NINETH ANNUAL REPORT

(2003-04)

CENTRE OF ADVANCED STUDIES

Dr. (Mrs.) V. Vimala

DIRECTOR

DEPARTMENT OF FOODS & NUTRITION

POST GRADUATE & RESEARCH CENTRE

ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY

RAJENDRANAGAR: HYDERABAD – 500 030

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NINETH ANNUAL REPORT OF CENTRE OF ADVANCED STUDIES

FOR THE YEAR 2003-2004

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 : April 2003 – March 2004. (Now the report is submitted up to Feb., 2004)

   Report No. : IX
4. Date of Start : 02-11-1995
5. A) Name of Institute/Station : Acharya N.G. Ranga Agricultural University,Rajendranagar, Hyderabad.

   B) Division/Department/Section : Centre of Advanced Studies
   Post Graduate & Research Centre,
   Department of Foods & Nutrition,
   Rajendranagar, Hyderabad-500030.
6. a) Technical Programme as approved for the scheme
   b) Technical Programme approved for the year
   c) Technical Programme approved for the next year : Appendix II enclosed
   d) Technical programme for the next plan period : Submitted for approval (Appendix II)
7. Technical Personnel employed(list of vacancies, if any)

Sanctioned Posts by ICAR	Posts filled	Posts to be filled
1. Steno – cum- Typist	** Senior Assistant Against the post of U.D.Stenographer Filled on 2-9-1996	NIL
2. AVA Operator	Projector Operator Filled on 16-6-1997	NIL

Sanctioned posts by ANGRAU
(Non-plan)

Attender *	Attender Filled on 1-4-1999	NIL

- The post of attender was borne by the ICAR up to 31-3-1999. Since the ICAR had sanctioned only two posts from 1-4-1999, the ANGRAU has created a post of attender from the financial year 1999-2000.

  It is requested under the report that the post of attender may also kindly be sanctioned in the ICAR Plan Scheme during the X-Five Year Plan.

  **Transferred & posted in the vacancy caused due to conversion of Sri. RVNS Murthy, U.D. Stenographer as Senior Assistant.

Name of the Designation	Date of Joining	Date of Leaving
K. Shakuntala Senior Assistant against the post of U.D. Steno	19-06-2003	----
N. Yedukondalu, Project Operator	16-06-1997	----
V. Narsinga Rao, Attender	22-06-1996	----

8. Total Outlay : **Rs. 63,80,090=70**

- Rs. 4,56,219=20 (1995-96)
- Rs. 9,61,192=20 (1996-97)
- Rs. 12,01,649=20 (1997-98)
- Rs. 9,10,103=40 (1998-99)
- Rs. 4,86,691=75 (1999-2000)
- Rs.7,03,771=30(2000-2001)
- Rs. 5,28,023=00 (2001-2002)
- Rs. 5,14,463=75 (2002-2003)

- Rs. 6,17,976=00 (2003-2004) upto Feb, 2004

Budget & Expenditure particulars for 2003-2004:

Sl. No.	Sub head	Budget Sanctioned	Expenditure	Balance
		Rs. Ps.	Rs. Ps.	Rs. Ps.
1.	Training Programme	3,54,000-00	2,99,695-00	54,305-00
2.	TA/DA	20,000-00	----	20,000-00
3.	Books	25,000-00	25,000-00	---
4.	Recurring Contingencies	1,00,000-00	92,473-00	7,527-00
5.	Staff salaries	3,00,000-00	2,00,808-00	99,192-00
	Total Rs.	7,99,000-00	6,17,976-00	1,81,024-00

9. Total amount spent : Rs. 5,14,463=75
In Previous year (2002-2003)

10. Total amount sanctioned /spent during the year under report
   a) Sanctioned : Rs. 7,99,000=00
   b) Spent : Rs. 6,17,976=00

No no-recurring grant was made during the year under report

11. Total No. of months During the year : 12months (From April 2003-March 2004)

12. Summary : Report objective wise enclosed.

Signature:

Name & Designation : Dr. (Mrs.) Vimala
Professor – cum- Director

REPORT ON ACTIVITIES CARRIED OUT UNDER CENTRE OF ADVANCED STUDIES 2002-2003

I. INFRASTRUCTURE FACILITIES:

1. STAFF RECRUITMENT:

The posts of Steno-cum-typist and Projector Operator have been filled up and the two posts are being continued under the ICAR plan during the IX Five Year Plan vide F.No. 1(18)/95/CAS/HRD-II, dt. 17-09-1999 and 02-07-2001 of the ICAR.

The post of attender is being borne by the University under Non-Plan scheme from the financial year 1999-2000. It is requested under the report that the **Post of attender may also kindly be sanctioned in the ICAR plan Scheme during the X- Five Plan in order to avoid two establishment rolls.**

2. CIVIL WORKS:

Civil works, electrical and sanitary works have been completed and handed over to this centre. Now the Centre of Advanced in Foods & Nutrition has the following facilities.

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

The University has constructed another conference hall costing Rs.3.5 Lakhs for this Centre above the existing P.G. & Research Centre building.

II EQUIPMENT PURCHASED UNDER CENTRE OF ADVANCED STUDIES (1995-96 TO 2001-2002)

SI.No.	Equipment	Cost (in Rupees)
1.	Computer, pentiun 100,640MB, with TVSE, MSP 155 printer and HP Deskjet Printer	1,00,000/-
2.	Modi Xerox machine	1,08,000/-
3.	Air Conditioners, Carrier Aircon	55,000/-
4.	Kirloskar 5 K V A UPS	2,10,000/-
5.	Overhead projector and Slide projector	50,000/-
6.	Microwave oven	13,000/-
7.	Samsung refrigerator 420 litres	42,000/-
8.	Gerhardt kjedatherm automatic nitrogen analyzer	3,28,000/-
9.	Community nutrition equipment : Height rods, diet Survey sets	30,000/-
10.	Electronic top loading balances	25,000/-
11.	Public address system	35,000/-
12.	Furniture for Seminar Hall and conference rooms in New building 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	2,50,000/-
13.	Water cooler cum purifier	17,000/-
14.	Portable refractometer and pH meter	10,000/-
15.	Double glass distillation unit	15,000/-

16. Exide batteries – 2 no's	12,880/-
17. V.Guard Stabilizer – 3nos	10,000/-
18. Aspirator bottle with stop cock	1,200/-
19. Magnetic letters	7,800/-
20. Essae digital weighing machine (2 no)	27,600/-
21. Executive high back chair	7,300/-
22. Prestosign letters	11,000/-
23. Hamilton HPLC syringe	2,750/-
24. Blow plast chairs (30nos)	15,660/-
25. LCD Multi-media projector (SANYO)	
26. Panaboard (PANASONIC)	
27. Metal halide spare lamp	
28. Wall mounted screen	
29. Laser pointers	
30. 2 KVA UPS system	1,25,000/-
31. U – Shaped conference table	46,000/-
32. Pentax Camera with accessories	33,000/-
33. Built – in cup – boards (20nos)	1,10,000/-
34. Black/green boards (5 nos)	16,225/-
35. Single blower	1,850/-
36. Door closures and door locks	12,000/-
37. PELICAN Soxplus solvent extraction system	1,71,970/-
38. Elico pH meter with electrodes	9,005/-

39. Sensory evaluation lab cubicles, booths, work tables Stools	37,922/-
40. Solar dryer	11,050/-
41. Spiral binding machine	6,380/-
42. Colour monitor	19,850/-
43. Blow Ups – 15 Nos.	12,000/-

FURNITURE:

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

List of Furniture and furnishings:

Seminar hall chairs	:	85
Dias table	:	01
Computer tables	:	02
Printer tables	:	02
Computer chairs	:	02
Table for Xerox machine	:	01
Rostrum	:	01
Carpets and curtains		
Bulletin Boards		

III. MAINTENANCE AND REPAIRS

The following activities were undertaken under maintenance and repairs:

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

All these years, for some of the equipment purchased warranty is covered. Now all the equipment purchased has to be maintained intact by entering into AMCs with the firms for which proposals for an amount of Rs. 75,000/- have been submitted to the ICAR.

IV. PURCHASE OF BOOKS AND JOURNALS:

- ♠ Hand Book food – drug interactions
- ♠ Nutrition & Immune function
- ♠ Introduction for food Biotechnology
- ♠ Instrumental methods foe quality assurance for foods
- ♠ Food Science: Experiments & Applications (2001)
- ♠ Practical manual of Biochemistry '4th ed
- ♠ Dough Rheology & Baked Product Texture
- ♠ Food Product develop from concept market place
- ♠ Food oils & fats : Technology, Utilization, Nutrition
- ♠ Biscuit, Cracker & Cookie recipes for the food industry
- ♠ Bakery Technology & Engineering 3rd ed
- ♠ Chocolate, Cocoa & Confectionery 3/e
- ♠ Chemical change in food during processing
- ♠ Mechanism & Theory in food preservations /4ed
- ♠ Technology of food preservations, 4th ed
- ♠ Composition Analysis of foods, 9th edn(1999)
- ♠ Proceedings of the IX Asian Congress of Nutrition
- ♠ Methods on Physico Chemical Analysis of Fruits
- ♠ Fermentation Microbiology and Biotechnology
- ♠ Recent trends in Biotechnology
- ♠ Introduction to Chemical Analysis of foods

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, short courses and training programmes.

The Centre of Advanced Studies, Department of Foods and Nutrition, Faculty of Home Science, Acharya N.G. Ranga Agricultural University, Hyderabad has been functioning as a resource and training centre for the faculty in the field of Foods and Nutrition from State Agricultural Universities since 1995. Organizing advanced training programmes is one of the major functions of this centre. Till today 15 training programmes on different aspects of Food and Nutrition have been conducted. During the year 2003-2004, two training programmes entitled **"Emerging Trends in Medical Nutrition Therapy"** and **"Biotechnological Approaches to Food Processing"** were organized the details are given below.

Training programme on "Emerging trends in Medical Nutrition Therapy" 16th July to 5th August, 2003.

Nutrition has long been recognized to play an important role in the prevention, treatment and cure of disease. The outcome of any disease treatment cannot be optimum without the right nutritional support. Though time and again, research has also emphasized this fact, nutritional care has not been given its due importance especially in a hospital setting. However, today there is a paradigm shift from starving the patients for days together after surgery or critical illness, to starting early enteral or parenteral feedings in order to put him on the road to recovery.

Both the principles and practice of nutrition in the hospital and especially in the critical care units is varied from those suggested for healthy populations. In order to enable nutritionists and dietitians to meet the challenges of medical nutrition therapy, it is essential to equip them with an in depth knowledge and thorough understanding of the metabolic and physiological changes in disease, food and drug interactions and various nutrition support systems.

Today the role of Nutritionists as a part of the 'Nutrition Support Team' consisting of doctor, nurse, nutritionist and pharmacist is being emphasized.

In view of the present situation, there is a need for nutritionists to equip themselves with a thorough knowledge in medical nutrition and claim rightfully their place in the implementation of patient care in hospitals. This course on 'Emerging trends in Medical Nutrition Therapy' was planned keeping all the above facts in view.

PROFILE OF PARTICIPANTS

Nine participants in the Assistant, Associate and Professor cadre attended the training programme. The participants were from Punjab Agricultural University, Ludhiana; Chandra Shekar Azad University of Agriculture & Technology, Kanpur; Marthwada Agricultural University, Parbhani; Tamil Nadu Agricultural Madurai, Baptla and Rajendranagar campus of Acharya N.G. Ranga Agricultural University. Eight of the participants were involved in under graduate and postgraduate teaching, one of them is a technical officer.

LIST OF PARTICIPANTS

Name & Designation	**Address**
Dr.P. Banumathi Professor (FSN)	Department of Food science & Nutrition Home Science College & Res. Instt. Tamil Nadu Agricultural University MADURAI – 625104
Ms. Asha Arya Associate Professor	Dept. of Foods and Nutrition College of Home science, Marthwada Agricultural University PARBHANI (M.S) – 431402
Dr.(Mrs.) Jaswinder Kaur Brar Asst. Professor	Dept. of Foods and Nutrition College of Home Science, Punjab agricultural University LUDHIANA (PUNJAB)-141004.

Dr. Anita Kochhar
Associate Professor

Department of Food & Nutrition
College of Home Science,
Punjab Agricultural University
LUDHIANA(PUNJAB)-141004.

Dr. T.V. Hymavathi
Asst. Director (H.Sc)

Administrative Office,
Acharya N.G. Ranga Agricultural University
Rajendranagar, Hyderabad-500 030

Dr.(Mrs) Lakshmi J.
Assistant Professor

B.Tech (Food Science Programme)
College of Home Science,
Bapatla, ANGRAU.

Mrs. K. Kusuma Rao
Assistant Professor

Department of Biochemistry
College of Agriculture
ANGRAU, Hyderabad

Ms. Vinita Singh
Assistant Professor

Department of Foods & Nutrition
College of Home Science,
C.S.A.U., KANPUR – 208002

Ms. Seema Sonkar
Assistant Professor

Department of FSN,
College of Home Science,
C.S.A.U., KANPUR.-208002

COURSE CONTENT

The course was designed to cover five major areas of Medical Nutrition Therapy. These included

- ♠ Process of Nutritional care.
- ♠ Physiological and Metabolic changes in diseases
- ♠ Nutritional care in critical illness
- ♠ Immuno nutrition
- ♠ Food and Drug interactions.

Thirty eight lectures were arranged to cover various aspects of the five major areas. Besides class room lectures, the participants visited hospitals to get first hand exposure to the manner in which nutritional care was being given. The participants also attended a two day 'Clinical update' organized by the A.P. Chapter of Indain Dietetics Association.

RESOURCE PERSONS

Faculty members of Department of Foods and Nutrition, College of Home Science, Department of Physiology, Pharmacology and Livestock Production Technology of College of Veterinary Science and departments of Biotechnology and Post Harvest Technology of College of Agricultural sciences, Acharya. N. G. Ranga Agricultural University were involved in giving the lectures. Eminent doctors and scientists also enlightened the participants with lectures. Among them were Dr. B. Ravinder Reddy, Head of gastro intestinal surgery unit from Care Hospital, Banjara Hills, Dr. Ajit Vigg, well known pulmonologist from Appolo Hospital , Dr. Jayanthi, Gynecologist from J.J. Hospitals and Dr. B. Sesikeran, Deputy Director from the National Institute of Nutrition.

HOST FACULTY

COURSE DIRECTOR

Dr. V. Vimala,
Professor-cum-Director,
Centre of Adavnced studies.

COURSE COORDINATORS

Dr. S. Sumathi
Associate professor

Dr. S. Shobha
Associate Professor

RESOURCE PERSONS

Dr.V. Vimala	Professor
Dr. D. Sharada	Professor
Dr.S. Sumathi	Associate professor
Dr. P. Rajyalakshmi	Associate Professor
Dr. V. Vijayalakshmi	Associate Professor
Dr.K. Uma Devi	Associate Professor
Dr. K. Uma Maheshwari	Associate Professor
Dr. S. Shobha	Associate Professor

GUEST FACULTY

FACULTY OF VETERINARY SCIENCES, ANGRAU

1. Dr. J.M. Reddy — Professor & Univ. Head, Dept. of Physiology
2. Dr.K.S.Reddy — Professor, Dept. of Pharmacology
3. Dr. B. Kala Kumar — Assistant Professor, Dept. of Pharmacology
4. Dr. K. Kondal Reddy — Associate Professor, dept. of LPT

FACULTY OF AGRICULTURAL SCIENCES, ANGRAU

1. Dr. Anurag Chaturvedi — Associate Professor, Dept. of PHT
2. Dr. K. Manorama — Associate Professor, Dept. of Biotechnology

GUEST FACULTY FROM MEDICAL PROFESSION

1. Dr. B. Ravinder Reddy — Head of the dept. of Gastro Intestinal Surgery care Hospital, Banjara Hills, Hyd.
2. Dr. Ajit Vigg — Head of the dept. of Pulmonology, Appollo Hospitals, Jubilee Hills, hyd.
3. Dr. Jayanthi — Gynecologist, J.J. Hospitals

SCIENTISTS FROM NATIONAL INSTITUTE OF NUTRITION

Dr. B. Sesikeran — Deputy Director

DIETITIANS

1. Ms. Nagamalleshwari — Dietitian, St. Thersa Hospital
2. Dr. Lata sahi — Dietitian, Nutrifit

IMPLEMENTATION OF THE COURSE

The training programme was started on 16th July 2003 at Centre Advanced studies P.G. & Research Center, ANGRAU, Hyderabad. Immediately after registration and pre evaluation of the participants, the course Director, Prof. V. Vimala interacted with the participants and explained about the importance and need for the course.

The participants were exposed to a number of lectures in the class room; their interest was sustained specially because of the new and interesting information provided. Visits to care Hospital, Hyderabad Kidney and Laparoscopic Centre, J.J. Hospital and the National Institute of Nutrition helped in giving a firsthand exposure. The two day seminar conducted by the Andhra Pradesh chapter of Indian Dietetics Association provided an opportunity to interact with dietitians working in hospitals. The participants also visited the library at national Institute of Nutrition.

TRAINING PROGRAMME ON EMERGING TRENDS IN MEDICAL NUTRITION THERAPY 16-7-2003 to 05-08-2003. PROGRAMME

S. No.	**Date**	**Time**	**Topic**	**Resource Person**
1.	16-7-2003 Wednesday	9.30 AM - 12.00 Noon 2.00-3.30PM	Registration Introductory Remarks Pre evaluation	 Dr. V. Vimala
PROCESS OF NUTRITIONAL CARE				
2.	17-7-2003 Thursday	9.30-11.00 AM	Nature and Process of Nutritional Care	Dr. V. Vimala

		11.30-1.00PM 2.00-3.30PM	Nutrition support in critical care Nutritional Assessment	Dr.S. Shobha Dr.K. Uma Devi
3.	18-7-2003 Friday	9.30-11.00 AM 11.30-1.00PM 2.00-3.30PM	Modalities of nutritional therapy Principles and methods of Enteral and Parenteral Nutrition Formula diets for oral tube and parenteral administration	Dr.V.Vimala Dr.V.Vimala Mrs.Nagamalleshwari

PHYSIOLOGICAL & METABOLIC CHANGES IN DISEASES				
4.	19-7-2003 Saturday	9.30-11.30Am 11.30-1.00PM 2.00-3.30PM	Physiological role of body fluids Regulation of body fluids in health & disease Laboratory diagnostic techniques in various disorders	Dr.J.M. Reddy Dr.J.M. Reddy Dr.K. Manorama

5.	20-7-2003	HOLIDAY

6.	21-7-2003 Monday	9.30-11.00AM	Physiological and Metabolic changes in diseases of G.I.tract	Dr.V.Vijayalakshmi

		11.30-1.00PM 2.00-3.30PM	Physiological and Metabolic changes in burns Physiological and metabolic changes in diseases of the kidney	Dr.S.Shobha Dr.K.Uma Maheshwari

7.	22-7-2003 Tuesday	9.30-11.00AM 11.30-1.00PM 2.00-3.30PM	Physiological and Metabolic changes in Cardiac diseases Library Challenges and opportunities for dietitians in Clinical Nutrition	Dr.D.Sharada Dr.Anurag Chaturvedi

8.	23-7-2003 Wednesday	9.30-11.0AM 11.30-1.00PM 2.00-3.30PM	Physiological and metabolic changes in pulmonary diseases Nutritional support in respiratory diseases Computer applications in Clinical Nutrition	Dr.D.Sharada Dr.Ajit Wigg Dr.Anurag Chaturvedi

9.	24-7-2003 Thursday	9.30-11.00AM 11.00-3.30PM	Nutrition support in gastrointestinal disorders Care Hospital visit	Dr. B. Ravinder Reddy

Participants attended Dietetics update 2003 conducted by Indian Dietetics Association, A.P.Chapter on 25th and 26th National Institute of Nutrition, Hyderabad

10.	25-7-2003 Friday		Why more and more Indians are succumbing to heart attacks? Syndrome X Role of nutrition in management of CVD Dietary management in diabetes Gastro esophageal reflux disease, irritable bowel syndrome, viral hepatitis and cirrhosis Role of nutrition in the management of gastro intestinal diseases	Dr.Krishna Reddy Cardiologist Dr.G.C.Reddy Endocrinologist Ms.Y.Anuradha Chief Dietitian Mr. Veereder Singh Dietitian Dr.Ibrahim Hassan Gastroentrologist Ms. Esther Dietitian

11.	26-7-2003		Role of nutrition in management of Pediatric gastro-intestinal problems Role of nutrition in gastro intestinal surgery Dialysis and kidney transplantation Clinical management of cancer patients during radiation therapy and chemotherapy	Ms. Shiva Priya Dietitian Dr. Ravinder Reddy Gastroentrologist Dr. Chakravarthy Nephrologist Dr. Raghunadha Rao Oncologist

			Nutritional needs of cancer patients during radiation therapy and chemotherapy	Ms. Nagamalleshwari Dietitian

12.	27-7-2003 Sunday	HOLIDAY

IMMUNO NUTRITION				
13.	28-7-2003 Monday	9.30-11.00AM	Physiology of immune system I	Dr.J.M. Reddy
		11.30-1.00PM	Physiology of immune system	Dr.J.M. Reddy
		2.00-3.30PM	Amino acids in critical care	Dr.S.Sumathi

14.	29-7-2003 Tuesday	9.30-11.00AM	Vitamins and immune competence	Dr. Manorama
		11.30-1.00PM	Early diet and development of immune system in infants	Dr.S.Shobha
		2.00-3.30PM	Probiotics and prebiotics in development of immunity and disease prevention	Dr.Kondal Reddy

15.	30-7-2003	9.30-11.00AM	Role of diet & Disease in intestinal cell death	Dr. Sesikiran
		11.30-3.30PM	Visit to NIN	
16.	31-7-2003 Thursday	9.30-11.00AM	Fats-Inflammation and immunity	Dr.S.Sumathi
		11.30-1.00PM	Immunological	Dr. Manorama

			responses in malnourished children	
		2.00-3.00PM	Minerals and Immuno Competence	Dr. S. Shobha

17.	01-8-2003 Friday	9.30-11.00AM	Food allergens and mucosal immunity	Dr.P.Rajyalakshmi
		11.30-3.30PM	Visit to Hyderabad Kidney and Laproscopic Centre	

FOOD & DRUG INTERACTIONS				
18.	02-8-2003 Saturday	9.30-11.00AM	Pharmocokinetics	Dr.K.S. Reddy
		11.30-1.00PM	Pharmocodynamics-I	Dr. B. Kala Kumar
		2.00-3.30PM	Pharmocodynamics-II	Dr. B. Kala Kumar
		4.00-5.30PM	Management of high risk pregnancies	Dr. Jayanthi

19.	03-8-2003 Sunday	HOLIDAY

20.	04-8-2003 Monday	9.30-11.00AM	Physical & metabolic nutrient drug interaction	Dr. B.Kala Kumar
		11.30-1.00PM	Malnutrition and drug interaction	Dr. S. Sumathi
		2.00-3.30PM	Process and Method of Diet counseling	Dr. Lata Vijayan

21.	05-8-2003 Tueday	Post Evaluation of participants knowledge Valedictory function

Note: 11.00-11.30am(Tea) 1.00PM-2.00PM(Lunch)

Registration of participants

Lecture by Course Director

Interaction with Guest Faculty

Lectures by Guest Faculty

Address by Dean of Home Science

Participants listening in rapt attention

Valedictory Function

Welcoming the Chief Guest Sri S. P. Singh, V. C., ANGRAU to the Valedictory function

Participant receiving certificate and manual from Dean of Home Science

KNOWLEDGE PROFILE OF PARTICIPANTS

Pre and post evaluation of the participants knowledge on Medical Nutrition Therapy was assessed using a proforma. The participants scored between 24-64% in pretesting. After exposure to the course, their scores were between 88-96%, showing an increase in knowledge levels. The mean increase in awareness was by 57.8%.

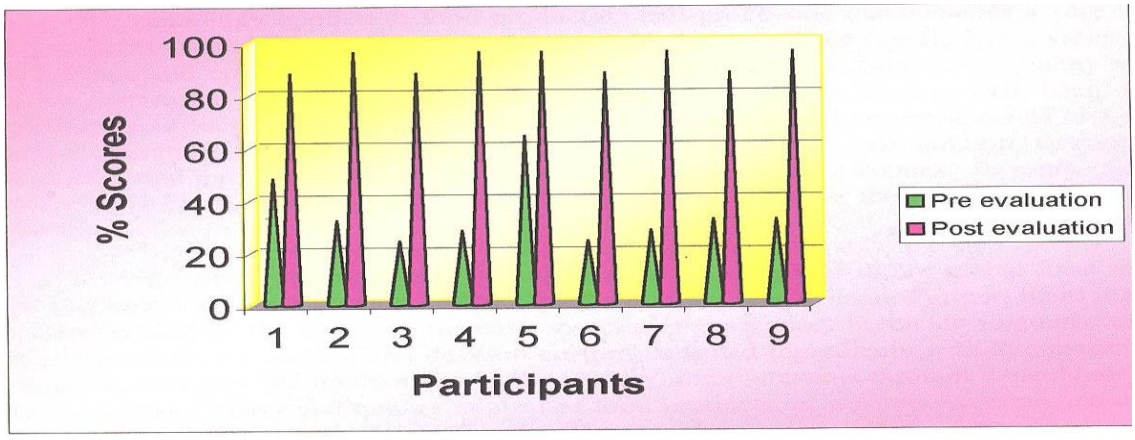


Fig.1 Pre & Post evaluation of Participants knowledge

COURSE EVALUATION BY THE PARTICIPANTS

After each lecture, the participants evaluated the lecture on various aspects such as relevance, clarity, adequacy of information, a new information provided, visuals used, discussion of the topic etc using a proforma. They also rated each lecture as excellent/good/average/fair. Compilation of evaluation data showed that on an average the lectures were considered to be good and very useful. The feedback obtained from the participants on the course revealed the following.

The course was extremely useful and stimulating

The academic atmosphere of the CAS, located in the university campus induced learning.

Field visits, though few, were informative and practical

Training programme on **"Biotechnological Approaches to Food Processing"** 20th January to 9th February 2004

Food, to the consumer, is usually characterized by a unique combination of texture and flavor. Food ingredients may be part of a formulation to impart physical properties or to modify textural properties to alter the mouth feel of a food, appearance and to the extent to which flavoured substances are perceived by the consumer.

Conventional technologies have been adop[ted over centuries both in the area of food production and processing. Hpwever, they have not been able to meet the ever growing demand for quantity and quality food. Recent advances in molecular bilogy, fermentation science, tissue cultures systems and bioengineering offer potential for application in several areas related to food production and processing. Thus, the enthusiasm for biotechnology, characteristic of the pharmaceutical and medical sciences in the early 1980's has proven to be is the oldest and largest industry using biotechnological processes based on fermentation, many new processes and technologies such as immobilized bio-catalyst technology etc. are now being used to produce other fermented products, food and feed additives and processing aids.

Biotechnology applied to food production and processing encompasses a very large and diverse fields. Capabilities of biological systems are being utilized rapidly into a variety of food applications and consequently many new food sources, processes and products are being developed. Biotechnology has been found to significantly influence food supply including the production and preservation of raw materials and the alterations of their nutritional and functional properties. In addition, development of production and processing aids and direct additives such as enzymes, flavours, single cell protein, polysaccharides, pigments and antioxidants can improve the overall utilization of raw materials.

In view of increasing world population, the challenge of future global food security is how to increase food production on the same or existing area of land. Further, there is a need to genetically modify the foods to increase insect/pest resistance, herbicide tolerance and yield, improved nutritional quality and develop custom designed ingredients with the enormity of the biological resources and

biodiversity in the country, improvements through biotechnology in the characterization, safety and quality control of food products, in waste conversion and utilization processes are some of the areas which offer great potential. Thus biotechnology can be visualized to have a positive impact on both food security and nutritional security through its application to food production and processing.

Biotechnology is identified as a technology for the future as the 21st century has been earmarked as the age of Modern Biology and Biotechnology, it was felt appropriate conduct this training programme with the objective to develop, update and strengthen knowledge about biotechnology and its application and approaches in development, quality assurance and safety of food products to give an impetus to this technology for use in food processing in future.

PROFILE OF PARTICIPANTS

The total numbers of participants for the programme were 15 in number who represented various State Agricultural Universities from Kerala, Orissa, Bihar, Tamil Nadu and Andhra Pradesh and Osmania University. The participants were from diverse fields such as Horticulture, Post Harvest technology, Food Engineering, Agricultural Biotechnology and Foods and Nutrition, from teaching and research areas.

Though the participants hailed from different regions with varied fields of specialization, the programme has been able to draw them close and this has given an assorted flavour to the training programme.

LIST OF PARTICIPANTS

Name & Designation	**Address**
Dr.T.Padmini Professor & Head	Dept. of Apparel Designing & Fashion Technology, Home Science & R.I., Madurai.
Smt. Leela Rani Saha	Dept. of Foods and Nutrition, College of Home Science, RAU,PUSA, Samastipur, Bihar
Smt. Ritalal,	C/o Dr. G.C.Keshari,Jamalpur,Munger,Bihar 811 214, Bihar Agril. College

Dr.K.P.Sudheer	Dept.of Post Harvest Technology & Agril.Processing, K.C.A.E.T., Tavanur, Kerala.
Dr. Uma Chitra, Associate Professor	Dept.of Clinical Nutrition & Dietetics, Women's, Kasturba Gandhi Women's College, Secunderabad.
Dr.Sanjaya Kumar Dash, Training Associate (Agric. Engg.)	Krishi Vigyan Kendra(OUAT), Semiliguda,P.OBox-10, Sunbeda-763 002, Koraput, Orissa.
Dr. P.Yasoda Devi, Associate Professor	Deputy Director, P& M Cell, Acharya. N.G.Ranga Agricultural University Rajendranagar
Dr.V.Vijayalakshmi Associate Professor	Dept. of Foods and Nutrition, College of Home Science, Hyderabad
Dr. Kavita Waghray	University College of Technology, Osmania University, Hyderabad-007
Mr. Manoj Kumar Panda Asst. Research Engineer	AICRP on Post Harvest Technology, C.A.E.T., O.U.A.T., Bhubaneshwar-751 003.
Dr. Manorama Associate Professor	Dept. of Agril. Biotechnology, C,A., ANGRAU, Rajendranagar
Dr.A.Girwani Scientist (Hort.)	Fruit Research Station, Acharya.N.G. Ranga Agricultural University, Sangareddy
Dr.A.Bhagwan Scientist (Hort.)	Fruit Research station, Acharya.N.G. Ranga Agricultural University, Sangareddy
Dr. Anurag Chaturvedi	Post Harvest technology of Horticultural

Senior scientist (Hort.)	Crops, ANGRAU
Dr.J.Dilip Babu, Senior scientist (Hort.)	Post Harvest technology of Horticultural Crops, ANGRAU

COURSE CONTENT

The technical sessions of the training were categorized to cover the following aspects.

- Biotechnology and Food – an interface
- Biotechnology and Food Fermentations
- Bio Ingredients – Development and use in Food Industry
- Biotechnology & Safety
- Other applications

The classroom schedule consisted of 50 lectures, which extensively covered the above aspects. Visits were arranged for the participants to enlighten them about the use of biotechnology in development of traditional products like curd, cheese etc. and in production of nutrient supplements and biofertilizers the participants also witnessed demonstrations on separation and identification of plant pigments, protein purification technique, mushroom cultivation technique etc. An exercise on preparation of project proposals based on biotechnology and presentation was also given to the participants.

RESOURCE PERSONS

Eminent resource persons were drawn from various institutions like NAARM, Hyderabad Central University, Osmania University, CFTRI, national Institute of Nutrition, directorate of Oilseeds research and National Research Centre for Sorghum. Faculty members from College of Agriculture, Veterinary science and Home science, Acharya.N.G. Ranga Agricultural University were also included as for different technical sessions.

HOST FACULTY

COURSE DIRECTOR

Dr.V.Vimala,
Professor-cum-Director,
Center of Advanced Studies

COURSE COORDINATORS

Dr. K. Kamini Devi
Associate professor

Dr.N.Lakshmi Devi
Associate professor

RESOURCE PERSONS

Dr. Vijay Khader	Professor & Dean of Home Science
Dr. V. Vimala	Professor
Dr. D. Sharada	Professor
Dr. S. Sumathi	Associate Professor
Dr. P. Rajyalakshmi	Associate Professor
Dr.Kamini Devi	Associate Professor
Dr.N.Lakshmi Devi	Associate Professor
Dr.K.Uma Maheshwari	Associate Professor
Dr.S.Shobha	Associate Professor
Dr. K. Krishna Kumari	Associate Professor
Dr. T.V. Hymavathi	Associate Professor
Mrs. Kanwaljit Kaur	Assistant Professor

GUEST FACULTY
FACULTY OF VETERINARY SCIENCES, ANGRAU

1. Dr.K.Kondal Reddy — Associate Professor, Dept. of LPT
2. Dr.N. Dhanalakshmi — Associate Professor, Dept of Microbiology
3. Dr. Nagamalleshwari — Scientist & Ruska Lab

FACULTY OF AGRICULTURAL SCIENCES, ANGRAU

1. Dr. Siddiq — Former Director, DRR and Consultant Biotechnology, ARI, R'nagar
2. Dr. Shivrama Krishna — Prof. & Head, Dept. of Biotechnology
3. Dr. Sokka Reddy — Associate Professor, Dept. of Genetics &

		Plant breeding
4.	Dr. R. Subash Reddy	Head, Dept. of Microbiology
5.	Dr.S.J.Rehman AICRP	Biological Control
6.	Dr.V.Padma	Associate Professor, Dept. of PHT
7.	Dr. K.Manorama	Associate Professor, Dept. of Biotechnology
8.	Dr. Dilip Babu	Associate Professor, Dept. of PHT

GUEST FACULTY FROM OSMANIA UNIVERSITY

1.	Prof. P.B. Kavikishor	Chairman, BOS Biotechnology, Dept. of Genetics, Osmania University, Hyd.
2.	Dr.P.Ravindra	Prof. & Head, College of Tech., O.U. Hyd.

SCIENTISTS FROM CENTRAL UNIVERSITY

1.	Dr. Reddanna	Prof.& Head, Dept. of Animal Sciences
2.	Dr. Siva Kumar	Scientist, Dept. of Bio-chemistry
3.	Dr. M.N.V. Prasad	Prof. & Head, Dept. of Plant Sciences

SCIENTISTS FROM NATIONAL INSTITUTE OF NUTRITION

1.	Dr.B. Sesikeran	Assistant Director, Dept. of Pathology
2.	Dr.S.Babu	Scientist, Dept. of Toxicology & Fd. Safety
3.	Dr. Sudarshan	Scientist, Dept. of Toxicology & Fd. Safety

SCIENTISTS FROM CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE

1.	Dr. D. Narasimha Rao	Scientist, CFTRI, Mysore
2.	Dr. D.G. Rao	Head, CFTRI, Hyderabad
3.	Dr. Satyanarayana	Scientist, CFTRI, Hyderabad

OTHER EMINENT SPEAKERS

1.	Dr. U S N Murthy	Head, Dept. of Bio Informatics, Indian Institute of Chemical Technology, Hyderabad
2.	Dr. N.S. Sudhakara	Associate Professor, College of Fisheries Science, Mangalore
3.	Dr. Visarada	Sr. Scientist, Directorate of Oil Seeds Research, R'nagar

IMPLEMENTATION OF THE COURSE

THE TRAINING PROGRAMME COMMENCED ON 20TH January 2004 with registration of participating followed by pre evaluation of knowledge of the

participants. The first session after the registrationwas introduction to the concept and need for biotechnology by Dr. V. Vimala, Programme Director. The Dean of Home Science, Acharya. N.G.ranga Agricultural University, Dr. Vijaya Khader interacted with the participants highlighting the role of biotechnology in meeting the needs of food industries. Many other sessions that were included in the training Programme were handled by eminent scientists proficient in the area of biotechnology like Dr. E.I. siddiq, Former Director, Directorate of Rice Research and presently Distinguished Chair, Dept. of Biotechnology, Acharya.N.G. Ranga Agricultural University, Dr. B.N. Mathur, Director, NAARM, Dr. Kavi Kishore, Professor of Biotechnology, Osmania University, Dr. Narasimha Rao, Head, Meat & meat products division, CFTRI, Mysore to mention a few.

The visits to creamline Dairy products, Ltd., Pratishta Biotech, Industries were very relevant and informative where the participants had an insight into use of biotechnology on an industrial scale. The participants also visited Hyderabad Central University, National Institute of Nutrition and Osmania University to attend some classroom sessions and lab demonstrations. In a practical session, traditional fermented products like idli, dosa, were demonstrated. The participants also demonstrated some products popular in their regions. In the areas of other applications, sessions were included with biopesticides, biofertilizers biosafety, bioinformatics, biomass utilization and IPR and trade issues. A post evaluation of the participants knowledge was conducted to assess the benefit of the training programme. Later the participants presented their project proposals on biotechnology – its intervention in food processing.

XIII TRAINING PROGRAMME ON BIOTECHNOLOGICAL APPROACHES TO FOOD PROCESSING
20-01-2004 TO 09-02-2004
PROGRAMME

S. No	Date	Time	Topic	Resource Person
1.	20-01-2004 Tuesday	10.00-10.30AM 10.00-11.00AM 11.00-12.00PM 2.00-3.00PM	Registration Introductory Remarks Interactive Session Pre Evaluation	 Dr. V. Vimala Professor & Head Dr. Vijaya Khader, Dean of Home Science, ANGRAU
	I.	BIOTECHNOLOGY AND FOOD – AN INTERFACE		
2.	21-04-2004 Wednesday	9.30-11.0 AM 11.30-1.00 PM 2.00-3.30 PM	Biotechnology and food Security Role of Biotechnology in food processing Biotechnology – A means for increasing food supply	Prof.P.B. Kavikishor Chairman, BOS Biotechnology, Dept. of Genetics, Osmania University, Hyd. Dr. V. Vimala, Professor & Head, Dept of Foods and Nutrition, ANGRAU Dr. Shivrama Krishna, Prof. & Head, Dept. of Biotechnology, ANGRAU

3.	22-01-2004	9.30-11.00 AM	Genetically modified foods-Technology and current status	Dr. Sokka Reddy Associate Professor, Dept. of Genetics & Plant Breeding, ANGRAU
		11.30-1.00 PM	Mushroom – technology & production	Dr. Vijaya Khader Dean of faculty of Home science, ANGRAU
		2.00-3.30 PM	Biotechnological advancements in food processing	Dr. P. Ravindra, Professor & Head, College of Tech., O.U. Hyderabad
		3.30-5.00 PM	Identification of GM foods	Dr. Manorama Associate Professor, Dept. of Agril. Biotechnology, ANGRAU

	II.	BIOTECHNOLOGY AND FOOD FERMENTATIONS		
4.	23-01-2004 Friday	9.30-11.00 AM	Biochemical aspects of food Fermentation	Dr. S. Sumathi Associate Professor, Dept. of Foods and nutrition, ANGRAU
		11.30-1.00 PM	Bio reactors in food fermentation	Dr.D.G.Rao, Head, CFTRI, Hyderabad
		2.00-3.30 PM	Microbiology of Food Fermentation	Dr. K. Dhanalakshmi Associate Professor, Dept. of Microbiology, Vety. College. ANGRAU

5.	24-01-2004 Saturday	9.30-11.00 AM	Technology of fermented cereal foods	Dr. N. Lakshmi devi Associate Professor, Dept of Foods and Nutrition, ANGRAU
		11.30-1.00 PM	Fermented millet products	Dr. P. Rajyalakshmi Associate Professor, Dept of Foods and nutrition, ANGRAU
		2.00-3.30 PM	Bioavailability of toxic trace elements – Human health concerns	Dr. M.N.V. Prasad Prof. & Head, Dept. of Plant sciences, HCU

6.	27-01-2004 Tuesday	9.30-11.00 AM	Visit to RUSKA Lab	Dr. Kamini Devi & Dr. N. Lakshmi Devi
		11.30-1.00 PM	Fermented grain legumes, seeds & nuts technology	Dr.K.Krishna Kumari Associate Professor, ANGRAU
		2.00-3.30 PM	Demonstration of fermented products Practicals	Dr. N. Lakshmi Devi / Ms. Kanwaljit Kaur Associate Professor, Dept of Foods and Nutrition, ANGRAU

7.	28-01-2004 Wednesday	9.30-11.00 AM	Fermanted meat products technology	Dr. D. Narasimha Rao, Scientist, CFTRI, Mysore
		11.30-1.00 PM	Biotechnology- Applications in dairy industry	Dr.B N Mathur, Director, NAARM, R'nagar

		2.00-3.30 PM	Use of Biotechnology in cheese production Visit to Creamline Dairy Products, Uppal Visit to biotech Lab, O.U	Dr. K. Uma Devi Associate Professor, Dept of Foods and Nutrition, ANGRAU

8.	29-01-2004 Thursday	9.30-11.00AM	Alcoholic foods & beverages	Dr.T.V. Hymavathy Associate Professor, ANGRAU
		11.30-1.00 PM	Visit ti Mushroom Production Lab	Dr. kamini Devi & Dr. N. Lakshmi Devi
		2.00-3.30 PM	Health benefits of fermented foods	Dr.D.Sharada Professor, Dept of Foods and Nutrition, ANGRAU

	III. BIO INGREDIENTS – DEVELOPMENT AND USE IN FOOD INDUSTRY			
9.	30-01-2004 Friday	9.30-11.00 AM	Use of membrane technology for production of probiotics	Dr. Kondal Reddy Associate Professor, Dept.of LPT,ANGRAU
		11.30-1.00 PM	Single cell & Mycoprotein production technology & use	Dr.K.Uma Maheshwari Associate Professor, Dept. of Foods and Nutrition, ANGRAU

		1.30-2.30 PM	Microbial Polysaccharides – use in food Processing	Dr. Kamini Devi Associate Professor, Dept. of Foods and Nutrition, ANGRAU
		2.45-4.00 PM	Radiation – A biotechnology tool for food preservation	Dr.Anurag Chaturvedi, Associate Professor, PHT of Horticultural Crops, ANGRAU

10.	31-01-2004 Saturday	9.30-11.00 AM	Bioadditives – Colours	Dr. Satyanarayana, Scientist, CFTRI, Hyderabad
		11.30-1.00 PM	Production and application of microbial enzymes	Dr. P. Ravindra Prof. & Head, Dept. of Food Tech., O.U.
		2.00-5.30 PM	Visit to Pratishta Industries	Dr. Kamini Devi & Dr. N. Lakshmi Devi

11.	03-02-2004 Tuesday	9.30-11.00 AM	Encapsulation technique in food processing	Dr.S. Sumathi Associate Professor, Dept. of Foods and nutrition, ANGRAU
		11.30-1.00 PM	Ecofriendly packaging material	Dr. Dilip Babu, Associate Professor, PHT of Horticultural Crops, ANGRAU
		2.00-3.30 PM	Production of bio nutrients	Dr. S. Shobha Associate Professor, Dept. of Foods and Nutrition, ANGRAU

		3.30-5.00 PM	Role of Biotechnology in Designer Lipids for functional foods	Dr. Manorama Associate Professor , Dept. of Agril. Biotechnology, ANGRAU

12.	04-02-2004 Wednesday (Visit to Hyderabad Central University)	9.30-11.00 AM	Technology of Fermented fruits & vegetables	Dr. V. Vimala Professor & Head Dept Of Foods and Nutrition, ANGRAU
		11.30-1.00 PM	Strategies for Improving shelf life of fruits & vegetables	Dr. Reddanna, Prof.& Head, Dept. of Animal Sciences, HCU
		2.00-3.00 PM	Protein purification techniques	Dr. Siva Kumar Scientist, dept. of bio-Chemistry, HCU
		3.00-4.00 PM	Demonstration of protein Purification technique	

IV. BIOTECHNOLOGY & SAFETY				
13.	05-02-2004 Thursday	9.30-10.30 AM	Bio-additives – Preservaties	Dr. S. Babu Scientist, NIN
		10.30-12.00 PM	Detoxification of mycotoxins using biotechnology	Dr. Sudarshan Scientist, NIN
		2.30-3.30 PM	Biotechnology and food allergenicity	Dr. Sasikeran Asst. Director, NIN

14.	06-02-2004	9.30-11.00 AM	Fermented marine products	Dr.N.S. Sudhakara Associate Professor, College of Fisheries Science, Mangalore
		11.00-1.00 PM	Internatinal trade issues and economic concerns	Dr. Visarada Scientist, NRCS, R'nagar
		2.00-3.30 PM	Bio mass utilization	Dr. V. Padma, Associate Professor, Dept. of plant Physiology, ANGRAU

V. OTHER APPLICATIONS				
15.	07-02-2004 Saturday	9.30-11.00 AM	Nutritional enhancement through biotechnology	Dr. Siddiq, Former Director, DRR and Consultant Biotechnology, ARI, R'nagar
		11.30-1.00 PM	Recent developments in bio informatics	Dr. U S N Murthy, Head, Dept. of Bio Informatics, IICT, Hyderabad.
		1.30-2.30 PM	Safety and international standards for biotechnologically developed foods	Dr. Dinesh Kumar, Sr. Scientist, Directorate of Oil Sedds Research, R'nagar
		2.30-3.30 PM	Development of biofertilizers	Dr. R. Subash Reddy Head, Dept. of Microbiology, ANGRAU

		3.30-5.00 PM	Bio Pesticides	Dr. S.J. Rehman AICRP, Biological Control, ANGRAU
16.	09-02-2004 Monday		Post evaluation Valedictory & Lunch	

Note: 11.00 - 11.30 am (Tea) 1.00 PM – 2.00 PM (Lunch)

KNOWLEDGE PROFILE OF PARTICIPANTS

Participants knowledge regarding to different various concepts about Biotechnology and its approaches to food processing was evaluated using a schedule. The percentage scores obtained before and after training is given in table

Table: Particulars knowledge evaluate before & after training (n=15)

	< than 20	**20-40**	**40-60**	**60-80**	**> than 80**
Before	13	33	47	7	-
After	-	7	7	20	66

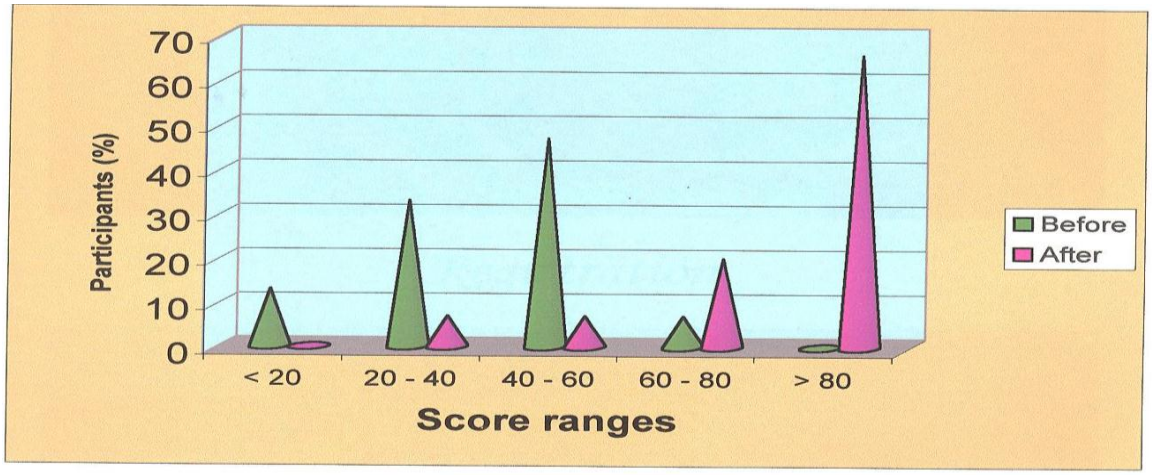


Fig.2 Pre & Post evaluation of Participants knowledge

COURSE EVALUATION BY THE PARTICIPANTS

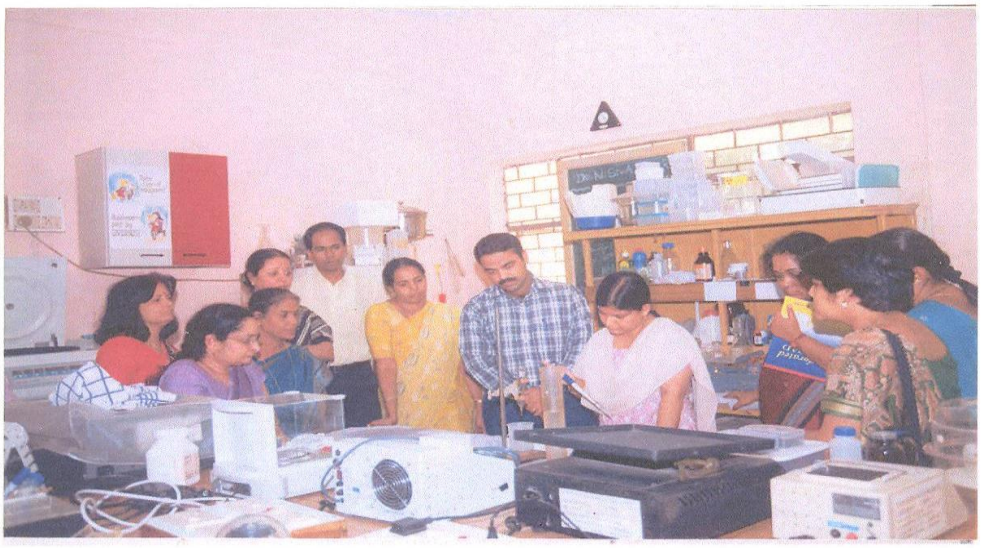
The technical sessions were evaluated by the participants through a schedule (Appendix II). Analysis of the data revealed that the participants felt that coverage of topics in the training programme was exhaustive. The participants were of the opininon that 90% of the topics were welcovered with latest information using good visual aids. They also expressed that visits were very appropriate and informative. The over all evaluation of each session was categorized as 70% excellent 20% good 10% fare in which content was satisfactory but visual presentation needed improvement participants have conveyed their appreciation about the programme through mail after getting back to their respective institutions (copies enclosed).

Registration

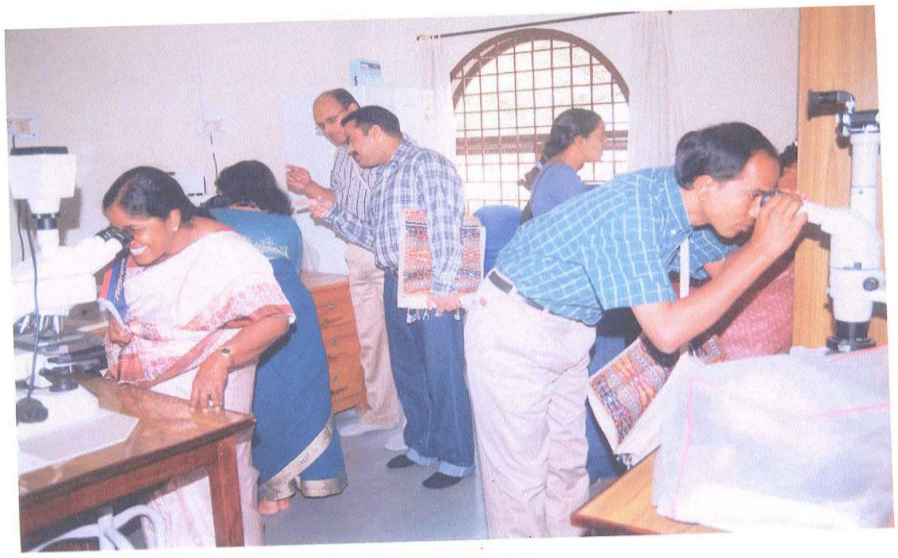
Post evaluation

Course Director & Course Coordinators

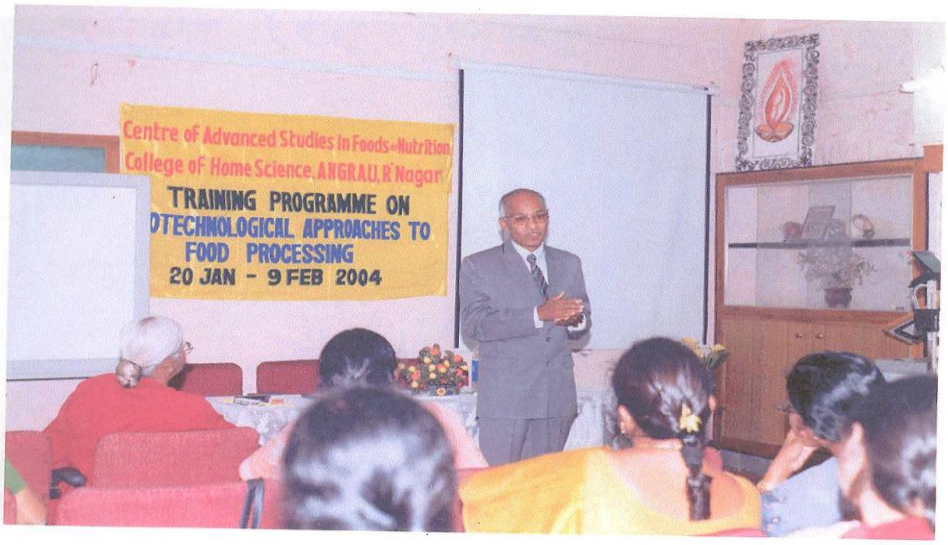
Depiction of Training programme theme



Practicals

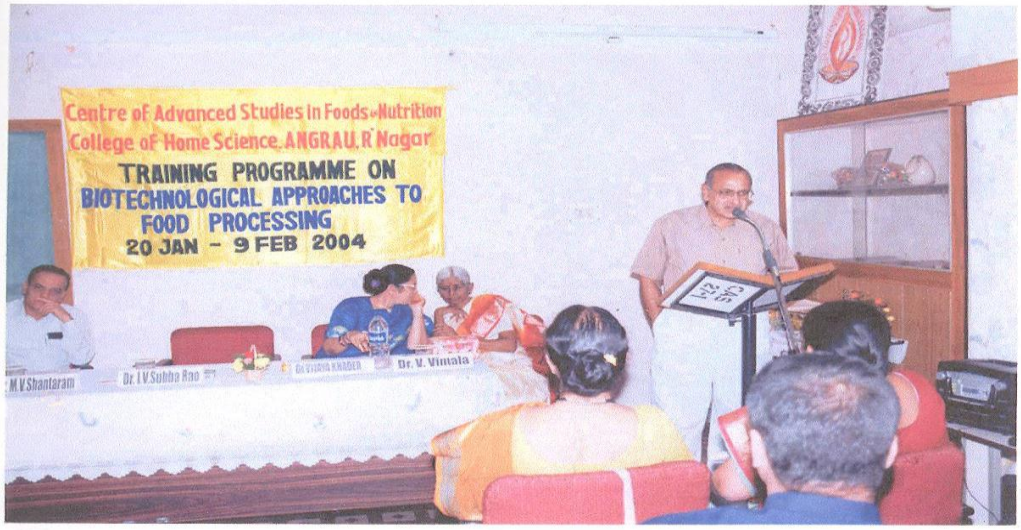


Visit to Ruska Lab & Mushroom Lab



Guest Speakers

Visit to Pratista Biotech Industries

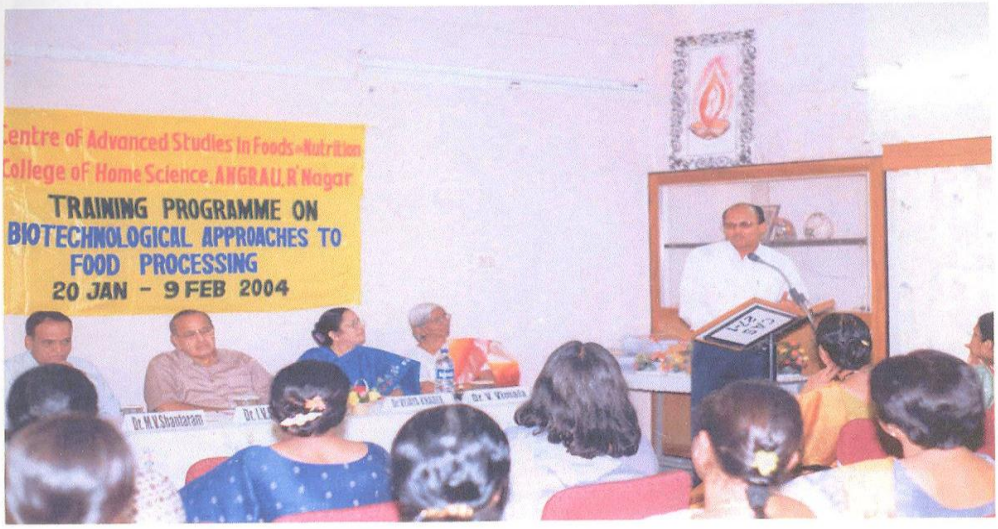


Address by Chief Guest

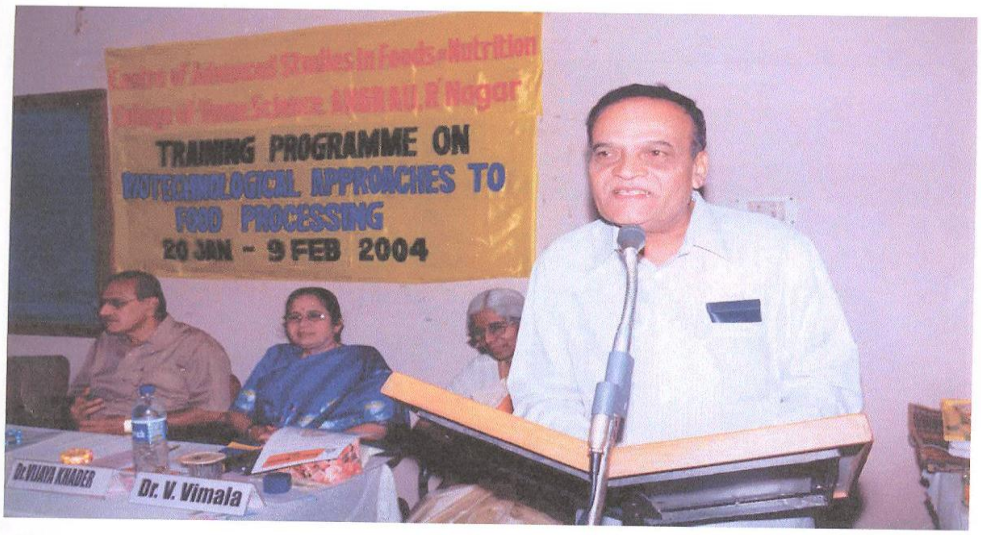
Release of News Letter & brochure

Presentation of CAS Report by Director

Training programme Report Presentation



Participants remarks



Address by Guest of Honor

Presenting vote of thanks

Presentation of certificate & manuals

OBJECTIVE II

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

UG PROGRAMME

- ✓ For popularization of four year degree programme the following methods have been used
    a. Student seminar
    b. Printing phamplets, posters
    c. Using mass media communicative
- ✓ Manuals for RHWEP programme and hospital placement have been developed and approved by academic council.
- ✓ A diploma course in catering technology which has been formulated to train students to start income generating activities was approved by dean's committee and this programme will be initiated in the month of June, 2004.

PG PROGRAMME

- ✓ During the year 2003-2004, a total number of 15 students (Both boys and girls) have been admitted to Food science and Technology programme.
- ✓ A P G diploma course on "Nutritional Therapy" was planned and approved by Acdemic Council. This course will be initiated during the year June 2004.
- ✓ A meeting was held at Post Graduate and Research Centre on 3-12-2003 to revise the courses of Foods and Nutrition at P G level into three areas i.e., community Nutrition, Nutrition and dietetics and Food Science. All the staff of Foods and Nutrition department participated in the meeting. It was also decided to plan for a P G diploma courses in food analysis and quality control.

ALLOCATION OF SEATS UNDER PG PROGRAMME FOR H.SC.

Over and above the sanctioned strength of M.Sc. students, one student was nominated by ICAR and admitted under Centre of Advanced Studies.

GUEST LECTURES TO PG STUDENTS & STAFF

The following guest lecturers have been arranged at Centre of Advanced studies for the benefit of both staff and students.

TABLE 1. GUEST LECTURES ARRANGED.

SI. No.	Resource Person	Topic	Date
1	Dr.K.H. Rao Dept of human Resource Management, NAARM, Hyderabad	Emerging Technologies in dairy products – cheese	3-4-2003
2	Dr. A. Vasudeva Rao, Consultant food Industry	Trends in dehydration technology	17-4-2003
3	Dr.D.G. rao Scientist & Head, CFTRI, Hyderabad	Recent trends in grain processing and machinery	24-4-2003
4	Mr. N. Giridhar Swami Ramananda Tirtha Rural Institute, Jabalpur village, Pochampalli	Recent developments in fruits and vegetable technology	6-5-2003
5	Mr. Sundereshwar Rao Chief Food analysis State Food Laboratory Nacharam, Hyderabad	Food laws and standars in India and Abroad	29-8-2003
6	Dr. Vidya Sagar, Scientist	Extruded Foods from Rice and pulses	2-9-2003
7	Mr. S.A. Majeed Marketing Advisor, Society for Elimination of Rural poverty, Hyderabad	Avenues in Food processing and marketing of processed foods	16-9-2003

PRACTICALS MANUALS DEVELOPED

- ✓ Diet and Nutrition Counselling (Vol. I) - V. Vimala – 2002
- ✓ Food Chemistry - Dr. S. Sumathi – 2003
- ✓ Nutritional implications of food processing – Dr. S. Shobha – 2003

OBJECTIVE III

To support the Government in training personnel by disseminating nutrition information to personnel of different sectors.

TRAINING PROGRAMME AND CERTIFICATE COURSES CONDUCTED

To encourage self employment and income generating activities among grass root level women, farm women and house wives, training programmes on Foods and Nutrition and skill oriented certificate courses were organized by Centre of Advanced Studies in Foods and Nutrition

TABLE 2. TRAINING AND CERTIFICATE COURSES ORGANIZED

S. No	Coordinators	Name of the Programme	Duration		No. Of Participants
			From	To	
1	Dr.K.Uma Devi & Dr.K.Uma Maheshwari	'Slimming diets' (Certificate course)	24-3-2003	30-3-2003	9
2	-do-	-do-	8-7-2003	15-7-2003	18
3	Mrs. Kanwaljit Kaur & Dr. V. Vijaya Lakshmi	Bakery & Confectionery (Certificate course)	18-8-2003	4-9-2003	10
4	Dr. S. Sumathi & Dr. S. Shobha	Training programme on Emerging trends in Medical Nutrition Therapy	16-7-2003	5-8-2003	9
5	Dr. Kamini Devi & Dr. N. Lakshmi Devi	Training Programme on Biotechnological approaches to Food Processing		9-2-2004	15

Staff of Centre of Advanced Studies are not only involved in conducting training programmes and certificate courses on the campus, they also participate as resource persons off campus where ever, they are invited by line departments and other Universities.

TABLE 3. STAFF AS RESOURCE PERSONS

Staff involved as resource person	**Organized/ Resource person**	**Type of programme**	**Date**	**Organization /Venue/Place**
Dr. K. Uma Maheshwari	UGC refresher training programme on community Health and Nutrition	Ecological aspects of food & Nutrition Environmental degradation: Ecological foundations for improved nutrition and health	1-12-2003 2-12-2003	SMPVV, Tirupathi
Dr. V. Vimala	-do-	Diet & nutrition counselling	6-12-2003	-do-

TABLE 4. SCIENTIFIC ARTICLES PUBLISHED DURING THE YEAR

S. No.	Name	Title	Journal	Month	Vol	No.	P.No	Year
1	K. Uma Maheshwari & Vijaya Khader	Contribution of JRY programme for food security of women in land less labour families during lean season in drought prone areas	The Indian journal Nutrition and Dietetics	March	40	99	99-104	2003
2	K. Swarjya Lakshmi & D. Sharada	Development of Iron rich supplement and its effect on Adolescents	J.Res. ANGRAU	-	31	2	85-89	2003

3	P. Tanuja & P. Rajyalakshmi	Development of products with products with purified caryota palm sago	Jr. Food Science and Technology	Acceptance				
4	S. Shobha & D. Sharada	Efficacy of Twice weekly Iron Supplementation in Anemic adolescent girls	Indian pediatrics	Dec.	40		1186	2003
5	P. Madhavi & Kamini Devi	Value addition to water melon fruit waste	J.Food Sci. & Technology	-	40	2	222-224	2003
6	A.Saritha., Kamini Devi, & Vijayalakshmi V	Adequacy of diet recommended in Siddha Samadhi Yoga(SSY) camp	Indian journal of nutrition and dietetics	-	40	-	297-302	2003

OBJECTIVE IV:

To disseminate the nutrition information to personnel of line departments, research institutes, State Agricultural Universities etc.

To disseminate research highlights of various aspects of our Nutrition to different sectors of population a quarterly issue of Foods and Nutrition News Letters were brought out for circulation among the lien departments and the organizations involved in nutritional related programmes to disseminate nutrition information to personnel of different sectors.

TABLE 5. NEWS LETTERS RELEASED DURING THE YEAR 2003

S. No	Title	Month	Year	Volume	Number	Issue Editor
1	Tribals of Andhra Pradesh – Nutrition Status	April	2003	8	1	Mrs. A. Sarala Kumari
2	Indigenous Storage Methods for Pulses	August	2003	8	2	Dr. V. Vimala
3	The Adolesecnt Girl-Nutritional Status	Decem ber	2003	8	3	Dr. D. Sharada

OTHER ACTIVITIES CONDUCTED BY STAFF OF CENTRE OF ADVANCED STUDIES

TRAINING PROGRAMMES/SEMINAR/WORKSHOPS ATTENDED BY STAFF

The staff of Department of Foods and Nutrition participated in the Annual Clinical update 2003 and in the Annual convention of A.P Chapter of IDA on 25th July 2003at NIN, Hyderabad.

The staff participated in the Nutrela Health workshop organized by Ruchi Soya Industries limited and American Soyabean Association at College of Home Science, Hyderabad.

The staff attended a seminar on Research priorities and food policy challenges for the rural south Asian Economy on 12-8-2003 at University Auditorium, Acharya.N.G. Ranga Agricultural University, Hyderabad.

The staff attended a seminar on "Agro-processing policies for development of Agro processing in A.P. Challenges and opportunities" on 16-1-2004 at Acharya.N.G. Ranga Agricultural University, Hyderabad.

Dr. V. Vimala & Dr. K. Uma Maheshwari attended the state level workshop on Nutrition and National Development on 2-9-2003, organized by Foods and Nutrition Board Department of women and Child Development Govt. of India,

Hyderabad and Women Development and Child Welfare Department, Govt. of A.P., Hyderabad.

TABLE 6. POPULAR ARTICLES PUBLISHED BY STAFF

Staff	Name of the Article	Magazine	Month/Year
Dr. K. Uma Maheshwari	Importance of iodine in our diet	Padi Pantalu	March 2003
Dr. K. Uma Maheshwari	Food, Health & Culture	Smriti, College of Home Science magazine	2001-2003
Dr. S. Shobha & Dr. s. Sumathi	Arogyaniki hani kaligincher sukshma poshaka iopalu	Annadatha	Dec 2003
Dr. S. Sumathi	Obesity- the epidemic of 21st century	Smriti, College of Home Science magazine	2002-2003
Dr. P. Rajyalakshmi	Canthium perviflorum – An under exploited carotene rich fruit	National Product radiance	2003
Dr. S. Shobha	Pachi Bappayi to Ousadha Viloualu	Vasundhara, Eenadu	30-4-2003
Dr. S. Shobha	Sukshma poshakalu lopanu valana jarige nashtamu	Annadata	December, 2003
Dr. K. Uma Devi	Tindi tinali-AKnda penchali	Eenadu health-column "Sukebhava"	-
Dr. N. Lakshmi Devi	Kanti Arogyaniki vitamin 'A' labinche aaharam	Padipantalu	2003
Dr. V. Vimala	Avu palu kante geda palu merugu	Eenadu health-column "Sukebhava"	

TABLE 7. T.V. PROGRAMME

S. No.	Name of the Staff	Date of broadcast/Telecast	Title	Venue
1	Dr.V.Vimala, Dr. V.vijayalakshmi, Dr. K. Uma Devi	31-5-2003	Diet for Heart disease	E.T.V

TABLE 8. RADIO TALKS

S. No.	Name of the Staff	Date of broadcast/ Telecast	Title	Venue
1	Dr. K.Uma Maheshwari	17-4-2003	Mana aharmlo neeru dravapadarthala avashyakatha	AIR, Hyderabad
2	Dr.S. Sumathi	17-7-2003	Marketlo andubatlo osya aaharam padhardalu	-do-
3	Dr. P. Rajyalakshmi	25-9-2003	Poshalopana jatiya patakalu	-do-
4	Dr. S. shobha	3-7-2003	Tallipalu shishu aarogyam	-do-
5	Dr. K. Uma Devi	-8-2003	Aaharamlo sugandha dravyalu pramukhyata	-do-
6	Dr. K. Uma Devi	7-4-2003	Poshaka viluvalu chetralu	-do-
7	Dr.N. Lakshmi Devi	6-11-2003	Vividha vysaula streelaku aaharam	-do-

RESEARCH ACTIVITIES

Though ICAR funded research project on "Popularization of cultivation of uncommon green leafy vegetables is in operation in the department, exclusively a research project entitled "*Standardization of parameters for texture Analysis of Foods by Table Top EZ Tester (Instron)*" is in operation under Centre of Advanced Studies. So far the work done in the research project is compiled and presented here under.

STANDARDIZATION OF PARAMETERS FOR TEXTURE ANALYSIS OF FOODS BY TABLE TOP EZ (INSTRON)

V.VIJAYALAKSHMI & V. VIMALA

INTRODUCTION

Quality is the ultimate criterion of the desirability of any food product. Food quality can be evaluated by subjective and objective methods. Various instruments are used to measure the texture of liquids, semisolids and solids. Rheology is

defined as the science of information and flow of matter. It has three aspects of elasticity, viscous flow and plastic flow.

The science of Rheology deals with the measurement of various mechanical properties of foods. A study of rheological properties of foods is important for two reasons-

- To determine the flow properties of liquid food stuffs
- To ascertain the mechanical behavior of solid foods when consumed and during processing.

Food texture can be reduced to measurements of resistance to force. When food is squeezed so that it remains as one piece it is called compression. The different aspects that can be studied by food texture instruments are cohesiveness, adhesiveness, hardness, springiness, gumminess, chewiness and fracturability.

Food testing is to determine texture related qualities. Testing food products for textuire related qualities enables the food industry to develop neo products and improve the existing ones. The freshness of baked goods, tenderness of peas and poultry, crispiness of potato chips and crunchiness of apples may be objectively measured with food testing equipment.

Food technologists worldwide are using precision equipment to measure texture properties of food, including ripeness, chewiness, gumminess, brittleness, viscoelasticity and tenderness. These properties can objectively characterize new foodsthat can be prepared quickly but taste like homemade to help food makers find success in the market place.

Instron a EZ food tester ia an instrument which measures the textural parameters in a food material. This study was planned to standardize the parameters for different food materials to enable the scientists to carry out the experiments with ease.

METHODS AND MATERIALS

- Instron EZ food tester
- Food materials from different food groups in different forms.

Foods from different food groups were taken for the study. The various foods taken were from cerals and their roducts, pulses and products, vegetables both raw and boiled, fruits, baked products etc.

The following tests were done for each product based on the type of product as shown in table 9

TABLE 9. TESTS SELECTED FOR VARIOUS FOOD PRODUCTS

Test material	**Test selected**
Soft products-idli, bonda, Bajji etc	Compression test, plunger compression, cutting
Raw Vegetables, fruits	Cutting test
Boiled vegetables, fruits	Cutting, Compression
Roti, Dosa, pesarattu	Tensile strength, cutting, compression
Baked products	Cutting, Compression, plunger compression
Bubble jam	Tensile strength, bending test
Jam, jelly, dal, egg	Mastication, plunger compression, compression

After the test was selected the parameters like load, time, speed, displacement were given at different levels and tested for the right level.

RESULTS

BEND TESTING

Bend testing measures the ductility of materials. Terms associated with bend testing apply to specific forms or types of materials. Bend testing provides a convenient that are typical of those found in microelectronic applications.

Bend testing was done for bubble gum and the results are shown in table 10

Test material	**Energy (Nmm)**	**Bending strength (N)**	**Young's modulus (N/mm^2)**	**Bending deflection (mm)**
Bubble gum	52.200	15.075	3.255	10.67

The above table shows that the energy required to bend the bubble gum is 52.2 Nmm and the strength is 15N with a bending deflection of 10.67mm and elasticity (Youngs modulus) of 3.255N/mm^2

COMPRESSION TEST

A compression test determines behavior of materials under crushing loads. The specimen is compressed and deformation at various loads is recorded. It is a useful procedure for measuring the plastic flow behavior and ductile fracture of a material. Measuring the plastic flow behavior requires frictionless (homogenous) test conditions. The results of the test are shown in table 11.

TABLE 11 COMPRESSION TEST FOR VARIOUS TEST MATERIALS

Test Material	Energy (Nmm)	Compression Strength (N)	Young's modulus (N/mm^2)
Bread	18.219	15.29	310.39
Idli	90.698	12.625	36.58
Instant Idli	96.058	26.392	24.88
Vada	88.585	30.133	12.498

The above table shows the elasticity is more in bread than the other products. The load increased as the hardness if the product as seen from the values of compression strength. Similarly the energy required to compress also increased with hardness. Therefore the load to be given has to be decided on the hardness of the product to be tested.

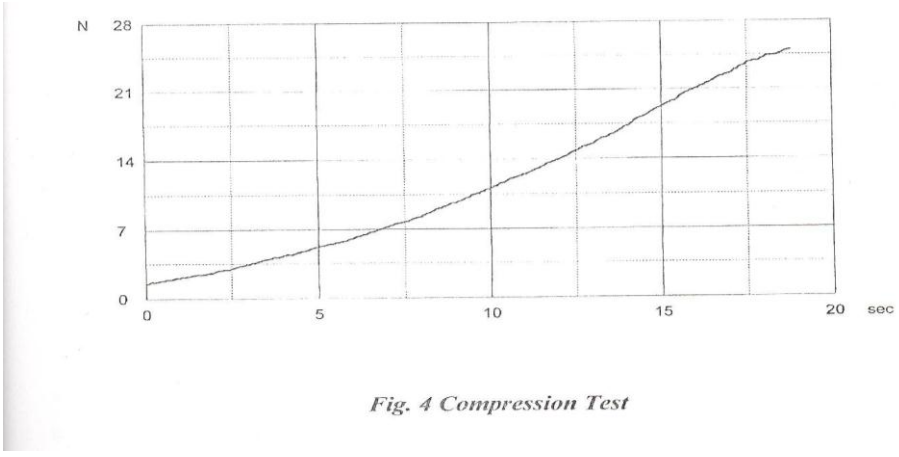


Fig. 4 Compression Test

MASTICATION TEST

Mastication test requires the force to chew the food. The test measures the adhesiveness, cohesiveness, hardness and elasticity of the product to be tested. The closer the molecules in a product the more the energy required. The results are presented in the table 12.

TABLE 12 MASTICATION TEST FOR THE TEST MATERIAL

Test Material	Energy (Nmm)	Adhesive Ness(Nmm)	Cohesive Ness(N)	Hardness (N)	Elastic (N/mm^2)	Load (N)
Jam	81.329	-8.804	3.195	75.144	18.728	1.825
Dal	13.414	1.033	-0.025	2.25	-	-
Egg	34.90	1.033	-	23.775	-	23.65

The above table shows clearly that since jam is more homogenized product than dal the cohesiveness is negative in dal whereas the adhesiveness is negative in jam. Egg required more load to be masticated since it is intact and not in a homogenized form.

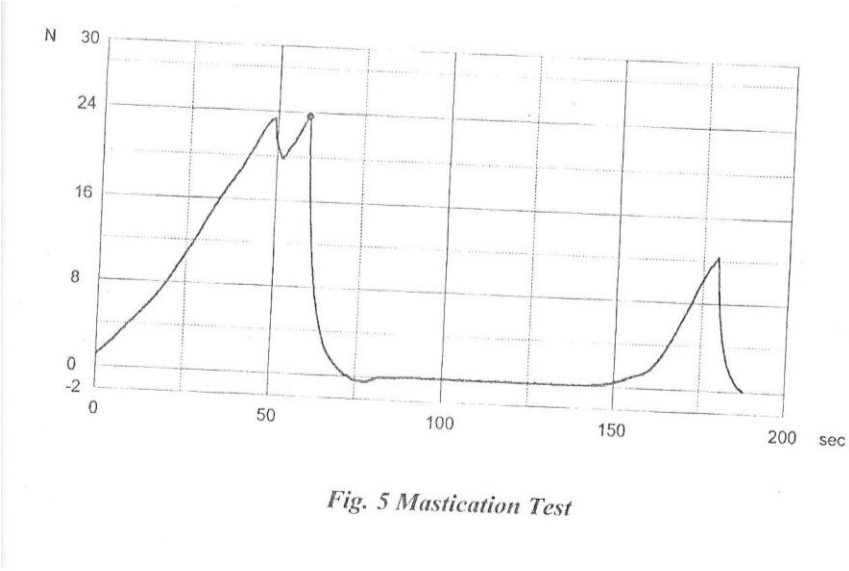


Fig. 5 Mastication Test

TENSILE STRENGTH

A tensile test also known as tension test is probably the most fundamental type of mechanical test performed. By pulling on something we determine very quickly how the material will react to forces being applied in tension. As the material is

being pulled we find the strength along with hoe much will elongate. The results of the test are shown in table 13.

TABLE 13 TENSLIE STRENGTH OF TEST MATERIALS

Test Material	Energy (Nmm)	Tensile Strength (N)	Young's Modulus(N/mm^2)	Tensile Extension(mm)
Bread	4.514	1.25	-	-
Chapathi	8.204	2.325	-	-
Puri	4.239	1.275	-	3.86
Aluminium foil	49.749	52.875	21.787	-

The results in the above table show a comparative tensile strength with aluminium foil. The tensile strength of the food materials was only 1-2N/mm^2 whereas for the foil it was around 50N/mm^2.

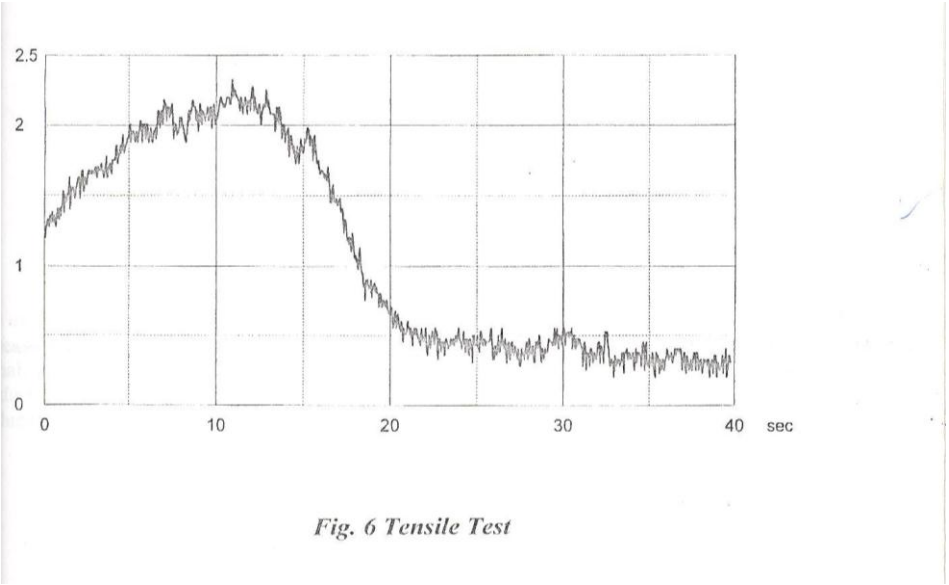


Fig. 6 Tensile Test

CUTTING TEST

Cutting test is used to determine the biting quality of any food material. It is the force or load required to make the food into pieces. It is measured in terms of cutting strength; the results are shown in table 14.

TABLE 14 CUTTING TEST FOR THE TEST MATERIALS

Test material	Energy (Nmm)	Cutting Strength (N)
Carrot (raw)	263.007	21.242
Carrot (boiled)	99.258	8.138
Potato (raw)	60.150	5.1
Potato(boiled)	22.631	2.713
Sweet potato(raw)	52.608	4.80
Sweet Potato(boiled)	31.150	2.527
Radish (raw)	141.45	15.35
Radish (boiled)	59.18	7.587
Kovai (raw)	87.354	25.79
Kovai (boiled)	43.556	18.056
Guava	147.738	22.075
Bread	54.799	16.125
Pesarattu	13.934	9.714
Puri	55.445	34.89
Vada	82.26	18.00

The above table shows the energy and the cutting strength required for the test material. The energy required by the raw vegetables was higher than that of the boiled ones because of increase in softness of the food on cooking. The energy required and the cutting strength reduced by half to one third of that of raw foods among the cooked foods the values were higher in wheat products like bread and puri compared to the pulse products like pesarattu and vada which may be due to the gluten content of wheat.

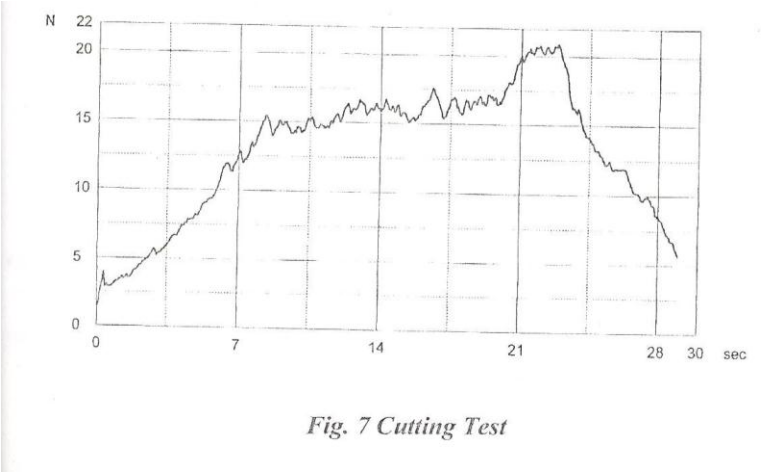


Fig. 7 Cutting Test

PLUNGER COMPRESSION TEST

Plunger compression test is done to test the hardness by piercing the food material by using a plunger. The piercing capacity changes according to the adhesiveness of the material being tested. The results are shown in table 7

Table 7 Plunger compression test for test materials

Test material	Adhesiveness(Nmm)	Hardness (N)	Dent(mm)
Instant idli	6.113	1.35	4.98
Potato (raw)	47.131	109.3	-
Potato (Boiled)	15.479	21.0	4.08
Guava	81.82	39.06	10.035

It can be seen from the above table that the plunger compression is indicated in terms of adhesiveness, hardness and dent. It was seen that the raw foods had higher adhesiveness and hardness compared to the cooked ones.

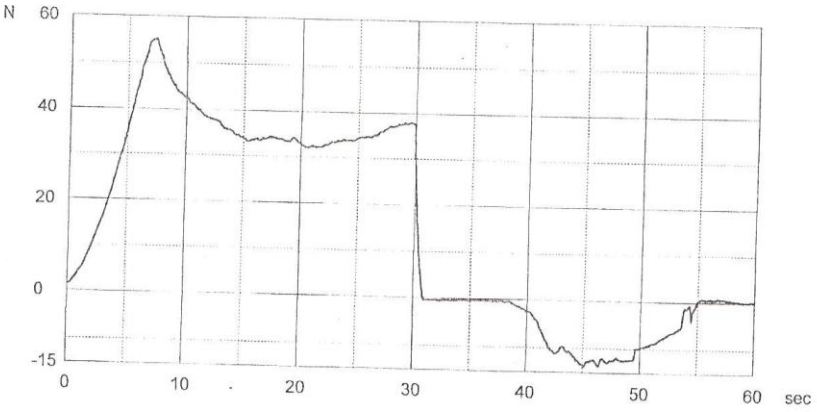


Fig. 8 Plunger Compression Test

CONCLUSION

Some more readings have to be obtained to arrive at the different amount of loads and timings to be set for studying the textural qualities by using the table top food tester.

EXTENSION ACTIVITIES

- International Women's day was celebrated on 8-3-2003 at pochampalli village. The women folk was appraised on various aspects of food, nutrition and health. Dr. V. Vimala, Professor & Director, Centre of advanced Studies and Dr. K. Uma Maheshwari, Associate Professor, Post Graduate and Research Centre participated in the programme. An exhibition on Food, Nutrition and Health was organized. Importances of medicinal plants along with live samples were also exhibited. Selfhelp Groups consisting of '10' in women each group was formed from Pochampally and Revenapally villages and they were trained in fish pickle making and a weaning food 'sisindri' as an income generating activity and samples prepared by them were kept for sale on this occasion.
- World diabetes day was celebrated on 14th November 2003 in College of Home science, with a theme "Diabetes and kidney complications and the slogan diabetes could cost you your kidney – Act now". Dr. P. Shyam sunder, a renowed Diabetologist and dr. K. Swarjya Lakshmi, Superintendent, Government maternity Hospital, Hyderabad enlightened the gathering on diabetes, its consequences and control. An interactive session was conducted where the doubts raised by the participants were cleared by the expert committee. A diabetic diet exhibition was organized and diet and nutrition counseling was part of the day's programme.
- World Food Day was celebrated on 16th October 2003 by the Department of Foods and Nutrition, College of Home Science, Hyderabad by organizing various activities to enhance nutrition knowledge and awareness of college and school students. A poster competition was held at College of Home Science on the theme of world Food Day – 'International Alliance in the fight against hunger' for B.H.Sc., M.Sc. (Foods and Nutrition) M.Sc. (Food Science Technology) students. The zilla Parishad High School at Sivarampalli with strength of twelve hundred students was selected and programmes were organized for the students. A meeting was arranged to explain about World Food day, its theme, food and nutrition security and the role of children in transferring the knowledge to their parents. An exhibition on adolescent nutrition was put up which attracted a lot of interest from the

students. A quiz competition was organized for the students and prizes were awarded.

- The Food and Nutrition Board, Hyderabad in association with department of Women and Child Welfare, Government of Andhra Pradesh, observed world breast feeding week from 1-7 August, 2003. In view of this progarmme was organized in the ICDS project, Rajendranagar on 4-8-2003 at Narsingi Village. Dr. N. Lakshmi Devi, Associate Professor, department of Foods and Nutrition, Post Graduate and Research Centre has been deputed to impart nutrition education on 'importance of breast feeding' for the mothers of ICDS beneficiaries especially pregnant and lactating women. Mrs. Sarala Rajyalakshmi, Regional Deputy director of ICDS, came as Chief Guest and CDPO of the ICDS project and supervisorsand other anganwadi teachers were also attended the programme. The Foods and Nutrition Board assistant Technical Advisor has educated the mother about the importance of weaning foods and demonstrated preparation of weaining foods. They organized "Healthy baby contest" and "weaning food preparation contest" and prizes were distributed to the winners. Khichidi and ragi laddu were prepared and distributed to all the mothers and preschool children. A good feedback of participants was attainedregarding the importance of colostrums, importance of mother's milk and weaning foods. More than 100 mothers attended the programme.
- Nutrition week is celebrated from September 1-7 every year. To celebrate Nutrition Week, the Department of Foods and Nutrition in Faculty of Home Science, Acharya.N.G.Ranga Agricultural University organized a nutrition awareness programme at Holy Mary High School, AC guards, Hyderabd on 6th September 2003. The theme of the programme was balanced diet and anaemia. An exhibition was arranged for class X students of the school in which visual aids like charts, posters were displayed. Balanced diet in terms of foods and iron rich foods for anaemia were also displayed. About 190 students of class X participated in the programme. They were explained about the various aspects of balsnced diet, its importance and constituents by Dr. N. Lakshmi Devi, associate Professor. The students went round the exhibition and responded enthusiastically when interacted about the concepts. Later Dr. kamini Devi, Associate Professor spoke on the problem of anaemia in adolescent girls and need for remedial measures to be taken.

Data on heights and weights of the class X students of the school was obtained and analysed. Based on the BMI, the students were categorized as normal, below normal, overweight etc. the nutritional status the students was presented in PowerPoint presentations by Dr. V. Vijayalakshmi, Associate Professor of the Department of Foods and Nutrition, College of Home Science, saifabad. The programme enthused much interest in the students and they could clarify doubts which they had regarding health and nutrition the programme was carried out under the guidance of Dr. V. Vimala, Professor & university head, Department Of Food & Nutrition.

VISITORS

- Dr. Hiroshi Nabetani, Head, reaction and Separation Technology labs, National Food Research Institute, ministry of Agriculture, Fisheries and Forestry, from Japan gave a lecture on 'Role of enzymes in food industry' on 11-12-2003.
- Dr. Manju Reddy, Nutritionist from Iowa State University has an interaction meeting with the staff of Department of Foods and Nutrition regarding various courses, diploma courses, certificate courses, dietetic internship programme, projects proposed and funding details in various aspects of Food Science & Technology and clinical Nutrition.
- Dr. Suresh Babu, research Fellow, IFFRI, Washington, U.S.A visited Post Graduate and research Centre, on 12-8-2003 had an interaction meeting with the staff & students of Food Science & technology

IV BUDGET PROPOSALS FOR THE YEAR 2004-2005

S. No.	Particulars	II year	Remarks
1.	Non-recurring Equipment		Justification Follows
	- Atomic absorption, spectrophotometer	20,00,000/-	-do-
	- CD writer	10,000/-	-do-
2.	Training Cost/CD ROM development	4,44,000/-	-do-
3.	Books & Journals	25,000/-	-do-

4.	TA/DA	20,000/-	-do-
5.	Staff Salaries	3,00,000/-	-do-
6.	Recurring contingencies	1,25,000/-	-do-
7.	Maintenance & repairs (including vehicle maintenance)	75,000/-	-do-
	TOTAL Rs.	**29,99,000/-**	

JUSTIFICATION FOR THE BUDGET REQUIREMENT

1. Equipment

As per the mandate of the ICAR, students as well as staff are also involved into the research activities of the Centre of Advanced Studies. Micronutrients especially minerals are gaining a lot of importance in the maintenanace of human health. For estimating the mineral content/level of foods/ biological samples, atomic absorption spectrophotometer and CD writer are needed. Since nutritional status assessment and bioavailability of minerals is planned as a thrust area for the X Five year plan, the purchase of this equipment is essential. Therefore, the above given equipment may be sanctioned during the X plan.

2. Training Cost/ Cd ROM development

An amount of Rs. 4,44,000/- is proposed for two training programmes to be conducted during the year 2004-05.

3. Books & Journals

Due to inflation in the cost of scientific library books, a sum of Rs. 25,000/- per annum is proposed instead of Rs. 20,000/-

4. TA/DA

Due to inflation in the fare of Rail/Road/Air, a sum of Rs. 20,000/- per annum is proposed.

5. Staff Salaries

During the VIII five year plan, the expenditure for the posts of steno-cum-typist, AVA Asst-cum-Operator and Attender were borne by the ICAR, and during the IX-plan period two post of Steno-cum-typist, AVA Asst-cum-Operator were sanctioned by the ICAR whereas the Attender post was sanctioned by the State Non-Plan. Now that the university has decided to scrap the three posts by means of adjusting the persons working against the posts elsewhere in the University, sanction for three posts of Steno-cum-typist, AVA Asst-cum-Operator and Attender may kindly be accorded during the X five year plan so that the staff working in the CAS are not disturbed.

6. Recurring Contingencies

Due to inflation of day-to-day consumables, chemicals, stationery etc., an amount of Rs. 1.5lakhs per annum instead of Rs. 1.0 lakh is proposed.

7. Maintenance & Repairs

In order to maintain the equipment purchased during the VIII and IX plan period as also the equipment to be purchased during the X plan in a habitable condition, a sum of Rs. 75,000/- per annum is proposed. This includes vehicle maintenance also.

APPENDIX

WORKPLAN FOR CENTRE OF ADVANCED STUDIES

Department of Foods & Nutrition
Post Graduate & Research Centre
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 upgrade the curriculum and courses of Foods & Nutrtion 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 IX 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. SHORT COURSES/ Short Courses

Conducting one Summer Institute Programme or one Short Course in priority areaof 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 AGRD 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 Deans Committees (Workshop organized on 7^{th}-12^{th} June, 1993 at ANGRAU, Hyderabad) IV year degree programme will be implemented.

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

To organize one workshop each for developingquestion banks for UG programmes.

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

Objective 3

To support the Government in training personnel and in implementation 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 Food & Nutrition Bulletin for circulation among the line departments and the organizations involved in nutrition related programmes.

Organizing group meetings for academicians, administrators, planners and extension workers to appraise them of nutrition situation and integrate nutrition component in the programmes of their departments.

Food & 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 programmes 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 multicentric studies to provide feed back to the planners and policy matters.

PROPOSALS FOR THE YEAR 2004-2005

APPENDIX II

WORKPLAN FOR CENTRE OF ADVANCED STUDIES FOR THE YEAR 2004-2005 FOR APPROVAL

Department of Foods & Nutrition
Post Graduate & Research Centre
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 upgrade the curriculum and courses of Foods & Nutrtion 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.

i. OUTPUTS / PROGRAMMES TO BE IMPLEMENTED DURING THE IX 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. SHORT COURSES

Conducting one Summer Institute Programme or one Short Course in priority area of Foods & Nutrition every year.

Priority areas identified for summer Institute Programme / Short Courses

1. Recent advances in Community Nutrition
2. Programme planning and evaluation
3. Post harvest technology of food grains

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

C. RESEARCH

Research Proposals for X Five year plan

i. Micronutrient (Vitamin A, Riboflavin, Iron, Iodine, Zinc) status assessment of the population.
ii. Assessment of micronutrient bioavailability within and between food crop species.
iii. Evaluation of the effects of food processing (including novel & traditional methods) on micronutrients bio-availabilty.
iv. Development of effective information, education and communication material to promote food based micronutrient interventions.
v. Documentation of results and enhancing dissemination of these results to other potential users (farmers, communities and policy makers.)
vi. Standardization of textural qualities of different categories of foods.

Objective 2

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

Action plan

To organize one workshop for developing PG curriculum.

Introduction of diploma courses in catering technology at UG level and Nutritional Therapy at PG level.

Preparation of One CD-ROM lesson.

Practical manual preparation at P.G. level Food Chemistry/ Nutritional evaluation of food processing

Development of PG diploma courses in community and food analysis and quality control

Objective 3

To support the Government in training personnel and in implementation 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. Food & Nutrition information through mass media (TV, Radio and press)

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

Title of the topic	**Month of issue**	**Issue Editor**
Dietary management of	April, 2004	Dr. S. Sumathi

diabetes		Associate Professor
Forest foods as dietary sources of beta carotene	August, 2004	Dr. P. Rajyalakshmi Associate Professor
Street foods	December, 2004	Dr. K. Aruna Senior Scientist & Unit Coordinator

III.EXPECTED OUTCOME BY THE END OF THE PLAN PERIOD

1. Providing common resource material for teaching and evaluation of food and nutrition programmes 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 multicentric studies to provide feedback to the planners and policy matters.

IV BUDGET PRPOSALS FOR THE YEAR 2004-2005

S. No.	Particulars	II year	Remarks
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7.	Maintenance & repairs (including vehicle	75,000/-	-do-

	maintenance)		
	TOTAL Rs.	**29,99,000/-**	

JUSTIFICATION FOR THE BUDGET REQUIREMENT

1. Equipment

As per the mandate of the ICAR, students as well as staff are also involved into the research activities of the Centre of Advanced Studies. Micronutrients especially minerals are gaining a lot of importance in the maintenanace of human health. For estimating the mineral content/level of foods/ biological samples, atomic absorption spectrophotometer and CD writer are needed. Since nutritional status assessment and bioavailability of minerals is planned as a thrust area for the X Five year plan, the purchase of this equipment is essential. Therefore, the above given equipment may be sanctioned during the X plan.

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During the VIII five year plan, the expenditure for the posts of steno-cum-typist, AVA Asst-cum-Operator and Attender were borne by the ICAR, and during the IX-plan period two post of Steno-cum-typist, AVA Asst-cum-Operator were sanctioned by the ICAR whereas the Attender post was sanctioned by the State Non-Plan. Now that the university has decided to scrap the three posts by means of adjusting the persons working against the posts elsewhere in the University, sanction for three posts of Steno-cum-typist, AVA Asst-cum-Operator and Attender may kindly be accorded during the X five year plan so that the staff working in the CAS are not disturbed.

6. Recurring Contingencies

Due to inflation of day-to-day consumables, chemicals, stationery etc., an amount of Rs. 1.5lakhs per annum instead of Rs. 1.0 lakh is proposed.

7. Maintenance & Repairs

In order to maintain the equipment purchased during the VIII and IX plan period as also the equipment to be purchased during the X plan in a habitable condition, a sum of Rs. 75,000/- per annum is proposed. This includes vehicle maintenance also.

A brief report on the major thrust during X plan

Micronutrient malnutrition continues to affect nearly half of the worlds population. An estimated 2000 million people live at risk to diseases resulting from micronutrient deficiencies; most of them are women and children living in the less developed and developing countries. Deaths due to micronutrient deficiencies are sustainable although difficulty to quantify, as many deaths in developing countries are unreported or misclassified. Micronutrient deficiencies are responsible for early child deaths, blindness, mental retardation, increased susceptibility to infection, diminished work capacity, impaired cognitive development and growth deficits. These constitute, in economic terms, a major erosion of the worlds human capital. In view of the importance of micronutrients, a project on ***Micronutrients and human health*** is proposed for the X-Five plan under CAS covering the following thrust areas.

Research proposals for X Five year plan

i. Micronutrient (Vitamin A, Riboflavin, Iron, Zinc) status assessment of the population.
ii. Assessment of micronutrient bioavailability within and between food crop species.
iii. Evaluation of the effects of food processing (including novel & traditional methods) on micronutrients bio-availability
iv. Development of effective information, education and communication material to promote food based micronutrieb=nt interventions.
v. Documentation of results and enhancing dissemination of these results to other potential users (farmers, communities and policy makers)

Activities and requirements

i. Publication of F& N News letters quarterly issues.
ii. Development of CD ROM lessons on different areas of Nutrition.
iii. Development of slides for various important topics of nutrition.

Budget Status: the Budget status for the X five year plan is furnished as below: