

# CENTRE OF ADVANCED STUDIES

FOURTEENTH ANNUAL REPORT  
(2008-2009)

*Dr. (Mrs.) S.Sumathi*

*Dr. (Mrs.) Kamini Devi i/c*

DIRECTOR

DEPARTMENT OF FOODS & NUTRITION  
POST GRADUATE & RESEARCH CENTRE  
ACHARYA N.G. RANGA AGRICULTURAL UNIVERSITY  
RAJENDRANAGAR: HYDERABAD – 500 030

**FOURTEENTH ANNUAL REPORT OF  
CENTRE OF ADVANCED STUDIES  
FOR THE YEAR 2008-2009 (April 2008 – March 2009)**

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 2008 – March 2009.
- Report No. : XIV
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 – 500 030.
6. Technical Programme
- a) Technical Programme as approved for the scheme } Appendix – I  
enclosed
- b) Technical Programme for the next plan period : Submitted for Approval  
in the year 2009-10  
(Appendix II enclosed)
7. Technical Personnel employed (list of vacancies, if any)

Sanctioned Posts by ICAR: Post particulars	Posts filled	Posts to be filled
1. Steno-cum-Typist	Senior Assistant against the post of U.D. Stenographer transferred to Department of Foods & Nutrition, PG & Research Centre, Rajendranagar.	One
2. AVA Operator	Projector Operator Filled on 16-6-1997	NIL

### Technical staff employed:

Name with Designation	Date of Joining	Date of leaving
U.D. Steno	Vacant	1-11-2008
N. Yedukondalu Projector Operator	16-06-1997	Continuing

8. Total outlay : **Rs. (94,79,983-70)**

- 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=90 (2001-2002)
- Rs. 5,14,463=75 (2002-2003)
- Rs. 6,32,489=00 (2003-2004)
- Rs. 4,75,996=00 (2004-2005)
- Rs. 6,45,016=00 (2005-2006)
- Rs. 6,79,644=00 (2006-2007)
- Rs. 5,06,987=00 (2007-2008)
- Rs. 7,77,737=00 (2008-2009)

### Budget & Expenditure particulars for 2008-09:

Sl. No.	Sub head	Budget Sanctioned		Expenditure		Balance	
		Rs.	Ps.	Rs.	Ps.	Rs.	Ps.
1.	Training Programme	3,54,000-00		2,06,799-00		1,47,201-00	
2.	TA / DA	1,00,000-00		2,338-00		97,662-00	
3.	Books	50,000-00		49,997-00		3-00	
4.	Recurring Contingencies	2,00,000-00		1,99,876-00		124-00	
5.	Staff salaries	4,00,000-00		3,18,727-00		81,273-00	
<b>Total Rs.</b>		<b>11, 04, 000-00</b>		<b>7,77,737-00</b>		<b>3,26,263-00</b>	

9. Total amount spent : Rs. 7,77,737-00  
in previous year (2008-09)

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

a) Sanctioned : Rs. 11,04,000-00

b) Spent : Rs. 7,77,737-00

11. Total No. of months : 12 months (From April 2008 – March 2009)  
during the year.

12. Summary : Enclosed.

Signature :

Name : Dr. S. SUMATHI & Dr. KAMINI DEVI i/c

Designation : PROFESSOR-CUM-DIRECTOR.

# **REPORT ON ACTIVITIES CARRIED OUT UNDER CENTRE OF ADVANCED STUDIES 2008-09**

## **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 and the X Five Year Plan vide F. No. 1(18)/95/CAS/HRD-II, dt. 17-09-1999 and 02-07-2001 of the ICAR.

### **2. Civil Works**

The Centre of Advanced Studies in Foods & Nutrition presently has the following facilities.

- Seminar hall/Lecture hall
- Conference hall
- Computer room
- Library room
- Office room
- Class rooms
- Store room
- Equipment room/Laboratory
- Museum Hall
- Educational Technology Cell (ETC)

**II EQUIPMENT PURCHASED UNDER EXPERIENTIAL LEARNING FUNDED BY ICAR FOR THE YEAR 2008-09**

<b>Sl.No.</b>	<b>Name of the Equipment</b>	<b>Amount (Rs. )</b>
1	Auto clave	76,387-00
2	Steam Generator	1,81,500-00
3	Tray drier	1,11,280-00
4	Dicing and Cubing machine	2,70,000-00
5	Hydraulic Juice press	1,49,715-00
6	Hammer Mill	17,84,275-00
7	Juice pasturizer	79,853-00
8	Colour measurement system	5,31,500-00
9	Steam jacketed kettle	91,125-00
10	Reverse Osmosis plant	1,40,717-00
11	Spectrophotometer	2,18,000-00
12	Horizontal laminar flow chamber	51,896-00
13	Working table stainless steel	90,000-00
14	Fluoride Meter	80,675-00
15	Viscometer	1,84,661-00
	<b>Total Rs.</b>	<b>24,41,584-00</b>

### **III. Books Purchased:**

- ♣ Food Polysaccharides and their applications
- ♣ Food Packing technology handbook
- ♣ Emerging Technologies for food processing
- ♣ Modern Technology of food processing & Agro based
- ♣ Sensory Science : Principles & Application in Food Evaluation
- ♣ Extruders in Food applications
- ♣ Handbook of Food processing technology
- ♣ Food safety Quality assurance & Global trade
- ♣ Introduction to Food & Agribusiness Management
- ♣ Quality assurance for the food industry: A practical approach

#### **IV. ACADEMIC ACTIVITIES**

##### **OBJECTIVE I**

To serve as a National resource and training centre for faculty in the field of Foods and 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 for State Agricultural Universities since 1995. Organizing advanced training programmes (21 days duration) is one of the major functions of this centre. Till today 20 training programmes on different aspects of Food and Nutrition have been conducted. During the reporting year i.e. 2008 – 09, the XIX<sup>th</sup> training programme entitled **“Nutrition & Health Policies & Programmes – Present scenario & Futuristic approaches”** from during the period of 24/07/08 to 13/08/08. Course Director, Dr. S. Sumathi and Course Coordinators, Dr. K. Uma Maheshwari & Dr. K. Uma Devi ”

The XX<sup>th</sup> training programme entitled **“Micronutrient Malnutrition – Strategies for prevention and control”** from during the period of 20/01/09 to 09/02/09. Course Director, Dr. Kamini Devi and Course coordinators Dr. P. Yasoda Devi & Dr. S. Shobha were conducted at Centre of Advanced Studies, PGRC, Rajendranagar. The details of the programme are as follows:



**XIX<sup>th</sup> Training Programme on  
Nutrition & Health Policies & Programmes  
Present scenario – Futuristic approaches  
24<sup>th</sup> July 2008 to 13<sup>th</sup> August 2009  
NAMES & ADDRESSES OF THE PARTICIPANTS**



S. No.	Name & Designation	Address
1	<b>Dr.( Mrs.) P.S. Geetha</b> Assistant Professor (FSN)	Department of FRM Home Science College & Research Institute Madurai – 625104, Tamil Nadu
2	<b>Dr. (Mrs). Karuna Kumari</b> Subject Matter Specialist (HSc)	Krishi Vigyana Kendra Sahibganj , Jharkhand.
3	<b>Dr. (Mrs). Prema B. Patil</b> Subject Matter Specialist (HSc)	Krishi Vigyana Kendra Bijapur-586101 Karnataka
4	<b>Dr. (Mrs). Bhuvaneshwari G</b> Subject Matter Specialist (HSc)	Krishi Vigyana Kendra Gangavati, Koppal dist. Karnataka.
5	<b>Shri. Vasant M. Ganiger</b> Subject Matter Specialist (Hort.)	Krishi Vigyan Kendra Gangavati Koppal dist. Karnataka.
6	<b>Mrs. T. Kamalaja</b> Subject Matter Specialist ( H.Sc.)	Krishi Vigyana Kendra Wyra, Khammam district, Andhra Pradesh
7	<b>Dr. (Mrs). K. Aparna</b> Assistant Professor ( FN )	Dept of Foods & Nutrition, College of Home Science, Hyderabad-4, Andhra Pradesh
8	<b>Mrs.N. Deborah Messiana</b> Subject Matter Specialist ( H.Sc.)	Krishi Vigyana Kendra Undi, West Godavari district, A.P

## HOST FACULTY



### Staff – Department of Foods and Nutrition

**Dr.P.Rajyalakshmi**

**Dr.M.Usha Rani**

**Dr.K.Krishna Kumari**

**Dr.Kamini Devi**

**Dr. P. Yasoda Devi**

**Dr.V.Vijayalakshmi**

**Dr.N.Lakshmi Devi**

**Dr.S.Shobha**

**Dr.T.V.Hymavathi**

**Dean of Home Science**

**Professor**

**Professor**

**Professor**

**Professor**

**Professor**

**Professor**

**Professor**

**Associate Professor**

## GUEST FACULTY



### **School of Agribusiness Management (SABM), College of Agriculture, ANGRAU, Hyderabad**

Dr. A. Janaiah                      Professor & Head, SABM

Dr. Seema                              Associate Professor, SABM

### **National Institute of Nutrition, Hyderabad**

Dr. A. Lakshmaiah                  Scientist E

Dr. G.V. Subba Rao                  Scientist C, Communication information extension & Training Division

Dr. G.N.V. Bramham                  Scientist F & Head of the Department, Division of community studies

Dr. Madhavan Nair                  Scientist E

### **Administrative Staff College of India - ASCI, Hyderabad**

Dr. P. H. Rao                          Professor, Health Management

### **Indian Institute of Health and Family Welfare (IIHFW), Hyderabad**

Dr. A. Saibaba                        Professor, Health Communication

Dr. V. Uma Devi                      Professor, Health Communication

### **CARE India, Hyderabad**

Mrs. N.V.N. Nalini                  State Programme representative

Mr. Sirodkar                          District representative, Warangal

### **UNICEF, Hyderabad**

Dr. Sudha Balakrishnan          HIV, AIDS Specialist

**Academy for Nursing Studies**

Dr. M. Prakasamma                  Director

**Health Management Research Institute ( HMRI ) , Hyderabad**

Mrs. Suneetha                          Consultant

**Emergency Medical Research Institute ( EMRI ) , Hyderabad**

Dr. P. Bhaskar Reddy                  Professor, Lt corl (Rtd) AMC consultant- EMLC

**Centre for Economics & Social Studies (CESS) , Hyderabad**

Dr. C. Ravi                                  Professor

**Andhra Pradesh State Aids Control Society (APSACS)**

Dr. Kailash Aditya                          HIV, AIDS Specialist

**Directorate of Health**

Dr. Gopal Krishna Rao                  Director

**LEPRA Society**

Mrs. K. Laxmi Priya                          Programme Coordinator

## TRAINING PROGRAMME SCHEDULE

<b>S. No.</b>	<b>Date</b>	<b>Time</b>	<b>Topic</b>	<b>Resource Person</b>
1.	24-7-2008 Thursday	10.00 am – 10.30 am	Registration	<b>Co-ordinators &amp; Mrs. K. Shakuntala</b>
		10.30 am– 11.00 am	Pre-evaluation	<b>Dr. K. Uma Maheswari</b> (Co-ordinator)
		11.30 am – 12.15 pm	Orientation to the Center of Advanced Studies, Acharya N.G. Ranga Agricultural University	<b>Dr. S. Sumathi</b> <b>Director , CAS</b>
		12.15 pm – 1.15 pm	Orientation to the Training programme	<b>Dr. K. Uma Devi</b> Co-ordinator
		2.00 pm – 3.30 pm	Planning, monitoring and evaluation of Nutrition and Health policies and Programmes – Preparation of project profiles	<b>Dr. P. Yashoda Devi</b> Professor PG & RC, ANGRAU Hyderabad
2.	25-7-2008 Friday	9.30 am – 11.00 am	National Health care Policies and Programmes and Implications	<b>Dr. R. Gopal Krishna Rao</b> M.B.B.S, DGO Joint Director ( I H ) O/o Director of Health Hyderabad
		11.30 am – 1.00 pm	Art and Science of Policy and Programme making	<b>Dr. P. H. Rao</b> Professor- Health Management Health Studies Area Centre for Human Development Administrative Staff College of India Hyderabad
		2.00 pm – 3.30 pm	National Nutrition Policy strategies & Programmes and Implications	<b>Dr. A. Lakshmaiah</b> Scientist E <b>NIN, Hyderabad</b>
3.	26-7-2008 Saturday	9.30 am – 11.00 am	National Rural Health Mission – converging Nutrition and Health policies and MDGs	<b>Dr. A. Saibaba</b> Professor, Health Communication INHFW, Hyderabad
		11.30 am – 12.15 pm	Visit to ANGRAU Museum and Agriculture Technology Information Centre, Rajendranagar, Hyderabad.	<b>Dr. K. Uma Maheswari</b> Professor PG & RC, ANGRAU Hyderabad

S. No.	Date	Time	Topic	Resource Person
		12.15 pm – 1.15 pm	Visit to AICRP Home Science	<b>Dr. K. Uma Maheswari</b> Professor PG & RC, ANGRAU Hyderabad
		2.00 pm – 3.30 pm	Principles and Practices of Social Marketing	<b>Dr. P. H. Rao</b> Professor- Health Management Health Studies Area Centre for Human Development Administrative Staff College of India Hyderabad
4.	27-7-2008	<b>SUNDAY</b>		
5.	28-7-2008 Monday	11.30 am – 1.00 pm	Impact of Intersectoral policies on health and nutritional status of population.	<b>Dr. Anurag Chaturvedi</b> Professor Department of Foods & Nutrition, ANGRAU, Hyderabad
		2.00 pm – 3.30 pm	Food aid programmes	<b>Dr. T. V. Hymavathi</b> Professor PG & RC, ANGRAU Hyderabad
		9.30 am – 11.00 am	Impact of Nutrition investment on socio economic development – Economic benefits of policy interventions	<b>Dr. C. Ravi</b> Fellow Centre for Economic and Social Studies Hyderabad
6.	29-7-2007 Tuesday	9.30 am – 11.00 am	Micro level experiments related to Nutrition and Health policies and programmes	<b>Dr. M. Usha Rani</b> Principal Scientist Unit Coordinator AICRP- Home Science, ANGRAU, Hyderabad
		11.30 pm – 1.00 pm	The public provision of Food in India : Public distribution system and it's implications	<b>Dr. K. Krishna Kumari</b> Professor Department of Foods & Nutrition ANGRAU, Hyderabad
		2.00 pm – 3.30 pm	Agriculture for Development : Looking at Recent AP's Experience	<b>Dr. A. Janaiah</b> Professor & Head SABM, College of Agriculture, ANGRAU, Hyderabad

<b>S. No.</b>	<b>Date</b>	<b>Time</b>	<b>Topic</b>	<b>Resource Person</b>
7.	30-7-2008 Wednesday	9.30 am – 11.00 am	Food and Agriculture – Various Policies and WTO Implications	<b>Dr. Seema</b> Associate Professor SABM, College of Agriculture, ANGRAU, Hyderabad
		11.30 pm – 1.00 pm	Healthy practices relating to reproductive health including menstrual hygiene for adolescent girls of tribal welfare schools	<b>Dr.V.Uma Devi</b> Senior Faculty-Communication Indian Institute of Health and Family Welfare Hyderabad
		2.00 pm - 3.30 pm	Food safety policies and programmes for promotion of Health and Nutrition	<b>Dr. S. Shoba</b> Department of Foods & Nutrition College of Home Science ANGRAU, Hyderabad
8.	31-7-2008 Thursday	9.00 am -10.00 am	Visit to college of Home Science	<b>Dr. Kamini Devi</b> Professor Principal Investigator AP Netherlands Biotechnology Project on Sorghum, Department of foods & Nutrition, College of Home Science, ANGRAU, Hyd
		10.00 am – 11-00 am	Dehulling of Sourghum – Effect on Nutrition & Health	<b>Dr. Kamini Devi</b> Professor Principal Investigator AP Netherlands Biotechnology Project on Sorghum, Department of foods & Nutrition, College of Home Science, ANGRAU, Hyd
		11.30 am – 1.30 pm	Visit to 104- For Health Information and Advice- A Government of India & HMRI Offering of Sathyam's Health Management Innovation	<b>Dr. Suneetha</b> FLCT-Nutrition Health Management and Research Institute-HMRI- Hyderabad
		2.30 pm – 6.30 pm	Visit to 108 Help line of Sathyam's Emergency Health Intervention Programme	<b>Dr. K. Uma Maheswari &amp; Dr. K. Uma Devi</b>

<b>S. No.</b>	<b>Date</b>	<b>Time</b>	<b>Topic</b>	<b>Resource Person</b>
9.	1-8-2008 Friday	9.30 am – 11.00 am	Building grantsmanship skills in Nutrition and Health plans	<b>Dr. K. Madhavan Nair</b> Scientist –E NIN, Hyd
		11.30 am – 1.00 pm	Nutrition Surveillance- Role of NNMB	<b>Dr.G.N.V.Bramham</b> Scientist F & Headof the Department Division of Community Studies NIN, Hyderabad
		2.00 pm – 3.30 pm	Visit to NNMB unit at NIN, Hyd	<b>Dr.G.N.V.Bramham</b> Scientist F & Headof the Department Division of Community Studies NIN, Hyderabad
		4.00 pm – 5.00 pm	Visit to NIN	--
10.	2-8-2008 Saturday	9.30 am – 11.00 am	Strategies for Mitigating adverse effects of Natural Hazards for sustainable health and nutritional status	<b>Dr. K.Uma Maheswari</b> Professor PG & RC, ANGRAU Hyderabad
		11.30 am – 1.00 pm	Achievements of Andhra Pradesh Aids control society (APSACS)	<b>Dr. Kailash Aditya</b> Joint Director, APSCAS, Hyderabad or Dr. B. kaidas Additional Project Director
		2.00 pm – 3.30 pm	Visit to LEPRAs	<b>Mr . Thivari</b> Programme coordinator LEPRA Society, Gandhi Hospital, Hyderabad
11.	3-8-2008	<b>SUNDAY</b>		
12.	4-8-2008 Monday	9.30 am – 1.00 pm	Guidelines and regulations for safety assessment of Genetically modified foods	<b>Dr.M.Manorama</b> Professor Department of Foods & Nutrition ANGRAU, Hyderabad
		11.30 am – 1.00 pm	Marketing nutrition for health promotion and disease prevention	<b>Dr.S.Sumathi</b> Professor & Head Department of Foods & Nutrition, PGRC ANGRAU, Hyderabad



<b>S. No.</b>	<b>Date</b>	<b>Time</b>	<b>Topic</b>	<b>Resource Person</b>
		2.00 pm – 3.30 pm	Gender specific policies and programmes for Health and Nutrition	<b>Dr.K.Uma Devi</b> Associate Professor Department of Foods & Nutrition College of Home Science ANGRAU, Hyderabad
13.	5-8-2008 Tuesday	9.30 am – 5.00 pm	Visit to CARE India-Integrated Nutrition and Health Project-Good practices for improving Nutritional Status of Children- Case study	<b>CARE India, Warangal</b>
14.	6-8-2008 Wednesday	9.30 am – 11.00 pm	Sustaining community Nutrition and Health programmes – Lessons from Integrated child Development Services (ICDS)	<b>Dr. K.Uma Maheswari</b> Professor PG & RC, ANGRAU Hyderabad
		11.30 am – 1.00 pm	<b>SWOT Analysis</b> – Case study assignment on, National Nutrition Policy - Practicals	<b>Dr.G.M.Subba Rao</b> Scientist ‘C’ Communication and Information Extention and Training Division NIN, Hyderabad
		2.00 pm – 3.30 pm	-do-	-do-
15.	7-8-2008 Thursday	9.30 am – 11.00 pm	Policy oriented investigations and analysis envisaging Nutrition and Health plans	<b>Mrs.N.V.N.Nalini</b> State Programme Representative CARE India Hyderabad
		11.30 am – 1.00 pm	Global database on National Nutrition and Health policies and programmes	<b>Dr.Sudha Balakrishnan</b> HIV/AIDS Specialist UNICEF Hyderabad
		2.00 pm – 3.30 pm	UNICEF agenda for promotion of Nutrition and Health	<b>Dr.Sudha Balakrishnan</b> HIV/AIDS Specialist UNICEF Hyderabad

S. No.	Date	Time	Topic	Resource Person
16.	8-8-2008 Friday	9.30 am –11.00 am	Grocery and Retail	<b>Dr.Seema</b> Associate Professor SABM, College of Agriculture, ANGRAU, Hyderabad.
		11.30 am –1.00 pm	<b>SWOT Analysis</b> -Case Study Assignment on Global Retail Industry - Practical	<b>Dr.Seema</b> Associate Professor SABM, College of Agriculture, ANGRAU, Hyderabad.
		2.00 pm – 3.30 pm	Epidemiology- Health Policy and Planning	<b>Dr. A. Saibaba</b> Professor, Health Communication IIHFW, Hyderabad
17.	9-8-2008 Saturday			
18.	10-8-2008 Sunday			
19.	11-8-08 Monday	9.30 am – 11.00 am	Programmes and upcoming strategies for combating micronutrient malnutrition	<b>Dr.V.Vijaya Lakshmi,</b> Professor, Department of Foods & Nutrition College of Home Science ANGRAU, Hyderabad
		11.30 am – 1.00 pm	Life cycle approaches for health and nutrition policy decisions	<b>Dr.Prakashamma</b> Consultant Health Management Hyderabad
		2.00 pm – 3.30 pm	-do-	-do-
20.	12-8-2008 Tuesday	9.30 am –11.00am	Nutrition Surveillance: Identification of Simple Indicators	Dr. P. Rajya Lakshmi Dean, Faculty of Home Science, ANGRAU, Hyderabad
		11.30 am – 3.30 pm	Presentation of project profiles	Participants
21.	13-8-2008	9.30 am – 11.00 am	Post Evaluation	<b>Dr. K. Uma Maheswari</b>
		11.30 am – 1.00 pm	Valedictory function	

- 11.00 am to 11.30 am – Tea Break
- 1.00 pm to 2.00 pm - Lunch Break

## **FOCUS AREAS COVERED UNDER THE COURSE**

Nearly thirty percent of India's population live below poverty line giving a clear indication that majority of them are deprived of the basic needs that are required to maintain a good quality of life. This segment of the population is neither able to feed themselves properly nor do they have affordability to feed their own children. Children below six years and women of childbearing age constitute about 40% of India's total population and they form the most vulnerable segment of the community. They are often the victims of malnutrition and ill health leading to high infant and maternal mortality.

The performance of India in the domain of economic growth is impressive, but its achievement in the areas of health and nutrition are far from satisfactory. Nearly half of the 0-3 year old children are malnourished. Infant mortality is declining, but not fast enough. There is lag in immunization and anemia is rampant. Economic cost to malnutrition and ill health is increasing in a steep line. Spread of communicable diseases is not fully under control despite extensive prevention programmes run by the government since decades.

While efforts to eradicate malnutrition are on their way, morbidity and spite extensive prevention programmes run by the government since decades. mortality due to non-communicable chronic diseases, such as cardio vascular diseases, stroke, cancer, diabetes mellitus and obesity and other chronic diseases that reduce quality of life are still alarming. Action needs to be initiated to reduce the incidence of these chronic diseases with initiatives at the policy level.

Improving nutrition and health contributes to productivity, cognitive development and economic development. Economic returns are high to investments in nutrition. Thus, the need for providing appropriate nutrition and health interventions to combat child and maternal malnutrition has strongly been recognized by the planners and policy makers. The health and nutrition specialists should disseminate clear and evidence based messages that ensure comprehensive health and they should also strengthen health systems and scale up nutrition actions to achieve the "Millennium Development Goals".

The present training programme on "Nutrition and Health Policies and programmes: Present Scenario- Futuristic approaches" has been organized with an objective to review the ongoing Nutrition and Health Policies and Programmes and identify recent trends and achievements. The training programme started on 24<sup>th</sup> July and concluded on 13<sup>th</sup> Aug 2008.

## **Training Course Content**

The course content was dealt under the following four main heads:

- I. Trends in Nutrition and Health Policies and programmes - an overview
- II. Strategic Approaches for revitalization of Nutrition and Health programmes
- III. Socio – Economic considerations on Health and Nutrition
- IV. Nutrition and Health policy research and futuristic approaches

The topics dealt under each head are briefed here

### **I. Trends in Nutrition and Health Policies and programmes - an overview**

An overview of trends in Nutrition and Health Policies and Programmes were discussed. Policies and programmes such as National Rural Health Mission, National Nutrition policies, Gender specific policies & programmes and Food safety policies were dealt in detail. Topics such as art and science of policy and programme making and global data base on National Nutrition and Health policies and programmes were also dealt to give first hand information to the participants.

### **II. Strategic Approaches for revitalization of Nutrition and Health programmes**

The strategies to combat nutritional deficiencies with special reference to micronutrients, HIV/AIDS and other nutrition and health problems due to rise in affluence like obesity, diabetes etc. were covered. Strategic approaches such as life cycle approaches, reproductive health care including menstrual hygiene for adolescent girls, mitigating adverse effects of natural hazards were dealt in detail. Contribution of programmes viz Food aid programmes, ICDS and PDS and their implications were discussed. Participants were exposed to recent innovative approaches of Emergency Management Research Institute (EMRI), Health Management Research Institute (HMRI) and Andhra Pradesh State Aids Control Society (APSACS) etc. Retailing of grocery and marketing nutrition for health promotion and disease prevention were also covered.

### **III. Socio – Economic considerations on Health and Nutrition**

Nutrition and Health policies provide a framework for health promoting actions covering the social, economic and environmental determinants of health. The sessions and topics on socio-economic consideration on Health and Nutrition included economic consequence of malnutrition, trends, determinants and policy options for eliminating malnutrition in India, recent developments in Agriculture and implications of WTO on Food and Agriculture and principles of Social marketing.

#### **IV. Nutrition and Health policy research and futuristic approaches**

The value of Nutrition and Health policy research is realized when it is translated in to subsequent planning and implementation of various related programmes. Translating evidence in to policy remains a major challenge, but the field makes crucial contributions in promoting health and nutritional status of the community. Therefore sessions on Nutrition surveillance – role of National Nutrition Monitoring Bureau, micro level experiments on Nutrition and Health policies & programmes, grantsmanship in Nutrition Science and Public Health, guidelines and regulations for safety assessment of genetically modified foods etc were covered. The other issues covered were Epidemiology, Health policy, planning, monitoring, evaluation and impact of intersectoral policies and Health and Nutritional status of population.

#### **Resource Persons**

Eminent scientists and experts in the field of Health, Nutrition, Agriculture & Management and Administrators delivered the sessions. The resource persons for the sessions were identified from various Government and Non-government agencies from International, National and State organizations like, UNICEF, CARE, Indian Institute of Health and Family Welfare (IIHFW), National Institute of Nutrition (NIN), Centre for Economics and Social Studies(CESS), Health Management and Research Institute (HMRI), Emergency Management and Research Institute (EMRI), Andhra Pradesh State Aids Control Society (APSACS), Directorate of Health & Medical Services, Administrative Staff College of India, Academy for Nursing Studies and LEPRA Society and our own colleagues from Home Science & Agriculture faculty . Experienced persons from the state line departments, specialists from directorate of health enriched the topics, sharing their work experiences. Trainees were enlightened with current issues, ideas, concepts, research priorities and futuristic approaches in Nutrition and Health Policies and programmes by the carefully picked resource persons.

#### **Profile of the Participants**

The participants who attended the programme were eight and represented the following State Agricultural Universities.

- Tamilnadu Agricultural University, Madhuri
- Assam Agricultural University, Jarkand
- University of Agricultural Sciences, Karnataka
- Acharya N.G. Ranga Agricultural University, Andhra Pradesh

The participants constituted a heterogeneous team having teaching, research and extension background. They are working as Assistant Professors, Training Associates of Krishi Vigyan Kendras, Extension Educationists and Scientists of District Agriculture and Transfer of Technology Centres.

### **Implementation of the Programme**

The training programme commenced on 24<sup>th</sup> of July 2008 with registration of participants followed by introduction and interactive sessions. The coordinators oriented the participants about the training programme schedule (Appendix I), objectives and various topics included and briefed about the resource persons. The participants' initial knowledge was assessed using a structured questionnaire (Appendix II).

The participants were oriented to the Centre of Advanced Studies (CAS) and were taken around to visit PG &RC, ACRIP (Home Science), University Museum, Information Centre and College of Home Science.

The regular classroom sessions were scheduled from 9.00 am to 5.00 pm. While field visits were scheduled from 8.00 am to 6.00 pm. The methodologies adopted for technical sessions were mainly lecture cum discussions and care was taken for the participation of each and every one during the sessions. Research Project proposal planning, case study analysis and presentation of the same were the additional facility given to the trainers.

The outcome of the training as expressed by the participants was that all the sessions were handled by the respective resource persons very exhaustively, giving in sight into the present trends, research priorities and futuristic approaches for effective implementation of health and nutrition programmes and policies.

### **Field visits**

The visits to Emergency Health Research Institute, Health Management Research Institute, National Institute of Nutrition, CARE India adopted village at Warangal, APSACS and LEPR India were said to be very informative, interesting and gave first hand experience about the innovative strategies and new approaches for rendering nutrition and health care services.

## Case study assignments

As part of practical exercises, SWOT analysis of relevant case studies was done. The participants were grouped into two and were asked to exercise on SWOT analysis of

1. National Nutrition Policy
2. Global Retail Industry

## Project proposals

The participants were trained on methodology of project planning and were asked to prepare individual project profiles on aspects related to Health and Nutrition. On the last day of the training programme the participants, individually planned and presented research project proposals on topics like

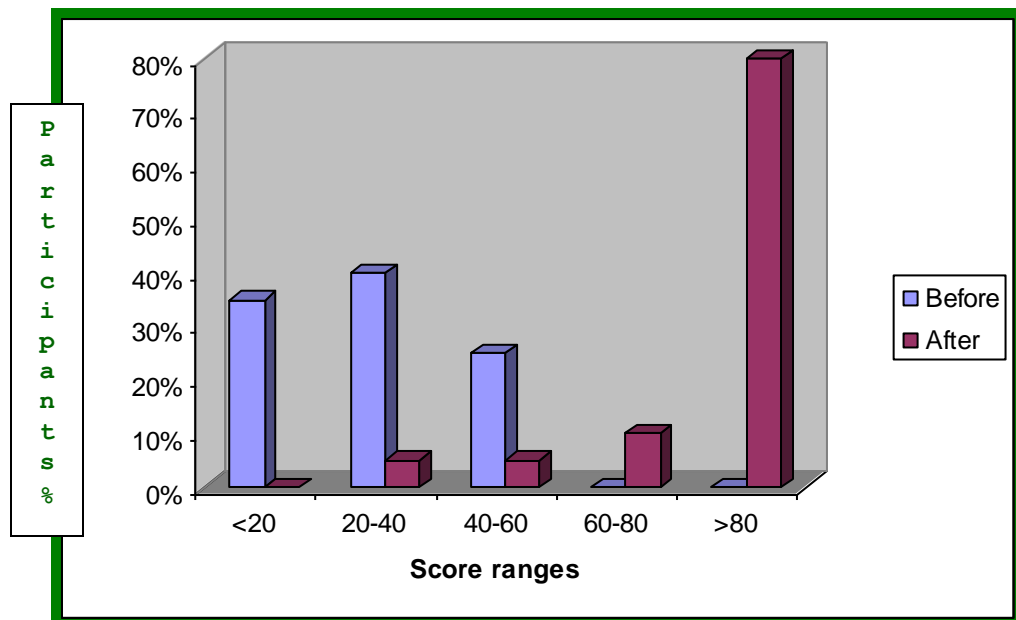
1. Empowerment of tribal adolescent girls on reproductive health
2. Effect of anganwadi on overall development of tribal children
3. Constraints in implementation of health and nutrition programmes by the anganwadi workers
4. Education intervention in prevention of Obesity among school children
5. Establishment of pilot plant for Fruit and Vegetable processing
6. Development and Acceptability of amylase rich weaning food from bajra
7. Trainers' Training Programme for Geriatric care

## Pre and Post Evaluation of Participants knowledge on programme content

Participants were asked to fill in Pre and Post knowledge questionnaires pertaining to the training content to test their initial knowledge and knowledge gained during the programme respectively. Pre and post evaluation was done before the commencement and completion of the training programme. The results of the tests are given in Table 1 and Fig. 1.

**Table 1 : Knowledge gain of the participants before and after training (n = 8)**

Scores	< 20	20-40	40-60	60-80	> 80
Before	35 %	40%	25 %	-	-
After	-	5 %	5 %	10 %	80 %



**Fig. 1 : Pre and Post Evaluation results of participants**

### **Course evaluation by the participants**

The training input was evaluated by the participants through the structured proforma (Appendix III). Each session / topic was assessed in terms of its

- Relevancy for application.
- Adequacy of the information.
- Audio visual aids used
- Information transfer
- Discussions

In addition to this, participants were asked to give overall rating of the lectures as Fair, Good and Excellent. As assessed by the participants, majority (95 %) of the sessions were said to be highly relevant. Content coverage and delivery of content was rated as excellent (53%), good (47 %) and fair (5 %). Group discussions and interactions after each session were rated to be satisfactory and fruitful.





**Course Director and Coordinators of the Training Programme interacting with the participants**



**Registration**



**Pre-evaluation**



**Course Coordinators handling the sessions**



**Dr. P. Rajya Lakshmi, Dean Faculty of Home Science interacting with participants**



**Guest speaker interacting with participants**



## INSTITUTIONAL VISITS



Visit to EMRI



**Visit to ICDS – CARE Intervention project at Warangal**



**Participant's visit to Lepra Society**



**Visit to ANGRAU Museum**





**Presentation of Case study Assignments by the participants**

## VALEDICTORY FUNCTION

The valedictory function of the training programme on “**Nutrition and Health Policies and Programmes Present Scenario – Futuristic Approaches**” was organized on 13<sup>th</sup> August 2008. Dr. M. Mohan Ram, Former Director, National Institute of Nutrition and Indian Institute of Health and Family Welfare, Hyderabad was the Chief Guest for the occasion. He enlightened the participants on progressive changes in planning implementation and evaluation of various food nutrition and health programmes. He emphasized the importance of planning and executing need based programmes and policies to the most vulnerable section of population for achieving sustainable health and nutrition.

Dr. P. Rajya Lakshmi, Dean, Faculty of Home Science, ANGRAU presided over the function. Dr. S. Sumathi , Prof. and Univ. Head and Director, Centre of Advanced Studies, Foods and Nutrition welcomed the gathering. She presented a brief report on the activities of the centre, Dr.K. Uma Maheswari, Course Co-ordinator, presented a brief report of the training programme.

Participants were asked to give their feed back about the training programme. The function came to an end with vote of thanks, proposed by Dr. K. Uma Devi, Course Co-ordinator.

## VALEDICTORY FUNCTION



**Dignitaries on the Dias – at Valedictory function on 13-8-2008**



**Participant honoring the chief guest with a bouquet**



**Participant honoring the Associate Dean with a bouquet**





**Professors and participants at Valedictory function**



**Presentation of CAS report by  
Director, CAS**



**Presentation of CAS report by  
Coordinator**



**Chief guest addressing the gathering**



**Dr. P. Raja Lakshmi, Dean, Faculty of Home Science delivering presidential remarks**



**Participants “Views and Remarks”**



**Participants receiving certificates and a package of manuals, CD and reference material from Chief Guest**

## TRAINING PROGRAMME ON

### “Nutrition & Health Policies & Programmes – Present scenario – Futuristic approaches”

24<sup>th</sup> July 2008 to 13<sup>th</sup> August 2008

#### PRE/POST EVALUATION SCHEDULE

Please answer the following questions appropriately

1. List two most important ongoing nutrition programmes of your state (2)  
a) \_\_\_\_\_  
b) \_\_\_\_\_
2. List two most important ongoing Health programmes of your state (2)  
a) \_\_\_\_\_  
b) \_\_\_\_\_
3. Write any three strategies that can be adopted for mitigating food  
Emergencies (3)  
a) \_\_\_\_\_  
b) \_\_\_\_\_  
c) \_\_\_\_\_
4. List the basic dimensions of Human development Index (3)  
a) \_\_\_\_\_  
b) \_\_\_\_\_  
c) \_\_\_\_\_
5. Write the two important economic indicators that have an impact on Health (2)  
and Nutritional status of a community.  
a) \_\_\_\_\_  
b) \_\_\_\_\_
6. Name any two types of Nutrition programme evaluation methods (2)  
a) \_\_\_\_\_  
b) \_\_\_\_\_
7. What is the prevalence of HIV /AIDS in India among 15- 49 age group? (1)

8. The new concept introduced by WHO to capture the burden of diseases for individual or for a society is called\_\_\_\_\_ (1)
9. The risk analysis process for foods derived from modern biotechnology should be consistent with the \_\_\_\_\_Principles for risk analysis. (1)
10. What is Bio terrorism ? (1)
11. Why do you think multi sectoral approach is required to combat malnutrition (2)
12. In your opinion what type of futuristic approaches for Nutrition and Health policies and programmes are required (5)

Date:

Place:

Signature

## EVALUATION PROFORMA

Training programme on “**Nutrition and Health Policies and Programmes  
Present Scenario – Futuristic Approaches**”

**24<sup>th</sup> July to 13<sup>th</sup> August 2008**

S. No.	Date	Title of the topic	Speaker	Relevancy for application	Adequacy of the information	A.V. Aids used	Information	Discussion	Overall rating of the lecture
				Teaching / Research / Extension	Sufficient / not sufficient	Appropriate / Not appropriate	New / Already known	Adequate / Inadequate	Fair (1) Good (2) Excellent (3)
1.									
2.									
3.									
4.									
5.									
6.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									

(Please do not write your name)



**XX<sup>th</sup> Training Programme on**  
**Micronutrient malnutrition**  
**Strategies for Prevention & Control**  
**20<sup>th</sup> January to 9<sup>th</sup> February 2009**  
**NAMES & ADDRESSES OF THE PARTICIPANTS**



S. No.	Name & Designation	Address & Telephone number
1	Dr. Sadhna Singh Assistant Professor	Department of Foods & Nutrition College of Home Science NDUA & T, Kumargunj Faizabad- 224229 Mobile: 09450766647
2	Dr. Savita S. Manganavar Subject Matter Specialist (H.Sc)	Krishi Vigyan Kendra, Hadonahalli, Bangalore Rural District Mobile: 9449775958 Email: <a href="mailto:gkvk@gmail.com">gkvk@gmail.com</a>
3	Maruthesh A.M Assistant Professor	Department of Food Science Agricultural College, HASSAN University of Agricultural Sciences Bangalore Mobile: 9844947362 Email: <a href="mailto:maruthesh@rediffmail.com">maruthesh@rediffmail.com</a>
4	Ms. T. Supraja Assistant Professor	Department of Foods & Nutrition College of Home Science, Hyderabad Email: <a href="mailto:suprajathoomati@rediffmail.com">suprajathoomati@rediffmail.com</a> Ph: 23244058
5	K. Bhagya Lakshmi Assistant Professor	EEl, Rajendranagar, ANGRAU, Ph: 9440112344 Email: <a href="mailto:bhagyadurga@gmail.com">bhagyadurga@gmail.com</a>

## HOST FACULTY



**Dr. Kamini Devi**

**Professor & Course Director**

**Dr. P. Yasoda Devi**

**Professor & Course Coordinator**

**Dr. S. Shobha**

**Professor & Course Coordinator**

**Dr. V. Vijayalakshmi**

**Professor, Dept. of Foods & Nutrition**

**Dr. N. Lakshmi Devi**

**Professor, Dept. of Foods & Nutrition**

**Dr. K. Uma Devi**

**Professor, Dept. of Foods & Nutrition**

**Dr. T. V. Hymavathi**

**Associate Professor, Dept. of Foods & Nutrition**

**Dr. K. Aparna**

**Assistant Professor, Dept. of Foods & Nutrition**



## GUEST FACULTY



### **I. National Institute of Nutrition, Hyderabad**

Dr. G.N.V. Bramham	Deputy Director, & Head, Division of Community Studies
Dr. A. Lakshmaiah	Scientist 'E', Division of Community Studies
Dr. M. Shiva Prakash	Scientist 'D', Dept. of Immunity Microbiology
Dr. G.M. Subba Rao	Scientist 'C', Extension & Training Division
Dr. K.V. Radha Krishna	Assistant Director
Dr. D. Sree Ramulu	Scientist, Dept. of Biochemistry
Dr. Gal Reddy	Research Officer, Division of Community studies

### **II. UNICEF, Hyderabad**

Dr. Saraswathi Bulusu	Nutrition specialist
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### **III. Directorate of Rice Research, ICAR, Hyderabad**

Dr. Ravindrababu	Scientist
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### **IV. Admn. Office, ANGRAU**

Dr. P. Rajyalakshmi	Dean, Faculty of Home Science
Dr. K. Krishna kumari	Professor & Additional Controller of exams

### **V. Dept. of Biochemistry, College of Agriculture, ANGRAU**

Dr. S. Sumathi	Professor & Head
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### **VI. Quality Control Lab, ANGRAU**

Dr. Anurag Chaturvedi	Professor
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### **VII. Dept. of Agricultural Biotechnology, ANGRAU**

Dr. K. Manorama	Associate Professor
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## Training Programme Schedule

S. No.	Date	Time	Topic	Resource Person
1.	20/01/09 Tuesday	10.00 am – 11.30 am	Registration	<b>Coordinators &amp; Mrs. K. Shakuntala</b> , Sr. Assistant
		11.30 am – 12.30 pm	Orientation to the Center of Advanced Studies, Acharya N.G. Ranga Agricultural University	<b>Dr. P. Yasoda Devi</b> Professor & Coordinator
		2.00 pm – 3.30 pm	Orientation to the Training programme	<b>Dr. P. Yasoda Devi</b> Professor & Coordinator
2.	21/01/09 Wednesday	9.30 am – 11.00 am	Pre evaluation	<b>Dr. S. Shobha</b> Professor & Coordinator
		11.30 am – 1.00 pm	Overview of micronutrient malnutrition	<b>Dr.S.Shobha</b> Professor Department of Foods & Nutrition College of Home Science ANGRAU, Hyderabad
		2.00 pm – 3.30 pm	Economic Consequences of malnutrition- A case study of India	<b>Dr. G. M. Subba Rao</b> Assistant Director National Institute of Nutrition Hyderabad
3.	22/01/09 Thursday	9.30 am – 5.00 pm	Prevalence and consequences of micronutrient deficiencies-an over view <ul style="list-style-type: none"> <li>• Iron deficiency anaemia</li> <li>• Iodine deficiency disorders</li> <li>• Vitamin ‘A’ deficiency</li> </ul>	<b>Dr. G. N. V. Brahman</b> Deputy Director National Institute of Nutrition

<b>S. No.</b>	<b>Date</b>	<b>Time</b>	<b>Topic</b>	<b>Resource Person</b>
4.	23/01/09 Friday	9.30 am – 11.00 am	Micronutrient malnutrition -Growth & development in infancy& childhood	<b>Dr. K. V. Radha Krishna</b> Assistant Director, National Institute of Nutrition
		11.00 pm – 1.00 pm	Consequences of micronutrient malnutrition in pregnancy & lactation	<b>Dr. K. Krishna Kumari</b> Professor&Addl.Controller of Exams,Admn.Office ANGR Agricultural University
		2.00 pm - 3.30 pm	Visit to ANGRAU Museum	<b>Coordinators</b>
5.	24/01/09	9.30 am - 11.00 am	Strategies to combat micronutrient deficiencies in elderly	<b>Dr. N. Lakshmi Devi</b> Professor, Dept. Foods & Nutrition ANGR Agricultural University
		11.30 am - 1.15 pm	Methodology for estimation of Vitamin 'A', Iron, Iodine	<b>Dr. A. Lakshmaiah</b> Deputy Director National Institute of Nutrition
		2.00 pm- 3.30 pm	Clinical assessment of nutritional status of individuals	<b>Dr. G.N.V. Brahman,</b> Deputy Director National Institute of Nutrition
6.	25/01/09	<b>SUNDAY</b>		
7.	26/01/09	<b>REPUBLIC DAY</b>		
8.	1-8-2008 Friday	9.30 am – 11.00 am	Role of Zinc in human health	<b>Dr. S. Sumathi</b> Professor&Head, Dept.Biochemistry ANGR Agricultural University
		11.30 am – 1.00 pm	Bio availability of micronutrients	<b>Dr. V. Vijayalakshmi</b> Professor, Dept. Foods & Nutrition ANGR Agricultural University
		2.00 pm - 3.30 pm	Milletts as source of micronutrients	<b>Dr. Kamini Devi</b> <b>Professor,</b> Dept. Foods & Nutrition ANGR Agricultural University

S. No.	Date	Time	Topic	Resource Person
9.	28/01/09 Wednesday	9.30 am - 11.00 pm	Health beneficial effects of dietary antioxidants and micronutrients.	<b>Dr. D. Sree Ramulu</b> Scientist, Biochemistry dept. National Institute of Nutrition
		11.30 am – 1.00 pm	Prebiotics and probiotics in relation to immune functions	<b>Dr. M. Shiva Prakash</b> Assistant Director National Institute of Nutrition
		2.00 pm – 3.30 pm	Micronutrient malnutrition – obesity and other chronic diseases in countries undergoing the nutrition transition	<b>Dr. Anurag Chaturvedi</b> Professor, Quality Control Lab ANGR Agricultural University
10.	29/01/09 Thursday	9.30 am – 11.00 am	Micronutrients & HIV	<b>Dr. T.V. Hymavathi</b> Assoc. Professor, Dept. Foods & Nutrition ANGR Agricultural University
		11.30 am – 1.00 pm	National Nutrition Policy	<b>Dr. P. Yasoda Devi,</b> Professor, Dept. Foods & Nutrition ANGR Agricultural University
		2.00 pm – 3.30 pm	Nutritional surveillance system & National nutrition monitoring Bureau	<b>Dr. G.N.V. Brahman,</b> Deputy Director National Institute of Nutrition
11.	30/01/09 Friday	9.30 am – 11.30 am	Crop breeding techniques – Nutritional enrichment in rice through Bio fortification	<b>Dr. Ravindra Babu,</b> Scientist Directorate of Rice Research Rajendranagar
		11.30 am – 1.00 pm	Biotechnological approaches	<b>Dr.K. Manorama</b> Professor Dept. Ag. Biotechnology ANGR Agricultural University
		2.00 pm – 3.30 pm	Demonstration of iron <i>lehyam</i> preparation using green leafy vegetables.	<b>Mrs. Vani Bhushan</b> Research assistant AICRP- Home Science, ANGRAU
12.	31/1/09 Saturday	9.30 am- 11.00 pm	Food fortification	<b>Dr. K. Aparna</b> Asst. Professor, Dept. Foods & Nutrition ANGR Agricultural University

S. No.	Date	Time	Topic	Resource Person
		11.30 am – 1.00 pm	Food supplementation programmes	<b>Dr. P. Yasoda Devi</b> Professor Dept. Foods & Nutrition ANGR Agricultural University
		2.00 pm – 3.30 pm	Horticultural intervention	<b>Dr. A. Lakshmaiah</b> Deputy Director National Institute of Nutrition
13.	01-02-09	SUNDAY		
14.	02-02-09 Monday	9.30 am – 11.00 pm	Importance of Screening & diagnosis & Methods of estimation of micronutrient deficiencies.	<b>Dr. Anurag Chaturvedi</b> Professor Quality control lab ANGR Agricultural University
		11.30 am – 1.00 pm	Demonstration of AAS for estimation of minerals.	<b>Mrs. Padmavathi</b> Research assistant Quality control lab ANGR Agricultural University
		2.00 pm – 3.30 pm	Demonstration of HPLC techniques for estimation of vitamin A.	<b>Mrs. Nagamalleshwari</b> Research assistant Quality control lab ANGR Agricultural University
15.	03-02-09 Tuesday	6.30 am – 5.30 pm	Field visit to demonstrate Techniques and indicators of identification of common micronutrient deficiencies.	<b>Mr. Gal Reddy</b> Research Officer National Institute of Nutrition
16.	04/02/09 Wednesday	9.30 am – 11.00 am	Dietary diversification	<b>Dr. P. Rajya Lakshmi</b> Dean Faculty of Home Science ANGR Agricultural University
		11.30 am – 1.00 pm	Innovative IEC strategies	<b>Dr. K. Uma Devi</b> Professor, Dept. Foods & Nutrition ANGR Agricultural University
		2.00 pm – 3.30 pm	Innovative approaches to Nutrition & Health communication	<b>Dr. G.M. Subba Rao</b> Asst. Director National Institute of Nutrition

<b>S. No.</b>	<b>Date</b>	<b>Time</b>	<b>Topic</b>	<b>Resource Person</b>
17.	05/02/09 Thursday	9.30 am to 11.00 am	Social Marketing & Social mobilization	<b>Dr. P. Yasoda Devi</b> Professor Dept. Foods & Nutrition ANGR Agricultural University
		11.30 am – 1.00 pm	International Programmes	<b>Dr. Saraswathi Bulusu</b> UNICEF, Hyderabad
		2.00 pm – 3.30 pm	Visit to ANGRAU Library	<b>Coordinators</b>
18.	06/02/09 Friday	9.30 am- 11.00 am	Visit to AP Foods	<b>Dr. P. Yasoda Devi</b> & <b>Dr. T.V. Hymavathi</b> Dept. Foods & Nutrition ANGR Agricultural University
		11.30pm – 1.00 pm	Visit to NIN Museum	<b>-do-</b>
		2.00 pm – 3.30 pm	Visit to NIN Library	-do-
19.	07/02/09 Saturday	9.30 am - 3.30 am	Presentation & discussion on project proposals made by trainees.	<b>Co ordinators</b>
20.	08/02/09	<b>SUNDAY</b>		
21.	09/02/09 Monday	9.30 am – 11.00 am	Post Evaluation	<b>Co ordinators</b>
		11.30 am – 1.00 pm	Valedictory function	

- 11.00 am to 11.30 am – Tea Break
- 1.00 pm to 2.00 pm - Lunch Break

## **FOCUS AREAS COVERED UNDER THE COURSE**

The Micronutrient malnutrition, which is called as hidden hunger is a result of multiple causes, which blunts the intellect & saps the productivity & potential of entire society. Despite the grave consequences, sufficient attention is not given to it by the world at large.

Politics, financial frauds, stock markets & even changing fashions are more highlighted than the devastating effect of malnutrition on the future generations of this world. The world knows what is needed to end this malnutrition. Only creation of awareness, stimulation & cooperation between communities, NGOs, Governments & International organizations is required for controlling micro nutrient malnutrition & to shape the future of the world's children by promoting their physical & intellectual development.

With this background & with the aim of appraising the professionals in nutrition from various state agricultural universities about the persistent crisis of micro nutrient malnutrition, this training course was organized. The specific objectives of this 21 days training programme were:

- To appraise about the micronutrients & their role in human health at different stages of the life cycle.
- To update information on those micronutrients whose deficiencies have caused a public health problem world wide.
- To focus the programmes for addressing the problem at different levels & their lacunae and
- To review the present strategies adopted world wide to prevent & control micro nutrient deficiencies.

### **Profile of participants:**

Five participants, four female and one male from different State Agricultural universities attended the programme. Two of them were from university of Agricultural Sciences, Bangalore, one from ND University of Agriculture & Technology, Faizabad, Uttar Pradesh, and two were from the host university.

### **Resource Persons:**

Experts for various sessions were identified based on their field of specialization from different departments of ANGRAU like Department of Foods & Nutrition, Biochemistry, Agricultural

Biotechnology, Quality Control lab and also from National Institute of Nutrition (NIN), UNICEF, ICAR institute, Directorate of Rice Research etc.

### **Training Methodology:**

The training programme commenced on 20<sup>th</sup> January 2009 with registration of participants followed by introduction and interactive sessions. The coordinators oriented the participants about the Centre of Advanced Studies, objectives of the training, areas covered under training programme, various topics included, field visits, practical sessions planned and the resource persons selected for each session (Appendix I).

- The participant's initial knowledge was assessed using a structured questionnaire (Appendix II) before starting the training and at the end of the training.
- The regular class room sessions were scheduled from 9.00am to 3.30 pm, while field practicals and Visits to various places were scheduled from 8.00 am to 6.00 pm.
- Planning Research Projects, presentation of the same by the individuals, in the class were also included as part of the training programme.
- The methodologies adopted for conducting technical sessions were mainly lecture cum discussions & demonstrations.
- At the end of the training, Participants expressed that all the sessions were handled by the respective resource persons excellently.

### **Training Course Content**

The training was designed to cover 3 major areas of micro nutrient malnutrition.

- 1 Health benefits of Micro nutrients
- 2 Causes & consequences of deficiencies
- 3 Strategies & programmes to prevent & control the micronutrient malnutrition.



The Topics covered under each head are as follows:

S.No	Topic	Speaker
<b>I. Micronutrient Malnutrition- Causes, Consequences &amp; Programmes</b>		
1.	Micronutrient malnutrition – An Overview	<b>Dr. S. Shobha,</b> Professor, Dept. of Foods & Nutrition ANGR Agricultural University(ANGRAU)
2.	Economic Consequences of malnutrition- A case study of India	<b>Dr. G. M. Subba Rao</b> Assistant Director National Institute of Nutrition, Hyderabad
3.	Prevalence and consequences of micronutrient deficiencies-an over view <ul style="list-style-type: none"> <li>• Iron deficiency anaemia</li> <li>• Iodine deficiency disorders</li> <li>• Vitamin ‘A’ deficiency</li> </ul>	<b>Dr. G. N. V. Brahman</b> Deputy Director National Institute of Nutrition
4.	Micronutrient malnutrition -Growth & development in infancy& childhood	<b>Dr. K. V. Radha Krishna</b> Assistant Director, National Institute of Nutrition
5.	Consequences of micronutrient malnutrition in pregnancy & lactation	<b>Dr. K. Krishna Kumari</b> Professor& Addl.Controller of Exams,Admn.Office ANGR Agricultural University
6.	Strategies to combat micronutrient deficiencies in elderly	<b>Dr. N. Lakshmi Devi</b> Professor, Dept.of Foods & Nutrition ANGR Agricultural University
7.	Methodology for estimation of Vitamin ‘A’, Iron, Iodine	<b>Dr. A. Lakshmaiah</b> Deputy Director National Institute of Nutrition
8.	Clinical assessment of nutritional status of individuals	<b>Dr. G.N.V. Brahmam,</b> Deputy Director National Institute of Nutrition
<b>II. Health Benefits of Micronutrients</b>		
1	Role of Zinc in human health	<b>Dr. S. Sumathi</b> Professor&Head, Dept. of Biochemistry, College of Agriculture ANGR Agricultural University
2.	Bio availability of micronutrients	<b>Dr. V. Vijayalakshmi</b> Professor, Dept. of Foods & Nutrition ANGR Agricultural University
3.	Millets as source of micronutrients	<b>Dr. Kamini Devi</b> <b>Professor,</b> Dept. of Foods & Nutrition ANGR Agricultural University
4.	Health beneficial effects of dietary antioxidants and micronutrients.	<b>Dr. D. Sree Ramulu</b> Scientist,Biochemistry dept. National Institute of Nutrition

5.	Prebiotics and probiotics in relation to immune functions	<b>Dr. M. Shiva Prakash</b> Assistant Director National Institute of Nutrition
6.	Micronutrient malnutrition – obesity and other chronic diseases in countries undergoing the nutrition transition	<b>Dr. Anurag Chaturvedi</b> Professor ,Quality Control Lab ANGR Agricultural University
7.	Micronutrients & HIV	<b>Dr. T.V. Hymavathi</b> Assoc. Professor, Dept. of Foods & Nutrition ANGR Agricultural University
<b>III. Strategies for Prevention and Control of Micronutrient Malnutrition</b>		
1	National Nutrition Policy	<b>Dr. P. Yasoda Devi,</b> Professor , Dept. of Foods & Nutrition ANGR Agricultural University
2	Nutritional Surveillance system & National Nutrition Monitoring Bureau	<b>Dr. G.N.V. Brahmam,</b> Deputy Director National Institute of Nutrition
3	Crop breeding techniques – Nutritional enrichment in rice through bio fortification	<b>Dr. Ravindra Babu,</b> Scientist Directorate of Rice Research
4	Biotechnological approaches	<b>Dr.K. Manorama</b> Professor,Dept. of Ag.Biotechnology ANGR Agricultural University
5	Food fortification	<b>Dr. K. Aparna</b> Asst. Professor, Dept. of Foods & Nutrition ANGR Agricultural University
6	Food supplementation programmes	<b>Dr. P. Yasoda Devi</b> Professor,Dept. of Foods & Nutrition ANGR Agricultural University
7	Horticultural intervention	<b>Dr. A. Lakshmaiah</b> Deputy Director National Institute of Nutrition
8	Dietary diversification	<b>Dr. P. Rajya Lakshmi</b> Dean Faculty of Home Science ANGR Agricultural University
9	Innovative IEC Strategies	<b>Dr. K. Uma Devi</b> Professor, Dept. of Foods & Nutrition ANGR Agricultural University
10.	Innovative approaches to Nutrition & Health communication	<b>Dr. G.M. Subba Rao</b> Asst. Director National Institute of Nutrition
11	Social Marketing & Social Mobilization	<b>Dr. P. Yasoda Devi</b> Professor, Dept. of Foods & Nutrition ANGR Agricultural University
12	International Programmes	<b>Dr. Saraswathi Bulusu</b> UNICEF, Hyderabad

## **I Micronutrient Malnutrition- Causes, Consequences & Programmes:**

After covering overview of micronutrient malnutrition, the trainees were sensitized about the cost of micronutrient malnutrition, how it hampers the social & economic progress of any country.

Prevalence and consequences of micronutrient deficiencies, specially vitamin 'A', iron and iodine deficiencies, the causes & consequences, followed by strategies & programmes to prevent & control these were discussed in detail.

The consequences of micronutrient malnutrition in different age groups, specially infants & young children, elderly population and in different physiological status like pregnancy & lactation were also covered. Screening & diagnosis of micro nutrient deficiencies using different techniques of nutritional assessment of individuals was also included.

## **II Health Benefits of Micronutrients**

The topics covered under this heading were Bio availability of vitamins, minerals & methods to improve bio availability, millets as excellent sources of micronutrients, the health benefits of micronutrients, role of dietary antioxidants, pre & probiotics. role of Zinc in human health, health benefits of dietary antioxidants, pre and probiotics, the effects of micro nutrient malnutrition on HIV, obesity & other chronic diseases were also dealt.

## **III Strategies for prevention and control of micronutrient malnutrition**

In the preliminary sessions, National Nutrition Policy, Nutrition Surveillance in India, National Nutrition Monitoring Bureau were covered. All the strategies for prevention & control of micro nutrient malnutrition like Crop breeding techniques, Biotechnological approaches, Food fortification, Food supplementation program, Horticultural intervention, Dietary diversification, Nutrition & Health information, Education & communication, Social marketing, Social mobilization etc. were discussed in detail in various sessions by the experts in the respective field. The participants were very much benefited by the lecture delivered by UNICEF Nutrition officer, who worked in Micronutrient Initiative for more than 10 years, she had explained about various programmes being implemented in different countries.

## Practical Sessions

1	Importance of screening & diagnosis & Methods of estimation of micronutrient deficiencies.	<b>Dr. Anurag Chaturvedi</b> Professor Quality Control Lab ANGR Agricultural University
2	Demonstration of Atomic Absorption Spectrophotometer (AAS) for estimation of minerals.	<b>Mrs. Padmavathi</b> Research Assistant Quality Control Lab ANGR Agricultural University
3	Demonstration of HPLC techniques for estimation of vitamin A.	<b>Mrs. Nagamalleshwari</b> Research Assistant Quality Control Lab ANGR Agricultural University
4	Demonstration of techniques of identification of common micronutrient deficiencies at field level.	<b>Mr. Gal Reddy</b> Research Officer National Institution of Nutrition
5	Demonstration of iron <i>lehyam</i> preparation using green leafy vegetables.	<b>Mrs. Vani Bhushan</b> Research Assistant AICRP- Home Science, ANGRAU
6	Developing a programme plan for submission to funding agency.	<b>Dr. P. Yasoda Devi</b> Professor, Dept. of Foods & Nutrition ANGRAU
7	Preparation of research proposals by trainees on micronutrients & presentation.	<b>Dr. P. Yasoda Devi &amp; Dr. S. Shobha</b> Professors & Coordinators ANGRAU

In the practical sessions, the trainees were exposed to different methods of estimation of various micronutrients in biological samples, at Quality Control Lab of the University. The sessions covered estimation of minerals using atomic absorption spectrophotometer, HPLC techniques for estimation of vitamin 'A', other techniques & methods of screening & diagnosis of micronutrient deficiencies.

In addition to these, the trainees were exposed to different techniques of identification of micro nutrient deficiencies at field level. During the field visits, they could also observe the ongoing nutrition intervention programmes.

Preparation of iron *lehyam* using cauliflower leaves was demonstrated in one of the sessions.

## **Research Project Proposals**

In order to strengthen the capabilities of trainees to undertake action oriented field research projects, the trainees were taught the methodology of planning research projects. They were made to prepare individual research proposal for elimination or control of micronutrient malnutrition & presentations were made at the end of the training.

### **Visits:**

Visit to AP foods factory at Nacharam, Hyderabad enabled the trainees to witness the production of various ready to eat or instant supplementary food mixes fortified with micronutrients.

The trainees could visit ANGRAU Museum and National Institute of Nutrition & ANGRAU libraries, for reference work.

### **Assessment of knowledge levels:**

The assessment of the knowledge levels at the pre & post survey revealed that there was significant increase in the knowledge levels of all the trainees.

The host faculty, as well as the guest faculty enjoyed training this present batch, as they were very enthusiastic, interactive & made all the sessions lively.



**Registration of Participants**



**Trainees in the Class Room**





**Lecture cum discussion sessions**





**Lecture by the host faculty**



**Group discussion**



**Demonstration of Iron Lehyam preparation**



**Trainees discussion with the Coordinator on Research Project proposals**



**Participants learning use of HPLC & AAS at Quality Control Lab**





**Participants learning Methods of estimation of Micronutrients at Quality Control Lab**

## **Valedictory function**

The valedictory function of the training programme was organized on 9<sup>th</sup> February 2009. Dr. A. Saibaba, Professor, Health Communication, Indian Institute of Health & Family Welfare, Hyderabad was the Chief guest for the occasion. He enlightened the importance of communication skills in assessing the extent of malnutrition in the communities and disseminating information to the population of all groups in an easy and understandable way. He emphasized the importance of various strategies of preventing and controlling micronutrient malnutrition in the most vulnerable sections of population, for achieving sustainable health and nutrition.

Dr. P. Rajya Lakshmi, Dean, Faculty of Home Science, ANGRAU presided over the function. Dr. Kamini Devi, Prof. and Univ. Head and Director, Centre of Advanced Studies, Foods and Nutrition welcomed the gathering. She presented a brief report on the activities of the centre, Dr.P.Yasoda Devi, Course Co-ordinator, presented a brief report of the training programme.

Participants gave feed back, on the training programme. The function came to an end with vote of thanks, proposed by Dr. S. Shobha, Course Co-ordinator.



**Dignitaries on the Dias at Valedictory function on 9-2-2009**



**Trainees at Valedictory function**



**Chief guest addressing the gathering**



**Presentation of CAS report by Director, CAS**





**Presentation of CAS report by Course Coordinator**



**Participants "Views and Remarks"**





**Participants receiving certificates and a package of manuals, CD and reference material from the Chief Guest**

## **TRAINING PROGRAMME ON**

### **“MICRONUTRIENT MALNUTRITION- STRATEGIES FOR PREVENTION AND CONTROL”**

**20<sup>th</sup> January to 9<sup>th</sup> February 2009**

#### **PRE / POST EVALUATION SCHEDULE**

Please answer the following questions appropriately

1. Name five nutrients which are categorized as micronutrients
2. Which are the micronutrients whose deficiency is a public health problem in India and world wide?
3. What is 'hidden hunger'?
4. Which is the micronutrient implicated in maternal deaths during child birth?
5. What is the defect which is caused in infants whose mothers have low folate levels?
6. Which is the mineral whose excess rather than deficiency causes a public health problem?
7. Which micronutrient deficiency grossly affects the mental development of infants?
8. The work performance of an individual is affected by his status with relation to the micronutrient -
9. The cognitive development and scholastic achievement of young children is affected by the deficiency of -
10. The micronutrient which is found only in foods of animal origin is

11. Which are the population groups mostly affected by iron deficiency anemia?  
a)                                      b)                                      c)
12. Forgetfulness in the elderly is caused by a deficiency of this B vitamin
13. Name a microorganism which is considered as a probiotic
14. Name 3 prophylaxis programmes presently in operation in the country-
15. Which is the food which is fortified with both iron and iodine
16. Name the genetically modified food which has enhanced vitamin A.
17. What are the vitamins which act as anti oxidants-  
a)                                      b)                                      c)
18. Which micronutrient deficiency is on the verge of being eliminated
19. Which micronutrient is helpful in improving immunity?
20. Which is the mineral which has an effect on improving immunity in a HIV patient

Date:

Place:

Signature

## EVALUATION PROFORMA

Training programme on “**Micronutrient malnutrition – Strategies for Prevention & control**”

**20<sup>th</sup> January to 9<sup>th</sup> February 2009**

S. No.	Date	Title of the topic	Speaker	Relevancy for application	Adequacy of the information	A.V. Aids used	Information	Dis-cussion	Overall rating of the lecture
				Teaching / Research / Extension	Sufficient / not sufficient	Appropriate / Not appropriate	New / Already known	Adequate / Inadequate	Fair (1) Good (2) Excellent (3)
1.									
2.									
3.									
4.									
5.									
6.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									

(Please do not write your name)

## **OBJECTIVE II**

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

### **UG Programme**

As per the ICAR's IV<sup>th</sup> Dean's Committee recommendations, UG Curriculum was revised and being implemented from the year 2007-2008 and the same is being followed for the current academic year also.

### **PG Programme**

As per the ICAR's IV<sup>th</sup> Dean's Committee recommendations, PG Curriculum of M.Sc (Nutrition & Dietetics) is also under the processes of revision.

### **Action Plan**

The original strength of M.Sc (Foods & Nutrition) at ANGRAU is 12 in number, but has been reduced to six in recent years due to slight draw backs in the existing strength of Home Science students at UG level. In view of the good number of students at UG level and also the demand at state level, it is decided to send the proposal to academic council to increase the strength of M.Sc (Foods & Nutrition) students from the existing strength of 6 number to 12 number to provide technical personnel to the state/country.

### **Rural Home Science Work Experience Programme (RHWEP)**

Rural Home Science Work Experience Programme (RHWEP) for the year 2008-09 was conducted in the village Jukal of Samshabad mandal, Rangareddy District. Nineteen girls specializing in Foods & Nutrition, Department of Foods and Nutrition were placed in the village for a period of 6 weeks from 11/02/09 to 31/03/09.

During the initial period of the programme students developed rapport with the villagers by using PRA techniques like transect walk, mapping time line, matrix ranking etc and got the right perspective of rural life, explored the resources, understood the potential problems and constraints of the community. Jukal village has 240 households with 1248 population among whom 185 were infants, 157 were preschoolers and 263 were children of 6-12 years.

The students were divided into 5 groups and were allotted different projects to be carried out in 6 weeks. The various projects given to them were:

- Morbidity and mortality pattern in the village
- Assessment of nutritional status of vulnerable groups
- Nutrition education to women and adolescent girls
- Fruit and vegetable preservation with locally available foods
- Establishing Diet Counseling centres in the village

The students collected the morbidity and mortality pattern from the village and found that villagers suffered from ulcers of stomach. The reason for suffering from ulcers were their habit of eating lot of chillies in their diet and drinking alcohol. Some of the children had diarrhea.

Assessment of Nutritional status showed that 54% of infants were in grade II malnutrition, 8% were with grade I malnutrition. Among children of 1-5 years age group, 45% suffered from grade I malnutrition and 25% suffered from grade II malnutrition. Among school children of 6 – 12 years, it was observed that 72 – 100 % were under weight and 62 – 100% had low height for age. It was also assessed that weight gain in pregnant women was low. Ten out of Fifteen pregnant women were under weight. Seven out of twenty three lactating women were under weight. The results of diet survey showed that the women were meeting only 50 – 70% of energy and protein requirements. Iron requirement was met up to 20% of RDA. In general micronutrient inadequacy was seen among the children, adolescent girls and women of age groups in the entire village. Apart from malnutrition, it was observed that the villagers also suffered from various disorders like diabetes (17 nos), hypertension (14%), Anemia (25%), osteoporosis (15%), Tuberculosis (2%) and kidney disorders (2%). Therefore there was a need for nutrition education and demonstration of nutritious recipes to the villagers

Nutrition education was given to women and adolescent girls on the importance of balanced diet, cooking practices to minimize nutrient losses, importance of intake of fruits and vegetables as they had meager intake of vegetables and fruits, hygienic way of cooking food, personal hygiene, menstrual hygiene etc. The students also demonstrated preparation of nutritious recipes like missi roti, *upma* using jowar rawa, vegetable *dosa* etc. The item vegetable *dosa* was highly accepted by the villagers.

Preparation of spice mixtures like garam masala, sambar powder, rasam powder, curry leaf powder, *vadiyams* etc were demonstrated. Some of the village women came forward to prepare the products on a large scale and sell in the shops. The students established two Diet Counseling centers in the village. The villagers attended the counseling centers for problems like hypertension, edema and diabetes.

Tomato is commonly grown in the village. Hence preservation of tomato was taught to the villagers by giving demonstrations of tomato pickle, tomato sauce, ketchup, tomato squash etc. Tamarind is abundantly available in the village and the women were taught to prepare tamarind toffee, which is highly accepted by the villagers.

### **Practical Manuals Developed**

UG practical manuals for the course: In plant Training Manual for “P G Diploma in Food Analysis & Quality Control” By Dr.N.Lakshmi Devi

### **Experiential Learning:**

The facilities are being set up for Hands on training on preserved fruit and vegetable products Unit under Experiential Learning. Under this schemes an amount of Rs.20 lakhs has been sanctioned by ICAR for civil works, consequently Laboratory construction has been taken up during this financial year. An exclusive laboratory with Extrusion unit with its accessories was established with financial sources of various research schemes to provide hands on training in Extrusion cookery and preparation of various nutritious snack items suitable for various age groups. Extrusion lab will be utilized for students research work as well as experiential learning.

## **Departmental Research: Research projects in operation**

### **1. Collaborative Project on ‘Development of millet based nutritious products using extrusion technology’**

The project was planned with the intention of exposing the scientists from ANGRAU to the process of Extrusion technology for product development and to give them a ‘hands on experience.’ Dr. N. Lakshmi Devi, Professor (Foods & Nutrition) and Dr. S.Shobha, Professor (Foods & Nutrition) have been deputed to Manhattan, Kansas State University, USA for a period of three months i.e from 1<sup>st</sup> March 2008 to 31<sup>st</sup> May 2008.

Dr. N.Lakshmi Devi and Dr. S.Shobha

1<sup>st</sup> March 2008 to 31<sup>st</sup> May 2008

This project was carried out in the Department of Grain Science and Industry, in collaboration with the scientist Dr. Sajid Alavi .

### **Objectives**

- To develop and standardize a value added millet based extruded product suitable for vulnerable groups of population.
- To combine a millet and a protein source in different proportions and develop the extruded product.
- To carry out objective and subjective evaluation of the developed product.
- To test the storage stability of the developed product.
- To assess the acceptability of the products in by sensory evaluation trials and by consumer evaluation studies.

Extruded snack items were prepared by using millets, Sorghum in combination with maize, defatted soy flour/ whey protein isolate/ legume mix at 10 -15% level, as protein source spices as a coating after extrusion.

The conditions of extrusion were first standardized and then the extrusion was carried out using combinations of sorghum and maize in different proportions along with the protein source. The moisture content of the mix was also kept at constant level of about 17%.

Ten best samples were selected and various objective tests were carried out on them. Informal sensory evaluation was done at KSU but samples were shipped to India for evaluation by trained panelists and consumers. The products were graded as acceptable to highly acceptable. Products containing legumes or soybean as protein source were tasty and highly accepted. The product developed was low in fat, high in protein and fibre, tasty, convenient to serve and eat, suitable for all age groups.

## **2. Development and evaluation of micronutrient fortified fruit & vegetable bars**

It is estimated that the annual post harvest losses of Fruits and Vegetables ranges from 20-25 percent in our country. The technologies adopted for processing of fruit and vegetables now range from traditional sun-drying to sophisticated and state-of-the-art techniques of juice concentration and freeze drying. Production of fruit and vegetable bars using dehydration technology will not only adds value to these crops but also becomes a choice product of many age



groups. Fortification of these bars with needed micronutrients will further enhance the nutrient quality and becomes a choice product for the people suffering from micronutrient malnutrition.

Project Duration: August 2008 to March 2009.

Principal Investigator: Dr.T.V.Hymavathi, Associate professor, (Foods & Nutrition)

Co-Investigators: Dr. K.Umamaheswari , Professor, (Foods & Nutrition)

Dr.P.Yasoda Devi , Professor, (Foods & Nutrition)

### **Objectives**

- Testing and identification of suitable fruits and vegetables for bar production.
- Standardization of bar production for each of the selected fruit and vegetable/ blend.
- Testing the suitability of fortifying Fruit and Vegetable bars with different forms of zinc
- Physico-chemical, nutritional and microbiological analysis of the selected fruit and vegetable bars
- Sensory evaluation and consumer acceptability of the developed bars
- Determination of appropriate packaging material for the selected fruit and vegetable bars.
- Shelf life studies of the best selected fruit and vegetable bars.

Fruit and vegetable are selected based on various aspects such as crop production, nutritive value and chemical composition etc. Several Fruits and vegetables and their blends were tested for the suitability for preparation of bars.

Studies revealed that Pumpkin, Ash gourd, Bottle gourd, Tomato, Papaya and Banana are suitable for the preparation of bars using tray drier. The pulp of these fruits/ vegetables/ blends can be successfully dried in a tray drier for about 4 hours to produce bars with moisture content ranging from 15% to 20%. Addition of banana pulp at 25 % and 50% helped production of ash gourd bars. Pectin, Maltodextrin, Inulin Fructooligosachharides are added in various proportions to improve the gel formation, mouth feel, texture etc. Nutritional, physicochemical and sensory quality was assessed in the fresh bars. Studies on shelf life and fortification of these bars are underway.

### 3. “Consumer Evaluation and Commercialization of Diabetic foods”

Duration of the project	:	9 months
Budget	:	2.8 lakhs
Staff	:	Dr. V. Vijaya lakshmi, Principle Investigator Dr. Uma devi, Co- Principle Investigator Ms. K. Rajeswari, Research Associate

Diet and nutrition play an important role in therapeutic management of diabetes. For effective dietary control of diabetes, it is recommended that 60-65% of individual's daily energy requirement should be derived from complex carbohydrates available in cereals and pulses. With this concept, studies on development and clinical evaluation of certain food mixes based on millets have been carried out in the project entitled 'Development and testing of millet based therapeutic foods for management of diabetes mellitus' during the year 2007-08. The trials have given encouraging results and the formulations and food mixes prepared from them were well accepted by diabetic subjects. Therefore, these food mixes need to be evaluated by a large group of consumers preferably diabetic patients in order to consolidate and confirm the results of earlier study. Hence, this project was planned with the following objectives:

#### **General objectives:**

To study the consumer acceptability and commercial feasibility of developed millet based therapeutic food mixes.

#### **Specific objectives:**

- To conduct consumer acceptability of the most efficient millet based therapeutic food mixes by a large group of subjects.
- To carry out clinical trials on diabetic consumers with the most acceptable food mix/es.
- To study the feasibility of commercialization in terms of packaging, cost and marketability of the food mixes.

Millets like jowar, maize and foxtail millet was procured from local market and subjected to processing such as cleaning, dehulling, repeated autoclaving, cooling, drying and grind into flour and *ravva*. The flour and *ravva* were used for preparation of instant therapeutic breakfast mixes like *idli*, *upma* and *roti*. The acceptability of breakfast items *roti*, *idli*, *upma* prepared with the millet based therapeutic instant mixes was assessed though consumer evaluation uses a questionnaire by 50 diabetic and 50 normal subjects attending the diabetic clinics at Hyderabad

city. Results revealed that *idli* and *upma* prepared with three millets were highly accepted when compared to roti. The most accepted products were studied for glycemic response in diabetic patients. For this the most accepted products were given to diabetic subjects and their glucose levels were monitored.

#### **4. National Agricultural & Innovative Project (NAIP) “Creation of Demand for Millet Foods through PCS Value Chain”**

The sub project on ‘Creation of Demand for Millet Foods Through PCS Value Chain’ was initiated in the month of December 2007, for which National Research Centre for Sorghum is the lead centre and the Department of Foods & Nutrition, ANGRAU is one of the consortium partners with Dr.Kamini Devi, Professor as a Co-Principal Investigator and Dr.T.V. Hymavathy as Investigator.

The project was launched on 5<sup>th</sup> February 2008 with the following objectives:

- To enable market-driven millets cultivation for specific end-products, procurement and primary processing for continuous supply-chain management.
- Fine-tuning the technologies for development of millet food products and up scaling.
- To carry out nutritional evaluation and safety of selected millet foods.
- To assess consumer acceptability, price and market strategies, and social and policy imperatives
- To develop entrepreneurship and appropriate strategies to promote and popularize millets for commercialization through value-addition branding as health foods.

Millets are considered valuable not only for their nutritive value, but also due to their ability to grow in the harshest climates, in rain fed areas of cultivation. The rapid disappearance of millets from the markets and meals of people is therefore a cause for concern, and various strategies have to be designed to increase the production and consumption of millets. Also millets, like pearl millet, were found to be prone to rancidity and poor shelf life. Hence, it was felt necessary to find solution to overcome these problems and promote millets among farmers and consumers.

The focus of work by ANGRAU is on creation of demand for pearl millet grain through various activities planned to meet the objectives. Several pearl millet products were developed and their acceptability and nutrient analysis was carried out. Fine tuning and up scaling of targeted niche products like biscuits and extruded products are being tried for their development and promotion in the urban areas. Absence of processing techniques for millets to enhance quality was an important

factor that was needed to be addressed. The dehulling machines available for dehulling sorghum and other grains are not efficient to dehull pearl millet as it is a smaller grain. Improved processing techniques are being tested which would result in increased demand and markets and also improve the bio availability of nutrients from diets based on millets. Survey on pearl millet production, productivity, consumption and utilization in Kurnool district in Andhra Pradesh and Jodhpur and Singur districts in Rajasthan was taken up. Study on the market potential of pearl millet in Andhra Pradesh and Rajasthan has been planned and is being initiated.

A combination of community based approaches, improved processing/post production value addition to millets have been planned to create increased awareness and demand for millets which could go a long way in increasing the production and consumption of millets.

#### **5. Project entitled “Critical study on mortality and morbidity among children below 15 years in the tribal areas of Adilabad District” sponsored by UNICEF**

Nutritional anemia and the problem of underweight are widely prevalent among the tribals. An analysis of the deaths that took place recently in the tribal mandals of Narnoor, Utnoor, Jaionoor, Sirpur-U and Indervalle in Adilabad District reveals that, out of 119 deaths that were reported up to 30-11-2007, ninety eight (98 No.) of them were children below the age of 15 years of them 59 were girls. Subsequent to that there are more deaths reported in the same area till Nov 2008 of which majority were children below 15 yrs. Similarly, the IMR and MMR rate in that tribal areas are very high. As against the state average of 57 per thousand, the IMR among ST's is 103.1 per 1000 live births.

It was therefore felt that there was urgent need to take up a critical evaluation study in collaboration with UNICEF, Hyderabad for finding out the reasons for the deaths in Adilabad Tribal areas as well as to suggest the corrective measures to be taken up by the Government to overcome the problem and provide suggestions for proper implementation of the Government programmes by the concerned personnel. The study was proposed with the following objectives:

- To investigate the causes of mortality and morbidity among children below 15 years in the tribal areas of Adilabad district
- To assess the existing health care and nutrition services, their systems and utilization
- To propose corrective measures for the identified causes and for providing quality services
- To recommend action strategies to the concerned agencies.

Duration : 3 Months  
Budget Sanctioned : Rs. 10,56,000/-  
Location : Five mandals of Adilabad Dist (Narnoor, Utnoor, Jainoor, Tirpoor & Indravalle)  
Funding Agency : UNICEF  
Principal Investigator : Dr. K. Uma Devi, Professor, Department of Foods & Nutrition  
Co Investigators: Dr. K. Aparna, Assistant Professor, Department of Foods & Nutrition  
Dr. M. Shyama Chaitanya Kumari, Assistant Professor  
Department of Extension Education

The project was initiated in February 2008 and a preliminary visit was conducted to the district and mandal officials for collection of secondary data at district and mandal level for necessary planning and implementation of the project. Development and printing of questionnaires and schedules was taken up during the first month of the project. During the second month the project team conducted PRA, focused group discussions, interaction with key informants at Utnoor in Adilabad District on March 18<sup>th</sup> 2009. Data collection using schedules at household level, collection and analysis of blood, urine, stools, water and food samples will be completed by the end of March 2009. After the completion of statistical analysis and consolidation of data, a workshop will be conducted to propose corrective measures and suggestions for the identified causes for providing quality services, with recommendations and action strategies to the concerned agencies

## **Staff Deputation Abroad**

### **Collaborative Research Project**

Dr. N. Lakshmi Devi, Professor and Dr. S. Shobha, Associate Professor participated in the collaborative project on “Development of Sorghum based Nutrition Snacks using extrusion technology” at Department of Grain Science & Industry at Kansas State University, Kansas, Manhattan, USA from March to May 2008 under the technical guidance of Dr. Sajid Alavi. The objectives of the project were:

- To standardize extruded snacks using a combination of sorghum and protein sources like soy bean / pulse or whey protein isolate, in different proportions.
- To enrich the products using a synthetic vitamin- mineral premix
- To carry out objective evaluation and nutrient analysis of the developed product
- To carry out subjective evaluation of the developed product.

- To test the storage stability of the developed product
- To test the acceptability of the snacks by the target groups in specific and consumer groups in general.

The first three objectives were carried out at KSU and last three objectives were carried out at ANGRAU. The results of the study showed that acceptable ready – to eat snack products of good quality can be developed by extrusion cooking with sorghum, corn and other protein source blends.

Addition of protein sources improved the nutritional and physico- chemical characteristics of the extrudates in terms of texture, crunchiness and taste even though they are not on par with sorghum and corn combined extrudates in expansion on piece density. Among the different blends studied, the most acceptable ones in terms of expansion ratio are the blend with higher level of corn incorporation.

Extruded snacks developed using sorghum and corn (Incorporated with protein sources like WPI, soy flour, legume mix & mineral and vitamin mix) were acceptable and had good nutritional value. Addition of protein sources improved the quality of sensory attributes. The ratings with respect to taste and overall acceptability of the sample, made of sorghum, corn, WPI & soy (50:20:15:15) was significantly higher than other combinations. Results of Consumer evaluation confirmed the acceptability of the ready to eat extruded snacks. All the samples of extruded snacks could be stored for 3months at room temperature. On the whole, the sorghum based snack products are well accepted with wide application in future and various other formulations can be made with other millets like bajra and Italian millet in combination of other cereals and legumes.

### **Students Admissions in the year 2007-08**

Name of the Programme	No. of Admissions		Total
	Open	ICAR	
M. Sc. Nutrition & Dietetics	2	2	4
M. Sc. Food Science & Technology	13	3	16
PG Diploma in Nutritional Therapy	5	-	5
PG Diploma in Food Analysis & Quality Control	2	-	2
Ph. D. Foods & Nutrition	1	-	1

**1. Guest lectures to P.G. students & staff:**

<b>S.No.</b>	<b>Resource Person</b>	<b>Topic</b>	<b>Period</b>
1	Dr. Kalakumar Associate Professor, Department of Pharmacology College of Veterinary Science Rajendranagar	Pharmacokinetics & Pharmacodynamics	April, 2008

### OBJECTIVE III

To support the Government in training the 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 workers, farmwomen 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

#### 1. Training Programmes and Certificate courses organized (1-4-2008 to 31-3-2009)

S. No	Coordinators	Name of the programme	Duration		No. of participants
			FROM	TO	
1.	Dr. K. Uma Maheswari	Joint Coordinator for an International Training course on 'Income, Price and Nutrition' organized by SABM, ANGRAU, Hyderabad	24-3-2008	4-4-2008	8
2.	Dr. Kamini Devi Dr. V Vijayalakshmi Dr. S.Shobha	Training programme on Technologies for income generation	21.7.2008	30-7-2008	30
3.	Dr. K.Uma Maheswari and Dr. K.Uma Devi	Nutrition & Health Policies and Programmes- Present scenario & futuristic approaches	24-7-2008	13-8-2008	8
4.	Dr. P. Yasoda Devi & Dr. M. Usha Rani	Training programmes to organizers of Nutrition cum day care centres of Indira Kranthi patham (IKP), (SERP) of Govt. of A.P.	December 2008	February 2009	10 programs with 35 No. in each batch
5.	Dr. P. Yasoda Devi & Dr. M. Usha Rani	Crash course on "Introduction to Foods and Nutrition" to train the master trainers and the state community resource persons (CRPs) of Society of Elimination of Rural Poverty (SERP) of A.P State Rural Development Department	December 2008	February 2009	30 per batch
6.	Dr. P.Yasoda Devi Dr..S.Shobha	Micronutrient Malnutrition- Strategies for prevention and control	20.1.2009	9.2.2009	5



## 2. Staff as Resource persons: (outside organization):

S. No.	Name	Title of the programme	Topic	Date	Organization / venue
1.	Dr. Kamini Devi Dr.K.Uma Maheswari	ZREAC meeting	Relevance of Home Science Technologies for rural families	21-22 May, 2008	Nirmal, Adilabad dist.
2.	Dr. K.Aparna	ZREAC meeting	Home Science for farm women	21- 22 Aug, 2008	Nalgonda, Nalgonda dist.
3.	Dr.K.Uma Maheswari	Nutrition week celebrations	Impact of developmental programmes on health & nutritional status of children	1.9.2008	National institute of Nutrition, Hyderabad
4.	Dr.K.Uma Devi	Chetana Kishore Balika Mela 2008	Assessment of Nutritional Status of adolescent girls	17.9.2008	Dept. of Women Development & Child Welfare, Hyderabad
5.	Dr.K.Uma Devi	International Nutrition Day	Malnutrition deficiency diseases and preventive measures	20.9.2008	Andhra Mahila Sabha, Hyderabad
6.	Dr. Kamini Devi	Model Training course	Talk on Alternate uses of millets and scope for entrepreneurship	24.9.2008	NRCS, Rajendranagar
7.	Dr. P. Yasoda Devi	Regional consultation meet on nutritional advocacy for urban school children and adolescents	Nutritional advocacy for urban school children	Oct 14 -16 , 2008	NIPCCD (National Institute of public cooperation & child development)
8.	Dr.K.Uma Devi	World Food Day celebrations	Nutritious food crops	16.10.2008	Food & Nutrition Board, Hyderabad
9.	Dr.K.Uma Devi	Induction training to new recruits	Cost effective diets and nutritive value of foods	15.11.2008 22.11.2008 29.11.2008	Dept.of BC Welfare, Hyderabad
10.	Ms.T.Supraja	Refresher programme for CDPOs & ACDPOs of WDCW dept.	Basic food groups, RDA and nutritional value of locally developed foods	15.12.2008	Food & Nutrition board, Hyderabad.

11.	Dr.S.Shobha	Refresher programme for CDPOs & ACDPOs of WDCW dept.	Importance of IEC in Nutrition & health education	19.12.2008	Food & Nutrition board, Hyderabad
12.	Dr.K.Uma Devi	Training programme for stakeholders of Department of WD&CW of Erukalgadda, ShamshabadMandal	Care of pregnant women	9.01.2009	Dept. of Women Development & Child Welfare, Hyderabad
13.	Ms.T.Supraja	Training programme for stakeholders of Department of WD&CW	Importance of balanced diet for a pregnant woman	12.01.2009	Dept. of Women Development & Child Welfare,Hyderabad
14.	Dr.K.Uma Devi	Training programme for Wardens of Social welfare Hostels.	Utilization of locally available nutritious foods for hostel children	16.2.2009	MCR Institute of Human Resource Development, Hyderabad
15.	Ms.T.Supraja	ZREAC	Home Science for farm women	20/03/09	Eluru, Godavari Zone

## 2. Scientific articles published:

- Narender Raju .P, Lakshmi Devi .N and Hanumantha Rao.K (2005) Whey protein concentrate for development of high protein cake. Indian Journal of Dairy and Bioscience, vol.16 (1& 2) 19-25 – Published in December, 2008.
- Sulaxana Kumari Chauhan, N. Lakshmi Devi, K. Kondal Reddy, Kamini devi (Jan 2009) Utilization of Whey Protein Concentrate (WPC) in Formulation and Standardization of Convenience Foods Beverage & food world. 36: 1

## 3. Awards:

- The “**FPO license**” was awarded to the Department of Foods and Nutrition for the production of Fruit and Vegetable products by the efforts of Principle Investigator Dr V. Vijayalakshmi under DBT project on “Establishment of rural enterprise for tomato products by women for food and nutritional security”.
- Dr. K. Aparna, Assistant Professor (Foods & Nutrition) has received “**K G Naidu Medical Trust Award**” for best research paper titled “Effect of supplementation of *Gymnema sylvestre* leaves on blood glucose, serum lipid profile and blood pressure of newly diagnosed Type II diabetic patients” at 41<sup>st</sup> National Annual Conference of IDA, held at National Institute of Nutrition, Hyderabad from 5<sup>th</sup> to 6<sup>th</sup> December, 2008.

## **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 Nutrition to different sectors and its personnel a quarterly issue of Foods and Nutrition News letter is brought out by Centre of Advanced Studies. During the report period, two quarterly issues of Foods & Nutrition News Letters were brought out for circulation among the line departments and the organizations involved in nutrition related programmes and to disseminate nutrition information to personnel of different sectors.

### **News Letters released during the year 2008-09**

<b>S.No.</b>	<b>Title</b>	<b>Month</b>	<b>Year</b>	<b>Volume</b>	<b>Number</b>	<b>Issue Editor</b>
1	Nutritional Status of Women Across life cycle	January	2008	V	3	Dr. K. Uma Devi
2	Peal Millet for Health & Nutrition	May	2008	VI	1	Dr. T. V. Hymavathi
3	Extrusion Processing Technology and Applications	Sep	2008	VI	2	Dr. S. Shobha

### 1. Training programmes/ seminars / workshops attended by staff:

S. No	Name / Designation	Programme attended	Organization / venue	Period	Purpose
1.	K.UmaDevi Dr.V.Vijaya lakshmi,	National Seminar on Traditional & Ethnic Foods- opportunities & Challenges for Industrial Development.	FAPCCI,Hyderabad	25-26 April,2008	Participation
2.	Dr.Kamini Devi Dr.K.Uma Maheswari Dr.V.Vijaya lakshmi Dr. S Shobha Dr.K.UmaDevi. Dr. T.V.Hymavathi	Training programme on 'Packaging of Food Products'	Indian Institute of Packaging, Hyderabad	3-7 June, 2008	Participation
3.	Dr.K.Aparna	Training programme on 'Nutrition & Health Policies and Programmes- Present scenario and futuristic approaches'	PGRC,ANGRAU	24 July -13 Aug, 2008	Participation
4.	Dr.K.Uma Maheswari	Downstream Processing of Biomolecules & Natural Colorants'	CFTRI, Mysore	18-22 Aug, 2008	Participation
5.	Dr. T.V.Hymavathi	National Seminar on 'Non biological Contaminants in Food, Feed & Their safety standards'	Ganesh Scientific Research Foundation, New Delhi	23-24 Sept., 2008	Participation
6.	Dr.K.Uma Maheswari Dr.K.Aparna	Training programme on 'Rapid Methods & Automation in Microbiology'	Dept.of Microbiology,ANGRAU & KSU,USA	15-17 Oct, 2008	Participation
7.	Dr.K.Aparna	Training programme on 'Designer & Functional foods through Extrusion Cooking Technology'	CIPHET, Ludhiana	29 Nov-19 Dec, 2008	Participation
8.	Dr.K.Uma Maheswari Dr.T.V.Hymavathi	e-Learning course on 'ISO 22000 Food Safety management System'	National productivity Council, New Delhi.	21-24 Oct.2008	Participation
9	Dr. K.Aparna	National Conference of Indian Dietetic Association	National Institute of Nutrition, Hyderabad	5-6 2008	<b>Paper Presentation &amp; received "K G Naidu Medical Trust Award" for best research Paper.</b>
10.	Ms. T.Supraja	Trainig programme on "Micro nutrient malnutrition – Strategies for prevention & control"	PGRC,ANGRAU	20/01/09 to 09/02/09	Participation

## 2. Popular articles published:

S. No.	Name / Designation	Title	Magazine / news paper / news letter	Date / month / year
1.	Dr.K.Uma Maheswari Professor	Crash Dieting	Rythunestham	January, 2009
2.	Dr. K Uma Devi Professor	Healthy School lunch for children	Eenadu Sukhibhava	June 17 2008
3.	Dr. S Shobha Professor	Microwave cooking	Eenadu Sukhibhava	20.1.2009
4.	Dr.V.Vijayalakshmi Professor	Carotenoids for Health & Nutrition	Health Action	June,2008

## 3. Books / Reports Published:

1. Home Science Technologies for viable enterprises – 2007  
Edited by Dr.P.Rajya Lakshmi. Dr. Vijaya Nambiyar, Dr.A.Sarada Devi, Dr.Kamini Devi, Dr.K.Mayuri and Dr.K.Uma Maheswari.
2. PG Thesis abstracts of faculty of Home Science 2008.  
Edited by Dr. Vijaya Nambiyar, Dr.S.Sumathi, Dr.A.Sarada Devi, and Dr.K.Mayuri.
3. Compendia of Adhoc Research projects from faculty of Home Science (1974-2007) – 2008  
Edited by Dr. Vijaya Nambiar, Dr. S. Sumathi, Dr. A. Sarada Devi, Dr. K. Mayuri and Dr. K. Uma Maheswari

## 4. T.V. Programmes:

S. No.	Name / Designation	Title	Date of broadcast	Place / venue
1.	Dr. K.Uma Devi Professor	Mango products preparation	26.07.2008	DD 1

## 5. Radio talks

S. No.	Name / Designation	Title	Date of broadcast	Place / venue
1.	Dr. V Vijayalakshmi Professor	Importance of green leafy vegetables	20.3.2009	AIR, Hyderabad
2.	Dr. S. Shobha Professor	Diet for winter season	2.09.2008	AIR, Hyderabad
3.	Dr.K.Uma Maheswari Profesor	Does nutritious diet mean costly diet ?	4.09.2008	AIR, Hyderabad
4.	Dr.T.V.Hymavathi Associate Professor	Nutritious food to be taken by pregnant and lactating mothers	22/5/08	AIR, Hyderabad
5.	Dr.T.V.Hymavathi Associate Professor	Jowar, Ragi & Bajra in our diet	25/9/08	AIR, Hyderabad
6.	Dr.N.Lakshmi Devi Professor	<i>Chanti pillalaku anubandha aharam</i>	Nov 2008	AIR, Hyderabad
7.	Dr. P. Yasoda Devi Professor	<i>Chinna pillalaku evvadagga poshaka chiruthindlu</i>	Dec, 2008	AIR, Hyderabad

6.

**Extension activities:**

S. No	Name / Designation	Programme	Place, Date	Purpose
1.	Dr. V.Vijayalakshmi Professor	World Breast Feeding Week Celebration 1.08.2008	Indian Institute of Health & Family Welfare, Hyderabad	Participation
2.	Dr.V.Vijayalakshmi, Professor Dr.S.Shobha, Professor Dr.T.V.Hymavathi, Associate Professor	Nutrition Week Celebration – Food exhibition- 4.09.2008	Asian Institute of Gastroenterology, Hyderabad	Participation
3.	Dr.P.Yasoda Devi, Professor Dr. K Uma Maheswari, Professor Dr.K.Aparna Assistant Professor	Nutrition Week Celebration- Exhibition on Nutritious School Lunches – 5.09.2008	GMR Chinmaya School, Shamshabad Mandal	Participation
4.	Dr. K Uma Devi Professor	World Food Day Celebrations – Conduct of competitions on Nutritious recipes for women 16.10.2008	Jukal village, Shamshabad Mandal.	Organized
5.	Dr.K.Uma Devi Professor	World Diabetes Day-	Jukal village, Shamshabad	Organized in association with

		Screening, counseling and exhibition - 14.09.2008	mandal	Natco Pharmaceuticals, Hyderabad.
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## 7. Visitors

1. Dr. Sajid Alavi , Associate Professor, Dept. of Grain Science & Industry, Kansas State University, USA visited College of Home Science, Hyderabad on 21.7.08. He interacted with 10 representatives of the food industry and developmental departments on the need for public private partnership for addressing nutritional and other needs of A.P. He also delivered a talk on “Processing of nutritious ready to eat foods”. Dr. Ashok I.A.S, MD, AP Foods , also gave a brief talk on the “ RTE snack foods for supplementary feeding programmes of A.P.” Director, International Programmes, ANGRAU, Dean of Faculty of Home Science, Associate Dean of College of Home Science, Hyderabad, the Staff and Students of Foods & Nutrition department, Heads of various other departments also attended the session.
2. Mrs. Nonomura San, nutritionist from Osaka, Japan delivered a lecture cum demonstration on ‘Japanese diet’ on 8<sup>th</sup> Aug, 2008 at college of Home Science, Hyderabad. She elaborated on how to prevent & cure diabetes & high blood pressure by balanced diet, which is one of the factors responsible for the long life of Japanese. She demonstrated the preparation of two recipes called ‘Tenpura’ and ‘Kakiage’ using vegetables & flour. The Staff & Students of the College attended the lecture.
3. Dr.Govind Sharma, Manager of National Development Research Corporation, New Delhi has delivered a talk on “Intellectual Property Rights” on 5<sup>th</sup> December 2008. Staff and Students of College of Home Science have attended and benefited from the talk.
4. Dr.E. Carter, Dean, International Programmes of Tuskegee University, USA had interaction with staff of Department of Foods & Nutrition on 28<sup>th</sup> February 2009 about the various academic programmes, ongoing research activities and also visited the labs in Department of Foods & Nutrition. She had a discussion with the staff of Department of Foods & Nutrition regarding extrusion lab facilities available, extruded products developed in the department & future research activities in the field of extrusion.

5. Dr. Sajid Alavi, Associate Professor, Extrusion Processing, Dept. of Grain Science and Industry, Kansas State University (KSU), USA visited ANGRAU on 12-3-09. He had discussions with Vice Chancellor and Director of International Programs, regarding the nomination of B.H.Sc / B.Tech (Food Science & Technology) students for 4 weeks training programme at KSU on Packaging Materials from May 30<sup>th</sup> to July 24<sup>th</sup> 2009. Later he had discussions with Foods & Nutrition department staff, regarding the ongoing projects on Extrusion at College of Home Science. Dr. N. Lakshmi Devi, Professor, presented the ongoing project on “Extruded weaning foods and snacks for children”. Ms. Aruna, M.Sc Student presented her special project report on “Sensory evaluation and shelf life studies of extruded products”. Dr.K.Aparna, Assistant Professor has given a brief report on her training on Extrusion technology which she attended at CIPHET, Ludhiana. She also presented a project proposal on “Designing, development and evaluation of fruit and vegetable incorporated extruded snacks”. After the discussion session Dr. Sajid visited the Extrusion lab at Department of Foods & Nutrition, College of Home Science, Hyderabad.



**Dr. Sajid Alavi delivering lecture**



**Welcoming to the Chief Guest & Staff by Dr. N. Lakshmi Devi**





**Dr. Ashok, Director A.P foods**  
**Dr. Rajyalakshmi, Dean of H.Sc.**  
**Dr. Chenchu Reddy, Director, I P**  
**Dr. Sajid Alavi, Associate Professor**  
**Dept. of Grain Science**



**Dr. Sajid observing the lab**  
**model twin-screw Extruder**

#### 8. Research Projects in operation:

S. No.	Project title	Investigators	Funding agency	Period / duration	Budget Rs. in lakhs
1.	"Creation of Demand for Millet Foods Through PCS Value Chain"	Dr. Kamini Devi, Co-principal Investigator Dr.T.V.Hymavathi,	World Bank NAIP	December 2007 to March 2012	59.23
2.	Consumer evaluation and commercialization of millets based diabetic foods	Dr.VVijayalakshmi Principal Investigator, Dr.K.Uma Devi	State Plan	July,2008- March 2009	2.8
3.	Development & evaluation of micronutrient fortified fruit and vegetable bars	Dr.T.V.Hymavathi, Principal Investigator, Dr.K.Uma Maheswari,	State Plan	July,2008- March 2009	3.6
4.	Collaborative study on	Dr.N.Lakshmi Devi Principal Investigator	International programmes	October 2008-March	3.6

	Utilization of extrusion technology for development of millet based weaning foods & ready-to-eat snacks for children.	Dr.S.Shobha & Dr.Sajid Alavi, Co Principal investigators	ANGRAU	2009	
5.	Critical evaluation study on mortality & morbidity among tribals of Adilabad District.	Dr.K.Uma Devi,Principal Investigator, Dr.K.Aparna Dr.Ch.Chaitanya kumari	UNICEF	Feb 2009- April 2009	10.56
6.	Development of Sorghum based Nutrition Snacks using extrusion technology	Dr.N.Lakshmi Devi and Dr.S.Shobha	Department of Grain Science & Industry, KSU, USA	1 <sup>st</sup> March - 31 <sup>st</sup> May 2008	Lab facilities, material required and technical assistance provided by KSU

## 2. Proposals for the year 2008-09

- Creation of demand for millet foods through PCS value –chain
- Cereal and millet based product development using Extrusion processing
- Micronutrient fortification of the fruit and vegetable products
- Development and commercialization of Diabetic foods
- Extraction of phytochemicals from fruits and vegetables
- Development of user friendly dietary guidelines for different diseases
- Value added unconventional fruit and vegetable dehydrated powders for micronutrient security.

## 3. The out turn UG and PG Students

- B.HSc with specialisation in Foods & Nutrition - 15
- M. Sc- Nutrition and Dietetics - 3
- M.Sc Food Science and Technology - 7
- PG Diploma in Nutrition Therapy - 2
- Ph.D - 1

#### IV. Budget Proposals for the year 2009-10

S. No.	Particulars	Amount (Rs.)
1	Trainings (2 Nos)	3,54,000-00
2	TA / DA	1,00,000-00
3	Books	50,000-00
4	Recurring contingencies	* 2,00,000-00
5	Staff Salary	5,00,000-00
	<b>GRAND TOTAL Rs.</b>	<b>12,04,000-00</b>

(Rupees Twelve lakhs and four thousand only).

**Justification :-** Due to inflation of day to day consumables, fuel, stationary, chemicals, and maintaining of vehicle etc., an amount of Rs. 2.00 lakhs per annum is proposed.

#### APPENDIX-1

#### WORKPLAN FOR CENTRE OF ADVANCED STUDIES

Department of Foods & Nutrition  
Post Graduate & Research Centre, ANGR 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**

- Industrial linkages and Food Technology
- Recent trends in Nutrition Research
- Management strategies for prevailing chronic diseases
- Recent developments in nuts & oils in relation to health

##### **B. Allocation of Seats under PG Programme**

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

### **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 IVth Dean's Committee from the year 2007-08.

### **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 the quarterly issue of Food & Nutrition News letter for circulation among the line departments and the organizations involved in nutrition related programmes.

Organizing group meetings for academicians, administrator, 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**

Faculty improvement in terms of teaching, research and extension.

Strengthening Post Graduate Education and Research in Foods & Nutrition in other State Agricultural Universities. Conducting need based multi centric studies to provide feed back to the planners and policy makers.

### **PROPOSALS FOR THE YEAR 2009 - 10**

### **APPENDIX – II**

#### **WORK PLAN FOR CENTRE OF ADVANCED STUDIES FOR THE YEAR 2009 - 10 FOR APPROVAL**

**Department of Foods & Nutrition, Post Graduate & Research Centre  
Rajendranagar, Hyderabad - 500 030.**

#### **I. OBJECTIVES**

- To serve as a national resource and training centre for faculty in the field of Foods & Nutrition
- To update the curriculum and courses of Foods & Nutrition to strengthen teaching and evaluation at UG and PG level.
- To support the government in training personnel

- To disseminate nutrition information to personnel of different sectors.

## **II. OUTPUTS/PROGRAMMES IMPLEMENTED DURING THE X 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 two Short Courses/Training programmes in priority areas of Foods & Nutrition as per the need.

#### **Priority areas identified for Summer Institute Programme/Short Courses**

- Industrial linkages and Food Technology
- Recent trends in Nutrition Research
- Management strategies for prevailing chronic diseases
- Recent developments in nuts & oils in relation to health

#### **B. Allocation of Seats under PG Programme**

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

#### **C. Research**

##### **Research proposals for XI Five year plan**

1. Acceptability study on Hot Foods (Instant Mixes): A two months (April- May 2009) research study will be taken up in 3 regions of Andhra Pradesh to test the acceptability of the instant mixes (*Upma, Kichidi & Halwa*) developed by A.P. foods, Hyderabad in ICDS centres. The target groups selected will be pre school children, pregnant & lactating women. Pretested & structured schedules will be developed to collect the needed data from the target groups, Anganwadi workers & Village key personnel. Recommendations will be made after analyzing the data.
2. Consumer evaluation and commercialization of Diabetic foods – Dr. V. Vijayalakshmi -3.12
3. Development and evaluation of micronutrient fortified fruit & vegetables - Dr. T.V. Hymavathi – 3.12

4. Utilization of micronutrient encapsulated underutilized fruit and vegetable powders as natural colourant for designing value added food products - Dr. K. Uma Maheswari – 3.76

### **Objective 2**

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

### **Action Plan**

The Revision of PG curriculum of Nutrition and Dietetics programme is in progress and the revised curriculum will be implemented from 2009-10 admitted batch.

### **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) for awareness creation. Conducting evaluation study titled "Impact assessment of food security Programme of Indira Kranthi Patham".

### **Objective 4**

To disseminate nutrition information to personnel of different sectors.

### **Action Plan**

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

### **Forth Coming Foods & Nutrition News letters**

Three issues of quarterly news letters will be coming up on latest topics which will be prepared by the staff of Department of Foods & Nutrition in their specialized areas.

## **III . EXPECTED OUTCOME BY THE END OF THE PLAN PERIOD**

- Providing common resource material for teaching and evaluation of food and nutrition programmes at UG and PG level.
- Faculty improvement in terms of teaching, research and extension.
- Strengthening Post Graduate Education and Research in Foods & Nutrition in other State Agricultural Universities.
- Conducting need based multi centric studies to provide feed back to the planners and policy makers.

# **APPENDIX - I**



