy district an opportunity to interact with the farmers of other districts and Subject Matter Specialists / Research Scientists and

acquire higher / new knowledge / technologies. The KVK organizes need-based study tours for practicing farmers and women's groups to visit and observe different developmental research organizations. Field Days are an important activity of KVK to publicize the achievements of frontline demonstrations / demonstrations and showing the potentials of technologies. Brainstorming sessions or seminars both on campus and in villages set the tone for the change by discussing in depth about the current issues on agriculture, dairy, poultry, small ruminants, etc. KVK also commemorates special events such as World Food Day, Women in Agriculture Day for raising awareness among the farming community on certain issues of concern to Indian farming, particularly rainfed agriculture. KVK staff regularly participates in Radio talks and television shows / presentations on various topics of agriculture and rural development. The extension activities of the KVK are covered regularly in all the leading newspapers of the district. Besides, KVK has published and made available extension literature (folders, etc.) on all major aspects of agricultural technology relevant to the needs of farming community to farmers, trainees, visitors and extension personnel.

## **INTRODUCTION OF SERICULTURE AND SOYBEAN**

Sericulture is introduced in Saireddiguda village, Kandukur mandal. They were provided subsidy to construct a shed and other materials to rear silkworms. Cocoons are sold in Hyderabad at Rs.90-150/kg cocoons. This is found to be more profitable. The net income per ha is found to be Rs.1,23,000 per ha if irrigated. Sericulture was also introduced in castor growing areas, but it is not successful due to lack of market.

Soybean (JS-335) is also introduced in Tekulapalli village, Mominpet mandal. Due to lack of proper market farmers have sold the produce to middlemen at a huge discount.

## **WOMEN EMPOWERMENT**

The KVK has been giving emphasis on improving the livelihood conditions of rural women and empowering them with the help of appropriate technologies for improvement of farm and home conditions.

The KVK has always laid special emphasis for development and empowerment of women who constitute more than half (57%) of the district population. Following are the on and off farm training courses that address the needs of the women of the district.

### **Activities On-Farm**

- Plant propagation techniques
- Preparation and use of biopesticides like neem seed kernel extract (NSKE)
- Vermicomposting
- Backyard poultry
- Maintaining dairy animals
- Raising of vegetable nurseries
- Use of improved implements for seeding, weeding and interculture
- Preservation of fruits and vegetables
- Value addition products

### **Activities Non-Farm**

- Smokeless chulhas / biogas
- Preparation of detergents, phenyl, Vaseline, pain balm, etc.
- Preparation of fruit and vegetable preserves
- Candle making
- Bakery products
- Preparation of handicrafts
- Tailoring and embroidery
- Adda leaf making
- Production of mushrooms

Besides, training in scientific storage of foodgrains, rural sanitation, nutrition, health aspects, etc. are also covered. The details of training programmes conducted for farmwomen are given in Table-10.

**Table 10: Training programmes conducted for farmwomen by the KVK (1977-2007)**

Title of training programme	Number of programmes	Number of women trained
Crop production	40	1000
Horticulture production	25	500
Farm implements	15	390
Plant protection	23	490
Integrated watershed management	17	438
Income generation activities	95	2300
Scientific storage of foodgrains	35	1750
Backyard poultry	45	925
Fruit and vegetable preservation	32	825
Mushroom production	5	100
Fuel management (biogas)	8	150
Rural crafts	8	150
Tailoring and embroidery	22	440
Nutrition child care	24	525
Health and sanitation	22	460
Total	416	10443

## INTRODUCTION OF VEGETABLE CROPS / FLORICULTURE

Carrot, raddish, beetroot and cauliflower were introduced in the year 2001 in KVK villages. The area under these crops has been expanding due to high profits. However, these are grown under irrigated conditions only. Marigold and Chrysanthemum are grown in large scale now to harvest higher returns. Thus, farmers prefer commercial crops.

# IMPACT OF TRAINING PROGRAMMES

## Crop Production Technologies

Technologies that produce profitable outcome are easily accepted by farmwomen. For example, improved vegetable and floriculture crops are grown following improved production technologies in over 50% of the cases. Thus, technologies are spread vertically and horizontally to maximize their income. These crops are grown under irrigated conditions, but tomatoes and chillies crops are grown in drylands for maximum profits.

## Farm Implements

Marker and Rotary Weeder in 'SRI' cultivation in paddy, dryland manual weeders in drylands, Six and Nine Row Planter in sowing and other small improved implements are in use already.

## Plant Protection Measures

Farmers have started accepting biopesticides in a big way. Locally available biopesticide plants, neem oil, neem cake, pongamia cake, castor cake, etc., are used suitably as biofertilizer or biopesticide. These are mostly used in vegetable crops.

## Backyard Poultry

It has spread in rural areas and farmwomen prefer improved breeds like Vanaraj, Giriraj, colour birds, Grama Priya, etc., in villages for their additional income. Colour birds of S.V. Veterinary University and Grama Priya of Project Directorate of Poultry (ICAR), are good layers. In villages, birds lay to the extent of 180-230 during the first 1 ½ year, but it weighs about 2-3 kg when grown to full extent. Giriraj is dual purpose breed and it lays about 130 eggs during 1 ½ year, but weighs about 4-5 kg at the end. The gestation period is 170-190 days.

## Tailoring & Embroidery

Intensive coaching was given (60-90 days) to rural women on tailoring and embroidery. About 40% of participants utilize their skills for their own in their houses, whereas 25% of participants have their tailoring shops in their villages / nearby towns to earn money. About 35% participants work for their use as well as stitch for others during free time for additional income. This has given women an alternative way to earn some extra money.

## **Income Generation Activities**

Preparation of bakery products, juices, squashes, pickles, adda leaf making have been accepted by women as other income generation activities. About 10% participants only have taken up to sell in villages and neighbouring towns, etc. Otherwise, most of the participants utilize skills obtained during trainings for use in their families. These skills have developed in women more confidence.

## **Nutrition, Health Care, Sanitation, etc.**

Trainings on such issues have broadened the views of women folk in rural areas. They are becoming nutrition and health conscious and there is a change in their outlook in terms of hygiene and quality of living.

# **SPECIAL ACTIVITIES**

## **Drudgery Reduction**

The traditional method of seeding involves dropping of seeds and fertilizer in the open furrow. It is too cumbersome and strenuous. By using the plough planter developed by CRIDA, drudgery involved seeding and fertilizer application can be reduced substantially. CRIDA plough planter not only saves labour and seed (worth Rs.900/- per ha), but also helps to achieve uniform crop stand. Normally intra-row weeding is done using locally made sickles by the women either by bending or sitting down and moving forward. This is a very tedious and awkward activity and time consuming operation involving severe physical strain. In order to address this problem, KVK has introduced the manual weeder developed by CRIDA and trained the women to use Dryland Weeder which can cover 0.20 ha per day with just one person operating it and save over 70% on labour without having to undergo the drudgery involved in manual weeding. This is mostly attended by men labourer.

## **Plant Propagation and Raising of Vegetable Nurseries**

Dryland horticulture provides stable income compared to crop production alone. Frequent droughts have made farmers think of alternatives to crop cultivation. Many farmers are taking to dryland horticulture and as a result, there is a great demand for good quality planting material of important dryland horticulture crops such as mango, sapota, guava, amla, fig, falsa,

citrus, tamarind, custard apple, etc., in addition to seedlings of tomato, chillies, brinjal, etc. KVK has seized this opportunity and trained women in plant propagation techniques and nursery management skills. Similarly women have been trained in improved methods of nursery raising especially for popular vegetable crops of the area like tomato, chillies and brinjal. The training facilitated them in raising healthy vegetable seedlings to harvest higher yields.

### **Integrated Pest Management**

In order to promote IPM techniques, women are being educated in preparation and use of biopesticides such as neem seed kernel extract (NSKE) and other non-chemical methods in order to reduce cost of cultivation and to maintain a healthy environment.



### **Post Harvest Technology**

Locally the gunnies and gunny bags are used to store the grain which result in atleast 10% loss of grain storage. To arrest the loss of grain by rats, insects, etc., during storage, improved metal storage bins have been



introduced in KVK villages. Women have been trained in rodent control methods to avoid the losses of grains during storage.

### **Preparation of Fruit and Vegetable Preserves**

The preparation of preserves by farmwomen was limited to a few items (mango, lemon). But there are many varieties of vegetables such as tomato, brinjal, drumstick, red chillies, green leaves, goose berry that are produced in plenty during season in this area, but not preserved for off-season use. Hence, the skills involved in preparing pickles, chutneys are imparted to women so that some of such produce can be preserved for off-season use. In order to impart the requisite knowledge and skills a 10-day programme has been developed for rural women and a detailed schedule of such a programme is provided hereunder.

<b>Day</b>	<b>Course content</b>
One	Introduction, need and importance of fruit and vegetable preservation – principles and methods of food preservation
Two	Dehydration of vegetables – methods of drying, method of using dried vegetables (locally grown vegetables)
Three	Sterilization and sealing of bottles and jams – methods
Four	Preparation of sauce, ketchup, murabbas
Five	Preparation of squash (with locally available lime and mango)
Six	Preparation of mango syrups
Seven	Preparation of jams (mango)
Eight	Preparation of pulp (tomato)
Nine	Preparation of mango fruit bar
Ten	Exhibition of vegetable and fruit preserves, evaluation and conclusion

## IMPACT

As a part of impact assessment several case studies were carried out and some of such studies are detailed here.

### Maize

It is found that the yield in hybrid maize has increased very significantly with new technologies. The average production of hybrid maize is found to be about 60 q/ha with gross income of Rs.42,000/-, while the cost of cultivation was Rs.18,000/ha. The net profit per ha is about Rs.24,000/- which is highly profitable considering the cropping condition of this area. Hence, it is spreading very fast in Rangareddy district.

### Paddy

Application of Gypsum and its treatment in saline soils increased the yield to the tune of 30 per cent over no Gypsum treatment. The additional cost benefit ratio is worked out to be 8.50 at Machanapalle village.

### Pulses

The improved varieties in case of pigeonpea and chickpea has increased the productivity to the tune of 16.9 and 12.3. The additional benefit cost ratio raised to 5.85 and 4.62, respectively in pigeonpea and chickpea.

### Cotton

The local varieties of cotton are no longer popular with farmers. Large area was covered under hybrids during last year, which yielded to the tune of 8-12 q/acre as against Bt. Cotton (two trials in each village) yield of 16-18 q/acre. Hence, hybrids are not being preferred during this year. Farmers prefer only Bt.Cotton due to higher profitability.

### Other Crops

The productivity of castor, sunflower, safflower, sesame, niger, etc., is higher with new technologies compared to traditional technologies. The additional benefit cost ratio vary between 16.0 – 20.0 in oilseeds.

## LINKAGES

### Research – Extension

The KVK, primarily a technology dissemination organization, has inbuilt mechanism of regular flow of research information for its various activities through its Scientific Advisory Committee (SAC). The SAC meets twice a year to discuss the technical programmes and review the activities of KVK. Staff of line departments, research organizations, banks, NGOs, etc. are also invited to SAC meetings. The Director of the host institution is its Chairman. The SAC has members from Zonal Coordination, institutes of ICAR, SAU, AIR, Doordarshan, NGOs, officials of line departments, farmers and farmwomen representatives of the district. The collaborative programmes between KVK and other departments / TOT agencies are planned, implemented and reviewed during the SAC meetings.

### Institutional

The KVK has established strong functional linkages with several State and Central Government organizations, viz., Andhra Pradesh State Departments of Agriculture, Horticulture, Sericulture, Animal Husbandry, Acharya NG Ranga Agricultural University, Directorate of Oilseeds Research, Directorate of Rice Research, Project Directorate on Poultry, National Plant Protection & Training Institute, National Research Centre for Sorghum, Andhra Pradesh State Seed Development Corporation, HACA, National Seed Corporation, National Institute of Nutrition, Indian Grain Storage Institute, Regional Station for Forage Production & Demonstration, NGOs, etc., for successful implementation of its activities. The KVK has formed a consortium of institutions working for rural development by regularly consulting several NGOs like AWARE, REEDS, JSS, etc., for implementing several collaborative programmes. Besides, KVK has participated actively in the preparation of Strategic Research and Extension Plan (SREP) of Agricultural Technology Management Agency (ATMA) for implementation in Rangareddy district as a partner along with other departments. Specialists from such organizations are often invited as resource faculty for capacity building of clientele, scientific investigation in respect of performance of technologies, conducting FLDs, OFTs, supply of seed / plant materials and hosting field visits for the trainees. These linkages have proved very crucial for the smooth conduct of KVK activities and implementation of various

programmes that require a strong persuasion and mobilization of the clientele. The impact on farmers is highly positive in developing their farms and farming activities.

## IMPROVED IMPLEMENTS

Developed by CRIDA and utilized by the farmers (2002-2005)

Implements	No. of units purchased by the farmers
Drill plough	25
Plough planter	80
Two row planter	10
Four row planter	51
Six row planter (tractor drawn)	36
Nine row planter (tractor drawn)	20
Manual weeder	425
Bullock drawn weeder	38
Castor sheller	35
Groundnut striper	36
Maize sheller	25
Rotary weeder	40
Marker	40
Vegetable preservator	240
Orchard sprayer	8
<b>Total</b>	<b>1109</b>

As the population of livestock / draft cattle has declined, implements and mechanization has gained a momentum in Rangareddy district to overcome the problem of bullock / human labour shortage.

## TRAINING IN SCIENTIFIC STORAGE OF FOOD GRAINS

Village	No. of families adopted the metal storage bins
Nallavelli	33
Nomula	33
Kishanpalli	33
Mogullavampu	33
Nazdeek Singaram	50
Ayyavari Gudem	50
Meerkhanpet	50
Nandiwanaparthi	100
Tallapally	50
<b>Total</b>	<b>432</b>

There is greater demand from other farmers who are purchasing directly from outside also. These are found in medium and large farmers' houses.

## PERMANENT STORAGE STRUCTURES OF 1 M.T. CAPACITY

Village	No. of families adopted
Nallavelli	50
Mogullavampu	01
Nazdeek Singaram	50
<b>Total</b>	<b>101</b>

These are not spreading due to fixed space. The grain production varies from year to year. However, these are effectively utilized in these villages.

## SUCCESS STORIES AT A GLANCE

### Vermicompost Production by an Enterprising Farmer

Name of the farmer and address	: Sri Bolla Subba Reddy S/o. Sri B. Rami Reddy Plot No.74, Phase I, Sharadanagar, Vanasthalipuram, Rangareddy district Ph: 24123182 / 9848148895
Location of units	: 1-87/Sahebnagar, Vanasthalipuram (2 units) Pasumamala village, Hayathnagar mandal, Rangareddy district (1 unit)
Year of start	: 9.6.1996 at Chintalakunta cattle market, Rangareddy district after getting training at KVK, Rangareddy
Unit size (in the beginning)	: 60' x 18' (1 shed)
Unit size (now)	: 110' x 2.5' bed size – 148 beds in 3 units
Raw material used	: Animal dung and fruit market waste (only paddy straw and banana leaves)
Quantity of raw material used	: 6 tons per bed
Cost of production (per unit)	: Raw material : Rs.1100 Labour and other maintenance costs : Rs.300 per ton of produce
Production – general beds	: 1.7 tons per bed (or) 10 tons per shed of 6 beds for a period of every 2 months
At present production	: 100 t per month
<b>Price of produce :</b>	
Without sieving and no packing	: Rs.2000 per ton
With sieving and packed	: Rs.2500 per ton (in the form of 50 kg bag)

At present Mr.Subba Reddy is supplying vermicompost to customers in 8 districts of Andhra Pradesh and several places in Maharashtra and Karnataka where there is a demand.



## Nursery Management

Mrs. Chinthapalli Arunamma, W/o. Sri Chinthapalli Narendar Reddy of Nazdeek Singaram village was mostly growing rainfed crops. She was motivated to take up drumstick PKM-1 cultivation as a new venture. She was trained at the KVK on raising and maintenance of drumstick nursery. The market price of each seedling was Rs.5 per seedling (2002). So, she could save Rs.377/- on every 100 seedlings and on 1000 seedlings she could save Rs.3770/- within a span of 40 days. She is now a successful entrepreneur who is able to produce and sell drumsticks.

The details of cost of production are :

Particulars	Cost (Rs)	Remarks
Seed	500	500 gm from TNAU, Coimbatore
FYM, black soil, field soil, SSP and folidol powder mixture	75	-
Polythene bags	200	1000 nos. of ½ kg capacity
Labour charges for polythene bags preparation with filling material	160	4 labourers @ Rs.40/day
Daily watering and day to day maintenance	200	1 Hr. labour for 40 days – 5 mandays (Rs.40/-)
Electricity, pesticide, weeding	100	-
Total expenditure	1235	

## Backyard Poultry – For Income Generation

The farmers of KVK villages were provided with improved variety of Vanaraj birds with the objective of improving their income levels in addition to the family nutrition status.

Villages	No. of families	No. of birds supplied
Kishan Pally	17	425
Nallavelli	110	1250
Nallavelli Tanda	06	150
Tammaloniguda	09	225
Mondi Gourelli	21	525
Nazdeek Singaram	13	130
Meerkhanpet	55	125
<b>TOTAL</b>	<b>231</b>	<b>2830</b>

The activity resulted in significant improvement in the returns in comparison to traditional method of rearing poultry birds in backyards. The cost – returns particulars are given in the following Table (per unit of 10 birds).





## Cost – Return Analysis of Poultry

Birds	Initial Wt. at three weeks (kg)	Wt. of a bird at 1 yr (kg)	No. of eggs/year	Total expenditure (Rs.)	Income per year (Rs)			Benefit Cost Ratio
					Eggs	Meat	Total	
Local	0.35	2.4	230	200	230	750	980	4.9
Vanaraj	0.50	4.5	980	200	1960*	1300	3260	16.0
Coloured/ Gramapriya	0.42	2.8	1400	200	2800	850	3650	18.0

\* The eggs of Vanaraj birds were sold @ Rs.2 per kg; The birds were watched for 1 ½ years

### Features of Vanaraja Poultry Birds

- Attractive feathers colour pattern
- Higher feed efficiency
- Larger egg size in Vanaraj and medium size in Colour birds / Gramapriya birds, but higher production
- High disease resistance
- Better survivability
- Low input cost
- Additional income generation

### Observations

- The local egg sold at the rate of Rs.1/- per egg whereas the Vanaraj egg sold for a minimum of Rs.2 to 5 per egg and Rs.2-3.50 in case of Colour birds / Gramapriya birds
- 233 non-beneficiary families purchased the Vanaraj eggs and hatched them with the local birds
- Persons maintaining farm houses purchased a pair of Vanaraj birds @Rs.200/ 300 and about Rs.150 in case of Colour birds / Gramapriya birds
- Since the size and weight of the Vanaraj egg is larger than that of the local birds, the consumption of nutrients is also higher

## INCOME GENERATING ACTIVITIES

### Pain Balm Preparation

Mrs.Yachem Sobha, D/o. Prabhakar, Tallapally village, Shabad Mandal underwent a training course organized by KVK on the 'preparation of Vaseline and pain balm'. Since the family is already running a petty shop in the village, she was able to sell the pain balm in the village.

### Economics of the enterprise

Amount invested	: Rs.430.00
No. of bottles prepared	: 130
Cost of the materials per bottle	: Rs. 3.50
Selling price per bottle	: Rs. 6.00
Selling price of branded pain balm in the market	: Rs.14.00/bottle
Profit realized after sale	: Rs.325.00/month

### Sheep improvement :

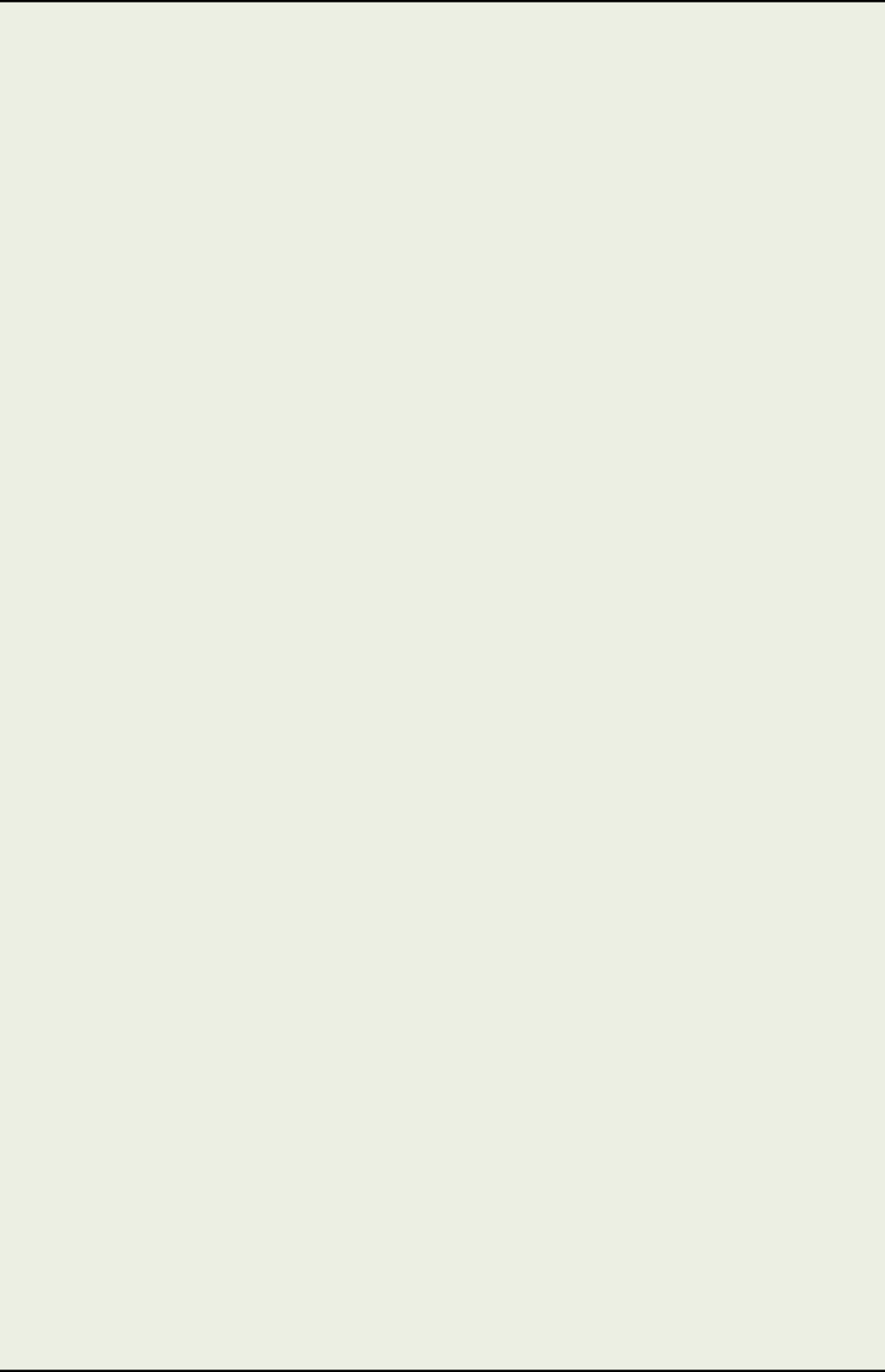
Local (Deccan) breed of sheep is small and yields low mutton compared to Nellore Brown breeds. However, adaptability of Nellore Brown to this Rangareddy district is a problem. Hence, Nellore Brown rams were supplied to sheep growers to upgrade the local breed. Hence, nine rams were purchased two years back from Government Livestock Farm, Warangal and introduced in the herds in Mucherla, Saireddiguda and Tanda in Kandukur mandal. The birth weight of Deccan sheep lamb is about 2.4 kg as against 3.01 kg in Nellore brown X Deccan cross and 3.5 kg in Nellore Brown. The average weight of Deccan breed at one year age is about 14 kg as against 19 kg in Nellore brown and Deccan crossbred. The cost of maintenance remains same, the gross income per one year old age sheep is worked out to be Rs.1190/- in Deccan breed as against Rs.1710 in case of Nellore Brown and Deccan breed sheep. The cost is worked out to be Rs.450 per year. Thus, the net income per lamb is Rs.740/- in Deccan breed as against Rs.1260/- graded / crossbred sheep. Farmers are accepting the crossbred lambs very fast.

## CONCLUSION

Krishi Vigyan Kendra of Rangareddy district has been expanding its activities to commercialize agriculture and allied enterprises to harvest assured, constant and higher income to farm families to have a better standard of living. The change in agriculture and income generating activities is clearly visible due to efforts of this Krishi Vigyan Kendra.

Thus, 'Krishi Vigyan Kendra' has become a 'Wheel of socio-economic development' in Rangareddy district.







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