Contents

1. INTRODUCTION

The Professor Jayashankar Telangana State Agricultural University (PJTSAU), Rajendranagar, Hyderabad was established as a public University by an Act of Legislature in exercise of the powers conferred by Section 101 of the A.P. Reorganization Act, 2014 (Central Act No.6 of 2014). The Act came into effect on 3rd September 2014 with the issue of Gazeette Notification (Part –I Extraordinary) No.3 by the Agriculture & Cooperation Department of Government of Telangana. PJTSAU is the only farm University located in the Telangana State and caters to the needs of an enterprising farming community of the state, which is endowed with abundant natural resources, diverse soil types and favourable agro-climatic conditions suitable for varied crops and cropping systems and has the potential to become the 'Seed Bowl of India'.

The Professor Jayashankar Telangana State Agricultural University its colleges and courses have been accredited by ICAR for a period of five years w.e.f. 28.03.2016 to 27.03.2021 by the ICAR, New Delhi. The University was also given recognition by University Grants Commission (UGC) for Award of Degrees under section 22 of the UGC Act 1956 through its constituent colleges from March 2015 onwards. Annually ICAR is allocating U.G, P.G & Ph.D students to its colleges on the basis of All India Competition. The PJTSAU has been admitted as 63rd Regular Member of Indian Agricultural Universities Association (IAUA), New Delhi. The University was also inducted as Institutional Member of National Academy of Agricultural Sciences (NAAS), ICAR, New Delhi since 2016 and APAARI since 2017.

The vision is to establish PJTSAU as an Institute of Excellence in Agriculture, Agricultural Engineering, Home Science and Human Resource Development. The has mission is to serve the cause of Agricultural Sciences by producing globally competitive quality human resource and generating cutting-edge technologies to address contemporary challenges of agriculture sector; and evolve responsive, effective, dynamic outreach mechanisms. To further its vision and mission the University has already implemented the V Deans Committee Report from 2016-17 academic year. The University has made concerted efforts over time to modernize the existing infrastructure and create new facilities viz., state of the art model & virtual class rooms, central instrumentation cell, indoor stadium & gymnasium, NABL accredited labs etc., for achieving excellence in teaching and research by procurement of state of art equipments in all Colleges, Research & Extension Centres.

The Professor Jayashankar Telangana State Agricultural University, has a dedicated mandate of Teaching (Education), Research and Extension in Agriculture, Agricultural Engineering and Home Science.

i. **Teaching:** To impart education in Agriculture, Agricultural Engineering & Home Science for advancement of learning and to contribute quality human resource.

ii. **Research:** Conduct basic and strategic applied research to generate technologies that lead to crop improvement and Sustainable Agriculture Development.
iii. **Extension:** Promote on-farm research and Technology assessment, Refinement and Transfer of knowledge through participatory approaches in collaboration with line Departments of the Government for socio-economic transformation.
iv. Promoting partnership and linkages with national and international industries, educational, research and other institutions

2. TEACHING OUTCOME

2.1 Academic Units & Programmes

The University has been expanding its academic units and programs to meet the requirement of human resource to face emerging challenges and changing agriculture needs. The academic programs of the University concerning the three faculties *viz.*, Agriculture, Agriculture Engineering & Technology and Home Science are organized under seven units viz., Five (5) Agricultural Colleges, One college each of Agricultural Engineering, Food Science & Technology and Home Science which offer both UG and PG programs (Fig. 1 & Table 1). Besides these, the University is also offering Diploma courses in Agriculture, Seed Technology and Agriculture Engineering to meet the grass root level human resource needs in the areas of agriculture extension, research, farm mechanization, microirrigation and seed production. The University has placed great emphasis on dynamic curriculum that ensures specialized skill development and practical experience by adopting V Deans Committee Report from 2016 – 17 academic year. The University offers four (4) Bachelor degree programs; Masters' in 22 disciplines and Doctoral (PhD) degree programs in 13 disciplines.

Fig. 2.1. Location of constituent colleges in the State of Telangana

The list of colleges with their location, year of establishment and courses offered is given in Table 2.1 & Fig. 2.1.

College of Agriculture,
Rajendranagar

Agriculture College,
Aswaraopet

Agriculture College,
Jagtial

College of Agriculture
Engineering, Kandi

College of Home
Science, Hyderabad

Fig. 2.1. Colleges under PJTSAU

Table 2.1. Colleges and academic programmes offered by the University

S.No.	College	Year	Courses offered
Faculty of Agriculture			
1	College of Agriculture, Rajendranagar, Hyderabad	1964	B.Sc. (Ag.), M.Sc. (Ag.), M.Sc. (Ag. Biotechnology), M.A.B.M., M.Sc. (Envi. Sci. & Tech.) and Ph.D. (Agric).
2	Agricultural College, Aswaraopet, Bhadradri Kothagudem	1989	B.Sc. (Ag.)
3	Agricultural College, Polasa, Jagtial	2008	B.Sc.(Ag.) and M.Sc.(Ag.)
4	Agricultural College, Palem, Nagarkurnool	2015	B.Sc.(Ag.)
5	Agricultural College, Warangal Urban	2016	B.Sc.(Ag.)
Faculty of Agriculture Engineering			
6	College of Agricultural Engineering, Kandi, Sangareddy	2011	B.Tech. (Ag. Engg.) & M.Tech (Ag. Engg)
7	College of Food Science & Technolgoy, Rudrur, Nizamabad	2015	B.Tech. (Food Technology)
Faculty of Home Science			
8	College of Home Science, Hyderabad	1964	B.Sc (Hons) Home Science B.Sc. (Hons) Food Sci. & Nutrition B.Sc. (Hons) Fashion Technology M.Sc. (Food and Nutrition), M.Sc. & PhD in

2.2 TEACHING OUTCOME

A. Number of students got JRF during last five years / Number of UG students passed out

The number of students who secured JRF during the last five years (2011 – 12 to 2016 – 17) is indicated in Table 2.2. The data for 2016 – 17 could not be presented as the students are yet to write the ICAR JRF examination during 2017. Out of a total of 1903 students from all faculties of PJTSAU who passed out during the period under report 79 secured JRFs which is 4.1%. Many students seek admission to PG and Ph.D. courses through PJTSAU held entrance examination as they are assured of a more or less equivalent stipend offered by the State Government, which seems to be more attractive preposition in comparison to ICAR JRF/SRFs in the last five years. However, rigorous efforts are being made to motivate the students to widen their outlook and aim for JRFs/SRFs for securing external University admission.

B. Number of students got admission in Masters program during last five years / number of UG students passed out.

The number of students who got admission into Master's Degree programmes with respect to number of UG students passed out is presented in Table 2.3. Nearly 50% of the UG students passed out in the all faculties put together were found to secure admissions in various PG programmes in PJTSAU itself.

Comparatively higher number of admissions to Master's degree programme in this University could be attributed to the fact that the State Government offers stipend to all the PG & Ph.D. students getting admitted into the University. Hence, the students show keen interest in getting admission in PJTSAU rather than going outside the state to persue their academic career.

C. Number of students got admission in Master's program in last five years through ICAR entrance examination/Number of UG students passed out

As could be observed from Table 2.4 comparatively less number of students got admission in Master's degree programme through ICAR entrance examination. However, this number is slightly higher as compared to the number of ICAR JRF's

obtained during the corresponding year. As a result of State Government offering the stipend to students getting admitted to various PG & Ph.D. degree programmes, the students show little interest in the ICAR JRF examinations.

However, it may be mentioned here that PJTSAU admits 25% of the students (over and above the seats admitted in the University through the entrance examination conducted by the University) allotted by the ICAR during the counseling held at NASC Complex every year. Further, from this year onwards, efforts are being made to pursue

Table 2.2. Number of Students securing JRF during last five years in relation to no. of UG students passed out

Faculty	Year												Total for 5 years	
	2011-12		2012 – 13		2013 – 14		2014 – 15		2015 – 16		2016 – 17*			
	No. of JRFs	No. of UG pass outs	No. of JRFs	No. of UG pass outs	No. of JRFs	No. of UG pass outs	No. of JRFs	No. of UG pass outs	No. of JRFs	No. of UG pass outs	No. of JRFs	No. of UG pass outs	No. of JRFs	No. of UG pass outs
Agriculture	9	230	13	247	15	265	11	313	10	322	-	-	58	1377
Agril. Engineering & Technology	-	-	-	-	-	-	1	44	3	58	-	-	4	102
Home Science	2	47	2	82	2	91	4	88	3	116	-	-	13	424
Total	**11**	**277**	**15**	**329**	**17**	**356**	**16**	**445**	**16**	**496**	**-**	**-**	**75**	**1903**

* Students are yet to appear for ICAR JRF Examination during 2017

Table 2.3. Number of Students securing admission in M.Sc. programme during last five years in relation to number of UG students passed out

Faculty	Year												Total for 5 years	
	2011-12		2012 – 13		2013 – 14		2014 – 15		2015 – 16		2016 – 17*			
	Students joined M.Sc	No. of UG pass outs	Students joined M.Sc	No. of UG pass outs	Students joined M.Sc	No. of UG pass outs	Students joined M.Sc	No. of UG pass outs	Students joined M.Sc	No. of UG pass outs	Students joined M.Sc	No. of UG pass outs	Students joined M.Sc	No. of UG pass outs
Agriculture	144	230	165	247	157	265	155	313	126	322	-	-	747	1377
Agril. Enggineering Technology	-	-	-	-	-	-	17	44	21	58	-	-	38	102
Home Science	22	47	40	82	20	91	45	88	30	116	-	-	157	424
Total	**166**	**277**	**205**	**329**	**177**	**356**	**217**	**445**	**177**	**496**	**-**	**-**	**942**	**1903**

* Number of Students admitted during the academic year and still to complete their eligibility requirement

Table 2.4. Number of Students securing admission in MSc programme through ICAR All India Entrance Examination during last five years in relation to no. of UG students passed out

Faculty	Year												Total for 5 years	
	2011-12		2012 – 13		2013 – 14		2014 – 15		2015 – 16		2016 – 17*			
	No. of MSc from ICAR	No. of UG pass outs	No. of MSc from ICAR	No. of UG pass outs	No. of MSc from ICAR	No. of UG pass outs	No. of MSc from ICAR	No. of UG pass outs	No. of MSc from ICAR	No. of UG pass outs	No. of MSc from ICAR	No. of UG pass outs	No. of MSc from ICAR	No. of UG pass outs
Agriculture	29	230	15	247	36	265	16	313	24	322	-	-	120	1377
Agril. Engineering & Technology	-	-	-	-	-	-	-	44	5	58	-	-	5	102
Home Science	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**29**	**230**	**15**	**247**	**36**	**265**	**16**	**357**	**29**	**380**	**-**	**-**	**125**	**1479**

Table 2.5. Students Performance at MSc Level – Number of Students securing SRF or admission to PhD programme in ICAR Deemed Universities during last five years in relation to no. of MSc students passed out

Faculty	Year												Total for 5 years	
	2011-12		2012 – 13		2013 – 14		2014 – 15		2015 – 16		2016 – 17*			
	No. of SRF/ PhD in ICAR DU	No. of MSc pass outs	No. of SRF/ PhD in ICAR DU	No. of MSc pass outs	No. of SRF/ PhD in ICAR DU	No. of MSc pass outs	No. of SRF/ PhD in ICAR DU	No. of MSc pass outs	No. of SRF/ PhD in ICAR DU	No. of MSc pass outs	No. of SRF/ PhD in ICAR DU	No. of MSc pass outs	No. of SRF/ PhD in ICAR DU	No. of MSc pass outs
Agriculture	--	93	2	95	2	90	4	75	4	90	-	-	12	443
Agril. Engineering & Technology	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Home Science	-	22	-	10	-	19	-	19	1	18	-	-	1	88
Total	**-**	**115**	**2**	**105**	**2**	**109**	**4**	**94**	**5**	**108**	**-**	**-**	**13**	**531**

the students to write ICAR / SRF / JRF examinations by providing coaching to the students through JRF / SRF coaching cells at all the constituent colleges of the University.

D. Students Performance at M.Sc. Level

Number of M.Sc. pass outs got SRF or Admission in Ph.D. in ICAR Deemed University during the last five years / Number of M.Sc. pass outs

The number of students getting admitted through ICAR - SRF for admission in to Ph.D. in deemed Universities during the last five years is presented in Table 2.5. It may be mentioned here that the PG &Ph.D. programmesare offered at College of Agriculture, Rajendranagar & College of Home Science, Hyderabad. Once again the less number of opting of SRFs can be attribute to the State Government offering stipend to all Ph.D. students getting admitted into the University and hence little interest is shown by the students in ICAR-SRF Examination.

However, after the formation of PJTSAU the University is encouraging the students to appear for these examinations and it is hoped the efforts of University will bear results in the near future.

E. ICAR Jawahar Lal Nehru Award for Ph.D. thesis in last five years (year-wise list to be enclosed)

As PJTSAU was carved out only in 2014, there are few research scholars fulfilling the criteria for award of CIAR Jawaharlal Nehru Award. However, PJTSAU is encouraging the Ph.D. Students to apply for such competitive awards and it is hoped that in future, students from our University shall be in a position to bag such awards. Many students are publishing their research papers in reputed journals with very high NAAS rating / Impact factor. Many students have got prizes / merit certificates for presentation of their Ph.D. thesis at a number of Annual conventions of professional societies held every year.

F. Selection in ARS during five years (year-wise list enclosed).

The data are set out in Table 2.6 indicates the number of students getting selected to ARS in the preceding four years. It was observed that

i. Most of the PG students were opting for research and academic career.
ii. Several students are opting for higher studies and employment abroad.

Table 2.6. List of Candidates selected in ARS, during last five years

Year	Name of the Candidate	Subject
2012-13	1. Mr. R. Srinivasan	Soil Science and Agricultural Chemistry
	2. Mr. L. Mallikarjuna	Entomology
2013-14	1. Mr. Rahul Madhav Rao Phuke	Genetics & Plant Breeding
	2. Mr. K. T. Ravi Kiran	Genetics & Plant Breeding
	3. Mr. Parshuram D. Patroti	Genetics & Plant Breeding
	4. Mr. Suresh	Entomology
2014-15	1. Mr. Sruthi	Genetics & Plant Breeding
	2. Mr. Mahadeva Swamy	Genetics & Plant Breeding
	3. Ms. Swetha Singh	Pathology
2015-16	1. Ms. Sooganna	Seed Science & Technology
	2. Ms. Usha Rani	Seed Science & Technology
	3. Mr. V. Rajesh	Genetics & Plant Breeding
	4. Mr. Chandramani Raj	Pathology
	5. Mr. Aruth Salvan	Pathology
2016-17	Examination yet to be conducted	-

G. Per cent of Faculty positions filled in teaching, research, extension, KVK, AICRP and at regional station (Give sanctioned cadre strength)

The per cent faculty positions filled College wise and cadre wise along with the sanctioned strength is indicated in Table 2.7. Further, the per cent posts filled up are higher in Professor cadre followed by Associate Professor and Assistant Professor cadres in all the three faculties across all the wings viz., teaching, research, extension and administration.

Table 2.7. Per cent of faculty positions filled in teaching, research, extension, KVK, AICRP and Regional Stations

S. No.	Faculty	Professor			Associate Professor			Assistant Professor		
		Sanctioned	In position	%	Sanctioned	In position	%	Sanctioned	In Position	%
1.	Teaching	31	12	38.7	75	28	37.3	208	155	74.5
2.	Research	17	30	-	64	51	79.6	159	106	66.6
3.	Extension	3	4	-	9	8	88.8	59	21	35.5
4.	Administration	6	7	-	2	2	100	2	2	100
	Total	**57**	**53**	**92.9**	**150**	**89**	**59.3**	**428**	**284**	**61.4**

* Includes 50 Teaching Associates working against post of the Assistant Professor

Note: Government of Telangana sanctioned 242 posts in the category of Assistant Professors vide G.O.Ms.No.77, Finance (HRM-II) Department, dated 6.5.2017 (copy enclosed) for which recruitment will be taken up shortly (Annexure – I).

H. No. of students admitted from overseas for Ph.D. during last five years (Year-wise list to be enclosed)

Eight (08) students from overseas were admitted during the period under report through ICAR selection process (Table 2.8).

Table 2.8. No. of students admitted from overseas for Ph.D. during last five years

S. No.	Year	Details of admission		
		Name of the student	Country	Degree
1.	2011-12	John Tamba Newmah	Liberia	Ph.D. (Genetics and Plant Breeding)
		Abdul Muniem Yousif	Sudan	Ph.D. (Agronomy)
2.	2012-13	Zenebeme Konnen Adere	Ethopia	Ph.D. (Agronomy)
3.	2013-14	Ghansham Payman	Guyana	Ph.D.(Agronomy)
		Safiyanu Umar Maiadua	Nigeria	Ph.D. (Agril. Economics)
		Jane Bridget Kandeh	Sierreleoni	Ph.D. (Food & Nutrition)
4.	2014-15	Mohamed Abdelhalim	Sudan	Ph.D. (Agronomy)
		Lulu Luflenga	Thanziania	Ph.D. (H.Sc. Extension)

I. National and International Awards (earned by Faculty) in last five years (Year–wise list to be enclosed)

The details of faculty securing International / National awards is presented in Table 2.9. Several members of the faculty at College of Agriculture, Rajendranagar and College of Home Science, Saifabad have obtained the National / International / State Awards for their meritorious performance in teaching and research.

Table 2.9. National and International awards (earned by faculty) in last five years

S.No.	Year	Name of the faculty	Award Paritculars
National Awards			
1.	2011-12	Dr. T.V. Hymavathi, Professor	Appreciation award by PIU-NAIP(ICAR)
2.	2012-13	Dr. K. Keshavulu, Professor	FAPCCI outstanding Scientist excellence Award
		Dr.K.V.S. Meena Kumari Professor	Women Bio-Scientist Award by Society of Applied Biotechnology
			Scientist Award by Andhra Pradesh State Counicl of Science & Technology, APSA
3.	2013-14	Dr. S. Sudheer Kumar, Professor	State Meritorious Teacher Award, Govternment of Andhra Pradesh
		Dr. G. Manoj Kumar, Associate Professor	State Meritorious Teacher Award, Government of Andhra Pradesh
		Dr. V. Mahalakshmi Reddy, Associate Dean	State Meritorious Teacher Award, Government of Andhra Pradesh
4.	2014-15	Dr. J. Satyanarayana, Professor	State Meritorious Teacher Award, Government of Andhra Pradesh
		Dr. R. Subhash Reddy, Professor	State Meritorious Teacher Award, Government of Andhra Pradesh
		Dr. V. Praveen Rao, Professor	Lifetime Achievement Award in the National Conference organized by G.V.K. Society, Agra, UP
		Dr. Y. Siva Lakshmi, Assistant Professor	Young Scientist Award in the National Conference held at DOR
		Dr. K. B. Suneetha Devi, Professor	Outstanding Women Scientist Award in the National Conference organized by G.K.V. Society, Agra, UP
		Dr. V. Anitha	Outstanding Women Scientist Award in the National Conference organized by G.K.V. Society, Agra, UP

		Dr. K. Bhanu Rekha, Assistant Professor	Outstanding Women Scientist Award in the National Conference organized by G.K.V. Society, Agra, UP
		Dr. A. Madhavi Latha, Associate Professor	Best oral presentation at Second International Conference on Bio-Resource and stress management at Hyderabad
		Dr. K. Bhanu Rekha, Assistant Professor	Best poster at the 2nd international conference on Bio-resource and stress management organized at Hyderabad
		Dr. K. Jhansi, Professor	Outstanding Women Scientist from GKV Society, Agra, UP
		Dr. M. Srilatha, Associate Professor	Outstanding Woman Scientist award from GKV Society, Agra, UP.
		Dr. C. Narendra Reddy, Professor	Distinguished Scientist Award at National Conference held at IIRR, Rajendranagar
		Dr. C. Narendra Reddy, Professor	Outstanding Researcher Award in the National Conference organized by G.K.V. Society, Agra, UP
		Dr. Bharathi N. Bhat, Professor	Excellence in Teaching Award by the Indian Institute of Rice Research, Rajendranagar
		Dr. V.Sudha Rani, Professor	National Award of Excellence in Teaching by Astha Foundation at DRR, Rajendranagar
		Dr. K. Jhansi Rani, Professor	Outstanding Woman Scientist Award by GKV Society, Agra
		Dr. P.Sujatha, Professor	Best poster prize at the 7thNational Seed Congress, held at Bhopal
		Dr. K. Manorama, Professor	State Meritorious Teacher Award, Govt. of Telangana
		Dr. K. Umameheshwari, Professor	State Meritorious Teacher Award, Govt. of Andhra Pradesh
5.	2015-16	Dr. G. Padmaja, Professor	Achiever Award – 2015 Society for Advancement of Human and Nature, Dr. Y.S. Parmar University of Horticulture and Forestry, Himachal Pradesh
			State Meritorious Teacher Award, Govt. of Telangana
		Dr. K. Suhasini, Professor	State Meritorious Teacher Award, Govt. of Telangana
		Dr. T. Ramesh, Professor	State Meritorious Teacher Award, Govt. of Telangana
		Dr.A. Mrunalini, Dean of Home Science	NASI – ICAR award for innovation and research on farm implements
		V. Anitha, Associate Professor	Distinguished Scientist Award by Society for Scientific Development in Agriculture & Technology, Meerut
6.	2016-17	Dr. Seema, Professor	State Meritorious Teacher Award, Govt. of Telangana
		Dr. K. Vani Sree, Assistant Professor	Outstanding Women in Agriculture Award from Venus International Foundation, Chennai
International Award			
	2012-13	Dr. Aldas Janaiah, Professor	Academic Leadership Excellent Award and Citation by Governor of Baltimore, Maryland, USA

J. Best Institution / University Awarded by ICAR in last five years (proof to be enclosed)

The Professor Jayashankar Telangana State Agricultural University was formed on 3rd September, 2014 and certain criteria need to be fulfilled for applying for the award to ICAR for Best Institution Award. The following Best Centre Awards were conferred on PJTSAU during the last five years.

1) **"Best AICRIP Rice Research Centre"** conferred to Rice Research Centre, PJTSAU by the ICAR in the 50th Annual All India Rice Workshop held in April 2015 for outstanding contribution in plant Breeding discipline through development of 4 popular varieties for betterment of the farming community and to increase rice production in the state of Telangana.

2) **"Best AICRP Scheme on Development of Rice Varieties Resistant to Gall midge"** conferred to ARS, Warangal for 2016 – 17 conferred by the ICAR in the 52nd Annual All India Rice Workshop held at Assam Agricultural University at Jorhat from 8th to 11th April, 2017.

3) **"Outstanding AICRP Maize Centre Award for contribution in Maize Research and Development in the Country"** conferred to Maize Research Centre, PJTSAU by ICAR on the occasion of Diamond Jubilee Celebrations of AICRIP MAIZE at 60th Annual Maize Workshop held at MPUAT, Udaipur during 2 – 4 April, 2017.

4) **"Best Performance Centre in Breeder Seed Production"** conferred to Maize Research Centre, PJTSAU by ICAR on the occasion of Diamond Jubilee Celebrations of AICRIP MAIZE at 60th Annual Maize Workshop held at MPUAT, Udaipur during 2 – 4 April, 2017.

5) **"Best Centre For Commercialization of Technologies through MoUs with Private Seed Enterprises"** conferred to Maize Research Centre, PJTSAU by ICAR on the occasion of Diamond Jubilee Celebrations of AICRIP MAIZE at 60th Annual Maize Workshop held at MPUAT, Udaipur during 2 – 4 April, 2017.

6) **"PPV & FRA Registration Certificates for DHM 111, DHM 113 and DHM 119"** issued to Maize Research Centre, PJTSAU by ICAR on the occasion of Diamond Jubilee Celebrations of AICRIP MAIZE at 60th Annual Maize Workshop held at MPUAT, Udaipur during 2 – 4 April, 2017.

K. Award in All India Youth Festival or All India Agricultural University Sports Meet (proof to be enclosed)

The College of Agriculture, Rajendranagar has won the medals / awards in 2013 – 14; 2015 – 16 and 2016 – 17 at 15th All India Inter Agricultural University sports & games meet held at AAU, Jorhat and Agricultural University Festival 2016 at OUAT, Bhubhaneswar and State Level NSS Youth Festival at Hyderabad (Table 2.10).

Table 2.10. Awards secured in All India Youth Festival and/or All India Agricultural University Sports Meet

S. No.	Year	Name of the Participant	Name of the meet	Venue and Date	Event	Prize / Award
1.	2012-13	Mr. D. Jagadesh	XII All India Inter Agril. Universities Sports & Games Meet, 2014	KVA & FSU, Bidar (6-10 March, 2013)	200 m Run	Gold medal
					Triple Jump	Silver medal
					100 m Run	Gold medal
2.	2013-14	Mr. K. Rajkumar	15th All India inter Agriculture University Sports and Games	Assam Agriculture University, Jorhat from 24-28th March 2014	4 x 100 m Relay	Gold medal
		Mr. D. Jagadeesh	XV All India Inter Agril. Universities Sports & Games Meet, 2014	Assam Agriculture University, Jorhat from 24-28th March 2014	200 m Run	Gold medal
					100 m Run	Silver medal
					Triple Jump	Silver medal
					4 x 100 m Relay	Gold medal
3.	2014-15	Ms. J. Shirisha,	State NSS youth festival	Mahatma Gandhi University, Nalgonda from 10th to 12th January, 2015	Quiz	1st Prize
		Ms. J. Shirisha	ICAR's 15th AGRIUNIFEST	NDRI, Karnal from 18th to 21st March, 2015	Quiz	5th Prize
4.	2015-16	Mr. D. Raju	ICAR's 16th AGRIUNIFEST 2016	OUAT, Bhubaneshwar	Painting	Gold medal
		Mr. Venuseetharam and T. Hasini	Inter State Youth Exchange Program on National Integration	Mysore from 25th to 27th December 2015	Debate & Solo Instrument	1st Prize
5.	2016-17	Mr. B. Sreeshailam & Ms.V. Sowmya	National Integration camp of NSS	Jagadguru Shivarathreshwara University, Mysore from 1 – 7th December, 2016	Telugu Debate	1st Prize
		Mr. B. Sreeshailam			English Debate	1st Prize
		Mr. B. Sreeshailam & Ms.V.Sowmya			Report of the Day	Best
		B. Harini	State level NSS Youth Festival	JNTU (H) Kukatpally, Hyderabad from 7th to 17th February 2017	Photo Exhibition	1st Prize
		P. Bhuvanasri			Solo Singing	2nd Prize
		Agniv Mukherjee			Patriotic Poem	2nd Prize
		Sai Krishna Reddy			Debate	3rd Prize
		Varsitha & D.Reethu			Quiz	1st Prize
		D. Krishna Priya	State level NSS Youth Festival	JNTU (H) Kukatpally, Hyderabad from 7th to 17th February 2017	Group Dance	Consolation Prize
					Classical Dance	Consolation Prize

Students of PJTSAU receiving several awards in All India Agricultural University Sports & Games Meet and All India Youth Festival events

The students of Agricultural College, Aswaraopet secured three (3) medals & First prize at 13th All India Inter Agricultural University Sports & Games meet held at Bidar during 2013 and four (4) medals at XV All India Inter Agricultural Universities Sports & Games Meet, 2014 held at AAU, Jorhat during March, 2014 and two (2) prizes at National Integration camp of NSS at Mysore during December, 2015 (Table 2.10).

L. Fellowship or Associateship of National Science Academies recognized by ICAR / ICMR / DST / CSIR (list to be enclosed)

A number of faculty have been awarded Honorary Membership / Fellowship of Professional Societies in the disciplines which are recognized by ICAR. The list is enclosed in Table 2.11. Two senior professors of the University have been awarded Honorary Life membership of Asian PGPR Society for sustainable Agriculture, USA for their outstanding dedication to the society in 2016.

Table 2.11. Fellowship or Associateship of National Science Academies recognized by ICAR / ICMR / DST / CSIR

S.No.	Name of the Faculty	Fellowship / Associateship
1.	Dr. V. Praveen Rao	1) Honorary Life membership of Asian PGPR Society for Sustainable Agriculture, USA. 2) Fellow Telangana Academy of Sciences 3) Fellow of ISOR
2.	Dr. P. Chandrasekhar Rao	1) Honorary Life membership of Asian PGPR Society for Sustainable Agriculture, USA 2) Founding Fellow Telangana Academy of Sciences
3.	Dr. K.V.S. Meena Kumari	1) Fellow of Plant Protection Association of India 2) Fellow of 2012 of the Society for Applied Biotechnlogy 3) Fellow of Indian Phyto Pathological Society
4.	Dr. D. Vishnu Vardhan Reddy	1) Fellow of Indian Society of Plant Physiology 2) Fellow of Plant Physiology Club, ANGRAU
5.	Dr. J. Satyanarayana	1) Fellow of Entomological Society of India.
6.	Dr. K. Jeevan Rao	1) Fellow of Telangana State Academy of Sciences
7.	Dr. Bharati N. Bhat	1) Fellow of Plant Protection Association of India
8.	Dr. G. Sridevi	1) Fellow of Plant Protection Association of India
9.	Dr. T. Ramesh	1) Fellow of Indian Society of Plant Physiology 2) Fellow of Indian Society of Plant Genetic Resources 3) Fellow of Indian Society of Oil Seeds

		Research.
10.	Dr. S. Narender Reddy	1) Fellow of Indian Society of Plant Physiology
11.	Dr. C. Narendra Reddy	1) Fellow of Entomological Society of India. 2) Fellow of Society of Pesticide Research 3) Fellow of Society for Scientific Development in Agriculture and Technology Research 4) Fellow of Plant Protection Association of India.
12.	Dr. C. Cheralu	1) Fellow ofIndian Society of Genetics and Plant Breeding 2) Fellow of Indian Society of Pulses and Research Development 3) Fellowship Award from Astha Foundation 4) Life member in Indian Society of Rice Research and Development
13.	Dr. R. Sudhakar	1) Fellow of Indian Society of Oil Seeds Research

M. Per cent of Faculty with Ph.D. degree from a University from outside of the state where employed

The number of Faculty and % of Faculty with Ph.D. degree from a University from outside the State where the faculty is employed is presented in Table 2.12.

Table 2.12. Per cent of Faculty with Ph.D. degree from a University from outside of the State where employed

S. No.	Faculty	Total No. of faculty	Faculty with Ph.D. Degree from University located outside the state*	Per cent
1.	Agriculture	378	336	88.8
2.	Agricultural Engineering	30	06	20.0
3.	Home Science	35	29	82.8
	Total	**443**	**371**	**-**

Note:

1. Out of the 336 Faculty in Agriculture, 56 have obtained their Ph.D. degrees from other SAUs viz., IARI, New Delhi, TNAU, Coimbatore, UAS, Bengalure, UAS, Raichur, UAS, Dharwad, BHU, Varnasi. The remaining 280 faculty have obtained their Ph.D. degree from APAU/ANGRAU the head quarter of which is located in the bifurcated State of Andhra Pradesh.
2. Faculty in Agricultural Engineering & Technology have obtained their Ph.D. degrees from IIT, Karghpur, TNAU, Coimbatore and IARI, New Delhi.

N. Per cent Faculty from the state other than the state in which university situated

Faculty from other than the state make up 22.12 per cent of the total faculty of PJTSAU as given in Table 2.13.

Table 2.13. Per cent faculty from the state other than the state in which University situated

S. No.	Faculty	Total No. of faculty	Faculty from the State other than the state in which University located*	Per cent
1.	Agriculture	378	64	16.93
2.	Agricultural Engineering	30	04	13.33
3.	Home Science	35	30	85.71
	Total	**443**	**98**	22.12

O. Number of faculty with 3 months or more in last five years pursued Post-Doctoral / Visiting Scientist experiences abroad (detailed list specifying year, place of visit and duration to be enclosed)

From Agriculture faculty, two staff members have gone on Post-Doctoral Fellowship (Table 2.14) and one faculty obtained Ph.D. from University of Florida, USA. While one visiting scientist from University of Kentucky, USA was a Fulbright Nehru Academic Scholar visited PJTSAU.

Table 2.14. Number of faculty having 3 months or more experience as Post-Doctoral Fellow / Visiting Scientist

S. No.	Year	Name	Particulars	Place
Faculty Visits				
1	20-4-2009 to 20-4-2010	Dr. K. Keshavulu, Associate Professor	BOYSCAST Post Doctoral Fellowship	University of California, Davis, USA
2	6-05-2008 to 5-5-2012	K.M. D. Murthy, Scientist	Doctoral Studies	University of Florida, USA
3	3-1-2012 to 2-1-2014	Dr. M. Balram, Associate Professor,	Post Doctoral Fellowship	International Rice Research Institute, Philippines
4	4-8-2013 to 31-7-2014	Dr. V. Lakshmi Narayana Reddy,	Post Doctoral Fellowship	Oklahoma State University, Stillwater, OK, USA
5	1.5.2013 to 30-6-2013	Dr. R. Vasantha Associate Professor	Visiting Professor	University of Massachusetts, Amherst, USA
Visiting Scientist				
1	19-09-2014 to 18-01-2015	Prof. P. Subba Reddy Dept. of Entomology, University of Kentucky, Lexington, USA	Fulbright Scholar	University of Kentucky, Lexington, USA

P. Total spending on Library Resources, IT infrastructure and equipment in last 5 years (year-wise expenditure incurred to be listed)

The PJTSAU University Library has very rich collections of print and non-print documents *viz.*, of books, e-books (CABI, Elsevier, CRC Net base), e-journals, databases such as J-Gate Agriculture and Biological Sciences (CeRA), KrishiPrabha, KrishiKosh, DELNET, CMIE-Commodities, Indiastate.com and many more. All the library resources are being made available through offline/online. The PJTSAU Library System has seven libraries in its fold apart from Central Library located at head-quarters in Hyderabad (Table 2.15).

Table 2.15. Total spending on Library Resources, IT infrastructure and equipment in last 5 year (Rs.in lakhs)

Sl. No.	Particulars	Spending (Rs. In Lakhs)					
		2012	2013	2014	2015	2016	Total
1	Library Resources	104.09	13.00	13.00	117.21	114.99	362.29
2	I.T. Infrastructure	41.00	11.00	10.50	12.00	20.00	94.50
3.	Equipment	54.00	99.33	95.58	17.00	13.00	278.91
Total		**199.09**	**123.33**	**119.08**	**146.21**	**147.99**	**735.70**

State of the art Library Facilities

Q. Wi-Fi connectivity and extent of CERA utilization

- **Wi-fi connectivity**

PJTSAU presently provides Wi-Fi facility at the Administrative Office, University library, College of Agriculture, University auditorium, Post Graduate Research Centre, Institute of Biotechnology, Post Graduate Hostel, International Students Hostel-I, International Students Hostel-2, Bheemaiah Hostel (Ladies) and Vasantha Nilayam (Ladies Hostel).

- **Consortium for e-Resources in Agriculture (CeRA)**

The information on CeRA utilization for the years 2014-16 is furnished in Table 2.16. A total of 6.72 lakh hits were successfully performed.

Table 2.16. CeRA Utilization at PJTSAU

S. No.	Group Name	Services	Hits 2014	Hits 2015	Hits 2016	Total
1	Successful Logins	Successful IP / Login BASED	20307	17718	13253	51278
2		Successful Profile User Login	27	175	159	361
3	Journal Finder	Archive	7645	3938	2787	14370
4		Browse By Packages	17	4	2215	2236
5		Browse Journal A-Z Listing	4964	2675	90	7729
6		Browse Publisher A-Z Listing	198	72	2083	2353
7		Current	7881	5102	4	12987
8		Journal Listing Under Package	26	15	57	98
9		Journal Listing Under Publisher	132	16	32	180
10		Latest Update	89	25	1533	1647
11		Table of Contents	23843	465	8202	32510
12		Search Within	4079	12474	1499	18052
13	Basic Search	Home page	24134	1806	17609	43549
14		Results Page	28920	19011	22369	70300
15		View All	21886	20119	17535	59540
16		View Fulltext	5529	15358	3548	24435
17	Advanced Search	Home page	2461	3740	1561	7762
18		Results Page	2775	1727	1491	5993
19		View All	2198	2044	1159	5401

20		View Fulltext	455	1724	244	2423
21	Author Finder	Home page	1085	239	820	2144
22		Results Page	814	526	892	2232
23	Lateral Search	Lateral Author Search	167	392	53	612
24		Lateral Keyword Search	112	146	30	288
25		Lateral Journal Search	123	52	89	264
26	Refine Search	Refine Search	6094	105	2953	9152
27	New Search	New Search	26415	4121	21799	52335
28	Sort Results By	Sort By Recency	5	18434	7	18446
29		Sort By Relevancy	81	2	92	175
30	Filter Results By	Subject	960	46	752	1758
31		Author	47	786	33	866
32		Journal	39668	51	13220	52939
33		Year	282	21674	248	22204
34	List of services	Abstract view	32243	95	23247	55585
35		Fulltext view	24636	20493	16704	61833
36		Find in library	227	17919	10	18156
37		Available in library	426	7	327	760
38		Request Article	1237	126	1117	2480
39	Preview Article	Preview Article	46	1059	77	1182
40	Print Article	Print Article	4	18	81	103
41	Download Article	Download Article	1	1	298	300
42	Email Article	Email Article	4	5	22	31
43	Registered Profile	Registered Profile Users	45	1	1228	1274
44	Change search settings	Change search settings	532	78	109	719
45	Search History	Search History	206	764	10	980
46	Save Search	Save Search	1	119	10	130
					Grand total	**6,70,152**

R. Placement Cell/Counseling Centre established and functional (year-wise number of placement during the last five years may be given)

The Student's Counseling and Placement Cells are functioning in all the Colleges and Polytechnics of our University. These cells are acting as liaison between the University Colleges and the public & private sector organizations / institutes, which are in need of the graduates/diploma holders. In addition, these cells are maintaining the data base of the outgoing students and arranging for career opportunity lectures by the prospective employers. The data pertaining to the placement cell and the number of placements during the last five years is presented in Table – 16. During the year 2016-17, the Government of Telangana has made large scale recruitments to the posts of Agricultural Officers and Agricultural Extension Officers as a result of which a large number of students were able placements in Government of Telangana.

Table 2.17. No. of Placements during the last five years

S.No.	Year	Organizations				
		Government	PSUs	Private	NGOs	Total
1.	2012-13	132	06	311	-	449
2.	2013-14	07	-	119	07	133
3.	2014-15	26	08	142	-	176
4.	2015-16	52	10	44	02	108
5.	2016-17	462	-	-	-	462
Grand Total		**679**	**24**	**616**	**09**	**1328**

3. RESEARCH

3.1 Introduction

The research endeavors of the University spanning across the faculties of Agriculture, Agricultural Engineering and Technology are delivered through 15 dedicated Research Stations strategically located in three Agroclimatic Zones represented by Regional Agricultural Research Stations *viz.*, Northern, Central and Southern Telangana Zones headquartered at Jagtial, Warangal and Palem respectively (Fig. 3.1).

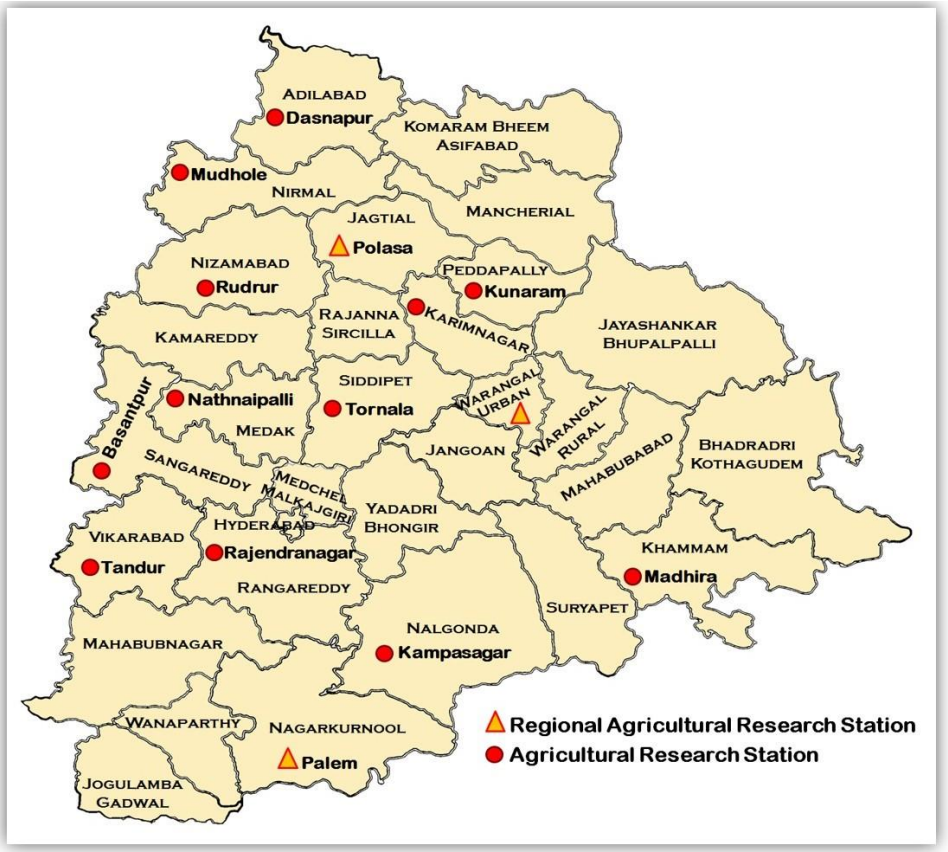

Fig.3. Location of Regional Agricultural Research Stations& Agriculture Research Stations in Telangana State

Further, twenty seven (27) AICRP Centres, two (2) AINP centres and three (3) GOI schemes are under operation (Annexures II & III). The research efforts in the faculty of Home Science are channeled through facilities like Post Graduate and Research Centre. The major research activities are prioritized based on location specific constraints and needs of the farming community. The thematic research programmes are conceptualized and organized at each Agroclimatic Zone and local level focusing on emerging issues covering most important crops of the state like Rice, Maize, Sorghum, Cotton, Red gram, Soybean, Ground nut and Castor. The ultimate objective of this

approach is to evolve cost-effective farm technologies through multi-disciplinary approach for food security at house hold level, farm profitability, sustainability of production systems, poverty alleviation leading to livelihood improvement and enhancing the farmer's income.

3.2 Agro Climatic Zones of Telangana State

The Telangana State is divided into three agroclimatic zones based on major soil types, mean annual rainfall, and maximum & minimum ambient temperature viz., Northern Telangana Zone, Central Telangana Zone and Southern Telangana Zone (Fig.4). The operational area of each agro-climatic zone and districtwise crops suitability is given in Table 17.

Fig. 3.2. Agroclimatic zones of Telangana State

Table 3.1. Agroclimatic zones of Telangana – Soils, weather and major crops

S.No.	Name of the Zone	Districts	Major Soil types	Annual Rainfall (mm)	T Range (°C)	Major crops
1.	Northern Telangana Zone	Karimnagar	Black soils, Red earths & Red sandy	902	16.9-38.9	Rice, Cotton, Maize, Redgram, Sesame & Green gram
		Adilabad		1162	15.7-39.9	Cotton, Maize, Soybean, Red gram & Sorghum
		Nizamabad		991	16.0-39.0	Rice, Cotton, Maize, Soybean, Sugarcane, Turmeric, Redgram & Chilli
		Nirmal		1060	15.9-39.2	Cotton, Maize, Soybean, Red gram, Sorghum, Turmeric, Sesame & Chickpea
		Mancherial		1092	16.3-38.7	Rice, Cotton, Maize, Vegetables, Redgram
		Jagtial		1018	16.2-39.3	Rice, Cotton, Maize Redgram Sesame, Turmeric, Chilli

		Peddapalle		1059	16.9-39.0	Rice, cotton, Maize, Chilli Sesame
		Rajanna Sircilla		867	16.5-38.8	Cotton, Maize, Redgram, chilli Sesame
		KomaramBheem Asifabad		1189	15.9-39.5	Cotton, Maize, Soybean Redgram, Chilli
		Kamareddy		989	16.2-38.7	Redgram, Greengram Maize, soybean, Sorghum
2.	Central Telangana Zone	Warangal Urban	Black soils, Red sandy, Red earths, Laterite & Alluvium	902	17.6-38.9	Cotton, Rice, Maize, , Redgram& Chilli
		Warangal Rural		1021	17.5-38.5	Cotton, Maize, Redgram, Sorghum,Sunflower
		Medak		847	16.6-38.5	Maize, Cotton, Greengram, Bengal gram, Red gram & Sugarcane
		Khammam		1051	18.7-37.6	Cotton, Rice, Red gram, Maize Greengram, Chilli, Sorghum
		Sangareddy		877	16.7-38.5	Maize Redgram, Vegetable, Sorghum, Safflower, Sunflower
		Siddipet		779	16.8-38.6	Maize, Sorghum, Sunflower, Vegetable, Redgram
		Jangoan		858	17.4-38.8	Rice, Cotton, Maize, Sorghum, Greengram, Fodder Crops, Blackgram,
		Mahabubabad		1047	17.8-38.7	Cotton, Chilli, Turmaric, Redgram, Maize,
		Jayashankar Bhupalpally		1185	17.2-38.3	Rice, Cotton, Chilli, Redgram, Greengram, Maize
		Bhadradri Kothagudem		1213	18.3-37.2	Cotton, Maize Chilli, Rice, Greengram, Blackgram
3.	Southern Telangana Zone	Nalgonda	Black soils, Red sandy & Red earths	702	18.1-38.4	Red gram, Rice, Cotton, Greengram& Castor, Maize
		Rangareddy		747	17.2-38.5	Red gram, Cotton, Sorghum, Maize, Vegetables, Chickpea
		Mahabubnagar		655	17.3-38.6	Redgram, Groundnut, Cotton, Castor, Rice, Jowar & Maize
		Hyderabad		831	17.0-38.6	-
		Vikarabad		853	17.1-38.5	Cotton, Maize, Sorghum, Redgram, Safflower, Chickpea, Groundnut
		Medchal Malkajigiri		795	16.9-38.5	Vegetables, Fodder Crops, Maize, Redgram,
		Yadadri Bhuvanagiri		735	17.5-38.8	Maize, Cotton, Redgram, Vegetables, Castor,
		Suryapet		780	18.3-38.2	Maize, Redgram, Cotton, Greengram
		Wanaparthi		664	17.6-38.8	Groundnut, Maize, Sorghum, Bajra, Castor, Green gram, chickpea,
		Nagarkurnool		677	17.6-38.6	Sorghum, Cotton, Maize, Greengram, Minor millets, Rice
		JogulambaGadwal		606	17.7-38.9	Sorghum, Redgram, Greengram, Castor, Maize Groundnut,

A. Research Product (No. of research articles per 100 scientists having NAAS rating of over 5.0 in last 5-years)

S.No.	Total No. of Research Articles having NAAS rating of over 5.0 in last 5 years	Total no. of Teaching Faculty	No. of research articles per 100 scientists having NAAS rating of over 5.0 in last five years
1.	205	378	54.23

Note: See Annexure IV for details of articles

B. Research Impact

PJTSAU was carved out in 2014 and from then has been formulating new directions in its research and education, outlook and outcome, which also includes publishing quality research papers in impact factor journals and associated citation analysis for developing an impact citational index (including "h-index") in the near future.

C. Research Excellence

(i) No. of research articles per 100 scientists in high impact journals having NAAS rating of over 5.0 in last 5-years)

S.No.	Total No. of Research Articles having NAAS rating of over 7.0 in last 5 years	Total no. of teaching faculty	No. of research articles per 100 scientists having NAAS rating of over 7.0 in last five years
1.	69	378	18.25

Note: See Annexure V for details of articles

(ii) Patents granted in last 5-years

Two patents were filed after the formation of new university in 2014. The details of the patents are given below:

Patent Information	Year of Application	Picture
Bio Acoustic- A Potential Technology To Reduce Wild Boar Menace The technology uses predatory, distress and alarm calls that convey 'danger' message to the wild animals invading crop fields. The equipment works both on normal electricity and solar power.	**2016** Provisional patent bearing number TEMP/E-1/16937/ 2016-CHE; Dated 04-06-2016	

Head Load Manager Used for manual material handling tasks associated with transport manure, seeds to the field, harvested grains, vegetables, fodder etc.	**2014** Provisional patent bearing number 2667/CHE/2014	

(iii)(a) Varieties released

As a result of research efforts over the last five years twenty five (25) varieties (Table 3.2) have been released by Professor Jayashankar Telangana State Agricultural University for cultivation by farmers in the state. Many of the varieties have become very popular among the farmers as is evident from breeders seed indent/production and area coverage.

Table 3.2. Varieties released during 2012-2016 from University

Crop	Variety released	Year of Release	Released from
Rice	1) Telangana Sona 2) Shobini	2015 2014	RRU, Rajendranagar
	4. Batukamma 5. Pradyumna 6. Pranahitha 7. Anjana	2015 2012 2012 2012	RARS, Jagitial
	8. Kunaram Sannalu	2015	ARS, Kunaram
	9. Somnath 10. Sheetal (WGL-283) 11. Siddhi (WGL-44)	2015 2012 2012	RARS, Warangal
Maize	12. Karimnagar Makka-1 13. DHM 121 14. BPCH6	2015 2013 2012	ARS, Karimnagar MRC,Rajendranagar MRC,Rajendranagar
Sorghum	15. SPV212 (palamuru Jonna) 16. YPSV (PYPS-2) 17. PSV-56 (Srisaila)	2015 2015 2012	RARS, Palem RARS, Palem RARS, Palem
Pearl Millet	18. PHB-3	2015	RARS, palem
Red Gram	19. Ujwala 20. Hanuma 21. Mannemkonda Kandi, 22. WRG-65 (Rudreshwara)	2015 2015 2015 2012	RARS, Palem RARS, Tandur RARS, Palem RARS, Warangal
Green Gram	23. WGG-42 (Yadadri)	2015	RARS, Warangal
Castor	24. Pragathi	2015	RARS, Palem
Fodder Cowpea	25. Vijaya	2015	AICRP-FCU, Rajendranagar
Fodder Bajra	26. Moti Bajra	2015	AICRP-FCU, Rajendranagar

Variety : Telangana Sona (RNR 15048)
Duration : 125 days
Yield (kg/ha) : Kharif – 6600 Kg/ha & Rabi – 6200 Kg/ha
Attributes : Blast resistant & short slender fine grains

Variety : Bathukamma (JGL18047)
Duration : 125 days
Yield : 7000 – 8000 Kg/ha
Attributes : Blast resistant & long slender grains.

Newly released improved rice varieties – Telangana Sona & Bathukamma

Variety : Kunaram Sannalu (KNM 118)
Duration : 125 days
Yield (kg/ha) : 7000 – 8000 Kg/ha
Attributes : Resistant to blast & Long slender grains

Variety : Somnath (WGL 347)
Duration : 130-135
Yield : 6000 – 6500 Kg/ha
Attributes : Blast resistant with good cooking quality

Newly released improved rice varieties – Kunaram Sannalu & Somnath

Variety : Pradyumna (JGL 17004)
Duration : 95 – 100 days
Yield : 5000 – 5500 Kg/ha
Attributes : Gall midge resistant & Tolerant to blast

Variety : Anjana
Duration : 110 – 115 days
Yield : 7000 Kg/ha
Attributes : Gall midge resistant & Tolerant to blast, BLB and cold

Newly released improved rice varieties – Pratyumna & Anjana

Variety : Shobini
Duration : 135 days
Yield : 5000 – 6250 Kg/ha
Attributes : Medium slender & highly aromatic

Variety : Sheetal
Duration : 130 days
Yield : 7000 Kg/ha
Attributes : Tolerant to blast and cold

Newly released improved rice varieties – Shobini & Sheetal

Variety : Siddhi (WGL 44)
Duration : 140 days
Yield : 7000 Kg/ha
Attributes : Resistant to Gall midge

Variety : Pranahitha (JGL 11727)
Duration : 135-140
Yield : 7000 – 8500 Kg/ha
Attributes : Resistant to Gall midge & Tolerant to blast

Newly released improved rice varieties – Siddhi & Pranahitha

Variety : DHM121
Duration : 95 – 100 days
Yield : 7000 – 8000 Kg/ha
Attributes : Non-lodging, Tolerant to stem borer, Leaf blights and Post flowering stalk rots

Variety : BPCH 6
Duration : 90 – 95 days
Yield : 4000 Kg/ha
Attributes : Non-lodging, Tolerant to stem borer, Leaf blights and Post flowering stalk rots

Newly released improved maize varieties – DHM 121 & BPCH 6

Variety : Karimnagar Makka-1
Duration : 90 days
Yield : 6000 – 6500 Kg/ha
Attributes : Tolerant to late wilt

Variety : Palamuru Jonna (SPV 2122)
Duration : 100 – 110 days
Yield : Grain - 3300 Kg/ha & Fodder - 14400 Kg/ha
Attributes : Resistant to grain mold

Newly released improved maize & sorghum varieties – Karimnagar Makka 1 & Palamuru Jonna

Variety : PYPS2 (Yellow Pericarp Sorghum)
Duration : 90 – 95 days
Yield : Grain – 2000 Kg/ha & Fodder – 5500 Kg/ha
Attributes : Tolerant to prolonged dry spells, Grain mold and Lodging

Variety : Srisaila (PSV 56)
Duration : 110 days
Yield : Grain – 2500 Kg/ha & Fodder – 8000 Kg/ha
Attributes : Tolerant to grain mold

Newly released improved sorghum varieties – PYPS 2 and PSV 56

Variety : PHB-3
Duration : 80 – 85 days
Yield : Rainfed- 2250 Kg/ha; Irrigated– 3500 Kg/ha
Attributes : Tolerant to Downy mildew and terminal drought

Variety : Ujwala (PRG176)
Duration : 130 days
Yield : 1800 Kg/ha
Attributes : Tolerant to wilt & Terminal drought

Newly released improved bajra and red gram varieties – PHB 3 and Ujwala

Variety : Hanuma (TDRG-4)
Duration : 160 – 180 days
Yield : 2000 Kg/ha
Attributes : Tolerant to *Helicoverpa* & moderately resistant to Sterility Mosaic Disease

Variety : Rudreshwara (WRG-65)
Duration : 175 – 180 days
Yield : 1800 Kg/ha
Attributes : Tolerant to *Helicoverpa* & Resistant to wilt

Newly released improved redgram varieties – Hanuma and Rudreshwara

Variety : **Mannemkonda kandi (ICPH 2740)**
Duration : **180 – 190 days**
Yield : **1800 Kg/ha**
Attributes : **Resistant to wilt & Sterility Mosaic Disease**

Variety : **Yadadri (WGG-42)**
Duration : **55 – 60 days**
Yield : **1200 – 1500 Kg/ha**
Attributes : **Resistant to YMV**

Newly released improved redgram and greengram varieties – Mannemkonda kandi and Yadadri

Variety : **Sri Rama (MGG-351)**
Duration : **70 – 75 days**
Yield : **1200 – 1500 days**
Attributes : **Tolerant to YMV & Moisture stress**

Variety : **Pragathi (PCS-262)**
Duration : **80 – 85 days to Primary spike maturity**
Yield : **1500 – 1800 Kg/ha in Rainfed**
Attributes : **Resistant to *Fusarium* wilt & high oil content**

Newly released improved greengram and castor varieties – Sri Rama and Pragathi

Variety : Moti bajra (APFB 09-1)
Duration : 56 (50% flowering),
Yield : Green fodder – 80 Tons/ha per cut
Attributes : Multi cut, high tillering & High seed potential

Variety : Cowpea Vijaya (APFC 10-1)
Duration : 55 days to 50% flowering
Yield : Green fodder – 25 Tons/ha
Attributes : High protein and High seed potential

Newly released improved fodder bajra and cowpea varieties – Moti bajra and cowpea Vijaya

(b) Breeders seed demand and Area coverage

The breeders seed demand for several newly released varieties is increasing year after year. Accordingly the University is making necessary arrangements in terms of infrastructure (seed godowns, threshing floors, farm equipment etc), budget & man power for meeting the demand of breeders seed production. The breeders seed produced during 2016 – 17 is given in Table 3.3.

Table 3.3. PJTSAU – Varietywise breeder seed production details &area coverage during 2016 -17

S.No.	Crop / Variety	Breeder Seed Production (q)	Area coverage in Telangana State (Lakh ha)
PADDY			
1	JGL-11118	4.20	0.30
2	JGL-17004 (Prathymna)	5.40	0.40
3	JGL-18047 (Bathukamma)	361.25	0.60
4	JGL-11727 (Pranahita)	39.30	0.60
5	KNM-118 (Kunaram Sannalu)	256.6	0.60
6	RNR-15048 (Telangana Sona)	297.25	1.60
7	Shobini	9.75	0.10
8	WGL-14 (Warangal Samba)	35.0	0.30
9	WGL-283 (Sheethal)	15.0	0.30
10	WGL-347 (Somnath)	20.0	0.20

11	WGL-44 (Siddi)	24.00	0.20
MAIZE			
12	DHM - 121 (Female) (BML – 45)	0.55	0.10
13	BML – 6 (Male)	11.50	
SORGHUM			
14	PYPS – 2	3.00	0.10
GREENGRAM			
15	WGG – 42	16.00	0.50
16	MGG – 351	16.69	0.50
REDGRAM			
17	TDRG – 4	10.00	0.10
18	WRG – 65	13.00	0.20
19	PRG – 176	40.00	0.20
FODDER CROPS			
20	Moti bajra	0.20	0.02
21	Cow Pea – Vijaya	0.25	0.02

(c) Products developed & Commercialized

- **Value addition of millets:** A dedicated Millet Processing & Incubation Centre was established at Rajendranagar for value addition in millets and also to impart entrepreneurial skills to students and other stakeholders. Several millet products viz., Dehulled millet grains, Semolina and other, Multigrain flour, Pasta/Omega 3 – fortified pasta, Jowar Noodles, Jowar Vermicelli, Gluten free pasta/vermicelli, Shelf-stable multigrain roti, Jowar Biscuits (4 variations), Fat free crunchies, Ragi vermicelli, Bajra vermicelli, Resistant Starch rich Rawa were formulated and produced in millet processing and incubation centre, Rajendranagar and sold under the brand name of MILLET PLUS with tag line (Fig. 3.3) *AncientFoods in Modern Form*.

Fig. 3.3. Millet Products

- **Natural dyes & colours:** Several natural dyes and eco-friendly colour products were developed for the use of textile industry, painting of clay Lord Ganesh idols and for use of natural colour powders during holi celebrations (Fig. 3.4). Further the products were commercialized through a Collaborative Project with Telangana State

Pollution Control Board (TSPCB). During 2016 – 17, thirty (30) tons of natural dye paint was produced and supplied to artisans for painting 2.0 lakh Ganesh idols in Hyderabad city. Likewise, 2.0 tons of natural colour powder was produced for use during holi celebrations. Both these products are contributing to reduction in environmental pollution in the city.

Fig. 3.4. Natural dyes & colours

- **Value addition in safflower:** To enhance the profitability of safflower farmers, value added products from dried safflower petals were developed (Fig. 3.5). Dried safflower herbal tea made of safflower petals has immense health benefits like controlling cardiovascular diseases, arthritis, spondylysis. Annually about 30-40 kg per acre of safflower petals are produced and are sold at Rs. 3000 per kilogram. The product is first of its kind in India and sold as "saffotea" by ARS, Tandur. The demand for Saffotea is increasing year after year.

Fig. 3.5. SaffoTea prepared from safflower petals

(d) Traits identified and its economic impact

Keeping in view the biotic and abiotic problems in major crops of the state the following lines with desired traits have been identified for use in breeding programmes.

- **High Water Use efficient rice lines**: INRC 10192 and Vandana
- **Molecular mapping of WUE in rice**: Identified 12 QTLs by both CIM and IM mapping approaches.
- **Populations with high iron and zinc:** BML 6 & BML 7 were crossed with high iron and high zinc lines to develop mapping populations.
- **Resistant sources against rice BPH** : CN-1231-11-7, CN-2072, CR-1898-32-69, CN-12-2, BM-71, IR-09-A104, Milyang 55, NLR-3041, PSBRC-1-2-1-2, IR-10A 135, IR-10A, 155, Akshaydhan
- **Resistant sources against rice gall midge**: Aganni, JGL-19618, RP-5332-54-101-8-2-1-1-B, IC-577036, IET-22698, IC-466408, Vellailankalyan, IC-466352. JGL-19618 and Aganni are being used as donors for gall midge biotypes 3 and 4M.
- **Sheath blight resistant lines identified**: Tetep and ARC 10531
- **Molecular mapping of sheath blight resistance**: Identified 11 QTLs on chromosome 1, 6, 7, 8 and 9.
- **SMD and wilt resistant redgram lines**: PRIL B 107 and 130 are showing resistance for both SMD and wilt resistance and PRIL 186 is showing only SMD resistance.
- **Pod fly (*Melanagromyza obtusa*) resistant sources in redgram**: WRGE 60, WRGE 76, WRGE 80.
- **YMV resistant genotypes identified**: LGG 460, PM -110, MH-3-18, TM962, LGG-543, LGG-537, LGG-486. Through molecular mapping identified the marker MB 14 linked with YMV resistance

(e) Technologies developed

i) Agrometeorology

- Climate adaptation strategies viz., pest and disease forecasting models were developed and issued weather based agro-advisories to minimize the impact of climatic variability on cotton and maize
- **Climate Information Centres** were established in 12 villages covering 9 districts of Telangana for providing timely information on weather and pest & disease incidence (Fig. 3.6).
- **Rainfall visualizer** - a SOFTWARE Tool was developed to enable the farmers at village level to monitor rainfall pattern *i.e.* the direction towards which the season is moving (Normal or Excess rainfall or deficit rainfall) and helps in initiating appropriate adaptation strategies to overcome weather anomalies if any, during the season.

ii) Soil health management

- Soil fertility status maps for micronutrients viz., Zn, Bo, Fe, Cu & Mn and secondary nutrient viz., S were determined for Telangana State soils. The priority areas where these nutrients have to be employed in crop production for better response was identified up to *mandal* level. The analysis revealed that Zn, Bo and S nutrients have to be used on priority basis in 90, 130 and 89 *mandals* in the state, respectively (Fig. 3.7). Accordingly the information was shared with the State Agriculture Department for positioning of these fertilizers.

Fig. 3.6. Agro-advisories for rainfed crops through climate information centres

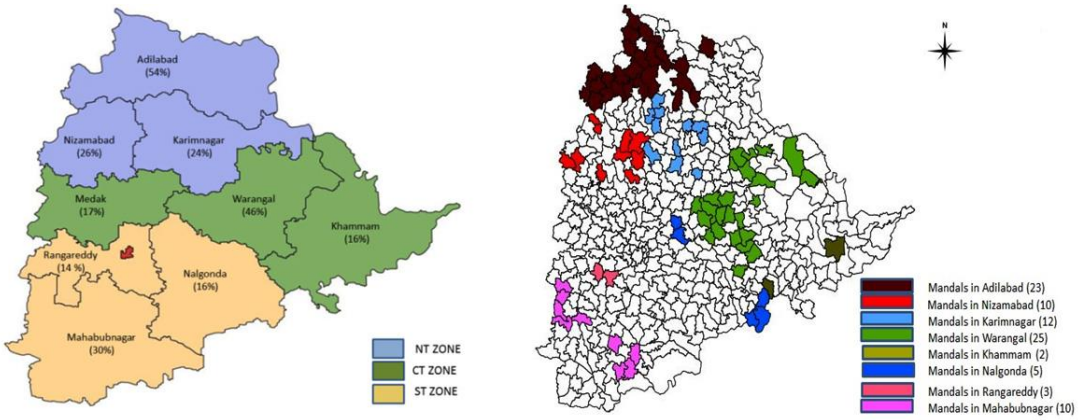

Fig. 3.7. Priortization of Zn fertilizer use in Telangana State for enhanced production

- The soils of the Telangana State were found to be high in phosphorus status in more than 70 % of cultivated lands and hence recommended to reduce the P – Fertilizers in the range of 25 to 50 % for important crops *viz.,* rice and maize.
- Information generated on soil health status in the state is used to identify more fertilizer responsive spots and accordingly the revised fertilizers doses for rice and maize crops were recommended to incorporate in the soil health cards.

iii) Water management

- Water Technology Centre at Rajendrangar functions as a nodal centre for planning water use research and policy making on agricultural water management aspects of the state.
- **Water saving technologies in rice:** Rice is a major water intensive crop consuming 54% of the water resources in the state. To conserve water in rice cultivation water saving technologies *viz.,* alternate wetting and drying(AWD) irrigation (Fig. 3.8), Wet seeding with drum seeder, Direct seeding of rice and mechanized system of rice intensification(MSRI) were field evaluated and popularized among the farming community under well, canal and tank commands areas. These technologies were shown to save 20-30% of water as compared to continuous submergence without any yield reduction.

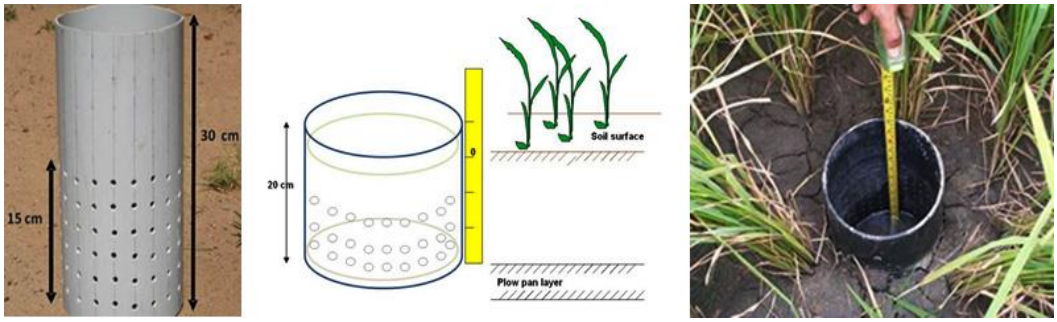

Fig. 3.8. Demonstration of drum seeding, AWD and MSRI systems as water saving technologies in rice

- **Drip irrigation and fertigation schedules** for important field crops *viz.,* maize (Fig. 3.9), cotton, castor, sunflower, sorghum, turmeric, sugarcane, *rabi* redgram, sesame, onion, chillies and rice were developed and popularized among the farmers for enhanced yield and water productivity besides improving FUE through fertigation.

Fig. 3.9. Drip irrigation and fertigationscheduling in maize

- **Water harvesting and efficient use of water in rainfed drylands**: Farm pond technology for harvesting run-off water under rainfed situation for protecting rainfed crops like maize, redgram, cotton etc., during dry spells was developed and popularized through demonstrations and capacity building. One or two supplemental irrigations with 25 mm depth of water increased crop yields by 30 – 40% over rainfed control (Fig. 3.10).

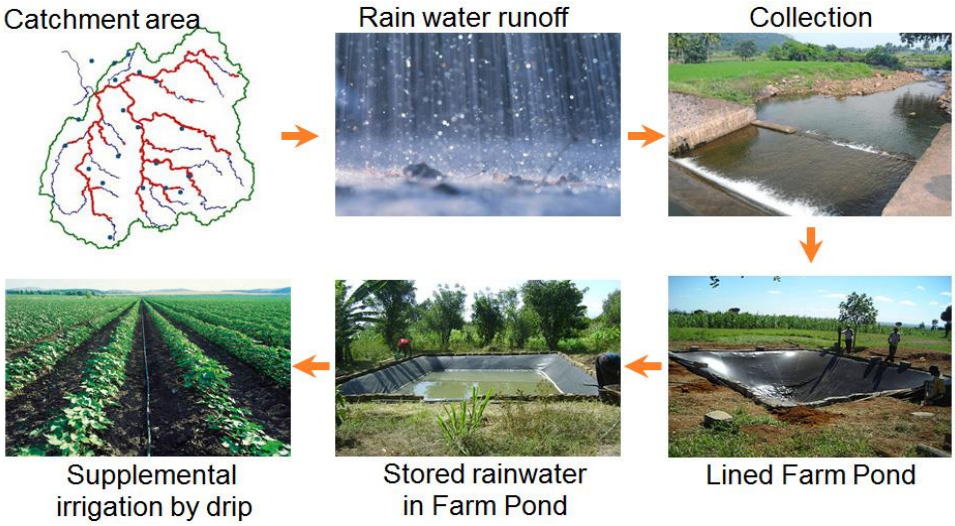

Fig. 3.10. Farm pond technology as a climate smart technology

iv) Biotechnology

- Promising lines of MTU1010 with bacterial blight and blast resistance and Tellahamsa with bacterial blight and gall midge resistance were developed and

characterized for 21 DUS descriptors. Fatty acid and Amino acid profiling is in progress.

- Parental lines of DHM117 i.e., BML1 and BML7 were converted to QPM versions and QPM versions of BML 6 and BML 7 were used to reconstitute the popular maize hybrid DHM117 with high lysine and tryptophan content. Likewise, another hybrid DHM121 was converted to QPM DHM121 maize hybrid by marker assisted selection.

v) Crop Oriented Technologies

a) RICE

- Growing greengram as catch crop/green manure preceding rice saved 20-25% nitrogen.
- Reduced seed rate of 12.5 kg/200 m^2 with 25 hills per m^2 for long duration variety during *kharif* and 44 hills m^2 for medium duration variety in rice for getting higher grain yield
- Protection of nurseries from cold injury by covering with tunnels made of polythene sheet during night and basal application of FYM/ vermicompost along with recommended NPK.
- Application of 160 kg/ha N in 5 splits *i.e.,* (Basal, Initial tillering, Tillering, Active tillering and panicle initiation) for higher yield
- Recommended 25% less of recommended dose of P_20_5 in P accumulated soils with out any yield reduction, which resulted in a net saving of Rs. 750/ha.
- Safe AWD irrigation with a drawdown of ponded water level up to 10 cm below groundlevel saved 30% water without any yield reduction as compared to continuous submergence irrigation of 3 – 5 cm at different growth stages under well command areas
- **Mechanized SRI** – A nursery tray mixture consisting of 350 gm rice husk as bottom material, 350 gm rice husk ash + 200 gm vermicompost per each tray is recommended for higher seedling vigour, fast establishment, higher tiller count and grain yield. Best age of nursery for Mechanized SRI was 14 days during kharif and 17 days during rabi season.
- **Semi Dry Rice**: Recommended fertilizer dose was 200-60-40 kg N-P-K/ha (N in five splits) for higher grain yield.
- In direct seeded rice, post emergence application of either cyhalofop-p-butyl (100 g/ha) + (Chlorimuron ethyl + Metsulfuron methyl) (4.0 g/ha) resulted in efficient weed control and higher grain yield compared to hand weeding (25 & 50 DAS)

- Spraying of Spinetoram + Methoxyfenozide @ 2ml/l (400ml/acre) against stem borer and Sulfaxoflor @ 70 g *a.i.*/ha, dinotefuran 20 SG @ 40 g *a.i.*/ha, imidacloprid 40 WG + ethiprole 40 WG @ 100 g *a.i.*/ha, DPX-RAB -55 @ 251.75 g *a.i.*/ha were found effective against BPH.
- Trifloxystrobin 25% + Tebuconazole 50% @ 0.4g/ l (80g/acre) was found effective against management of multiple diseases *viz*., blast, sheath blight, stem rot, false smut and grain discoloration.
- Compatible combinations *viz.,* Acephate @ 1.5g + Merger @ 2g; Chlorpyriphos @ 2.5ml + Kasugamycin @2.5ml; Chlorantraniliprole @ 0.3ml + Carbendazim @ 1g + Mancozeb @ 2.5g; Chlorantraniliprole @ 0.3ml + Propiconazole @1ml; Chlorantraniliprole @ 0.3ml + Isoprothiolane @ 1.5ml;Chlorantraniliprole @ 0.3ml + Nativo @ 0.4g/l of water were identified. Due to adoption of this technology farmers save protection costs to the tune of Rs. 1000 to Rs. 1500/acre.
- Seed treatment with Emamectin benzoate 5% SG @ 2 ppm (40 mg) + Captan 50% WP @ 2.5 g/kg, Spinosad 45 SC @ 2 ppm (4.4 µl/kg) + Captan 50% WP @ 2.5 g/kg were found to enhance germination, vigour with minimum seed infection up to nine months period of storage in paddy.
- Paddy seeds exposed to 30% and 40% volume of carbondioxide in air tight containers resulted in minimum seed infection without any impairment of seed quality traits during prolonged storage up to nine months.
- Comprehensive scale for rice panicle mite, *Steneotarsonemus spinki* was developed and used in screening and identification of panicle mite resistant varieties/cultures (Fig. 3.11).
- The causal agent of New bacterial disease, Crown rot (Fig. 3.12) in paddy prevalent in Musi river belt of Ranga Reddy and Nalgonda districts of Telangana was identified as *Erwinia chrysanthimi*

Fig. 3.11. Scale for screening against panicle mite

Fig. 3.12. Crown rot in rice

b) **MAIZE**

- Standardized optimum plant density for corn and pop corn as 83,333 pl/ha (60 x 20 cm) and baby corn as 1,11,111 pl/ha (45 x 20 cm) for higher grain yield.
- Detopping, by leaving two leaves above the cob at 40 days after tasseling resulted in higher grain yield
- Postemergence application of Topramezone 336 SC at 25.2 g/ha + MSO adjuvant @ 2.0 ml/L or Tembotrione @ 100 g a.i./ha was effective in reducing grasses and broad leaved weeds population.
- Optimum date of sowing window for kharif maize was from 20th June to 5th July; Delayed sowing i.e., 20thJuly and 5thAugust reduced the crop yield by 12 & 44% respectively.
- Skip furrow irrigation saved water by 28% and produced higher yields over every furrow irrigation in maize.
- Revised and validated fertilizer recommendation for late and medium maturity maize hybrids @ 250-80-60 kg NPK/ha and for early maturity and quality protein maize hybrids @ 200-60-80 kg NPK/ha.
- Chlorantraniliprole @ 0.3 ml/l of water was identified as an alternative against *Chilo partellus* (60 ml/acre) in Maize (Fig. 3.13) since endosulfan (the previously recommended chemical) was banned.
- Seed treatment with spinosad 45 SC @ 2 ppm (4.4 µl/kg) + thiram 75% WP @ 2.5 g/kg, Spinosad 45 SC @ 2 ppm (4.4 µl/kg) + carbendazim 50% WP @ 2.5 g/kg were found effective in reducing storage fungi in Maize.

c) SORGHUM

- Sowing of *rabi* sorghum from 1stto3rdweek of September produced significantly higher grain and fodder yields.

Treated Chlorantraniliprole @ 0.3 ml/L Untreated

Fig. 3.13. Control measures for *Chilo partellus* in maize

- Seed priming with Cycocel 500 ppm + Foliar spray at 40 DAS and boot leaf stage @ 1000 ppm of Cycocel proved to be remunerative.
- Nutrient management through 50% organics (FYM) + 50% RDF inorganic source resulted in significantly highest and consistent grain and fodder yields in Soybean – Sorghum double cropping system.
- Sorghum grain and fodder yields were maximum with application of 100% RDF (80-40-40 kg NPK/ha) + 5 irrigations of 50 mm depth each at 35, 55, 75, 85 and 105 DAS.

d) CASTOR

- High density planting of castor at 45 cm row to row and 30 cm with in the row and safflower at 30cm row spacing with 15cm with in the row as barrier crops werefound effective for protecting sorghum, maize and groundnut crops against wild boar management (Fig. 3.14).
- Spraying propiconazole @ 1g/litre or *Trichoderma viride* 5 g/litre @ or *Pseudomonas fluorescens* 5 g/litreduring grain formation and hardening stages effectively contained grain mold.

Fig. 3.14. Barrier Crops for Wild Boar Management in Sorghum

e) REDGRAM

- Square planting of redgram at 90 x 90 cm in light soils gave higher seed yield of 1389 kg/ha under rainfed conditions (Fig. 3.15)

Fig. 3.15. Square planting in redgram

- Foliar spray of Chloromepequatchloride (Chamathkar) @ 2000 PPM (40ml of Chamathkarin 200 litres of water sufficient for one acre) at flower bud initiation stage as well as at ten days after flower bud initiation produced highest seed yield of 1650kg/ha.
- Nipping the redgram crop once between 45 to 60 DAS recorded significantly higher seed yield of 1460 kg/ha.
- Identified Thiacloprid 21.7 SC @ 0.6ml/l as the best chemical against redgram pod fly.
- A uniform *Fusarium* wilt sick plot was developed at ARS, Tandur and used by National and International agencies for large scale screening and cataloguing of redgram and safflower germplasm.
- Treating with 40% volume of carbondioxide in air tight containers maintained germination and vigour index of redgram (Fig. 3.16).
- Identified seven vegetable oils *viz*., groundnut, palm, Sesame, Neem, Mustard, Sunflower and Castor oils (5ml/kg seed) for managing pulse beetle in storage without affecting germination of redgram up to 6 months.

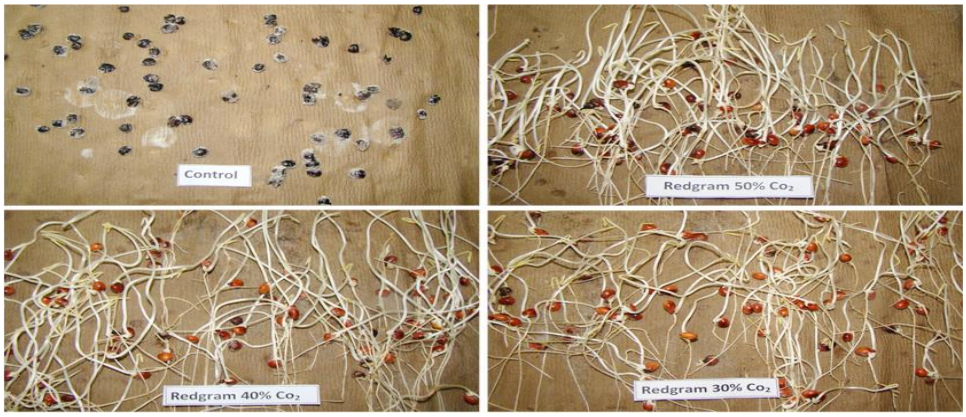

Fig. 3.16. CO_2 treated redgram seed at nine months after storage

f) **GREENGRAM**

- Growing greengram as catch crop/ green manure preceding rice.
- During *kharif* season, optimum sowing window for **greengram**was found to be during 3rd week of June to 3rd week of July and under late sown crop 1st week of September. During *rabi* season sowing during 3rd week of September and 1st week of October and under late sown condition 1st week of December resulted in better yields.
- Application of 20 kg/ha N + 50 kg P_2O_5 + 20 kg/ha of K_2O as basal and 20 kg/ha N at 30 DAS and foliar nutrition of 2% KNO_3 at 35 & 45 DAS resulted in higher grain yield.
- Spraying of paraquat @ 4 ml/l of water, is recommended in greengram at physiological maturity (a week before harvesting) to facilitate machine harvesting (Fig. 3.17). Residues of paraquat were not traceable either in grain or haulm
- Seed treatment with Spinosad 45 SC @ 2 ppm (4.4 µl /kg) + Captan 50% WP @ 2.5 g/kg and Emamectin benzoate 5% SG @ 2 ppm (40 mg) + captan 50% WP @ 2.5 g/kg were found effective in reducing storage fungi up to twelve months in gunny bag.

Fig. 3.17. Spraying paraquat for mechanical harvesting of greengram

g) BLACKGRAM

- Seed treatment with Emamectin benzoate 5% SG @ 2 ppm (40mg) + Carbendazim 50 WP @ 2.5 g/kg, Spinosad 45 SC @ 2 ppm (4.4 µl/kg) + Captan 50 WP @ 2.5 g/kg, were found effective in reducing storage fungi up to nine months.

h) GROUNDNUT

- Emamectin benzoate 5% SG @ 2 ppm(40 mg/kg) + Thriam @ 2.5 g/kg, Emamectin benzoate @ 5% SG @ 2 ppm(40 mg/kg) + Captan 50 WP @ 2.5 g/kg were identified for groundnut seed storage.
- Fixing of jute rope around the crop with the help of pegs at 1 or 2m intervals and tying the rope 30 cm above ground in checkered pattern forming squares of 1m x 1m to prevent entry of Peafowl into the crop fields was developed.

Fig. 3.18. Peafowl Management

- Bio Acoustics technology for Wild Boar management in groundnut and Bird management in sun flower were developed.

i) SUNFLOWER

- Seed coating with polykote @ 3 ml/kg + thiram 75 WP @ 2.5 g/kg seed was found to enhance the storability in gunny bag up to six months and in HDPE bag up to nine months (Fig. 3.19).

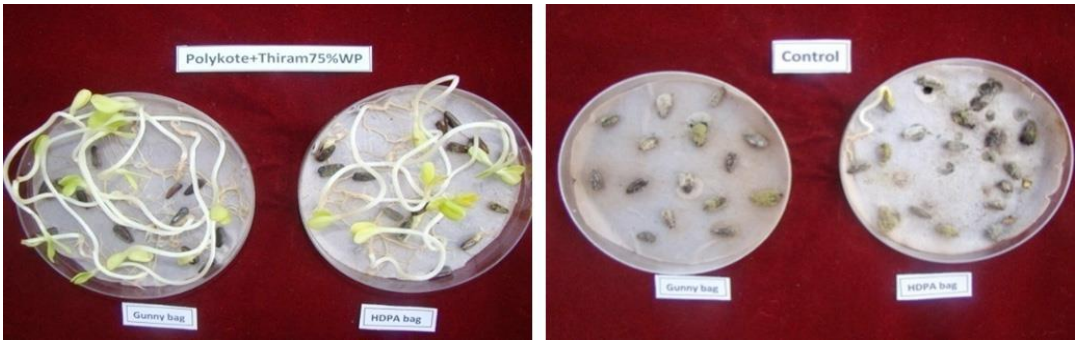

Fig. 3.19. Seed treatment with polykote + fungicide in sunflower

j) SAFFLOWER

- Standardized the BMP (Best Management Practices) for Safflower.
  - Optimum time of planting : 3rd week of October
  - Method of planting : Broadbed and furrow
  - Seed treatment with *Azospirillum* & PSB @20g each/kg of seed
  - Optimum plant spacing 35 cm x 20 cm
  - Application of recommended fertilizer 40 kg N & 20 kg P_2O_5 as basal.
  - Need based plant protection to control Safflower Aphids.

Fig. 3.20. BMP for safflower

k) SOYBEAN

- Among the different spacings adopted to sow the crop, soybean sown at 30 x 10 cm distance recorded highest seed yield (1874 kg/ha) during *kharif*. This is followed by 30 x 7.5 cm or 45 x 5 cm.
- Foliar application of KNO_3 @ 1% as anti-transpirant during the dry spell coupled with straw-mulch application @ 5 t/ha recorded higher soybean seed yield (1946 kg/ha). This was followed by application of Glycerol @ 5% (1730 kg/ha) and Na_2Co_3 @ 2%.

l) COTTON

- Inter cropping of cotton with greengram or redgram or soybean proved remunerative.
- Paired row (180 x 60-60 cm) planting with fertigation enhanced the seed cotton yields by 24% over farmers practice.
- High density cotton planting system 60 x 10 cm, with seed rate of 10-12.5 kg/ha , varieties ADB-39 and WGCV-48 yielded 44% more yields (18 q/ha) over farmers practice in Alfisols of Southern Telangana Zone (Fig. 3.21)

Fig. 3.21. High density cotton planting system 60 x 10 cm

- Studies on scheduling of fertilizers to Bt. Hybrids established that application of N&K in 4 equal splits viz., 20, 40, 60 & 80 DAS gave higher seed cotton yield.

- Spraying 2% urea / DAP at 60, 70 & 80, 90 DAS improved seed cotton yields by 10-15%.
- Ridge and furrow method followed by broad bed furrow land configuration techniques proved superior for moisture conservation in rainfed cotton.
- Neeraja, Yuva, ATM, RCH-659, RCH-836, Akka, Ankur-3224 and ACH-155 were identified as sucking pest tolerant Bt cotton hybrids and popularized among the farmers.
- Optimized and promoted cotton IPM technologies in Bt cotton for sucking pest management (Fig. 3.22).
- Compatible combinations against sucking pests viz., Acephate (1.5g/l) + fipronil (2ml/l)/acetamiprid (0.2g/l), Monocrotophos (1.6ml/l) + fipronil (2ml/l) were identified.
- Location specific IRM strategies were fine-tuned and disseminated.

Fig. 3.22. IPM in cotton

- A new viral disease on cotton, Tobacco Streak Virus (TSV) was identified by this centre for the first time, which spreads by thrips and vector management strategies were devised and popularized.

m) INTEGRATED FARMING SYSTEM

- Crop + livestock + horticulture IFS model (1.0 ha) was developed by integrating crops (0.7 ha with diversified crops) horticulture (0.2 ha with fruit crop guava and seasonal vegetable) and animal components [(0.1 ha with 2 dairy buffaloes (Murrah Breed), 6 goats (Osmanabadi) and a unit of 20 backyard poultry birds (Vanaraja)] (Fig. 3.23).
- On an average the IFS unit produced annually 2591 kg of cereals, 160 kg pulses, 405 kg oil seeds, 2436 litres of milk, 1140 kg of vegetables were produced in the system

as against annual demand (Indian Council of Medical Research standards) of 730 kg of cereals, 125 kg pulses, 120 kg oil seeds, 400 litres of milk and 300 kg of vegetables for five a member farm family.

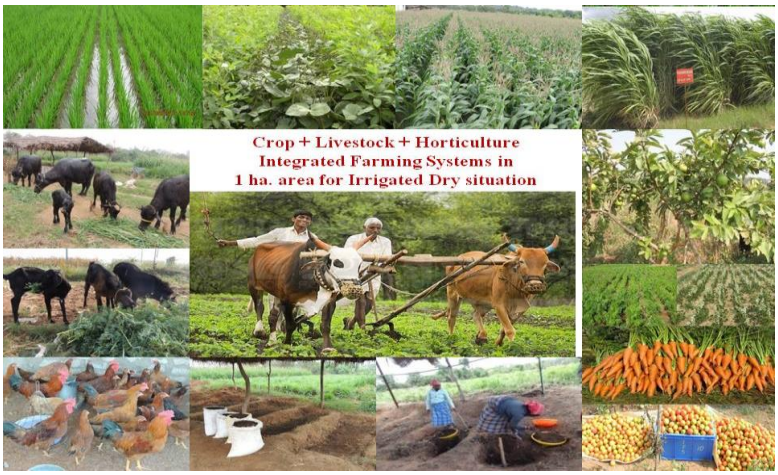

Fig. 3.23. Integrated Farming System

- Feed and fodder requirement of livestock unit with 2 buffaloes and 3 calves could also be met through average production of 21,400 kg green fodder and 4262 kg dry fodder as against the demand of 17,500 kg green fodder and 3000 kg dry fodder per year.
- Continuous use of crop residues and manures through residue recycling over five years helped in improving the soil fertility of the unit with perceptible improvement in organic carbon. The availability of diverse farm products in the system facilitated in effective recycling and in turn their utilization as inputs for the other integrated components in the unit. From the system through residue recycling and manure production, on an average, 8625 kg of FYM and 1269 kg of vermicompost could be produced which was equivalent to 135-77-103 kg of N, P and K and saving fertilizer worth of Rs 9000/year.
- Adoption of IFS resulted in net returns of Rs.103685/ha per annum as against the average farmers income of Rs. 54,000/ha in STZ.

n) CASTOR

Standardised the agro-techniques for *rabi* castor

- Sowing time: October 1st fortnight is optimum for higher yields (23.0 q ha^{-1})
- Spacing: 90cm x60 cm under normal cultivation,120 cmx60 cm under drip irrigation
- Irrigation scheduling:
- Conventional method: 5 cm at 50 mm CPE for higher yields (20.0 q ha^{-1})

- Drip irrigation: Three days interval @ 0.9 Epan for higher yields (35.0 q ha^{-1})
- Fertilizer dose:
  - *Under conventional irrigation*: 80-40-30 kg N, P_2O_5, K_2O ha^{-1} with P and K as basal; ½ dose of N as basal and rest of the N in three equal split doses at 30, 60 and 90 DAS.
  - *Under Drip irrigation:* 120-40-30 kg N, P_2O_5, K_2O ha^{-1} with P and K as basal
  - *Fertigation:* N at 6 days interval; 30 kg N (10 DAS to 55 DAS), 40 kg N (56 DAS to 85 DAS), 30 kg N (86-105 DAS), 20 kg N (106 to 130 DAS)
- Selective mechanization in castor saves labour (23 man days) and time (55 hours) besides yield enhancement (Fig. 3.24).

Fig. 3.24. Selective mechanization in castor

o) SUGARCANE

- Developed seedling method of planting in Sugarcane through bud chips to save planting material and germination time.
- Developed bud chip seed treatment technology (Fig. 3.25) with 0.1.% 2 Chloro ethyl phosphonic acid + 0.2% CaCl2 to improve their germination up to 93% at low temperatures

Fig. 3.25. Bud chip technology

- Four sugarcane varieties –Co 86032,97R401,97R129,85R186 with wider spacing (150x60) using single budded healthy canes resulted in cane yield of 152 t/ha in 97 R 401 variety followed by 85 R 186(123 t/ha)and Co 86032 (118t/ha). This method of wider planting also resulted in cost reduction of seed material to the tune of 3/4th (1 ton ha^{-1}) over traditional planting with three budded setts (4 ton ha^{-1})

p) FORAGE CROPS

- A low cost silage preparation method in polythene bags was developed to conserve green fodder for lean periods. Polythene bags of > 100 micron thickness (double covered) or > 200 micron polythene bags (single cover) could be used to prepare silage. Silage is well formed by 45 days of ensiling (Fig. 3.26).

Fig. 3.26. Silage preparation in bags

- Silvipastoral systems, Subabul (*Leucana leucocephala*) + Bajra Napier hybrid + Hedge Lucerne (*Desmanthes virgatus)* was developed for highest green fodder (509 q/ha/year),dry fodder (108 q/ha/year) and crude protein yields (15 q/ha/year).

q) AGROFORESTRY

- *Melia dubia* based silvi-pastoral system, higher fresh forage biomass, total N, crude protein and fiber was high in fodder maize than sorghum.
- In Mango + curry leaf + moringa based agri-horti system (3 years old), among the different inter crops tested, Cowpea (833 kg ha^{-1}) + curry leaf (359 kg ha^{-1}) + moringa (368 kg ha^{-1}) in *kharif* and safflower in *rabi*performed better in terms of higher net returns (Rs. 66,290 ha^{-1}) and B:C ratio 3.27.

r) PESTICIDE RESIDUES

- Dissipation patterns and half life of **20** insecticides, **18** fungicides, **2** herbicides and 1 growth regulator were standardized.
- Pesticide usage patterns in important commercial crops and vegetables (Chilli, Capsicum, Bitter gourd, Cauliflower, Cabbage, Cucumber, Okra, Tomato and Brinjal) was monitored and information provided to GOI.
- Method validation for determination of residues of 48 pesticides on LCMSMS and 24 pesticides on GCMSMS under NABL scope performed.

s) MFPI QUALITY CONTROL LAB

- Developed a rapid detection method for mycotoxin contamination in food grains using 2100 Bio-analyzer and Real-Time PCR
- Developed and validated advanced analytical procedures for determination of minerals using Optical Emission Spectrometry, amino acids using Liquid Chromatography and fatty acids using Gas Chromatography in food and agricultural produce.
- Gamma Irradiation protocols for seed storage in different crops were standardized.

t) BIOFERTILIZER PRODUCTION

- Professor Jayashankar Telangana State Agricultural University is well equipped with three big fermentors for biofertilizer production. Production capacity of the unit is 3 tons per month.
- Standardized all the protocols to mass multiply the different biofertilizers. Isolated and characterized the different strains for their multiple traits to produce the different biofertilizers in different crops from native soils of Telangana (Fig. 3.27).

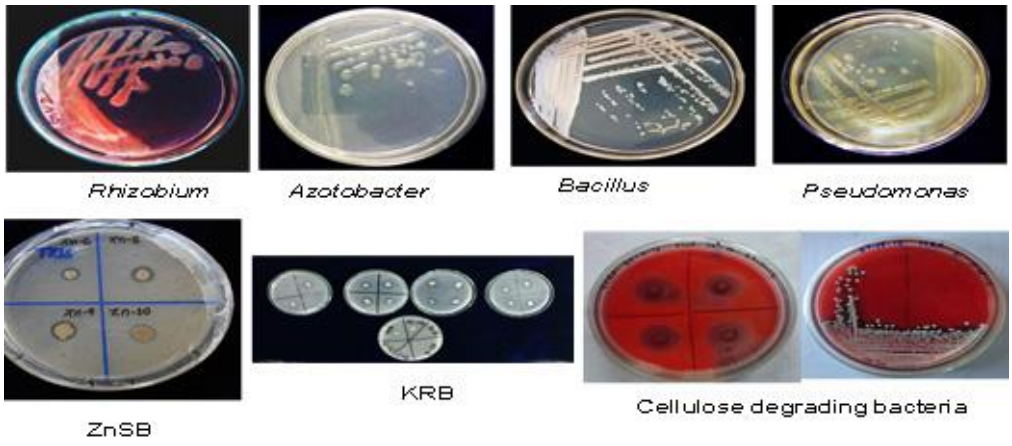

Fig. 3.27. Nitrogen fixers and P-solubilizers

(f) New Farm machinery & Tools developed

i) Tractor Operated Turmeric Digger

Salient features

- Turmeric digger (Fig. 3.28) is used for digging the turmeric rhizomes lying 300 – 350 mm deep in soil.
- Labour required: One person
- Cost of implement: Rs. 30000/-

Impact and benefits

- The net saving of Rs. 4200/- per ha when compared to manual digging.

Fig. 3.28. Turmeric digger

ii) Four wheel drive tractor mounted 8-row paddy transplanter

Salient features

- The 4-wheel drive 22 hp mini tractor provides power for propulsion as well as for working of 8-row paddy transplanter (Fig. 3.29)
- The machine cost of operation was observed as Rs.1919/- per ha operated at 2rd gear as against Rs.3750/- per ha with conventional method.
- Cost of implement:Rs.2,00,000/-

Impact and benefits

- Net saving of Rs. 1831/- per ha when compared to traditional method.

Fig. 3.29. Four wheel drive tractor mounted 8-row paddy transplanter

iii) Power operated 8-row drum seeder cum 4-row weeder for paddy

Salient features

- Dual purpose implement used for seeding and weeding in paddy with seed requirement of 40.4 kg/ha (Fig.3.30)
- Capacity for seeding is 6 hr/ha and weeding is 12 hr/ha
- Cost of implement:Rs.60,000/-

Impact and benefits

- Saves man power and reduces human drudgery and facilitates timely operation

Fig. 3.30. Power operated 8-row drum seeder cum 4-roe weed for paddy

iv) Stem applicator cum weeder for cotton crop

Salient features

- Stem applicator cum weeder (Fig.3.31) can be used for application of chemical to the cotton stem for sucking pests and weeding simultaneously
- Application rate: 25 l/ha
- Fuel consumption: 1.2 l/h
- Weeding efficiency: 80 %
- Cost of implement: Rs. 85000/-

Impact and benefits

- The saving in cost is Rs.1020 per hour compared to manual operation

Fig. 3.31. Stem applicator cum weeder in cotton

v) Three row power weeder for rice

Salient features

- Three row power weeder (Fig. 3.32) can be used for weeding operation in different row spacings viz., 20, 25 and 30 cm
- The highest weeding efficiency was 81.88% for 20 cm spacing followed by 79.22% and 76.54% for 25 and 30 cm spacings respectively.
- Area coverage: 1ha in four hours
- Cost of implement: Rs. 85000/-

Impact and benefits

- Used satisfactorily in direct sowing by drum seeder, machine transplanted crop and SRI methods

Fig. 3.32. Three row powder for rice

vi) Head load manager

Salient features

- Light weight women friendly load carrying device (Fig. 3.33)
- Used for manual material handling tasks associated with transporting manure, seeds etc to the field, harvested grains, vegetablesandfodder
- Cost of implement: Rs. 1500/-

Impact and benefits

- This tool is designed to reduce the drudgery load on woman labourers at field level

Fig. 3.33. Head load manager

(iv) External funding in last 5-years (total amount) for the projects

The number of external projects executed by PJTSAU during the last five years are presented in Table 20 along with the budget. The total amount of external funding received amounted to Rs. 2825.068 Lakhs.

Table 3.4. External funded projects for the Period 2012-13 to 2016-17

Sl. No.	Name of the funding agency	Tile of the Project	Duration of the Project	Total out lay of the project (Rs. in lakh)
1.	Government of India	Project on "Strengthening for Seed Quality Control" under the scheme "Sub-Mission of Seed and Planting Material (SMSP) of National Mission on Agricultural Extension and Technology (NMAET)" Dept. of Seed Science & Technology, Rajendranagar.	2014-15	160.00
2.	Government of India	PFDC-Precision Farming Development Centre	2016-17	10.57
3.	Government of India	Monitoring of Pesticide Residues at National Level	2012-13 to 2016-17	160.32
4.	Government of India	Creation of Seed Hub increasing indigenous production of pulses in India	2016-17	251.00
5.	Government of Telangana	Crop Water Requirement Studies Under Major projects in Krishna basins	2016-17	10.45
6.	Government of Telangana	Strengthening of Seed Chain infrastructure development of breeder production in different research Stations of PJTSAU	2014-15 to 2016-17	800.00
7.	ICAR, New Delhi.	Extramural Project entitled "Widening the genetic base in pigeonpea (*Cajanuscajan* (L) – RARS, Warangal.	2015-16 & 2016-17	45.00
8.	IPNI, Hyderabad	Collaborative Project on "Nutrient Management in Maize at 4 Centres	2015-16 & 2016-17	12.90
9.	ICRISAT, Hyderabad	NMOOP Phase-II Project with ICRISAT at RARS, Palem	2016-17	2.54
10.	Dept of Science and Technology, New Delhi	"Development of lab-on-chip platforms for efficient and automated farming(LEAF)" project at Water Technology Centre, Rajendranagar	2016-17	53.27
11.	ICRISAT, Hyderabad	USAID project on 'Pigeonpea Improvement through molecular breeding' at Institute of Biotechnology, Rajendranagar	2012-13 to 2014-15	49.50
12.	IINRGN, ICAR New Delhi	"Network Project on Conservation of Lac Insect Genetic Resources (NPCLIGR)" under AICRP on Biological Control, ARI, Rajendranagar, Hyderabad	2014-15 to 2016-17	53.93
13.	NIPHM,	Project on "Impact of indiscriminate	2016-17	26.72

	Hyderabad	use of chemical fertilizers and Pesticides" at RARS, Jagtial.		
14.	Telangana State Biodiversity Board, Hyderabad	Project on Tradable Bioresources at AINP on VPM, Rajendranagar	2015-16	7.00
15.	SERB, New Delhi	Assessment of Genetic Diversity of Pigeonpea (Cajanuscajan (L.) Millsp.) Genotypes Using Morphological traits and Randomly Amplified Polymorphic DNA (RAPD) Markers".	2014-15 to 2016-17	21.37
16.	NICRA, Hyderabad	Real time pest surveillance on pigeonpea under NICRA Project at RARS., Warangal	2012-13 to 2016-17	30.00
17.	NICRA, Hyderabad	Risk Minimization in drought prone Telangana districts through millet based crop diversification at RARS., Palem	2016-17	34.70
18.	ICRISAT, Hyderabad	Morocco-India Food Legumes Initiative at RARS., Palem.	2013-14 to 2016-17	100.00
19.	ICRISAT, Hyderabad	Identification of superior alleles and lines from wild cajanus species for pigeonpea improvement	2015-16 to 2016-17	48.25
20.	Indian Metrological Department, New Delhi	FASAL Project on "Forecasting Agricultural Output Using Space Agrometerology and Land Based Observation at AC&RC, Rajendranagar.	2012-13 to 2016-17	22.74
21.	Indian Metrological Department, New Delhi	Project on GraminKrishiMausamSewa at ACRC, Rajendranagar	2012-13 to 2016-17	48.63
22.	Indian Metrological Department, New Delhi	Project on Gramin Krishi Mausam Sewa at RARS., Jagtial	2012-13 to 2016-17	42.73
23.	Promotion of improved pigeonpea varieties through large scale production for enhancing its productivity in dryland	Department of Biotechnology under Biotech KISAN scheme	2016-2017	38.50

	agriculture and self-sustenance on seed			
24.	World Bank	Water Sector Improvement Project-Adaptive Research	2012-13 to 2016-17	117.52
25.	M/s.Netafim Irrigation Pvt.Ltd.,Isreal	Evaluation of Drip Fertigation in Aerobic Rice	2012-13 to 2013-14	11.75
26.	ICAR	Tribal sub-plan-Livelihood and Nutritional Security Support to Tribal Predominant Population in Selected *Gram Panchayats* of Kothagudem (Khammam) in Telangana State	2016-17	36.10
27.	Australian Centre for international Agriculture research (ACIAR), Australia	Developing multi-scale climate change adaptation strategies for farming communities in Combodia, Lao PDR, Bangladesh and India	2012-13 to 2013-14	36.50
28.	Dept. of International Development, UK and US department of Agriculture and, Earth Institute Centre for Climate Systems Research Columbia University, New York, USA	AgMIP project on Integrated assessment of Climate Change impacts on principal crop and household incomes in Southern India	2012-2013 2013-17	35.11
29.	AUS Aid, Australia	Aus-AID project on "Can seasonal climate forecasts improve food security in Indian Ocean Rim Countries in a variable and changing climate?"	2012-2013 2013-17	32.13
30.	UGC, New Delhi	Project on Plant Growth Promoting Rhizobacteria can be considered as biofertilizer and Biocontrol agent at RARS, Palem	2012-13 to 2014-15	9.098
31.	DST, New Delhi	Project on "Proactive mitigation of gray mold (Botryotiniaricini) disease of	2016-17	12.50

		castor (Ricinuscommunis L.) Crop in Telangana State using dynamic disease forecast" at Agro Climate Research Centre, Rajendranagar		
32.	NAE, New Delhi	Project on Molecular breeding and Genetic manipulation of rice and Pigeonpea at IBT, Rajendranagar	2014-15 to 2016-17	276.88
33.	DBT, New Delhi	Project on Identification of miRNa and their targets in cytoplasmic male sterile and its maintainer fertile lines of Cajanuscajan at ARS, Tandur	2014-15 to 2016-17	22.33
34.	DBT, New Delhi	Project on Biofortification of Maize (ZeaMays.L) for enhancing Beta Carotene through marker assisted selection to combat Vitamin A deficiency at SRTC, Rajendranagar	2013-14 to 2015-16	15.80
35.	DBT, New Delhi	Project on Nutraceutical properties of underutilized fruits and vegetable in North Eastern Hill Region of India at QC Lab, Rajendranagar	2014-15 to 2016-17	19.07
36.	DBT, New Delhi	Project on Identification of candidate genes for enhanced water use efficiency in rice through activation tagging at IBT, Rajendranagar	2012-13 to 2016-17	36.00
37.	DBT, New Delhi	Project on Development of micronutrient enriched maize through molecular breeding phase II at IBT, Rajendranagar	2012-13 to 2014-15	44.66
38.	DBT, New Delhi	Project on Development of high yielding gall midge resistant rice varieties through marker assisted pyramiding of multiple gall midge resistance genes at IBT, Rajendranagar	2014-15 to 2016-17	22.36
39.	DBT, New Delhi	Development of pod borer resistant chickpea through transgenic technology at IBT, Rajendranagar	2015-16 to 2016-17	42.14
40.	DBT, New Delhi	Project on Enrichment of nutritional quality in maize through molecular breeding at IBT, Rajendranagar	2015-16 to 2016-17	25.00
			Total	**Rs.2825.068**

(v) Is PME Cell established (Yes/No)

The Planning and Monitoring Cell, headed by the Director (Planning and Monitoring), was established in the year 2014 at the Administrative Office, PJTSAU,

Rajendranagar, Hyderabad, immediately after the formation of the University with the objectives of planning, monitoring and evaluation of various developmental programmes and activities of the University.

The Director, Planning and Monitoring Cell also the Nodal Officer for ICAR laisioning between the University and the ICAR, with regard to the all the budgetary, academic and other activities like monitoring the ICAR Developmental Grants, NTS, JRF/SRF, Student READY programmes, Tribal Sub Plan, Strengthening of Libraries etc.

The Cell helps in preparing the outcome budget of the University prior to the budget session of Legislative Assembly every year. It also assesses and monitors the demand for human resources required to carryout teaching, research and extension activities of the University. It also provides the information pertaining to the PJTSAU to the State Legislative Assembly through the address given by His Excellency the Governor of Telangana and the Budget Speech of the Hon'ble Minister of Finance, Government of Telangana. The Director (P & M Cell) is also the Nodal Officer for the ICAR.

The Cell also attends to preparation of Annual Report of the University; maintenance and up gradation of human resource data base of the University; collection, compilation and submission of data and information in various formats to different agencies within the country and outside; furnishing information required by other statutory bodies; preparation of the Convocation Report of the Vice-Chancellor reflecting the achievements and objectives of the University; submission of monthly reports of the PJTSAU to His Excellency the Governor of Telangana and the Chancellor of the University, compilation and preparation of significant events of the PJTSAU to be presented at the Meetings of Board of Management, PJTSAU, etc. It also acts as the liaison office between the University and other Government and Non-Government Institutions.

The Director, Planning and Monitoring Cell acts has the Transparency Officer of University under the RTI Act 2005 and oversees the implementation of Section (4) obligations of RTI Act, 2005 and maintains due transparency in implementation of the Act.

4. EXTENSION

4.1 Introduction

Extension is one of the three mandates of the University, it enables flow of information and transfer of knowledge and scientific findings to practice. It reads "assist through Development Departments of Government in the process of dissemination of the improved agricultural technologies to the farmers of the State through enhanced Farmer – Extension – Research linkages and interactions".The front line extension activities of the University commonly known as Extension Education are being offered through the following centres.

- Nine (09) District Agricultural Advisory and Transfer of Technology Centers (DAATTCs)
- Six (06) *KrishiVigyanKendras* (KVKs) (2 new KVKs are sanctioned to PJTSAU in the year 2016-17 at BhadradriKothagdem and Mancherial districts of Telangana)
- Extension Education Institute (EEI) at Rajendranagar
- Agricultural Technology Information Centre (ATIC) and AICC & University Press at Rajendranagar
- Electronic Wing at Rajendranagar

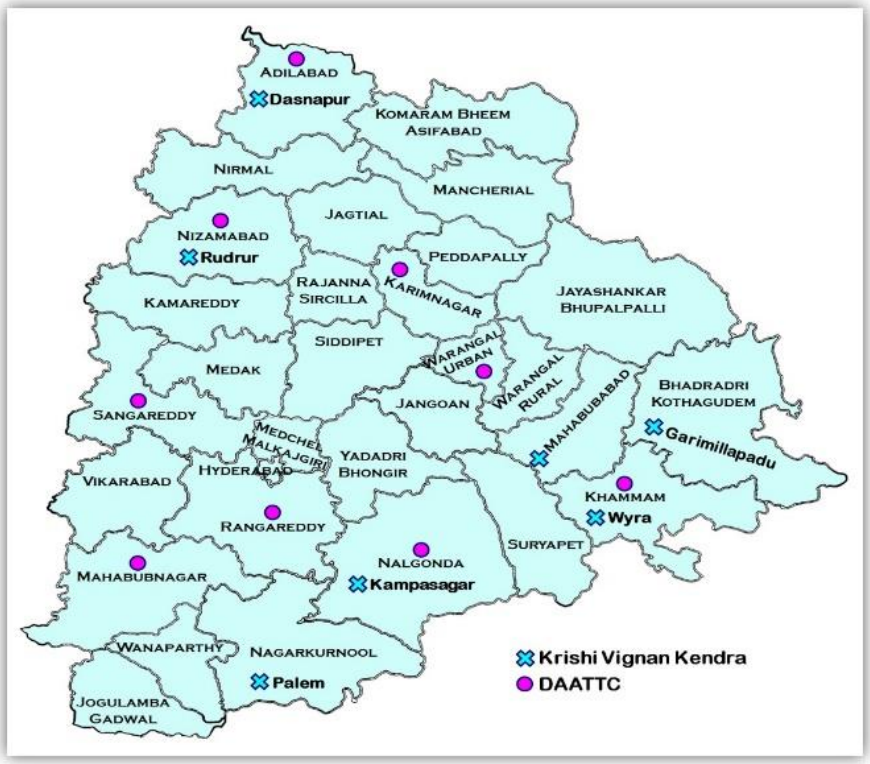

Fig. 4.1. Location of KVKs and DAATTC in Telangana State

4.2. Activities of Extension

- Technology Assessment and Refinement to develop location specific profitable technologies through on-farm trials & adaptive trials.
- Training of development personnel, non-officials and farmers in the latest technologies/ skills in agriculture and allied enterprises and organizing periodic Research – Farmer – Extension interactions.
- Organizing diagnostic surveys and suggesting remedial measures.
- Organizing *KisanMelas*, Exhibitions, Field days, *RythuSadassus*
- Processing and dissemination of production technologies relating to agriculture and allied aspects through mass media like press, radio, television, mobile, publications as well as through other extension activities.

A. No of technologies transferred to farmers during last year

The number of technologies transferred to farmers are presented in Table 21.

Table 4.1. No. of technologies transferred to farmers during last 5-years

S. No.	Themes	No of technologies transferred	Remarks
1	Crop Improvement	Improved crop varieties (13)	Climate smart, high yielding tolerant to biotic and abiotic stresses *(for details refer to Annexure VII)*
2	Crop production	33	Green manuring in rice, weed management in rice, integrated crop management in cotton, INM in cotton, integrated crop management in redgram*(for details refer to Annexure VII)*
3	Crop protection	25	Pest and disease management in rice, stem borer management in maize, sucking pest management in cotton, maruca management in redgram*(for details refer to Annexure VI1)*
4	Water management	4	Micro irrigation in sugar cane, fertigation in maize, cotton *(for details refer to Annexure VI1)*
5	Cost reduction technologies	15	Drum seeded rice, zerotillage maize, bio fertilizers in rice, sugar cane, use of bio agents for pest management in rice, sugar cane*(for details refer to Annexure VI1)*
6	Home Science	8	Drudgery reduction technologies, kitchen and nutritional gardening, value addition to vegetables and fruits, candle making*(for details refer to Annexure VI1)*
7	Fisheries and	6	Fish farming, magur culture, crap culture,

	Veterinary		azolla production *(for details refer to Annexure 1)*
8	Knowledge material	18	Interactive DVDs on crop production and protection technologies, Annual almanac (*VyvasayaPanchangam*), *Vyavasayam* monthly agriculture magazine *(for details refer to Annexure VIII)*

B. Spread of Technology in larger area (Please specify per cent area of adoption/spread at National level of total area)

Name of the crop	Name of the technology	Spread of the technology
Improved varieties	Improved high yielding and climate smart cultivars	During 2015, 13 varieties in different crops were released by the University. Out of 40 lakh acres of areanearly 20-25 percent of the area is covered with the high yielding climate smart varieties released by the University.
Rice	Cultivation of Green manure/ green gram preceding to rice	Out of 15 lakh hectares of rice area approximately in 1.5 lakh hectares area of rice green manure viz., Dahincha, sunhemp / Green gram crop cultivated before growing of rice as a green manure crop.
	Alternate Wetting and drying for management of BPH	Alternate wetting and drying a simple technique is in practice in an area of 6 lakh hectares (approx.) and it is also one of the cost effective technology which has garnered wider acceptability and adoption for management of BPH in rice.
	Drum seeding	Nearly 40, 000 ha area out of 15 lakh hectares is covered with drum seeding technology and it helped the farmers to reduce their cost interms of inputs – seed , labour, timeetc.,
	Direct seeding	The technology is spread in around 800 acres area in the state mainly in Khammam district.
Maize	Zero tillage	Approximately an area of 50,000 hectares is covered with the Zero tillage cultivation of maize during *rabi* season (mainly in Warangal, Khammam, Karimnagar, Nizamabad districts).
Cotton	Stem application	Adopted in an area of 5 lakh hectares (31.00%) out of 16 lakh hectare cultivated area across the State for management of sucking pest complex
Redgram	Improved varieties and Best Management Practices	Out of 4 lakh hectares of redgram cultivated area nealry30 per cent area is covered with

		the improved varieties and best management practices developed by the University
Micro irrigation	Drip and fertigation	The adoption of micro irrigation and fertigation is widely adopted in vegetables and commercial crops like cotton, sugar cane and maize. Out of 49 lakh hectares of gross cropped area the technology is spread approximately in an area of4-5 lakh hectares
Soil health management	Soil analysis and INM/ STCR	Soil test based fertilizer application is adopted in major crops like rice, maize, cotton. The technology is spread nearly in 20-25 percent of the cultivated area of the State.

C. Increase in Agricultural growth (total production) in the area of jurisdiction of the University in last 5 years

In the jurisdiction of the University about 55.49 percent of the population is dependent, in some form or the other, on farm activity for livelihoods, it is imperative to increase the farm incomes and ensuring sustainable growth in Telangana to reduce poverty. The share of agriculture sector to the Gross State Value Added (GSVA) is 8.6 percent at current prices.

Table 4.2. Food grain production, GSDP and contribution to GSVA

S.No	Year	Total Food grain production (lakh tonnes)	GSDP	Contribution to GSVA
1	2012-13	82.42	2.7	17.9
2	2013-14	106.86	5.6	18.3
3	2014-15	72.15	8.7	16.0
4	2015-16	51.45	9.5	14.7
5	2016-17	77.93	10.1	15.3

As is evident from Table 4.2, the food grain production dipped in the two consecutive drought years encountered in 2014 – 15 & 2015 – 16 which led to farmers distress in the state. However, 2016 – 17 was more promising with bundant rainfall and critical planning and collaborative efforts of Government of Telangana and PJTSAU have paid rich dividends in increasing the area under pulses and consequent reduction in area of cotton; adoption of new high yielding rice, maize, castor and red gram varieties & following soil test based fertilizer usage.

The production of food grains, including cereals and millets and pulses estimated to be about 77.93 lakh tones. The sharp increase in the production of pulses, cereals and millets has resulted in increased food grain production in the State. It is also

encouraging to note that there is an increase in both area and yield in food grains in 2016-17, mainly due to abundant rainfall. The oilseeds production recorded as against 5.79 lakh tonnes.

In case of Rice, the increasing trend in yield of the crop is mainly due to introduction of the High Yielding Varieties released by the University, namely JGL 18047, KNM-118, RNR-15048, etc., which have also replaced the age old varieties viz., MTU 1010, BPT 5204 respectively.

The cost reduction technologies introduced and demonstrated by the extension units of the University viz., Direct seeded rice, use of bio fertilizers, green mannuring, growing of green gram as preceding crop to rice, intercropping in cotton, maize, use of bio agents for pest & disease management, alternate wetting and drying etc., benefitted the farming community in reducing the cost of cultivation also conservation of natural resources and reducing water and soil pollution.

D. KVK Awards during last 5 years – NIL

E. Extension workers award at State and National level during last five years (List to be enclosed)

The following are the awards / honours received by the Scientists working in KVKs, DAATTCs and EEI of the University (Table 23).

Table 4.3. Summary of the awards received by the Extension Scientists of the University

S.No	Year	Details of the Awards / honours
National Level Awards		
1	2014-15	**Best Stall Award** was conferred on PJTSAU "PUSA *Krishi Vigyan Mela* -2015 held at IARI, New Delhi during 10th to 12th March 2015
2	2015-16	**Best Stall Award** was conferred on PJTSAU in 8th National seed congress award held at HICC, Hyderabad from 27th to 29th Oct 2015.
State Level Awards		
1.	2012	Dr. B. Savitha received "***Rytuunestham Puraskaaraalu*** – 2012" from Padmasri Dr. I.V. Subba Rao in the category of Best Scientist on 11th September, 2012 at Hyderabad.
2.	2012	Dr. B.P. Vardhini, Coordinator DAATTC Mahabubnagar (2010 to June-2013) Honoured with ***Ugadi Puraskaralu*** **Award** in 2012
3.	2012	Dr. R. Uma Reddy, Coordinator DAATTC, Warangal received ***Ugadi Puraskaralu*** Award in 2012
4.	2013	Dr. J. Hemantha Kumar, Coordinator DAATTC, Khammam received ***Ugadi Puraskaralu*** from the Hon'ble Chief Minister of Andhra Pradesh on 11th April 2013 at Ravindra Bharathi, Hyderabad.

5.	2015	Dr.K.Madhu Babu, Assoc. Professor received **State Level Best Extension Scientist Award** on April 04, 2015 at Tirupathi.
6.	2016	"**National Public Relations Award**" was conferred on PJTSAU for Corporate Video Production on "University Profile" on February 21, 2016.
7.	2016	Dr.M.Preethi, Assoc. Professor received **Meritorious Extension Scientist Award** for the year 2012.
8.	2016	Dr. V. Lakshmi Narayanamma received **"Young Scientist Award"** for significant contribution in Agricultural Science on 4th June 2016.
9.	2016	Dr. V. Ravinder Naik, PC, received the **Young Scientist Award for** "Innovative and Current Advances in Agriculture and Allied Sciences" (ICAAAS, 2016) during 10th and 11th December, 2016 at PJTSAU, Hyderabad
10.	2016	Dr. V. Ravinder Naik, PC, received the **Distinguished Scientist Award**, 2016 during National Conference on "Emerging Challenges and Opportunities in Agriculture, Social, Plant, Environment, Co-operatives &Technology" (ECOASPECT-2016) from 10-11th September, 2016.

F. Quality input supplied by University (Seed Semen, planting material etc., during last year)

S.No	Quality input	Quantity (Q)	Remarks
1	Seed (Foundation seed)	872.6	KVKs of the University producing the quality seed in their instructional farm for supplying to the farmers of their respective districts and for replacement of the old varieties with new.
2	No of Soil Samples analyzed	5724.0	Two KVKs namely Adilabad and Malyal are having Soil testing labs for carrying out the analysis.

*Details of the seed production are presented in Annexure VI.

G. Resource generated including revolving fund & commercialization of technologies in five years.

The total amount of resources generated year wise as reflected in Book accounts is given in Table 4.4.

Table 4.4. Resources generated in PJTSAU during last five years

S. No.	Year	Education (Seed Production & Projects)	Research (Seed Production & Projects)	Extension (Seed Production & Projects)	Direct Receipts as per Book of Accounts	Total
1	2012-13	741367	0	3990178	61744000	66475545
2	2013-14	947936	0	4895127	53170000	59013063
3	2014-15	2333417	83110644	5136680	49825000	140405741
4	2015-16	1230624	99099949	6867232	71071000	178268805
5	2016-17	1989329	91841815	5234442	68865000	167930586
Total :		**72,42,673**	**27,40,52,408**	**2,61,23,659**	**30,46,75,000**	**61,20,93,740**

An amount of 61,20,93,740/- (Sixty one crores twenty lakhs, ninety three thousand and seven hundred and forty only) were generated through the activities of three wings of the University (Annexure - IX).

H. Consultancies / Assignments (list to be enclosed)

The consultancy projects handled under different faculties is given in Table 25. A total of Rs. 119.17 was earned through consultancy projects.

Table 4.5. Consultancy projects executed by the University

S. No.	Project title	Period	Budget (Rs.in lakhs)	Project Investigator
1.	Bio-Diversity Studies at Degraded Forestland of Sarapaka and Surrounding Environs of Khammam District, Telangana	2013-14	5.00	Dr. V. Vasudeva Rao
2.	External Monitoring and Evaluation of AP/TS Community Based Tank Management Project (Andhra Pradesh /Telangana State Community Based Tank Management Project)	2013-14 to 2015-16	0.50	Dr.K. Avil Kumar
3.	Consultancy project on "Field Oriented Training of Facilitators on cotton production" for African participants under CTAP (Cotton Technical Assistance Programme)	2013-14	45.75	Dr.D.Jagannadha Raju, Dr.K.MadhuBabu Dr.M.Sreenivasulu Dr.K.S.Purnima
4.	Special Consultancy project on "*New Dimensions in Agricultural Extension Management*" for the	2014-15	14.06	EEI faculty

	officers of Agriculture and Allied departments of Odisha state			
5.	International consultancy project on "Technological advancement in value added agriculture and linking farmers to market through small holder's group approach"	May, 2016	1.16	Dr.M.Surya Mani Dr.P.Vijaya Lakshmi
6.	International consultancy project on "Best practices for quality rice seed production and storage" for the officers of Department of Agriculture, Dhaka, Bangladesh	June, 2016	1.13	Dr.M.Surya Mani Dr.K.MadhuBabu
7.	International consultancy project on "Technological Intervention and Best Practices for Coconut Hybridization" for the officers of Department of Agriculture, Dhaka, Bangladesh	June, 2016	1.65	Dr.M.Surya Mani Dr.K.MadhuBabu Dr.P.Vijaya Lakshmi Dr.M.Preethi
8.	International consultancy project on "Technological Intervention and Best Practices for Coconut Hybridization for the officers of Department of Agriculture, Dhaka, Bangladesh	December, 2016	3.35	Dr.K.MadhuBabu Dr.S.Chandrashekar
9.	International consultancy project on "Advanced Technology in Mechanized Agriculture" for the officers of Department of Agriculture, Dhaka, Bangladesh	February, 2017	2.34	Dr.M.Surya Mani Dr.S.Chandrashekar
10.	Consultancy project on "Integrated Farm Management and Advancement in Linking Farmers to Market for High Value Crops" for the officers of Department of Agriculture, Dhaka, Bangladesh	March, 2017	1.47	Dr.M.Surya Mani Dr.M.Prasuna
11.	Consultancy project on capacity building of "Agrotechnologies for Productive and Profitable Agriculture in Telangana State" for Department of Agriculture, Telangana	August, 2016	6.35	Dr.M.Surya Mani Dr.P.Vijaya Lakshmi Dr.M.Preethi
		September, 2016	6.50	Dr.M.Surya Mani Dr.S.Chandrashekar Dr.C.LawrencePrabu
		April, 2017	4.22	Dr.M.Surya Mani Dr.K.MadhuBabu

				Smt.D.Vani
		April, 2017	4.22	Dr.M.Surya Mani Dr.M.Prasuna Sri S.V.Ratnacharyulu
		Total	**119.76**	

5. LINKAGES

A. List No. of Inter Institutional / collaborative Projects

The list of inter institutional & collaborative projects are presented in Table 26.

Table 5.1. List of inter institutional & collaborative projects

S. No.	Title of the Project	Period	Name of the collaborating Institute	PI/Co-PI	Budget (Rs.in lakh)
1.	Technology enhanced learning in Agricultural Education under Niche area of Excellence, College of agriculture, Rajendranagar	2014-17	NAARM, Rajendranagar	Dr. G.R.K. Murthy, NAARM Dr.K.V. Radha Krishna, PJTSAU	42.00
2.	"Pigeonpea Improvement through molecular breeding' at IBT (USAID), Rajendranagar	2012-15	ICRISAT, Hyderabad	Dr. M. Balaram	49.50
3.	"Impact of indiscriminate use of chemical fertilizers & Pesticides" at RARS, Jagtial.	2016-18	NIPHM, Hyderabad	Dr. M. Venkataiah	26.72
4.	Identification of superior alleles and lines from wild cajanus species for pigeonpea improvement at RARS,Warangal	2015-18	ICRISAT, Hyderabad	Dr. P. Jagan Mohan Rao	48.25
5.	Identification of superior alleles & lines from wild cajanus species for pigeonpea improvement	2015-17	ICRISAT, Hyderabad	Dr. M.V. Nagesh	48.25
6.	Developing multi-scale climate change adaptation strategies for farming communities in Combodia, Bangladesh & Lao PDR, and India	2010-15	CSIRO, Australia	Dr. D. Raji Reddy	73.42
7.	AgMIP project on Integrated assessment of Climate Change impacts on principal crop and household incomes in India	2012-15	ICRISAT, Hyderabad TNAU, Coimbatore	Dr.D. Raji Reddy	35.11
8.	Aus-AID project on "Can seasonal climate forecasts improve food security in Indian Ocean Rim Countries in a variable and changing climate"	2012-15	CSIRO, Australia	Dr. D. Raji Reddy	32.13
9.	Water Sector Improvement Project-Adaptive Research	2012-17	World Bank, Irrigation & Agriculture Department	Dr. V. Praveen Rao	117.52
10.	Thematic project in frontiers of Nano S&T on Development of Lab-on-chip platforms for	2016-19	IIT, Mumbai	Dr. V. Ramulu	53.27

	Efficient & Automated farming (LEAF)-Agricultural sensors				

B. Details of partnership with private sector R & D institutions and Impact

The details of partnerships with private sector institutions and its impact is presented in Table 5.2, 5.3, 5.4 & 5.5.

Table 5.2. Partnerships with private sector R& D institutions and its impact

S.No.	Name of the Institution	Impact
1	Agriculture Skill Council of India	Developed occupational standards for job roles in agriculture and allied sector and assessment of skill and knowledge of trainees as per occupational standards
2	Better Cotton Initiative, New Delhi	Capacity building of farmers & extension workers and knowledge transfer from a single point source on sustainable cotton farming
3	Assocom Institute of Bakery Technology and Management, New Delhi	Provided a framework for comprehensive teaching, training and research specifically for baking technology and allied disciplines
4	Interface Agricultural Technologies Private Limited, Hyderabad	Provided a framework for project "Sustainable agriculture through farmer training, skill building and awareness generation on responsible use, secure storage and disposal of pesticide products.
5	Pioneer Hi-Bred Private Limited, Hyderabad	Developed technologies using biotechnological tools in crop plants.
6	Prathista Industries Private Limited, Hyderabad	Developed technologies using biological agents for control of crop pests.

Table 5.3. Collaboration with private seed companies for production and marketing of university developed maize hybrids

S. No.	Name of the Company	Name of the Hybrid
1	M/s Shakthi Seeds Pvt. Ltd., Hyderabad, Telangana State	DHM 117
2	M/s Sonam Seed Technologies Pvt. Ltd., Karimnagar, Telangana State	DHM 117
3	M/s Genesis Agro Seeds Pvt. Ltd., Reg. Office, H.No. EWS 86/1, KPHP Colony, Kukatpally, Hyderabad	DHM 117
4	M/s Naveen Seeds, Adoni, Kurnool, Andhra Pradesh	DHM 117
5	M/s Naveen Seeds, Adoni, Kurnool, Andhra Pradesh	DHM 121
6	M/s Sri Laxmi Venkateswara Seeds, Peddapadu, Kurnool, Andhra Pradesh	DHM 117
7	M/s Muralidhar Seeds Corporation, Kurnool, Andhra Pradesh	DHM 121
8	M/s Sayaji Seeds, Kathwada, Ahmedabad, Gujarat	DHM 117
9	M/s Chakra Seeds, Kurnool, Andhra Pradesh	DHM 117
10	M/s Sri Sai Laxmi Seeds, Kurnool, Andhra Pradesh	DHM 121
Impact The collaboration of PJTSAU with the above private seed companies for marketing its maize hybrids viz., DHM-117 and DHM-121 contributed to increase the area under these hybrids by 4 to 5% of the		

total maize area in the country. It is an effective PPP model working successfully.

Table 5.4. Collaboration with private seed and agro-chemical companies for testing of hybrids, varieties and efficacy of new molecules (Period: 2014 – 2017)

S.No.	Name of the firm	Name of the crop
1.	M/s.Rallis India Ltd., Bangalore	Rice
2.	M/s.MakhteshimAgan India Pvt.Ltd., Hyderabad	Blackgram
3.	M/s.Sri Biotech Laboratory India Ltd., Hyderabad	Rice
4.	M/s.DuPont India Pvt.Ltd., Haryana	Rice
5.	M/s.MakhteshimAgan India Pvt.Ltd., Hyderabad	Redgram
6.	M/s. Dow Agro Sciences, Mumbai	Rice
7.	M/s.Advanta India Ltd., Hyderabad	Forage Crops
8.	M/s.Bayer Crop Science Ltd., Madhapur, Hyderabad	Soybean
9.	M/s.Parijat Industries India Pvt.Ltd., New Delhi	Rice
10.	M/s.Privi Life Science Pvt.Ltd., Mumbai	Rice
11.	M/s.Nagarjuna Fertilizes & Chemical Ltd., Hyderabad	Maize
12.	M/s.Biotech Laboratories India Ltd., Hyderabad	Rice
13.	M/s.NovozymesAgriPvt.Ltd., Bangalore	Corn
14.	M/s.Ganga Hybrid Seeds Company, Armoor	Forage Sorghum
15.	M/s.Excel Crop Care Ltd., Mumbai	Rice
16.	M/s.Coromnandel International Ltd., Secunderabad	Soybean
17.	M/s.DhanukaAgri Tech Ltd., Haryana	Cotton
18.	M/s.BASF India Ltd., Navy, Mumbai	Sugarcane
19.	M/s.InternationalPanaacea Limited, New Delhi.	Blackgram
20.	M/s.Dhana Crop Science Ltd., Secunderabad	Tomato
21.	M/s.Monsanto India Limited, Banjara Hills, Hyderabad	Maize
22.	M/s.Kanchan Ganga Seed, Somajiguda, Hyderabad	Maize
23.	M/s.Ajit Seeds Ltd., Chitegaon, Maharashtra	Maize
24.	M/s.Hy-Tech Seeds India Pvt.Ltd., Hyderabad	Maize
25.	M/s.Kaveri Seed Company Ltd., Secunderabad	Maize
26.	M/s.Bisco Bio-Sciences Pvt.Ltd., Secunderabad	Maize
27.	M/s.PHI Seeds Pvt.Ltd., Somajiguda, Hyderabad	Maize
28.	M/s.Rasi Seeds Pvt.Ltd., Madhapur, Hyderabad	Maize
29.	M/s.MaaAgri Biotech, L.B.Nagar, Hyderabad	Maize
30.	M/s.Nuziveedu Seeds Limited, Medchal, Ranga Reddy	Maize
31.	M/s.PHI Seeds Pvt.Ltd., Somajiguda, Hyderabad	Maize
32.	M/s.Shri Ram Bioseeds Genetics, Madhapur, Hyderabad	Maize
33.	M/s.Nuziveedu Seeds Limited, Medchal, Ranga Reddy	Maize
34.	M/s.L.G.Life Sciences India Pvt.Ltd., Gurgaon	Rice
35.	M/s.Adama India Pvt.Ltd., Ranga Reddy	Soybean
36.	M/s.Gavage Organics Technology, Dilsukhnagar, Hyderabad	Paddy
37.	M/s.GSP Crop Science Pvt.Ltd., Ahemadabad	Groundnut
38.	M/s.Horizon Molecules Pvt.Ltd., Hyderabad	Rice
39.	M/s. Kaveri Seeds Company Ltd., Secunderabad	
40.	M/s. PHI Seeds Pvt.Ltd., Hyderabad	

41.	M/s. Rohini Seeds Pvt.Ltd., Hyderabad	**Maize Hybrids**
42.	M/s. UPL Ltd., Hyderabad	
43.	M/s. BISCO Biosciences Pvt.Ltd., Secunderabad	
44.	M/s. Kaveri Seeds Company Ltd., Secendurabad	
45.	M/s. Kanchana Ganga Seed Company, Hyderabad	
46.	M/s. Monsanto India Ltd., Mumbai	
47.	M/s. Sygenta India Ltd., Medchal, Rangareddy	
48.	M/s.BISCO BIOSCIENCES PVT.LTD., Secunderabad	Paddy Hybrids
49.	M/s. Rohini Seeds Pvt.Ltd., Hyderabad	Paddy Hybrids
50.	M/s. Mahyco Pvt. Ltd., Hyderabad	Paddy Hybrids
51.	M/s.Nath Bio Genes Ltd., Aurangabad	Paddy Hybrids
52.	M/s.Ajith Seeds, Pvt.Ltd., Aurangabad	Paddy Hybrids
53.	M/s.Bayer Bio Science Ltd., Hyd	Paddy Hybrids
54.	M/s.Metaheli Life Science Ltd., Bangalore	Paddy Hybrids
55.	M/s.Vikky'sAgri Sciences Pvt.Ltd., Hyderabad	Paddy Hybrids
56.	M/s.Amar Biotech Ltd., Hyderabad	Paddy Hybrids
57.	M/s.Ankur Seeds Pvt.Ltd., Nagpur	Paddy Hybrids
58.	M/s.Sunglow Seeds Pvt.Ltd., Hyderabad	Paddy Hybrids
59.	M/s.Bioseeds Research India Pvt.Ltd., Hyderabad	Paddy Hybrids
60.	M/s. Seeds Works International Pvt. Ltd., Chitegaon, Aurangabad	Paddy Hybrids
61.	M/s.NarmadaSagarAgri Seeds Pvt.Ltd., Hyd	Paddy Hybrids
62.	M/s.KiritimanAgro Genetics Ltd., Imanpur, Aurangabad	Paddy Hybrids

Impact

- The conduct of the paid up trials on hybrids/varieties helped in identifying the high yielding hybrids and varieties suitable for the Telangana State.
- Conducting the paid up trials resulted in data generation on bio-efficacy of new molecules for management of pests & diseases which is mandatory for registration through CIBRC

Table 5.5. Collaboration between PJTSAU & Microirrigation companies

S.No.	Name of the Company
1	M/S Netafim Irrigation India Pvt. Ltd., 268 – 278, GIDC, ManjusarSavli, Vadodara, India – 391775, Gujarat
2	M/S FinolexPlasson Industries Pvt Ltd.., Habsiguda, St. No. 8, Hyderabad – 500007, Telangana State
3	M/S Jain Irrigation Systems Ltd., Jalgoan, Maharashtra - 425001

Impact

- Conducting the fertigation studies in aerobic rice and ID crops enabled to formulate both irrigation & fertigation scheduling programs for the benefit of the farmers
- Also enabled exchange of microirrigation technical knowledge and capacity building

Other Collaborative Initiatives

1. PJTSAU & M/s Pioneer DuPont Pvt. Ltd Conference

A Conference on "Integrating Genomics with Phenomics in Crop Improvement – Learnings from a Commercial Perspective" was organized on 23rd& 24th November, 2015 at PJTSAU Auditorium, Rajendranagar in collaboration with M/s. DuPont Pioneer to familiarize students on advances and Integration of Genomics &Phenomics into Plant Breeding. The conference was followed by a visit on 25th Nov., 2015 to the facilities of M/s. Pioneer Hi-Bred Pvt. Ltd, Wargal Mandal, Medak District.

Dr. Hans Bhardwaj, Senior Research Director, M/s. DuPont Pioneer, Asia Pacific interacting with students & faculty during the conference at PJTSAU, Hyderabad

2. PJTSAU & IAUA Conference

Seventh Brainstorming session on "Youth and Smart Agriculture: Challenges and Opportunities" was organized during 28th& 29th September, 2016 at Hyderabad in collaboration with Indian Association of Agricultural Universities (IAUA). Twenty Two Vice Chancellors of various State Agricultural Universities of the country participated in the same. Dr. N. S. Rathore, DDG(Edn.), ICAR, New Delhi delivered the Keynote Address on "The Future of Agriculture – Smart Farming" during the inaugural session. The President of IAUA, Dr. M. C. Varshneya; the Directors of local ICAR Institutes and University Officers of Professor Jayashankar Telangana State Agricultural University also participated in the session.

Dignitaries on the dais during the inaugural session of the 7th Brainstorming session on "Youth and Smart Agriculture – Challenges and Opportunities"

C. Exchange of Faculty (Sabbatical, Visiting Scientist, Adjunct Faculty)

Honorary Professors

- Prof. E.A. Siddiq, FINA, FNASc, FINAAS, Senior Scientist, NASI Platinum Jubilee Fellowship, Hon Professor (Biotechnology) PJTSAU, Institute of Biotechnology, Rajendranagar.
- Dr. M.N.V. Prasad Gajula, DST Ramanujam Fellowship (Principal Investigation), Institute of Biotechnology, Rajendranagar

Adjunct Faculty

- Dr.S.N. Puri, Former Vice-Chancellor, Central Agricultural University, Imphal eminent scientist in the field of Entomology.
- Dr. Jagadish K. Ladha, Principal Scientist, International Rice Research Institute, Los Banos, Phillippines eminent scientist in the field of Agronomy and Soil Science

Visiting Scientist

- Dr. Subba Reddy Palli, Dept. of Entomology, College of Agriculture, University of Kentucky, Lexington, USA availed the Fulbright Nehru Academic and Excellence Award as a Fulbright scholar from 19th Sept., 2014 to 18th Jan., 2015. He conducted research on uptake of nanoformulated dsRNA into rice plants at the Institute and helped to develop a concept document on use of genome editing technologies to improved rice grain quality.

Participation of faculty in overseas programs

The details of participation of faculty in various overseas programmes and the visits by foreign delegations to the University during the period under report are given here under.

Table 5.6. Faculty visits to foreign countries for attending scientific meetings

S. No.	Name of the Faculty	Programmes attended	Period&Place
1.	Dr. K. Keshavulu, Associate Professor & Univ. Head, Dept. of Seed Science & Technology, College of Agriculture, Rajendranagar, Hyderabad	Workshop on "Variety Testing" and ISTA 2012 Annual Meeting	6th - 14th June, 2012, The Netherlands
2.	Dr. K. Murali Krishna, Scientist (Pl. Br.), Maize Research Centre, Rajendranagar, Hyderabad	"Abiotic stress tolerant maize for Asia (ATMA)" and training programme on "Double Haploids"	11th -16th June, 2012, Stuttgart, Germany

3.	Dr. V. Praveen Rao, Director, WTC, Rajendranagar, Hyderabad	Workshop on "Israeli Technologies - Relevance to Myanmar Agriculture"	9th –10th July, 2012; Yangon, Myanmar
4.	Dr. V. Shashi Bushan, Principal Scientist (Entomology) & Head, AINP on Pesticide Residues, Rajendranagar, Hyderabad	4th International Feed Safety Conference: "Methods and Challenges".	11th -13th Sept., 2012; Beijing, China
5.	Sri V. Nagi Reddy, Vice-Chancellor I/c and Dr. AldasJanaiah, Professor & Head, SABM, Rajendranagar, Hyderabad	Michigan State University, Lansing; Mississippi; Kansas State University, Manhattan and IFPRI, Washington DC, USA to explore possibilities for joint programmes in research and education in the field of agribusiness management.	5th – 15th Sept., 2012; USA
6.	Dr. G.Bhupal Raj, ADR, RARS, Jagtial and Dr. M. Sreedhar, Senior Scientist, Quality Control Lab, Rajendranagar, Hyderabad	Training programme on "Installation, Calibration and Operationalization of Inductively Coupled Plasma Emission Spectrophotometer"	15th – 23rd Sept., 2012; Hudson, New Hampshire, USA
7.	Dr. Y. Siva Lakshmi, Scientist (Agronomy); Dr.M. Anuradha, Sr. Scientist (Entomology) and Dr. D. Sreelatha, Scientist (Agronomy), Maize Research Centre, ARI, R'nagar, Hyd.	International Maize Conference 2012	22nd - 24th Nov., 2012; Sulawesi, Indonesia
8.	Dr. AldasJanaiah, Professor & Head, School of Agribusiness Management, College of Agriculture, Rajendranagar, Hyderabad and Dr. K. Aparna, Assistant Professor, Post Graduate and Research Centre, Hyderabad	Global Program & Planning Meeting of the Global Innoversity for MetroAg / Metro Food.	24th -28th Feb., 2013; Michigan State University, Detroit, USA
9.	K. Sumalini, Scientist (Plant Breeding), Maize Research Scheme, ARS, Karimnagar	Training programme on "Doubled Haploid (DH) Technology in Maize Breeding".	4th – 8th March, 2013; El Batan, Mexico
10.	Dr. G. P. Sunandini, Principal Scientist (Agril. Economics), Admn. Office, ANGRAU, R'nagar, Hyderabad	AgMIP TOA-MD Workshop	29th April – 3rd May, 2013; Dubai, UAE
11.	Dr. Mahalakshmi V. Reddy, Professor & Head, Dept. of Resource Management & Consumer Sciences, College of Home Science, Saifabad, Hyderabad	Training programme on "Freeze Dry Training for Botanique's Freeze Dry Machines & Floral Preservation"	16th – 17th May, 2013; Arizona, USA
12.	Dr. K. Manorama, Prof. and Head & Program Director, Dept. of Foods and Nutrition, Post Graduate and Research	"Palm Oil Nutrition Week and dietary palm oil in human nutrition conference – Nutricon 2013"	20th – 22nd May, 2013; Kuala Lumpur, Malaysia

	Centre, Rajendranagar, Hyderabad		
13.	Dr. P. Punna Rao, Dy. Director of Extension, Admn. Office, ANGRAU, R'nagar; Dr. K. Madhu Babu, Assoc. Professor, EEI, R'nagar and Dr. K. S. Purnima, Asst. Professor, EEI, R'nagar	International Conference on Social Sciences Research (ICSSR-2013)	4th – 5th June, 2013; Penang, Malaysia
14.	Dr. K. Vijay Krishna Kumar, Scientist (Pathology), FCC, Seetaphalmandi, Hyd.	International Training Workshop for Groundnut Soil-Borne Diseases	7th – 9th June, 2013; Wuhan,China
15.	Dr. K. Keshavulu, Assoc. Prof. & Head, DSST, College of Agriculture, R'nagar.	30th ISTA Seed Symposium	12th - 14th June, 2013; Antalya, Turkey
16.	Dr. B. Neeraja Prabhakar, Professor, Dept. of Horticulture, College of Agriculture, R'nagar; Dr. K. B. Suneetha Devi, Professor, Dept. of Agronomy, College of Agriculture, R'nagar and Mrs. R. Neela Rani, Assistant Professor, EEI, R'nagar.	International Conference on Agricultural and Animal Sciences	8th – 9th July, 2013; Colombo,Sri Lanka
17.	Dr. V. Bharathi, Scientist (Pathology), SRTC, R'nagar.	10th International Congress of Plant Pathology 2013	25th – 30th Aug., 2013; Beijing, China
18.	Dr. A. Madhavi Lata, Asst. Professor, Department of Forestry, College of Agriculture, R'nagar.	61st International Congress and Annual Meeting of the Society for Medicinal Plants and Natural Product Research	1st – 5thSept., 2013; Munster, Germany
19.	Sri. S.G. Mahadevappa, In-Service Ph.D. Scholar, Dept. of Agronomy, College of Agriculture, R'nagar.	Training course on "Methods of extension and participatory engagement in farming systems research"	2nd – 14thSept., 2013; Australia
20.	Dr. K. Veeranjaneyulu, University Librarian, Central Library, ANGRAU, R'nagar.	16th International Symposium on Electronic Thesis and Dissertations	23rd -26th, Sept., 2013 University of Hong Kong, Hong Kong
21.	Dr. D. Raji Reddy, Director, Agro Climate Research Centre, ARI, R'nagar.	University of California, DavisTo explore collaboration in the fields of crop modeling, AWS networking, drought monitoring and bio-energy	15th Oct., 2013; University of California, Davis, USA
22.	Dr. M. Yakadri, Principal Scientist (Agro) & Head, AICRP on Weed Control, R'nagar.	24th Asian - Pacific Weed Science Society Conference	22nd - 25th Oct., 2013; Bandung,Indonesia
23.	Dr. M. Madhavi, Principal Scientist (Agro), AICRP on Weed Control, R'nagar.		

24.	Dr. D. Raji Reddy, Director, Agro Climate Research Centre, ARI, R'nagar.	4th Annual AgMIP Global Workshop	28th – 30th Oct., 2013; Columbia University, New York, USA
25.	Dr. T.V. Hymavathi, Professor, Dept. of Foods & Nutrition, Post Graduate and Research Centre, R'nagar.	First International Conference of the Asia- Pacific-Society for Agricultural and Food Ethics (APSAFE 2013)	28th – 30thNov., 2013; Chulalongkorn University, Bangkok, Thailand
26.	Dr. C. Cheralu, Principal Scientist (Rice Breeding), RARS, Warangal.	7th International Rice Genetics Symposium, IRRI	5th – 8th, Nov., 2013; Manila, Philippines
27.	Dr. Ch. Venkata Durga Rani, Professor, Institute of Biotechnology, R'nagar.		
28.	Dr. A. Sharada Devi, Consortium Principal Investigator & Emeritus Scientist, College of Home Science, Saifabad, Hyderabad.	Taiwan International Cultural & Creative Industry Expo – 2013	21st–24th, Nov., 2013; Taiwan
29.	Dr. C. Sudhakar, Senior Scientist, ARS, Tandur.	Training program on "Hybrid Pigeon pea"	9th – 12thDec., 2013; ICRISAT-Nairobi, Kenya
30.	Dr. K. Veeranjaneyulu, University Librarian, Central Library, ANGRAU, R'nagar.	International Training of NARS scientists in Digitalization of Libraries	20th Feb., to2nd Mar., 2014; Cornell University, USA
31.	Dr. G. Sreenivas, Principal Scientist (Agro.), Agro Climate Research Centre, R'nagar.	AgMIP Regional Research Team Finish Line Workshop	29th Jan., to6th Feb., 2014; Arusha, Tanzania
32.	Dr. D. Raji Reddy, Director, Agro Climate Research Centre, ARI, R'nagar.		
33.	Dr. K. Veeranjaneyulu, University Librarian, Central Library, ANGRAU, R'nagar.		
34.	Dr. M. V. Nagesh Kumar, Principal Scientist, RARS, Palem.	Tropical Legumes – III Stakeholder Consultation Meeting	17th– 21stMar., 2014; Nairobi,Kenya
35.	Dr. V. Radha Krishna Murthy, Prof. (Academic), O/o Dean of Agriculture, Admn. Office, R'nagar.	International conference on "Adapt to Climate"	27th– 29th March, 2014, Nicosia, Cyprus
36.	V. Rajendra Prasad, Scientist (Economics), ECF Scheme, RARS, Warangal.	International Global Food Symposium	25th–26thApril, 2014; Georg-August University Gottingen, Germany
37.	Dr. K. Aparna, Assistant Professor, Post Graduate and Research Centre, R'nagar.	International training programme on "Monitoring, evaluation and impact assessment of Food and Nutrition Security Programmes.	19th May – 6thJune, 2014 Wageningen, The Netherlands.
38.	Dr. V. SashiBhushan, Principal Scientist & Head (Entomology) and Dr. Ch. Sreenivasa Rao, Senior	International Conference on Agriculture & Forestry (ICOAF-2014)	10th –11thJune, 2014; Colombo, Sri Lanka

	Scientist (Entomology), AINP on Pesticide Residues, Rajendranagar, Hyderabad		
39.	Dr. K. Aparna, Assistant Professor, Post Graduate and Research Centre, R'nagar.	International training programme on "Monitoring, evaluation and impact assessment of Food and Nutrition Security Programmes.	19th May – 6thJune, 2014, Wageningen, The Netherlands.
40.	Dr. V. SashiBhushan, Principal Scientist & Head (Entomology) and Dr. Ch. Sreenivasa Rao, Senior Scientist (Entomology), AINP on Pesticide Residues, Rajendranagar, Hyderabad	International Conference on Agriculture & Forestry (ICOAF-2014)	10th –11thJune, 2014, Colombo, Sri Lanka
41.	Dr. P. Anand Kumar, Director, Institute of Biotechnology, R'nagar, Hyderabad	Workshop on "The Global Pipeline of GM Crops: An Outlook for 2020"	11th –12th June, 2014 Seville, Spain
42.	Dr. K. Keshavulu, Associate Professor & Univ. Head, Dept. of Seed Science & Technology, College of Agriculture, Rajendranagar, Hyderabad	ISTA Annual Group Meeting 2014	15th –19thJune, 2014, Edinburg, Scotland, UK
43.	Dr. S. J. Rahman, Principal Scientist & Head, AICRP on Biological Control of Crop Pests and Weeds, R'nagar, Hyderabad	Technical Training Workshop on "Non-Target Organisms (NTO) Testing of Transgenic Crops"	23rd –27thJune, 2014, Ames, IOWA, USA
44.	Dr. D. Raji Reddy, Director of Extension, R'nagar, Hyderabad	Final Review Meeting of the ACIAR Project on "Developing Multi scale climate change adaptation Strategies for farming communities in Cambodia, Lao PDR, Bangladesh and India"	21st – 25thJuly, 2014, Savannakhet in Laos, Cambodia
45.	Dr. D. Raji Reddy, Director of Extension, Admn. Office, ANGRAU, R'nagar, Hyderabad & Dr. G. Sreenivas, Principal Scientist (Agronomy) & Director i/c, Agro- Climate Research Centre, ARI, R'nagar, Hyderabad	Workshop of the Project on "Improving the robustness, sustainability, productivity and eco-efficiencies of rice systems throughout Asia"	2nd – 4thSept., 2014, Bogor Agriculture University, Indonesia
46.	Dr. P. Anand Kumar, Director, Institute of Biotechnology, Rajendranagar, Hyderabad	2nd Annual "South Asia Biosafety Conference"	15th –16thSept., 2014 , Colombo, Sri Lanka
47.	Dr. G. Sreenivas, Principal Scientist (Agronomy) & Director i/c, Agro Climate Research Centre, Agril. Research Institute, R'nagar,	Aus-AID project Meeting and Workshop on "Cross-Indian Ocean Region Climate Risk Management"	25th – 26thSept., 2014, Colombo, Sri Lanka

	Hyderabad		
48.	Dr. G. Bhupal Raj, Director (International Programmes), Admn. Office, R'Nagar, Hyderabad	2nd International Conference on Agricultural and Environment Engineering (ICAEE'14)	29th – 30thSept., 2014, Phuket, Thailand
49.	Dr. G. Sreenivas, Principal Scientist (Agronomy) & Director i/c, ACRC, Agril. Research Institute, R'nagar, Hyderabad	Forum on Mitigating Negative Effects of Climate Change on Agriculture	30th Sept., - 3rd Oct., 2014, Bali, Indonesia
50.	Dr. K. Veeranajaneyulu, University Librarian, Administrative Office, R'Nagar	International Conference on "Digital Libraries :Advance Methods and Technologies – RCDL 2014"	13th – 16thOct., 2014, Dubna, Russia
51.	Dr. K. Suhasini, Professor, Department of Agril. Economics, College of Agriculture, Rajendranagar	8th Asian Society of Agricultural Economists (ASAE) International Conference	15th -17th Oct., 2014, Dhaka, Bangladesh
52.	Dr. Ch. Surender Raju, PS & Head, Rice Section, ARI R'Nagar.	4th International Rice Congress during 27th Oct. - 1st Nov., 2014	27th Oct., 2014 –1st Nov., 2014, Bangkok, Thailand
53.	Dr. P. Raghu Rami Reddy, PS (Agro.), Rice Section, ARI, R'Nagar		
54.	Dr. R. Jagadeeshwar, PS(Pl. Path.), Rice Section, ARI, R'Nagar		
55.	Dr. S. Vanisree, SS (G & PB), Rice Section, ARI		
56.	Dr. N. Rama Gopala Varma, SS(Ento.), Rice Section, ARI, R'Nagar		
57.	Dr. Ch. Damodar Raju, SS(G & PB), Rice Section, ARI, R'Nagar		
58.	Dr. M. Sreedhar, Sr. Scientist (Pl. Br.), QCL, R'Nagar		
59.	Dr. K. Manorama, PS & Head, QCL, R'Nagar		
60.	Dr. Anurag Chaturvedi, Dean (Home Sci.), Admn. Office, R'Nagar		
61.	Dr. I. Sreenivasa Rao, Prof.&Head, Dept. of Agril. Extn., CA, R'Nagar		
62.	Dr. D. Sreelatha, Sr. Scientist (Agro.), Maize Research CentreC, ARI, R'Nagar	12th Asian Maize Conference	30th Oct., 2014 – 1st Nov., 2014 , Bangkok, Thailand

63.	Dr. M. Lavakumar Reddy, PS (Ento.), MRC, ARI, R'Nagar		
64.	Dr. Y. Siva Lakshmi, Asst. Professor (Agro.), CA, Rajendranagar, Hyderabad		
65.	Dr. M. Anuradha, Senior Scientist (Ento.), AICRP on Forage Crops, ARI, R'Nagar		
66.	Dr. V. Radha Krishna Murthy, Principal Scientist (Agro.), Seed Research and Technology Centre, Rajendranagar, Hyderabad	Workshop on Roving Seminars	1st- 21st Dec., 2014, Nepal
67.	Dr. S. Vanisri, Associate Professor, Institute of Biotechnology, Rajendranagar, Hyderabad	8th Hybrid Rice Development Consortium (HRDC) Annual Meeting	25th - 27th Mar., 2015, IRRI, Philippines
68.	Dr. V. Shashi Bhushan, Principal Scientist & University Head (Ento.), AINP on Pesticide Residues, Rajendranagar, Hyderabad	Caribbean Food Safety and Security Conference 2015	17th – 18th March, 2015, Montego, Jamaica, West Indies
69.	Dr. Y. Chandra Mohan, Scientist (Pl. Breeding), Rice Research Scheme, RARS, Jagtial	Training course on Hybrid Rice Breeding Technology for South Asian Countries	20th March, 2015 – 20th April., 2015, Hunan Hybrid Rice Center, China
70.	Dr. (Mrs). Ch. V. Durga Rani, Institute of Biotechnology, Rajendranagar, Hyderabad	5th International Conference on Biotechnology and Food Science (ICBFS-2015)	24th – 25th April, 2015, Istanbul, Turkey
71.	Dr. Ch. Sreenivasa Rao, Senior Scientist (Ento.), AINP on Pesticide Residues, Rajendranagar, Hyderabad	4th International Conference on Agricultural and Environmental Engineering (ICFAE'15)	7th – 8th May, 2015, Bali, Indonesia
72.	Dr. P. Sujathamma, Scientist (Agro. & Co-PI, IMFLI), Regional Agricultural Research Station, Palem	Second Annual Review and Planning Workshop of OCPF, Morocco Project entitled "Increasing food legumes production by small farmers to strengthen food and nutrition through adoption of improved production technologies and governance within South-South co-operation"	5th – 12th May, 2015, Morocco
73.	Dr. C. Sudha Rani, Principal Scientist (Agro.) & Head, ARS, Tandur	4th International Conference on Agricultural & Horticultural Sciences	13th – 15thJuly, 2015, Beijing, China
74.	Dr. B. Joseph, Prof. & Head, Dept. of Agro., CA, R'nagar		
75.	Dr. K. P. Vani, Assoc. Prof., Dept. of Agro., CA, R'nagar.		

76.	Dr. A. Madhavi Lata, Assoc. Professor, Dept. of Agro., CA, R'Nagar		
77.	Dr. A. V. Ramanjaneyulu, Scientist (Agro.), RARS, Palem.		
78.	Dr. M. Balram, Assoc. Prof., Institute of Biotechnology, R'nagar, Hyderabad.		
79.	Dr. (Mrs). Ch. V. Durga Rani, Institute of Biotechnology, Rajendranagar, Hyderabad	5th International Conference on Biotechnology and Food Science (ICBFS-2015)	24th – 25th April, 2015, Istanbul, Turkey
80.	Dr. K. Suhasini, Professor, Dept. Agril. Economics, CA, R'nagar	7th International Conference on Agribusiness Economics & Management	14th – 16th Oct., 2015, Davao City, Philippines
81.	Dr. V. Bharathi, Senior Scientist, SRTC, R'nagar	International Multidisciplinary Academics Conference 2015	2nd – 6thNov., 2015, Pattaya, Thailand
82.	Dr. K. Kanaka Durga, Senior Scientist, SRTC, R'nagar		
83.	Dr. K. P. Vani, Professor, Dept. of Agronomy, CA, R'nagar		
84.	Dr. K. Uma Maheswari, Professor (F&N) & Head, PGRC, Rajendranagar	Training course on "Right based approach to Food and Nutrition Security"	25th Jan., 2016 to 5th Feb., 2016 Wageningen UR, The Netherlands
85.	Dr. V. Praveen Rao, Registrar, Admn. Office, PJTSAU, R'nagar	12th Dahlia Greidinger Memorial Symposium 2016	29th Feb., 2016to4th Mar., 2016, Haifa, Israel
86.	Smt. K. Sumalini, Scientist (Pl. Breeding), ARS, Karimnagar	Short course on "Contemporary Approaches to Genetic Resources Conservation and Use"	2nd - 24thApril, 2016, Wageningen UR, The Netherlands
87.	Dr. K. N. Yamini, Assistant Professor, Institute of Biotechnology, Rajendranagar, Hyderabad	"International Conference on "Pulses for Health, Nutrition and Sustainable Agriculture in Drylands"	18th – 20thApril, 2016, Marrakesh, Morocco
88.	Dr. Seema, Professor & Head, Schoool of Agribusiness Management, Rajendranagar	Training course on "Advanced Agribusiness Management Course for Executives and Managers" organized by Asian Productivity Organization	25th – 29thJuly, 2016, Bangkok, Thailand.
89.	Dr. P. Radhika, Associate Professor, School of Agribusiness Management, Rajendranagar	Training course on "Asian Food and Agribusiness Conference" - Greening the Food Supply Chain organized by Asian Productivity Organization	26th – 28thOctober, 2016, Bali, Indonesia
90.	Dr. V. Ramulu, Principal Scientist (Agro.), Water Technology Centre, R'nagar	2nd World Irrigation Forum (WIF2) Conference	6th – 8thNov., 2016, Chang Mai, Thailand
91.	Dr. V. Vijaya Lakshmi, Professor & Head, Department	8th Pan – Commonwealth Forum	27th – 30thNov., 2016, Kuala Lumpur, Malaysia

	of Foods & Nutrition, College of Home Science, Hyderabad		
92.	Dr. N. Sandhya Kishore, Scientist (Plant Breeding), RS& RRS, Rudrur, Nizamabad ; Dr. Sridhar Siddi, Scientist (Pl. Br.), Agricultural Research Station, Kunaram and Dr. K. Rukhmini Devi, Scientist, ARS, Warangal	Training course on "Rice Breeding: Issues, Challenges and Opportunties"	1st – 22ndDec., 2016, IRRI South Asia Hub, ICRISAT, Hyderabad
93.	Dr. M. Surya Mani, Director, EEI, R'nagar	"Fifth European Research Conference on Global Business, Economics, Finance and Banking"	15th – 17th Dec., 2016, Istanbul, Turkey
94.	Dr. K. Madhu Babu, Associate Professor, EEI, R'nagar		