

CENTRE OF ADVANCED STUDIES

THIRD ANNUAL REPORT

(1997-1998)

Dr. (Mrs.) Vijaya Khader

DIRECTOR

DEPARTMENT OF FOODS & NUTRITION

POST GRADUATE & RESEARCH CENTRE

ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY

RAJENDRANAGAR: HYDERABAD – 500 030

THIRD ANNUAL REPORT OF CENTRE OF ADVANCED STUDIES FOR THE
YEAR 1997

1. Project Title : Centre of Advanced Studies
2. Sanction No. : Proc.No.37735/H.Sc/a1/94,dt.22-9-95 of
APAU
3. Report Period : January – December 1997
Report No. : 3
4. Date of start : 02-11-1995
5. A) Name of the institute : Acharya N.G.Ranga Agricultural University,
Or station Rajendranagar, Hyderabad.
B) Division/Section : Centre of Advanced Studies
Department Post Graduate & research Centre
Department of Foods & Nutrition
Rajendranagar, Hyderabad- 500030
6. A) Technical Programme as approved for the scheme Appendix – I
B) Technical programme approved for the year enclosed
C) Technical programme approved for the next year: Approved Programme
Completed
D) Technical programme for the next plan period : For Approval
7. Technical personnel employed (list ovacancy, if any)

Sanctioned Posts	posts filled	posts to be filled
1. Steno-cum-Typist	U.D.Stenographer Filled on 2-9-1996	NIL
2. AVA Operator	Projector Operator Filled on 16-6-1997	NIL
3. Attender	Attender Filled on 22-6-1996	NIL

Name with Designation	Date of Joining	Date of Leaving
R.V.N.S. Murthy	02-09-1996	---
U. D. Steno		
N. Yedukondalu, Projector Operator	16-06-1997	---
V. Narsinga Rao, Attender	22-06-1996	---

8. Total outlay : Rs. 14, 17,412=10

9. Total amount spent : Rs. 4, 56,219=20

In previous year (1996-97)

10. Total amount sanctioned/spent during the year under report

a) Sanctioned : Rs. 11, 66,930=00

b) Spent : Rs. 10, 52,854=00

11. Total No. of man-months : 12months (from Jan '97 to Dec'98)

during the year

12. Summary : Report objective wise enclosed

Signature:

Name & Designation: Dr. (Mrs.) Vijaya Khader

**REPORT ON ACTIVITIES CARRIED OUT UNDER
CENTRE OF ADVANCED STUDIES 1996-97**

I. INFRASTRUCTURE FACILITIES:

1. Staff requirement:

The posts of Steno-cum-typist, Attender and Projector Operator have been filled up.

2. Civil Works:

Civil works, Electrical and sanitary works have been completed. Now the Centre of Advanced Studies in Foods & Nutrition has the following facilities.

- Seminar hall/ Lecture hall
- Conference hall
- Library room
- Equipment room/Laboratory
- Computer room
- Office room
- Store room

II. EQUIPMENT:

Equipment purchased under Centre of Advanced Studies

S.No.	Equipment	Cost (in Rupees)
1.	Computer; Pentium 100,640MB, with TVS, MSP 155 Printer and HP Deskjet Printer.	1, 00,000=00
2.	Modi Xerox machine	1, 08,000=00
3.	Air conditioners, Carrier Aircon	55,000=00
4.	Kirloskar 5 KVA UPS	2,10,000=00
5.	Overhead Projector and slide projector	50,000=00
6.	Microwavw Oven	13,000=00

S.No.	Equipment	Cost (in Rupees)
7.	Samsung Refrigerator,420 litres	42,000=00
8.	Gerhardt Kjeldatherm automatic Nitrogen Analyser	3,28,000=00
9.	Community nutrition equipment: Height rods, Diet survey sets.	30,000=00
10.	Electronic top loading balances	25,000=00
11.	Public address system	35,000=00
12.	Furniture for seminar Hall and conference Rooms in new building	2, 50,000=00
	a. Chairs : 85	
	b. Dias table : 01	
	c. Computer tables : 02	
	d. Computer Chairs : 02	
	e. Printer tables : 02	
	f. Table for Xerox machine : 01	
	g. Rostrum	
	h. Carpets and curtains	
	i. Bulletin boards	
13.	Water Cooker cum Purifier	17,000=00
14.	Portable refractometer and pH meter	10,000=00
15.	Double glass distillation unit	15,000=00
16.	Exit batteries - 2Nos	12,880=00
17.	V.Guard Stabilizer - 3Nos.	10,000=00

S.No.	Equipment	Cost (in Rupees)
18.	Aspirator bottle with stop cock	1,200=00
19.	Magnetic letters	7,800=00
20.	Essae Digital weighing Machines (2Nos)	27,600=00
21.	Executive high back chair	7,300=00
22.	Prestosign letters	11,000=00
23.	Hamilton HPLC syringe	2,750=00

Apart from the above, purchase of the following equipment to the tune of Rs. 7.4 lakhs is in progress:

- LCD Multi – media Projector
- UPS – 2 KVA
- ‘U’ shaped conference table
- Pentax camera with accessories
- Black boards

Furniture:

The following furniture and furnishings have been purchased to furnish the seminar hall, Conference hall, Computer room etc.

List of furniture and furnishings :

- Dias table : 01
- Seminar hall chairs : 85
- Rostrum : 01
- Computer chairs : 02
- Computer tables : 02
- Printer tables : 02
- Xerox machine table : 02
- Carpet
- Curtains

III. MAINTENANCE AND REPAIR:

The following activities were undertaken under maintenance and repairs.

- Electrical wiring to UPS
- Maintenance for Xerox machine
- Deioniser servicing
- AMC of AC machine

IV. PURCHASE OF BOOKS AND JOURNALS:

- Advances in food colloids
- Food properties hand book
- Biochemical aspects of nutrition
- Child growth & Nutrition in developing countries
- Effective programming for developing countries
- Major issues in Food & Nutrition Sciences
- Participatory rural appraisal methods and applications
- Nutrition & diet therapy
- Functional properties & food components
- Handbook of cereal science and technology
- Post harvest technology of cereals pulses and oilseeds
- Food safety
- Diet planning through the life cycle in health and diseases
- Subscription for “ Down-to-Earth” made and copies being received fortnightly

V. ACADEMIC ACTIVITIES:

Objective I: to serve as a national resource and training centre for faculty in the field of Foods & Nutrition by conducting summer institutes and short courses.

Two short courses(duration of three weeks each) viz;

- Recent development in Fruit & Vegetable Processing from 3rd – 22nd February, 1997.
- Recent developments in Grain Processing from 4th – 23rd August, 1997.

RECENT DEVELOPMENTS IN FRUIT AND VEGETABLE PROCESSING

Nature has gifted our country with a wide variety of fruits and vegetables and these are important items in our dietaries from the point of minerals and vitamins they contain. They are highly perishable due to the high moisture content. Reports indicate that nearly 25-30% of these vegetable commodities are lost annually for various reasons like wilting, inadequate storage (pre-cooling and cold storage) facilities at production centers, rodent damage etc. even though the processing technologies are available to reduce the post harvest losses and increase value addition, presently the capacity of utilization of the existing processing units is very low and of the total production of fruits and vegetables, less than two per cent only is being processed in the country as against 70-80% in many developed countries. The processing units are not used to the fullest advantage and most of the technologies are available to reduce the post harvest technology losses and increase value addition, presently the capacity utilization of the existing processing units is very low and of the total production of fruits and vegetables, less than two percent is being processed in the country as against 70 -80% in many developed countries. The processing units are not used to the fullest advantage and most of the technologies are primitive.

In recent times many newer technologies have been developed by the scientists working in the area of fruit and vegetable processing. These technologies have added advantage of getting a product of superior quality with maximum nutrient retention, value addition and export potential. The existing curriculum of under graduate programme in Foods & Nutrition, has a subject entitled food storage and preservation, which deals with many methods of processing and preservation. Extending the knowledge on newer methods and technologies to the teachers and researchers working in the faculty of Home Science in State Agricultural University (SAU) is very essential. It is also the responsibility of the researchers in the State Agricultural Universities to explore appropriate processed technologies for developing new products based on the available and existing technologies. Hence this particular short course on “ Recent Development in Fruit & Vegetable Processing”, was conceived, planned and conducted with the following objectives:

- To upgrade the knowledge and skills of the teachers and researchers working in SAUS in the areas of fruits and vegetable processing.

- To strengthen the existing course content of food preservation with recent development.
- To enable them to guide student research effectively in the relevant areas.

Keeping these objectives in view the short course on “ Recent Development in Fruit & Vegetable Processing” was held from 3rd – 22nd February, 1997.

PARTICIPATORY PROFILE

Altogether 9 participants attended the short course. They are in the cadre of Assistant Professors and Instructors both from the faculty of Home Science (Foods & Nutrition) and Faculty of Agriculture (Horticulture). The participants hailed from Department of SAUS, i.e., three from Rajendra Agricultural University – PUSA, Samasthipur, Bihar; one from University of Agricultural Sciences – Dharwad, Karnataka; one from Sri Avinashalingam Institute of Higher Education for Women – Coimbatore; and four from Acharya N.G. Ranga Agricultural University – Bapatla, Tirupathi and Aswaraopet, Andhra Pradesh. Profile of participants is given below.

PROFILE OF THE PARTICIPANTS

NAME	DESIGNATION	OFFICIAL ADDRESS
Mrs. Shivani Bala	Instructress	College of Home Science, Rajendra Agriculture University, Pusa, Samasthipur – 848 125 Bihar.
Ms. N. Malathi	Lecturer	Sri Avinashalingam Institute Of Science & Higher Education for Women, Coimbatore 641 043
Dr. Pushpabharathi	Asst. prof	College of H.Sc., University of Agricultural Science, Dharwad 580055, Karnataka.
Dr. Meera Singh	Asst. Prof	College of H.Sc., Rajendra Agricultural University, Pusa Samasthipur – 848 125 Bihar

Ms. L.R. Saha	Instuctress	College of H.Sc., Rajendra Agricultural University, Pusa Samasthipur – 848 125 Bihar
Dr. Ram Singh	Asst. Prof	Dept. of Horticulture, College Of Agriculture, ANGR Agril. University, Aswaraopet 507301 Khammam District.
Dr. Anurag Chaturvedi	Asst.Prof	College of Home Science ANGR Agril. University, Bapatla, Guntur District
Dr. Kanwaljit Kaur	Asst. Prof	College Agriculture, ANGR Agril. University, Tirupati – 517502 Chittoor District
Mrs. K.V.S. Gopal Rao		College of Agriculture, ANGR Agril . University, Hyderabad.

CONDUCT OF THE PROGRAMME

Fruit and vegetable processing requires not merely imparting theoretical knowledge through class room teaching. Hence four relevant practical demonstrations were arranged to impart skills about processing techniques. The participants were actively involved, facilitated to learn maximum and clarified many queries. In addition, they were given opportunity to visit two Food Processing Units i.e., Hyderabad Agri – Dry Products Pvt. Ltd., and Naturite Agro Products Ltd., concerned with processing and marketing dehydrated foods like raisins and mango bar. Naturite Agro Products Ltd., is concerned with the extraction of oleoresins from capsicum, turmeric, fenugreek, pepper and other spices. A trip to a biggest pre-cooling cold storage unit of the state (Gubba cold storage unit) was also fixed, as most of the participants do not know much about the same and the types of foods/items being stored. A visit to Central Food Technological Research Institute(CFTRI) (Regional Centre located at Hyderabad) was also arranged. During the visit the participants were briefed about the recent research activities of the institute and were made familiar with pilot plant

equipment and operations used for processing a variety of foods. Apart from these the participants were given chance to visit the National Institute of Nutrition, and to get a glimpse of the Nutrition related research that is presently being conducted. In general, the field visits helped them to get a clear understanding of the underlying principles of technologies.

TESTING THE PARTICIPANTS KNOWLEDGE

All nine participants were tested initially before the commencement of the programme with regard to their knowledge on various aspects of fruit and vegetable processing especially pertaining to the topics scheduled in the course. At the end of the programme the same questionnaire was administered to the participants to test their understanding of the course.

The knowledge level of the participants before and after the short course are given below:

Knowledge level assessed by score	percentage of participants	
	Before	After
Poor (0 – 25%)	22	-----
Average (26 - 50%)	34	-----
Good (51 – 75%)	22	44
Excellent (76 – 100%)	22	56

The above analysis indicates that there is definite improvement in their knowledge level after attending the course. After the course an upward shift was observed in the knowledge level of the participants from poor and average to good and excellent.

EVALUATION OF THE COURSE BY PARTICIPANTS

Individual participant was asked to give an overall view, to evaluate the usefulness of the programme at the end of the course. For this purpose an evaluation schedule containing few questions, pertaining to the topics covered in theory and practical

were developed and given to each participant. After compilation of the participant's views of the short course, the following conclusions were drawn:

- All the participants felt that the course was highly useful and relevant for teaching and research and would make best use of the given material.
- The topics covered in theory were appropriate with the inclusion of recent developments.
- In practical sessions the demonstrations were innovative.
- The field visits were very informative.
- They also felt that such courses are to be organized more frequently in future and in many other areas in Foods & Nutrition.

RECENT DEVELOPMENTS IN GRAIN PROCESSING

Agriculture revolution is credited to have started about 10,000 years ago. Prior to this period, for several centuries, human beings had been carnivorous. Since the Agricultural revolution, the change in food habits, the change in food habits from that of carnivorous and omnivorous to herbivorous nature is very much evident. Currently, worldwide 21% of staple food consumed is rice and around 20% wheat. The agricultural revolution signified the change from food gathering to food production. Plants and animals were domesticated and cultivated to yield food. As a result, the human population also increased rapidly.

It is common knowledge that cereals and millets constitute the major staple food of populations of majority of the countries of the world.

Grain processing starts from the time the crop is harvested in the field and the processing can be delineated to three classes.

1. PRIMARY PROCESSING

Threshing, cleaning, drying, & Bagging

2. SECONDARY PROCESSING

Dehusking, Milling, Soaking and Grinding

3. TERTIARY PROCESSING

Food preparation such as : Frying, Deep frying, Cooking and Blanching

PROCESSING OF FOOD GRAINS FOR VALUE – ADDITION

For realizing income through value – addition, food grains have to be purchased further. The process of conversion of grains into flour, grits, semolina, etc., involves secondary processing. Secondary processing always results in value – addition. For example, one kilogram of wheat costs Rs. 10.00 in the retail market. But when it is converted into flour, the cost realization is Rs. 15.00 i.e., 50% more. Similarly in case of paddy, the cost varies from Rs. 7.00 to Rs. 9.00 per kilo and the same when converted to rice commands a price ranging from Rs. 12 to Rs. 14.

PARTICIPANTS PROFILE

Total 9 participants attended the short course. They are in the cadre of Assistant Professors, Instructors and Technical Supervisors from the faculty of Home Science (Food & Nutrition/Rural). The participants hailed from departments of SAU's i.e., 2 from University of Agricultural Sciences, Hebbal, Bangalore; 3 from Rajendra Agricultural University, PUSA, Samastipur, Bihar; 1 from C.S. Azad University of Agriculture and Technology, Kanpur, 1 from College of Agriculture, Trivandrum and 2 from Acharya N.G. Ranga Agricultural University is given below.

PROFILE OF THE PARTICIPANT

Name	Designation	Official Address
Ms. M.L. Annapurna	Assistant Professor	Dept. of Rural Home Science, University of Agril. Sciences, Hebbal, Bangalore – 560024
Dr. Neelima Kunwar	Assistant Professor	Dept. of Home Science, C.S. Azad University of Agriculture & Technology Kanpur – 208002

Dr. Vijaya Lakshmi	Assistant Professor	Dept. of Rural Home Science, University Of Agril. Sciences, Hebbal, Bangalore – 560024.
Ms. Sunitha Prasad	Technical Supervisor	College of Home Science, Rajendra Agricultural University, Pusa, Samasthipur, Bihar – 848125.
Mrs. Leela Rani Saha	Instructor	Dept. of Foods & Nutri. College of Home Science, Rajendra Agricultural University, Pusa, Samasthipur, Bihar – 848125.
Dr. Sunitha Kumari Mishra	Instructor	College of Home Science, Rajendra Agricultural University, Pusa, Samasthipur, Bihar – 848125.
Dr. P.V. Nandini	Assistant Professor	Dept. of Home Sceince, College of Agriculture, Vellayani(P.O.), Trivandrum – 625522
Dr.S. Sumathi	Assistant Professor	Dept. of Foods & Nutr. P.G & R.C. (H.Sc.), A.N.G.R. Agril. Univ., Rajendranagar, Hyderabad – 500030
Dr. Kamini Devi	Assistant Professor	Dept. of Foods & Nutr. College of Home Science A.N.G.R. Agril. Univ., Rajendranagar, Hyderabad – 500030

CONDUCT OF THE PROGRAMME

After registration on 4th August, 1997 the programme has commenced. The short course started off on a high note with the present Dean, P.G. studies, Dr.M.V. Shanta Ram auspiciously inaugurating the seminar hall by lighting the lamp followed by his lecture on the need and importance of grain processing which left the participants enlightened. Dr. M.V. Rao, Ex- Vice Chancellor, A.N.G.R.A.U., delivered an exhaustive lecture on “ Production of base materials of cereals for promoting processing industry”. Dr. Malleshi from CFTRI, Mysore discussed the role of technologists in developing small scale industries in India and also shared his views on the technology and importance of cereal malts. The recent development in pulse milling technology was elucidated by Dr. S. Venkat Rao, CFTRI, Mysore. Topics like wheat quality, composition, milling technology, current and future trends in biscuit industry in India and abroad were discussed in detail by dr. K. Krishna Moorthy, Joint Commissioner (Retd.), Ministry of Food. Dr. D.G. Rao, Head of the CFTRI Regional Centre, Hyderabad shared his valueable views on machinery and engineering applications in grain processing. The present scenario of oilseed production in the country and the future thrust areas of research was brought to light by Dr. P.S. Reddy, director (Retd.), DOR. Dr. T.N.B. Kaimal, deputy Director and Head, IICT gave an exhaustive lecture on industrial applications of vegetable oils and fats. Topic on extrusion cookers and their applications was dealt by Mr. Mallikarjuna Rao, General Manager, A.P. Foods. Mr. Kawale, Deputy Director, Bureau of Indian standards focused the participants attention on the quality control regulations and sale of processed grain products while the quality standard of food grains in India wqas discussed by Dr. J. L. Srivastava, Regional Director, Quality control cell, Rajendranagar. The staff of P.G. & R.C., have also made their valuable contributions for the course in the fields of rice, wheat, sorghum, chickpea, horsegram, soyabean and oilseeds with their informative lectures. For the coverage of the topics included in the scheduled programme the teaching methodology adopted was classroom teaching.

Visits to food industries like wheat milling unit, bambino factory, modern bakeries/biscuit factories, parboiling unit, chick pea processing unit and A.P. Foods was arranged. The participants also visited National Institute of Nutrition

and CFTRI, Regional Centre. In general the field visits helped the participants to get a clear understanding of the underlying principles of technologies.

TESTING THE PARTICIPANTS KNOWLEDGE

All nine participants were tested initially before commencing the programme with regards to their knowledge on various aspects of grain processing specially pertaining to the topics scheduled in the course. At the end of the programme the same questionnaire was administered to the participants to test their understanding of the course.

Table 1. The Knowledge level of participants before and after the short course

	Knowledge level as Assessed by score	Percentage of Participants	
		Before	After
Poor	(0 – 25%)	25	-
Average	(26 – 50%)	30	-
Good	(51 – 75 %)	20	35
Excellent	(76 – 100%)	25	65

The above analysis indicates that there is definite improvement in their knowledge level after attending the course. After the short course an upward shift was observed in the knowledge level of participants from poor and average to good and excellent the questionnaire which has been used for assessment is given in Appendix I.

EVALUATION OF THE SHORT COURSE BY PARTICIPANTS

To get the opinions and valuable suggestions from the participants, an evaluation schedule (Appendix II) was administered to the participants at the end of the course. The usefulness and coverage of topics under the short course as assessed by the participants is given table 2. Majority of the participants i.e., 60 – 100% found the topics included in the short course very useful and they were also fully covered. They are also of the opinion that all the topics which were included in the course were relevant. There was also enough opportunity for discussions during the sessions. The participants found only are lacunae in the programme. They felt

that one topic on “Modern Processing equipment and in grain Processing” should have been included in the course.

Though they were extremely satisfied with the practical content of the course and field visits, few suggestions were given by the participants to improve the practical component of the course. According to them, the following field visits should have been included in the course.

Field Visits:

- ❖ Visit to oilseed processing unit.
- ❖ Visit to rural areas to see different traditional processing methods
- ❖ Visit to biscuit factory.
- ❖ Visit to brewing unit to show utilization of maize grains for preparation of beer.

Practicals:

- ❖ Demonstration of Mixes (cereals & pulses)
- ❖ Demonstration of Bakery products.
- ❖ Demonstration of Sorghum products.

The participants also felt that they should have been asked to demonstrate products with any grain specific to their region. Majority of the participants (80%) were of the opinion that the course has helped them to have better skills and knowledge as a teacher.

The trainees felt that the social atmosphere of the short course is congenial and enjoyable and the trainer – trainee relationship was very good.

The participants suggestions, will be incorporated whenever the next course on “Grain Processing” is conducted. But the duration of the short course need to be increased to four weeks to incorporate all suggestions of the participants.

On the whole, the participants found the course very useful.

Table 2: Usefulness and Coverage of Topics under the short course.

Topic	Usefulness of the topic			Coverage		
	Very Useful %	Useful %	Not useful %	Fully covered %	Not Covered %	Partially Covered %
1. Need and importance Of grain processing	66.6	33.33	-	100	-	-
2. Production of base materials for promoting processing industry.	44.44	55.55	-	100	-	-
3. Technologies relevant to wheat based products.	55.55	44.44	-	100	-	-
4. Technologies relevant to wheat based products.	44.44	55.55	-	100	-	-
5. Importance of cereal malts.	88.88	11.11	-	100	-	-
6. Rice milling processing	55.55	44.44	-	100	-	-
7. Parboiling of rice.	100	-	-	100	-	-
8. Rice bran and its utilization.	77.77	22.22	-	100	-	-
9. Current and future trends in biscuit industry.	77.77	22.22	-	100	-	-
10. Sorghum – Scope for Diversification	88.88	11.11	-	100	-	-
11. Value added products with millets	100	-	-	100	-	-

12. Utilization of loose grain.	77.77	22.22	-	100	-	-
13. Soya bean and food application	66.66	33.3	-	100	-	-
14. Oil seeds – Processing composition, industrial applications.	66.66	33.3	-	100	-	-
15. Enzyme technology in baking industry.	66.66	33.3	-	100	-	-
16. Extrusion cooking.	77.77	22.22	-	100	-	-
17. Quality control in grain processing	77.77	22.22	-	100	-	-

Objective II :

The department of Foods & Nutrition of the Home Science Faculty of Acharya .N. G. Ranga Agricultural University has always played a leading role among agricultural universities in terms of curriculum development and research. The UNDP consultants and the Senior Programme Office of Nutrition, FAO had also indicated a reviving in P.G curricula and separate specialization to meet the changing needs of the state and country.

Keeping all these points in view, a large number (33) of Ms. and Ph.D. courses have been modified and two specific areas of nutrition have been identified i.e., Nutrition and Dietetics and Community Nutrition. These courses were approved by the Academic Council of ANGER – Agricultural University held on 24th and 25th May, 1996.

ALLOCATION OF SEATS UNDER P.G PROGRAMME

M.Sc

Over and above the sanctioned strength of 14 M.Sc students four more candidates who have been nominated by ICAR are admitted under Centre of Advanced Studies (one from Assam, one from Orissa, one from Chennai and one from Himachal Pradesh).

Ph.D

Ms. Mary Walingo an in service candidate from Kenya has been nominated by ICAR and admitted in Ph.D during the year 1995-96. She is also permitted to carry out her research “Impact on dairy programme on nutritional status of vulnerable groups in Kenya”, at Kenya. She is the first International candidate to be admitted into the Ph.D programme of the department and also permitted to work at Kenya.

DEVELOPMENT OF TEXT BOOKS

Two University level text books entitled “Food storage and preservation” and “Food Science Technology” were submitted by Dr. Vijaya

Khader, Director, Centre of Advanced to the University Grants Commission and Indian Council of Agricultural Research for reviewing.

DEVELOPMENT OF LABORATORY MANUALS

Manuals prepared: Four laboratory manuals at P.G. level namely Macro and Micro Nutrients in Human Nutrition and Physical and functional properties of food constituents Food Chemistry and Advances in diet therapy have been prepared by the faculty member.

Objective III

World Bank aided operational research project in ICDS Centre of Srikakulam district has been initiated by the department of Foods & Nutrition in the year 1996. The main aim of the project is to test the effect of the therapeutic food supplementation on the growth and morbidity status of pre-school children of ICDS project run by the department of Women Development & Child Welfare, Govt. of A.P.

The A.P. Foods Factory, Nacharam, Hyderabad, a public sector undertaking is manufacturing three types of supplements (a) Therapeutic food (b) Therapeutic food with Amylase Rich Food (ARF) and (c) Sweet Ready Mix (SRM) and supplying to 124 Anganwadi Centers in 3 ICDS Projects of Srikakulam district.

Objective IV

To disseminate nutrition information to personnel of different sectors.

Action Plan

To bring out quarterly issue of Foods & Nutrition bulletin for circulation among the live departments and the organizations involved in Nutritional related programmes.

Seven quarterly issues of “Food & Nutrition News”, were brought out.

List of “Food & Nutrition News” quarterly issues.

S.No.	Title	Month	Year	Volume	Number
1.	Nutritional importance of Red Palm oil.	December	1995	1	1
2.	Carotenoid and tocopherol Retention in food products Using Red palm oil.	April	1996	1	2
3.	Alternate uses of sorghum	August	1996	1	3
4.	Afatoxins – its prevention And detoxification	December	1996	1	4
5.	Iron nutritional status and Work performance	April	1997	II	1
6.	Dietary fiber in Human Nutrition	August	1997	II	2
7.	Speciality Foods	December	1997	II	3

Faculty improvement in terms of teaching, research and extension.

- ❖ Eight independent adhoc research projects on various aspects are going on in the department.
- ❖ All – Indian Coordinated research Project in the Department of Foods & Nutrition is going on from the inception of the project.
- ❖ Four students two inservice candidate and another two regular students have obtained Ph.D degree during 1997.

ON GOING RESEARCHPROJECTS

Title	Agency
All india Co-ordinated Research Project	I.C.A.R
Measurement of work performance of Anaemic adolescent girls in rural A.P. before and after iron supplementation	I.C.A.R
Screening of forest foods consumed by tribals for β -carotene content	I.C.A.R
Operational research on therapeutic food supplementation	WORK BANK
Effect of processing on Aflatoxin reduction in food products based on food grains	I.C.A.R
Home based low cost energy protein rich preparations using horsegram for vulnerable groups	I.C.A.R
Effect of feeding grain Amaranth and Rerd palm oil to hens on cholesterol level of eggs	I.C.A.R
Nutrition and health education for adolescent girls in urban slums of Hyderabad	I.C.A.R

SEMINARS/SYMPOSIUM/WORKSHOPS

The staff of the department were being invited and nominated to present papers and participate in various Seminars/Symposia and workshops organized by the reputed national organizations on various issues such as new technologies in Food processing, palm-oil promotion, educational administration and management under utilized food grains-quantity assessment, technology for use and popularization , production of soyabean based foods and their quality assurance, problems of hunger and challenges to food security, nutritional food supplements for the elderly etc., at Goa, NISIET; Hyderabad Society for promotion of oil palm development research; Vijayawada, Cultural Institute of Agricultural Engineering; Bhopal, Centre for area studies; Hyderabad, BARC; Mumbai, RRC; Trivandrum, NAARM; Hyderabad, C.HSc, Dharwad etc.,

POPULAR ARTICLES

About '16' popular articles have been published on nutritional significance of various food products and importance of various foods in human nutrition in news papers and magazines such as Swathi, Vartha, Annadata etc., by the staff members of the Centre.

RADIO TALKS

The teaching staff of the department gave about "10" radio talks/interviews during the year 1997-98 on aspects such as Food Security, minimizing nutrient losses during cooking, low cost nutritious recipes, nutritional deficiency diseases and programmes under taken by the Government of India for the welfare of women and children etc., which were broadcasted in the local language.

T.V.PROGRAMMES

T.V. Programmes on "Food security for improving the nutritional status" by the Director, CAS was telecasted in Doordarshan, Hyderabad on the occasion of "World Food Day" on 16th October, 1997.

SCIENTIFIC PAPERS

Fifteen scientific papers have been published by the staff of Department of Foods & Nutrition on the aspects such as nutritional significance of red palm oil, lipid profiles of blended oils, geriatric foods, food security etc., which were published in various national and international journals such as Indian Journal of Agricultural Marketing, Plant foods for human nutrition, Asia Pacific Journal of Clinical Nutrition etc.

AWARDS RECEIVED BY THE STAFF

1. Dr. K. Aruna, Scientist II in AICRP (F & N) is awarded Jawaharlal Nehru Award for Post Graduate Agricultural research for the Ph.D work on "Propagation, processing and storage studies of Papaya (*Carica papaya L.*) and its products".
2. Dr. M.Uma Reddy, Associate Professor has been awarded G.S. Nivetia Memorial Award 1995 for the best Research paper published in all issues of the Journal of the oil Technologists Association of India. The papers

- was on “A simple method for decontamination of Aflatoxin B1, in unrefined groundnut oil using aluminium silicate clays, co-authored by Dr. Kavita Waghay”.
3. Dr.v. Vimala, associate Professor, is honored with state award for best teacher 1997-98 which was received on Teachers day 5th September 1997 by her for the meritorious work.
 4. Best paper award was honoured to Mrs. Alkananda & Dr. Vijaya Khader for the paper on “Effect of fibre from Mushroom, Spinach and isabgoel on blood glucose response in non-insulin dependent diabetes” which was published in Indian Journal of Clinical Practise.

OTHER ACTIVITIES

A visitor from U.S.A enlightened the gathering, the research done on the “Protein quality” to the staff and student of the department.

A one day symposium on Horticultural products in nutrition and dietetics was jointly organized by National Institute of Nutrition (ICMR) and Centre of Advanced Studies, Post Graduate and Research centre on 21-6-97 in connection with IX Annual meeting of Indian Dietetic Association (AP Chapter), Hyderabad. Dr. Sugunakar Reddy Dean Of Agriculture and Dean of Home science (I/c), Dr. Kamala Krishna Swamy Director, NIN (ICMR); Dr. Vijaya Rao, Head, CFTRI, Mysore; Dr. Vijaya Raghavan, Deputy Director; Dr. Bhaskarachary, Technical Assistant, NIN, Hyderabad and Dr. Vijaya Khader, Director, CAS spoke on different aspects of processing, storage, preservation, nutritive value and production of horticultural produce and products.

Dr. Vijaya Khader has been unanimously elected as President of ID, ADP Chapter in the same meeting.

The Director, AS and other staff in the department participated and presented a paper in the 30th National Meeting of ID on the “Nutritional challenges in life, community, clinical and commercial nutrition” at Sri Rama Chandra Medical College, Chennai.

A one day symposium on 27th January, 1998 on “Iron Deficiency Anaemia” sponsored by Kellogg India Ltd., was held at Hyderabad by the IDA (A.P

Chapter). Eminent scientists from NIN, Hyderabad spoke on Iron and its metabolism, prevention and control of iron deficiency anaemia and role of fortification in improving iron status.

The staff and students of the department actively participated in Kellogg's 'Family Meal' held on 30th January, 1998 and conducted various games on "Nutrition" to the children.

WORLD DIABETIC DAY CELEBRATIONS

A one day "Diabetic day" was jointly celebrated by the Centre of Advanced Studies, Post Graduate & research Centre and Osmania Medical College, Hyderabad. Dr. M.V. Rao, the Vice – Chancellor, ANGRAU, Hyderabad addressed the gathering on the occasion. The staff and students organized a beautiful exhibition on "Diet during Diabetes" for the benefit of the public.

APPENDIX I

WORKPLAN FOR CENTRE OF ADVANCED STUDIES

Department of Foods & Nutrition
Postgraduate & Research Centre
Andhra Pradesh Agricultural University
Rajendranagar, Hyderabad 500030

I. OBJECTIVES

1. To serve as a national resource and training centre for faculty in the field of Foods & Nutrition.
2. To update the curriculum and courses of Foods & Nutrition to strengthen teaching and evaluation at UG and PG level.
3. To support the government in training personnel.
4. To disseminate nutrition information to personnel of different sectors.

II. OUTPUTS/PROGRAMMES TO BE IMPLEMENTED DURING THE CURRENT PLAN PERIOD

Objective 1

To serve as a national resource and training centre for faculty in the field of Foods & Nutrition in State Agricultural Universities.

Action Plan

A. Summer institutes/ short courses

Conducting one summer Institute Programme or one short course in priority areas of Foods & Nutrition every year.

Priority areas identified for summer Institute Programme/ Short Courses.

1. Recent developments in therapeutic nutrition.
2. Fruit and vegetable processing.
3. Grain processing.
4. Nutritional assessment and methods.
5. Nutrition toxicology.

B. Allocation of seats under PG programme

Provision of seats in M.Sc and Ph. D in Foods & Nutrition to outside State candidates selected by ICAR through a common test would be

decided (as a policy matter) under AHRD subject to the approval of state Government.

Objective 2

To update the curriculum and courses of Foods & Nutrition and strengthen teaching and evaluation at UG and PG level.

Action plan

To implement the course curriculum for UG programme keeping in view the recommendation of Dean's committee (workshop organized on 7th – 12th June, 1993 at APAU, Hyderabad – Report awaited).

To organize one workshop for developing PG curriculum during III year of the programme.

To organize one workshop each for developing question banks for UG programme.

To organize workshop for preparing laboratory manuals for UG and PG programmes.

Objective 3

To support the government in training personnel and in implementing and evaluation of nutrition programmes.

Action plan

Assessing and developing the training needs of the line departments (Women's Development & child Welfare; social & Tribal Welfare; Panchayat Raj & Rural Development) through meetings and group discussions.

Objective 4

To disseminate nutrition information to personnel of different sectors.

Action Plan

To bring out quarterly issue of Foods & Nutrition Bulletin for circulation among the line departments and the organizations involved in nutrition related programmes.

Organizing group meetings for academicians, administrator's planners and extension workers to appraise them of nutrition situation and integrate nutrition component in the programmes of their departments. Foods & Nutrition information through mass media (TV, Radio and Press).

III. EXPECTED OUTCOME BY THE END OF THE PLAN PERIOD

1. Providing common resource material for teaching and evaluation of food and nutrition programme at UG and PG level.
2. Faculty improvement in terms of teaching, research and extension.
3. Strengthening Postgraduate Education and Research in Foods & Nutrition in other state Agricultural Universities.
4. Conducting need based multicentre studies to provide feedback to the planners and policy matters.

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Topics of the News Letter for the year 1998

Issue Editors	Title of the topic	Month of Issue
Dr. Vijaya Khader Professor & Head	Role of Mushrooms in Nutrition	April, 1998
Dr. S. Sumathi Associate Professor	Micro Minerals	August, 1998
Dr. K . Aruna Associate Professor	Potential uses of papaya	December, 1998

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