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ABSTRACT

This booklet outlines a plan for the delivery of human nutrition research and services, in accord with the 1977 Federal Food and Agriculture Act. Research priorities are identified as: (1) nutritional needs; (2) actual eating habits and their effects on health; (3) factors which shape eating habits; (4) production and distribution of food; (5) effects of government nutrition programs and policies on people's health and nutritional status; and (6) considerations for helping to meet the dietary needs of people in other countries. Current Federal nutrition research programs are described, as are programs for information and education. The agencies or offices responsible for each program are indicated. Also described is the coordination between the Department of Agriculture and other Federal departments in various nutrition related activities. In addition, it is explained how the recent creation of three advisory boards will provide a public participation component to the Department of Agriculture's decision making process. Finally, future nutrition related research and educational objectives are analyzed. Appended to the booklet are tables indicating budget appropriations for different programs from 1978 through 1980. (30)

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# Food and Nutrition for the 1980's:

## Moving ahead

Comprehensive Plan for Implementing  
the National Food and Human Nutrition Research  
and Education and Information Programs

United States Department of Agriculture  
Washington, D.C.  
April 1979

U.S. DEPARTMENT OF HEALTH  
EDUCATION & WELFARE  
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# INTRODUCTION

Section 1427 of the 1977 Food and Agriculture Act requires the Secretary to submit to Congress a comprehensive plan for the implementation of a human nutrition research and nutrition education program.

The fundamental purpose of the U.S. Department of Agriculture is to ensure that there will continue to be an adequate, safe, palatable, nutritionally balanced, and reasonably priced food supply, equitably available to all Americans.

To reach this goal, the Department defines the term "nutrition" broadly to include research on specific nutrient requirements; food composition; the relation of diet to disease; food safety; food enrichment; factors influencing nutritional practices, food choices, and consumption behavior; food processing and distribution; and the impact of farm and market food prices on consumer food choices.

The 1977 Act recognized this broad definition of nutrition research. Section 1403 of the Act designates the Department of Agriculture as the lead agency of the Federal Government for the conduct of human nutrition research. It specifies five areas of high priority in basic and applied research and nutrition education research:

- Human nutritional requirements.
- Composition of foods and the effects of agricultural practices, handling, processing, and cooking on the nutrients they contain.
- Surveillance of the nutritional benefits provided to participants in the food programs administered by USDA.
- Factors affecting consumer food preferences and eating habits.
- Development of techniques and equipment to assist consumers in the home or in institutions in selecting food that supplies a nutritionally adequate diet.

The Act further recognized that progress toward a well-fed and healthy Nation requires coordination and cooperation among all departments of the Federal Government which have responsibility for human nutrition activities. Sections 1403 and 1405 of the Act require that the Department coordinate the nutrition research and education activities within the Department, and the activities of the Department with those of other Government agencies.

Finally, the Act created two advisory boards which provide public participation in policy and planning in the Department to ensure that USDA programs reflect priorities identified by the public.

The comprehensive plan for the delivery of human nutrition research and services begins with a basic statement of purpose and priorities, proceeds through a description of current programs for meeting those priorities, and concludes with a discussion of future goals and implementation plans.

## SUMMARY

In the past, Government response to identified nutrition problems has been characterized by the creation of categorical programs which often either failed to adequately identify causes of the problem or failed to address the multifaceted influences contributing to the problem.

USDA recognizes that efforts to maintain and improve optimal levels of human nutrition must be integrated and related to efforts to improve agricultural food production and quality. The 1977 reorganization of the Department to create a new Assistant Secretary for Food and Consumer Services elevated consumer and nutrition issues to concern equal to that for agricultural productivity and economic issues in the Department.

The recently completed reorganization of the Science and Education Administration, which created the Human Nutrition Center, marks further USDA's recognition that scientific and technical research must be the basis for developing alternative nutrition policy and program strategies and assessing the impact of these programs. Recognizing this needed relationship, Congress in the 1977 Food and Agriculture Act gave USDA lead agency responsibility for the conduct of agricultural and human nutrition research and for coordination of research in other departments of Government.

Current research priorities of the Department focus on seven major questions which illustrate the integrated direction which research must take if it is to provide answers for immediate application in program decisions:

1. What do people need nutritionally for optimal growth, functional performance, and continued well-being?
2. What are people actually eating, and how do their eating habits affect their nutritional health?
3. What factors shape people's eating habits?
4. What happens to our food from its origin on the farm to our tables, and how does this affect the safety, quality, and nutritional value of our diets?
5. How do Government intervention and nutrition education programs affect people's health, nutritional status, and performance?
6. What are the nutritional effects of Government policies and regulatory programs?
7. What special considerations must we take into account in helping meet the dietary needs of people in other countries?

A total appropriation of \$39,769,000 in fiscal year 1979 for in-house, extramural, and competitive grant research funds will be devoted to research intended to find answers to these questions. This includes \$5,941,000 in Federal formula funds under the Hatch Act and for 1890 institutions and Tuskegee Institute provided to States for cooperative research efforts.

The purpose of nutrition education and information programs is to communicate research-derived nutrition concepts and dietary guidance to consumers to help them make informed food choices and maintain diets which promote good health. Nutrition information and education by USDA takes the form of:

1. Information for the general public through print and electronic media.
2. Information to scientists and professionals through publications, training programs, and scientific conferences.
3. Community education programs for groups with special needs.
4. Formal education programs in elementary and secondary schools for teachers, parents, food service workers, and children.
5. Technical guidance for food procurement, distribution, and regulatory programs.

A total appropriation of \$110,314,000 in fiscal year 1979 will fund these activities.

The Human Nutrition Center (HNC) and the Human Nutrition Policy Committee of the Department will enjoy their first full year as functional units in fiscal year 1979. Implementation plans and priorities evolving from this first year of function will be reflected in future years through the budget process.

USDA's programs in 1980 will focus on efforts to coordinate and integrate the human nutrition research, education, and information activities within USDA and efforts to cooperate with the Department of Health, Education, and Welfare (HEW); the Office of Science and Technology Policy; the National Science Foundation; and other agencies of the Federal Government in coordinating their nutrition activities with those of USDA.

The budget for fiscal year 1980 also includes increased funding for efforts to improve analytical methods available for nutritional status monitoring and surveillance and for evaluation of nutritional impacts of food assistance and education programs operated by the Department.

Joint programs within the Department are being initiated to share resources. For example, the Food and Nutrition Service will join with the Expanded Food and Nutrition Program of the Science and Education Administration in a pilot project to reach low-income program participants with nutrition information.

Finally, fiscal year 1980 funds will be used to expand research on factors influencing consumer food choices and on consumer education program alternatives.

# **BASIC AND APPLIED NUTRITION RESEARCH**

Two Federal Departments, USDA and HEW, share the primary responsibility for human nutrition research. The Food and Agriculture Act of 1977 gives USDA lead agency responsibility for food and agriculture research, except for the biomedical aspects of nutrition concerned with the diagnosis and treatment of disease, which is reserved for HEW.

USDA research focuses on normal, healthy individuals rather than on individuals who are in clinical or institutional settings for treatment or cure of illness. However, investigations of nutrient interactions necessarily address the issues of maintenance of health and the prevention of diseases and disorders caused by nutrient deficiencies or excesses. Thus, there is a heightened need for USDA to coordinate its research priorities with those of other Government agencies, particularly with HEW.

The scope of research topics was outlined in the Office of Science and Technology Policy's report, "New Directions in Federally Supported Human Nutrition Research," December 1977:

- Basic physiological and biochemical mechanisms for the digestion, absorption, metabolism, and transport of nutrients; the role of food ingredients in human health and performance and in the prevention and treatment of disease.
- Nutrient composition of foods; the effects of storage, processing, and packaging; and the biological availability of nutrients in the foods at the time of consumption.
- Determinants of dietary practices and methods for educating the public about dietary practices.
- Food consumption patterns and nutritional status of the general population and of special high-risk subgroups within the population; evaluation of the nutritional impact of various intervention strategies and public policies.

## **PRIORITIES FOR HUMAN NUTRITION RESEARCH**

Numerous Government planning and review agencies and professional organizations have offered lists of alternative research priorities in human nutrition. Four of these are summarized in the following table. They were influential in developing USDA's research priorities.

PRIORITIES FOR HUMAN NUTRITION RESEARCH

Office of Technology Assessment (1)	General Accounting Office (2)	Office of Science and Technology Policy (3)	HERAPP (4)
<p><b>Role of Diet in Prevention of Chronic Diseases and Obesity</b></p> <ul style="list-style-type: none"> <li>-- major health problems and diet-related risks</li> <li>-- methods for preventing obesity</li> <li>-- nutrition and mental development</li> </ul> <p><b>Role of Nutrition in Treatment of Disease and Support Therapy</b></p> <ul style="list-style-type: none"> <li>-- nutritional support of patients with severe disease and injury</li> <li>-- other disease states</li> <li>-- technology of delivery of nutrients</li> <li>-- behavioral and emotional problems</li> </ul> <p><b>Nutrition Education and Consumer Information</b></p> <ul style="list-style-type: none"> <li>-- factors affecting lifetime eating habits and identification of critical education points</li> <li>-- development and evaluation of nutrition education and communication methods</li> <li>-- methods for simplifying consumer information utilization</li> </ul> <p><b>Requirements for Essential Nutrients</b></p> <ul style="list-style-type: none"> <li>-- methods for determining nutrient needs</li> <li>-- interactions among nutrient requirements based on functional criteria</li> <li>-- pharmacologic and toxicologic effects on nutrition</li> <li>-- bioavailability of nutrients in foods</li> </ul> <p><b>Nutritional Aspects of Food Science and Food Safety</b></p> <ul style="list-style-type: none"> <li>-- food composition</li> <li>-- new food processing and handling procedures to maintain nutrient content</li> <li>-- better methods of assuring food safety</li> </ul> <p><b>Monitoring Nutritional Status</b></p> <ul style="list-style-type: none"> <li>-- methods for improving integration of food composition and nutritional status surveillance</li> <li>-- evaluation of the effects of food and nutrition education programs</li> </ul> <p><b>Nutrition Policy and Management</b></p> <ul style="list-style-type: none"> <li>-- food-related interventions</li> <li>-- other interventions</li> </ul>	<p><b>Research Gaps</b></p> <ul style="list-style-type: none"> <li>-- knowledge of dietary nutrients required to promote or maintain growth or well-being at various stages and conditions of life</li> <li>-- information on the composition of the current U.S. food supply and the extent that nutrients are biologically available</li> <li>-- evaluation of long-term health consequences of the modern diet</li> <li>-- assessment of the Nation's current nutrition status in terms of dietary excesses and imbalances, as well as deficiencies</li> </ul> <p><b>Research Needs</b></p> <ul style="list-style-type: none"> <li>-- long-term studies of human subjects across the full range of both health and disease</li> <li>-- comparative studies of populations of differing geographic, cultural, and genetic backgrounds</li> <li>-- basic investigations of the functions and interactions of dietary components</li> <li>-- updated and expanded food composition data</li> <li>-- improved techniques for assessing long-term toxicological risks</li> </ul>	<p><b>Effects of Nutrition on Human Health and Performance</b></p> <ul style="list-style-type: none"> <li>-- pregnancy</li> <li>-- infancy and early childhood</li> <li>-- elderly</li> <li>-- obesity</li> <li>-- iron deficiency</li> <li>-- nutrient toxicity and interactions</li> </ul> <p><b>Food Sciences</b></p> <ul style="list-style-type: none"> <li>-- methodology for analysing food composition</li> <li>-- nutrient bioavailability in foods</li> <li>-- updating National Nutrient Data Bank</li> <li>-- expanding food composition measurements</li> </ul> <p><b>Nutrition Education Research</b></p> <ul style="list-style-type: none"> <li>-- factors determining dietary practices</li> <li>-- identification of food nutritional practices</li> <li>-- ad hoc education research planning committee</li> </ul> <p><b>Diet and Nutritional Status Surveillance</b></p> <ul style="list-style-type: none"> <li>-- food consumption survey methodology</li> <li>-- measurements of nutritional status</li> <li>-- analysis of NHANES data</li> <li>-- epidemiological studies</li> </ul>	<p><b>Nutrient Requirements</b></p> <ul style="list-style-type: none"> <li>-- in successive phases of life cycle</li> <li>-- physiological functions and interactions of nutrients</li> </ul> <p><b>Nutritional Health of Populations</b></p> <ul style="list-style-type: none"> <li>-- improve methodologies for assessing nutritional health</li> </ul> <p><b>Nutrition Education and Applied Programs</b></p> <ul style="list-style-type: none"> <li>-- improve effectiveness of nutrition education and intervention programs</li> </ul> <p><b>Food Quality</b></p> <ul style="list-style-type: none"> <li>-- improve quality of available foods</li> <li>-- develop consumer awareness of quality in selection, preparation, and storage of foods</li> </ul> <p><b>Food Safety</b></p> <ul style="list-style-type: none"> <li>-- factors contributing to safety</li> <li>-- establish guidelines for safety</li> </ul>

1. Nutrition Research Alternatives, Office of Technology Assessment, September 1978, page 35.
2. Federal Human Nutrition Research Needs - A Coordinated Approach to Advance Nutrition Knowledge, March 1978.
3. New Directions in Federally Funded Human Nutrition Research, Office of Science and Technology Policy, December 1977, page iv.
4. Home Economics Research Assessment, Planning, and Projections, Association of Administrators of Home Economics and Agricultural Research Policy Advisory Committee, April 1978, pages 30, 34, 37, 40, 43.

## **USDA's RESEARCH PRIORITIES**

USDA has defined seven major areas of research which illustrate the integrated direction research must take if it is to provide answers for immediate application in program decisions.

1. What do people need nutritionally for optimal growth, functional performance, and continued well-being?
2. What are people actually eating, and how do their eating habits affect their nutritional health?
3. What factors shape people's eating habits?
4. What happens to our food from its origin on the farm to our tables and how does this affect the safety, quality, and nutritional value of our diets?
5. How do Government intervention and nutrition education programs affect people's health, nutritional status, and performance?
6. What are the nutritional effects of Government policies and regulatory programs?
7. What special considerations must we take into account in helping meet the dietary needs of people in other countries?

### **Question one: What do people need nutritionally for optimal growth, functional performance, and continued well-being?**

To answer this question we need research on the requirements of people of all ages, with special emphasis on the requirements of the prenatal, infants, 6- to 23-month-old infants, preschool youngsters, adolescents, adult men, women of childbearing age, and the aged. We need particularly to study nutrition in relation to intellectual and physical development, pregnancy, lactation, menopause, and work performance.

Some of the research priorities include the following.

**Pregnancy**--The major research tasks are to develop more satisfactory methods of quantifying a pregnant woman's nutritional status, to discover more nutrient/genetic interactions in both animals and man, and to develop appropriate nutritional intervention in pregnancy in order to prevent the birth of physically or mentally damaged children.

**Infancy**--Infants have less ability than adults to adapt to excesses or deficiencies in diet. It is extremely important that we be able to formulate optimal diets. This optimal diet is significant not only for normal infants but for those with special needs which must be met if they are to achieve maximal growth and development.

**Preschool Children**--There is a particular need to determine the nutrient requirements for optimum growth, function, and well-being of 2- to 6-year-olds. Because nutrition affects the functioning of the central nervous system, which in turn affects learning and behavior, research in the development of children

in this vulnerable age group is crucial to optimize expenditures in the education and care of them.

**The Elderly**--Despite the fact that people over 65 represent over 10 percent of the U.S. population, little is known about their nutritional requirements or the relationship of nutritional status at different stages of the life span to longevity or quality of life. We need to know whether and how the metabolism of certain nutrients in the elderly differs from that of other age groups.

Studies are needed to determine the level of nutrient intake in relation to the prevention and moderation of degenerative processes, and the specific effects of vitamin and trace element supplementation on the physical performance, health, and well-being of the elderly.

**Work Performance**--The recommended daily allowances of nutrients for healthy people represent estimates of needs based on age, sex, body size, and activity. Wide variations in both nutrient need and intake occur within these groups, however. Improved methods of estimating nutrient requirements are needed to allow an individual to more intelligently select a diet to fit his lifestyle.

New methodologies for estimating the effects of nutrients on human performance are essential to the success of this research. This subject can be easily researched, and the potential benefits to human function, performance, and satisfaction are great.

**Obesity**--Obesity is the most widespread nutritional disorder in the United States, and appears to be a primary factor in the development of diabetes and hypertension. Current evidence suggests that as many as 30 percent of middle-aged men and 40 percent of women may be obese.

While it is certain that restriction of food intake will prevent or cure obesity, this advice is obviously not enough. If effective prevention is to be developed, we must have more understanding of the fundamental causes of obesity and the relative hazards associated with varying degrees of obesity.

Research is needed on the role of genetics and biochemistry in the development of taste, since taste preferences guide eating patterns. Some evidence indicates that eating behavior may be determined very early in life. Precisely how the composition and quantity of food intake in infancy or at other ages may affect the drive to eat or to overeat requires study.

We need to clarify the interactions between these internal regulatory mechanisms, and external psychological/environmental factors which may override the internal mechanisms. We need further studies on the kinetics and metabolism of fat cells and the role of overfeeding in infancy and childhood to justify appropriate dietary modifications.

**Iron and Other Trace Mineral Requirements** --Mild iron deficiency is known to be very common in the United States, especially among women. There is reason for concern about whether deficiencies of other trace minerals, such as zinc and selenium, may present significant health problems. Even with regard to iron, which has been rather extensively studied, the effects of mild deficiencies on physical and mental performance and on resistance to infection, as well as the need for iron at various ages, are poorly defined. Data on the requirements and physiological effects of other trace minerals are fragmentary indeed. There is also substantial evidence that the availability of the trace minerals is determined by the nature of the foods in which they are consumed. Particular attention must be paid to these nutrients since the character of the national food supply is continually changing.

**Nutrient Toxicity and Nutrient Interactions** --In recent years, there has been a steady increase in the quantities of vitamins and essential mineral elements purchased by the public for self-medication or insurance against presumed dietary deficiency. There is a mistaken belief that excessive intake of nutrients poses no health problem.

Most of the nutrients that we know are essential for human growth and development are also known to be toxic at levels above recognized requirements. The level at which acute toxicity occurs has not been determined for most essential vitamins and minerals. For those on which data are available, the margin of safety is sometimes small--for vitamin D, only five times the recommended daily intake is toxic in some individuals. This margin is substantially less than the 100-fold safety factor required for the approval of new food additives.

Levels of nutrients required to meet human needs are known to be influenced by many factors: interactions with other nutrients; drugs such as antacids, analgesics, sleep medications, and birth control pills; food additives and dietary supplements; environmental contaminants such as lead, arsenic, and cadmium; and various chemicals that occur as natural components of foods. Identification of nutrient interactions is becoming increasingly important with the ever-increasing exposure of our population to compounds.

**Nutrition in the Maintenance of Health and Prevention of Chronic Disease** --

The major health problems of Americans are the chronic diseases--heart disease, cancer, hypertension, diabetes, osteoporosis, etc. Although nutrition is not necessarily the cause of these diseases, the amount and kind of food we eat is intimately related to these diseases. It is understood that many such diseases may start in childhood and become manifest 20, 30, or 40 years later. The specific roles of various nutrients and food constituents must be known if these diseases are to be prevented or ameliorated. Efforts to discover these roles will be coordinated with similar work at HEW.

## **Question two: What are people actually eating and how do their eating habits affect their nutritional health?**

American supermarkets today offer consumers the opportunity to choose from among some 11,000 different items. New products are introduced almost daily. Other products disappear from the shelves. Our food supply is a kaleidoscope of constantly changing packages, products, formulas, and conveniences.

Thus, individual eating patterns are changing faster than we can monitor them with present techniques. Therefore, it is important to revise the methods we use to find out what individuals eat and find new ways to measure nutritional impact.

Presently, the Federal Government uses two principal means of monitoring American diets. The first method is through the Nationwide Food Consumption Survey conducted approximately every 10 years by the Department of Agriculture. The 1978 survey assessed the eating patterns of a sample of 40,000 people.

The second principal method of monitoring diets and nutrition is through the Health and Nutrition Evaluation Survey (HANES), conducted by HEW's National Center for Health Statistics with help from the Center for Disease Control. This survey provides diet history, and laboratory and clinical data on the health and nutrition status of a sample of 30,000 individuals.

There is no survey technique available by which to accurately determine what people eat. The most common survey technique--the dietary recall system--has built-in potential for error. Clinical and laboratory tests have problems too. Those presently in use are slow, cumbersome to administer in the field, and difficult to analyze.

Considering these and other problems, the most urgent research needs are as follows.

### **Survey Methods**

First, we need to develop faster and more accurate methods of collecting food consumption information. This will enable the Department of Agriculture and the Department of Health, Education, and Welfare to obtain information that will accurately portray changing dietary habits. It will also facilitate studies of certain high-risk groups that we need to know more about--especially the poor, infants, and the elderly.

We urgently need a coordinated system to measure trends in consumer food-buying patterns. We must change or improve old survey techniques, and give consideration to the possibilities of using new automatic checkout and perpetual inventory systems of commercial food establishments to provide continuous food consumption data.

## **Laboratory Methods**

There is need to develop more accurate and efficient clinical and laboratory methods for measuring and evaluating changes in nutritional health. Breakthroughs will depend upon basic physiological, biochemical, and genetic studies as well as on epidemiological research. Efforts to refine laboratory methods will be coordinated with HEW.

## **Surveillance and Monitoring Programs**

It is agreed that the Nation should have a surveillance and monitoring system which will attempt to evaluate the nutritional status of the population and the nutritional impact of changes in the food supply, Governmental programs, price changes, and other events. The development of such a system will require the coordination and/or consolidation and extension of current programs in USDA and HEW. Improvements in data-processing are necessary in order to yield reports within a reasonable period of time, and, as indicated above, substantial basic research in various methodologies is also required.

## **Question three: What factors shape people's eating habits?**

Efforts to formulate national nutritional policies or to design intervention programs, educational programs, or possible regulatory actions need to be based on knowledge of the factors affecting consumer food choices.

### **Factors Affecting Food Choices**

These factors include price, income, family size and composition, advertising and packaging, labeling, wholesale and retail marketing practices, convenience of preparation, education, health status, individual and family attitudes and lifestyles, and the taste, smell, and appearance properties of foods.

Emphasis should be placed on factors determining food consumption behavior and barriers to adequate diets in such vulnerable groups as pregnant women, infants, the elderly, low-income, as well as certain culturally defined population subgroups which may have poor dietary practices.

Research efforts should draw on findings from such diverse areas as anthropology, sociology, economics, market and communications research, general education research, and basic medical and food science studies on taste preferences.

**Question four: What happens to our food from its origin on the farm to our tables, and how does this affect the safety, quality, and nutritional value of our diets?**

We need basic information on the nutritional composition of food. Data are lacking on the amounts of important nutrients and the availability of these nutrients in various foods. Most of the current information is obsolete because of changes in varieties and processing methods, and in storage and transportation facilities. This information would be useful to guide food choices and design programs capable of encouraging people to change their eating habits.

Research on nutrient availability is needed to:

- Investigate the factors affecting the ability of people to utilize nutrients in specific foods, such as factors affecting the chemical form of the nutrient, its relationship to other nutrients, and the presence of inhibitors.
- Determine the social and economic feasibility--and nutrient possibilities--of new or improved food processes.

**Expand Federal Food Composition Measurement Capabilities --**Needed research includes:

- Studies on the nutrient content of foods and changes due to production, processing, and handling practices. Industry research has expanded because of food-labeling regulations, but it includes only limited groups of foods. Because of the multitude of commodities, processes, and practices, there is still a need to increase this research, and particularly to develop information that considers new processes and practices.
- Status of the Nation's food supply and changes over time. Special emphasis should be placed on the amounts of particular nutrients or contaminants in the total food supply which may constitute a public health hazard at certain levels.

In view of the complexity of our food supply and the rapid changes occurring in it, we need a coordinated Federal effort to ensure that adequate data are available as rapidly as possible and that important food groups are not ignored. Currently, food composition data are produced by HNC (Nutrient Composition Laboratory), Agricultural Research and the Cooperative Research, within the Department of Agriculture, and FDA (Market Basket Survey) and a variety of university and other research groups. Expansion of laboratory facilities and/or provision for contract services are needed.

**Improve Methods for Analysis of Foods --**If food composition analysis is to meet the challenge posed by our rapidly changing food supply and consumer demands for information on food composition, we need more rapid methods of analysis for certain food constituents; more precise and standardized methods for analyzing other food components; and eventual analysis methods which distinguish availability between different forms of a nutrient.

## **Update Food Composition Information in the National Nutrient Data Bank**

The National Nutrient Data Bank is intended to be the central repository for nutrient composition data providing detailed information on individual food products and aggregated data on classes of food products. These data are important for planning adequate diets and determining nutrient intakes and nutritional deficiencies of selected populations when used with food consumption data collected through surveys. The Consumer and Food Economics Institute of USDA operates the data bank.

## **Question five: How do Government intervention and nutrition education programs affect people's health, nutritional status, and performance?**

This is one of the most difficult questions to answer. Finding an answer is a problem facing persons responsible for Government food assistance programs, food fortification and enrichment activities, as well as nutrition education. Clearly we need to develop better methodologies for measuring program effectiveness.

• To be useful, research should measure not just nutritional changes but also the results such programs achieve in behavior changes, social and economic benefits, and public acceptability.

• The need for analysis, evaluation, and testing is particularly acute in nutrition information and education programs. Research is needed to assess and interpret dietary behavior, knowledge, and attitudes which interfere with health-promoting food consumption practices. We need to identify ways to reach, appeal to, and motivate the general public and groups with special needs to adopt or sustain good dietary practices. A more consistent flow of information among the nutrition research and education communities is needed to increase validity and reliability of concepts used in education and information.

Priority must be given to designing and carrying out studies of diet practices to determine which groups in our population are most vulnerable to poor food habits. We also need to evaluate alternative food intervention programs.

## **Question six: What are the nutritional effects of agricultural and other U.S. Governmental policies and regulatory programs?**

Currently, few studies are being done to assess the impact of Government policies on our nutritional health. We need to look not only at Government policies directly related to food production and distribution but also at those indirectly related to nutrition.

Specifically, we need research on the nutritional effects of Government activities in establishing and enforcing food grades and standards; packaging, labeling, and advertising requirements; and other measures to regulate marketing practices.

We need to know the nutritional impact of Government crop adjustment programs, of our international trade policies, and grain reserves.

We need to know how human nutrition is affected by food production strategies, agricultural research and extension programs, and rural credit services. Beyond these programs directly related to food, we need to look at the effects on nutrition of welfare and other income subsidies, income taxes, manpower policies, health, environmental health, and other general Government policies.

We must be particularly concerned about the effects of Government policies on those most vulnerable to malnutrition--the poor, the young, and the elderly.

### **Question seven: What are the special considerations we must take into account in helping to meet the dietary needs of people in other countries?**

Billions of people in this world suffer from malnutrition and hunger. The Nation's commitment to aid these people makes human nutrition research vitally important.

Our research should assist all countries, but especially those whose people face extreme hardship. Therefore, the design of these studies must take into account a range of circumstances that may differ widely from our own.

Such considerations should include:

- The dietary needs and food practices of other countries.
- Differing political and cultural systems.
- The impact of land reform in some areas.
- The effects of low protein, low-calorie interactions, and other nutritional deficiencies on the growth and development of children.
- High incidences of disease and stress conditions in many countries.
- Waste and inefficiencies in food production.
- The lack of worldwide data systems for food supplies and the lack of early warning of impending food shortages.
- The need for research methodology tailored to the people and circumstances of other countries.

### **CURRENT RESEARCH**

USDA nutrition research is a cooperative effort of the Department and State agricultural experiment stations, 1890 land-grant institutions, Tuskegee Institute, and other universities. A total of \$28.6 million was provided by Congress in fiscal year 1978 for this work. The cooperating universities provided approximately \$12 million from State and other sources.

The 1979 appropriation for nutrition research within USDA is \$39.8 million.

## The Human Nutrition Center

Primary responsibility within USDA for human nutrition research is assigned to the newly created Human Nutrition Center (HNC) of the Science and Education Administration (SEA). The Center, created pursuant to Section 1423 of the 1977 Food and Agriculture Act, consists of five laboratories and one institute with a \$22 million budget for fiscal year 1979.

The Center has direct management responsibility for nutrition research programs, which include food composition and improvement, human requirements for nutrients, and food consumption and use. The research includes the work of laboratories in Beltsville, Maryland; Grand Forks, North Dakota; Boston, Massachusetts; Houston, Texas; Hyattsville, Maryland; and the Consumer and Food Economics Institute. The Center is also responsible for all USDA extramural nutrition research in which human subjects are involved.

Finally, the Center has coordinating responsibility for all other human nutrition-related research and action programs within SEA, and between SEA and the Food and Nutrition Service and the Economics, Statistics, and Cooperatives Service.

The Center's current research focuses on questions 1, 2, and 4 of USDA's research priorities:

1. What do people need nutritionally for optimal growth, functional performance, and continued well-being?
2. What are people actually eating, and how do their eating habits affect their nutritional health?
4. What happens to our food from its origin on the farm to our tables and how do all the steps in between affect the safety, quality, and nutritional value of our diets?

Ongoing research includes investigation of the following.

**Nutrient Requirements** --Research on nutrient requirements for optimum human growth, functioning, and well-being is conducted in the HNC by laboratories concentrating on carbohydrate nutrition, lipid nutrition, protein nutrition, vitamin and mineral nutrition, and trace element nutrition. This research helps determine recommended dietary patterns assuring safe and satisfactory levels of nutrients.

This research also helps determine nutritional requirements, as well as the influence food has on the development of arteriosclerosis and other degenerative diseases. It may also identify people who must control their diets to avoid or delay health problems.

**Nutrient Composition** --Analysis of the nutrient composition of specific food products is conducted in the HNC by the Nutrient Composition Laboratory (NCL). For many years USDA has published the fundamental compendium of the nutrient content of foods: Agriculture Handbook Number 8, "Composition of Foods--Raw, Processed, and Prepared." An extensive revision of the last edition is underway, and three sections have already been published.

Up-to-date knowledge on nutritive composition is still limited. The Nutrient Composition Laboratory was created to expand this knowledge substantially. More data are needed on the nutrient content of processed foods and of food items served outside the home. We also need more information on nutrients such as zinc, copper, and chromium.

The lack of appropriate and reliable methodology for the assay of significant nutrients is a continuing problem. The NCL is developing improved methods for the extraction, identification, and measurement of nutrients in foods. The NCL will also continue to conduct initial analyses and verify the authenticity of industry analyses and nutritive labeling claims.

**Food Consumption and Use**--The Consumer and Food Economics Institute conducts the Nationwide Food Consumption Survey to assess the eating patterns of the Nation. The survey of 40,000 people is based on food intake over a 3-day period.

Data from the survey will be used to:

1. Determine shifts in domestic food consumption patterns and expenditures for foods associated with household incomes, size, sex-age composition, education, lifestyle, and eating patterns.
2. Determine changes in food consumption and expenditures in terms of individual food products, forms, convenience, new products, and market development.
3. Measure changes in food consumption away from home.
4. Provide measures of nutritional adequacy of diets of households participating in the Food Stamp Program.
5. Estimate effects on diets of fortifications in foods, additives, pesticides, and other residues.

## **Competitive Grants Program**

The Competitive Grants Program was established in the Department of Agriculture to implement Section 1414(b) of the Food and Agriculture Act of 1977 (P.L. 95-113). The program was implemented with a \$15 million appropriation to fund basic research in food crop production and human nutrition. The competitive grants are designed to complement ongoing research efforts by USDA and the traditional agricultural research community by drawing on research scientists throughout the country.

In 1978 and again in 1979, \$5 million was apportioned to human nutrition to fund research to establish nutrient requirements for normal humans of all age groups and to address the social and behavioral factors affecting food choices and food habits. These goals are raised in USDA research questions 1, 3, and 5:

- 1. What do people need nutritionally for optimal growth, functional performance, and continued well-being?
- 3. What factors shape people's eating habits?
- 5. How do Government intervention and nutrition education programs affect people's health, nutritional status, and performance?

Allocations among the various human nutrition topics for fiscal year 1979 were as follows:

<b>Behavior Aspects</b>	No. of grants: 9 Total awarded: \$1,020,000
<b>Food Nutrient Content</b>	No. of grants: 3 Total awarded: \$420,000
<b>Methodologies for Nutrient Studies</b>	No. of grants: 4 Total awarded: \$749,000
<b>Requested Studies of Specific Nutrients</b>	No. of grants: 19 Total awarded: \$2,626,000
<b>Miscellaneous</b>	No. of grants: 3 Total awarded: \$235,000

## **Cooperative Research**

The Cooperative Research staff of SEA administers funds for research to:

- State agricultural experiment stations. Funds are appropriated directly to States under the Hatch Act as amended in 1955. During fiscal year 1976 these funds made up 29 percent of the total spent by the experiment stations for human nutrition research. State and State-generated funds accounted for the remaining 71 percent.
- The 1890 land-grant schools and Tuskegee Institute. The 1977 Food and Agriculture Act put the funding of research programs at the 16 predominantly black 1890 land-grant colleges and Tuskegee Institute on substantially the same basis as they used to provide funds to the state agricultural experiment stations under the Hatch Act.

The regional cooperative research program, supported in part by Hatch funds, is a means of pursuing problems too large for one research group to attack. Cooperative Research personnel, State agricultural experiment station directors, human nutrition scientists, including those in other Federal agencies, develop and carry on the research.

The Agricultural Research Policy Advisory Committee's "1976-81 Cycle for Projecting and Analyzing Research Program Adjustments" (December 1977) reflects a clear recommendation that funding at these institutions be shifted to give increased emphasis to food and nutrition and food safety research.

Current research includes nutrient requirements and the nutritional status of special population groups, including children, low-income people, and the elderly; metabolic functions of nutrients in the diet and their interaction; effects of processing on nutrients; food delivery systems; dietary patterns; food preference and eating habits; and nutrition education.

Estimated budgetary figures for 1979 are:

Hatch Act	\$2,954,000
1890 Institutions	
& Tuskegee Inst.	2,866,000
Federal Admin.	<u>121,000</u>
	\$5,941,000

Hatch funds are matched with State funds. In 1976 approximately \$12 million of State and other funds, in addition to Federal dollars, were spent by universities on nutrition research.

## Food Safety and Quality

The Food Safety and Quality Service (FSQS) was established on March 14, 1977. Its major objectives are to ensure that the public receives foods that are safe, wholesome, nutritious, and appropriately labeled. The agency inspects, certifies, standardizes, and grades certain agricultural commodities.

FSQS regulatory responsibilities include:

1. Meat and poultry inspection authorized by the Wholesome Meat Act, Wholesome Poultry Products Act, Humane Slaughter Act, Federal-State Cooperative Act, and Talmadge Aiken Act.
2. Eggs and egg products inspection under the Egg Products Inspection Act.
3. Voluntary grading and certification programs for various foods authorized by the Agricultural Marketing Act of 1946.

Chemistry, pathology, and microbiology laboratories and multidisciplinary field laboratories perform analyses for toxic compounds, drug and pesticide residues, as well as microbiological analyses to spot unsanitary conditions and food-borne diseases.

Analysis of foods in FSQS laboratories includes an examination of nutrient components, such as protein quality, and the qualitative and quantitative identification of vitamins and minerals. Products with nutritional labeling, fortified foods, special diet items, labeling for percentage of ingredients, and combination foods require monitoring by the multidisciplinary laboratories to verify compliance with standards of identity and other laws. The Nutrient Composition Laboratory in the Human Nutrition Center assists FSQS in the development of new methods and technologies for analyzing food nutrients. The NCL also researches important questions that relate to the regulation of the food supply to ensure that the most nutritious foods actually reach the American public.

## Policy Research

Program priorities and implementation plans must start with basic demographic, social, and economic data on target populations. It must include "feedback" data on program effectiveness.

USDA primarily uses two methods to collect data for use in policy analysis and decisionmaking:

1. Assessment of the nutritional quality and adequacy of diets of the general public and nutritionally-at-risk groups.
2. Evaluation of Federal nutrition research, education, distribution, and regulatory programs in improving diets.

These data are collected by the Economics, Statistics, and Cooperatives Service (ESCS); the Food and Nutrition Service (FNS); and the Science and Education Administration (SEA); and published in the Nationwide Food Consumption Survey (NFCS).

## Monitoring and Surveillance: Nationwide Food Consumption Survey (NFCS)

The NFCS is the main Federal tool for collecting and maintaining data on the food intake of individuals and households. The 1977-78 NFCS, now in progress, will be the sixth in a series that began in 1935. The survey is based on a nationwide sampling of individuals and households and a supplemental sampling of elderly and low-income people. The primary objectives of the 1977-78 survey are to measure the nutritional quality of U.S. diets, changes occurring in diets since 1965-66 (the date of the most recent survey in the series), and factors related to these changes.

The data from the NFCS are used throughout Government and private industry to make projections of food consumption and demand. The NFCS provides baseline data for the development and analysis of food distribution and regulatory programs administered by USDA, including measures of the nutritional adequacy

of diets of households participating in food stamps and other food assistance programs.

The first results of the 1977-78 survey should be released in May 1979.

### **Economics, Statistics, and Cooperatives Service**

The Economics, Statistics, and Cooperatives Service (ESCS) was established by consolidation of the Economic Research Service, Statistical Reporting Service, Farmer Cooperative Service, and the Economic Management Support Center.

The three major missions of the agency are to formulate, develop, and administer (1) economic research, analysis, and information programs related to food, agriculture, and rural resources and communities; (2) programs collecting and publishing statistics related to food, agriculture, and rural resources and communities; and (3) technical assistance programs evaluating agriculturally related cooperatives.

Research on factors affecting food choices is aimed at improving understanding of the role of prices, income, family size and composition, advertising, and lifestyle on consumer behavior in the food market. The research provides a foundation for policy analyses and evaluations of Federal programs in nutrition education, food distribution and public assistance, and food safety and quality. In addition, the research improves understanding of the nutrition consequences of Federal agricultural production, marketing, and income stabilization programs.

Results of these studies are reported in:

- Publications containing food situation and outlook data.
- Reports of a Total Food Expenditure (TFE) series.
- Reports containing forecasting models of retail food prices for estimation of the Consumer Price Index.

Nutrition program analysis is also conducted by the Food and Nutrition Service on the school lunch, school breakfast, food stamp, and supplemental food programs.

### **Program Evaluation:Food and Nutrition Service**

The Office of Policy, Planning, and Evaluation (OPPE) was recently created in FNS to coordinate all studies and evaluation projects of FNS divisions and staffs and other USDA organizations.

The Food Stamp Program is the largest food program administered by the Department, with an appropriation of \$5,779,200,000 in fiscal year 1979. FNS conducts analyses of participation, food expenditures by participants, and the effect of changes in the program on both participation and costs. The purpose is to assess the relationship between food stamp benefits and food expenditures, and ultimately the nutritional impact of the program. The first of a series of annual evaluations of the Food Stamp Program will be based on these data plus information from the 1977-78 Nationwide Food Consumption Survey and other studies of low-income populations.

The child nutrition programs, including the school lunch, school breakfast, summer, and child care food programs, represent about \$2.9 billion of the Department's annual budget. Studies in progress evaluate factors influencing consumption, participation, and acceptance of the programs by students, parents, and faculty; and the nutritional implications of varying these factors. Studies will include variations in preparation methods (onsite versus pre-portioned, delivered meals); changes in the meal pattern requirement to reflect the 1974 Recommended Dietary Allowances; changes in portion sizes allowed; changes in types of milk offered to include skim milk, low-fat milk, and buttermilk; changes in specifications for meal pattern components; and models for involvement of students, parents, and faculty in meal-planning and other food service decisions.

FNS is working in collaboration with the Center for Disease Control of HEW to determine how to assess the health benefits of the WIC program.

A study also is being conducted to examine practices and factors influencing rates of breast-feeding among low-income women. The study will assess whether the WIC program is in any way a deterrent to breast-feeding. Finally, breast-feeding practices, the potential for inclusion of indigenous foods in the WIC food package, the nutritional status and dietary intakes of the target population, and the incidence and associated causes of diarrhea are being studied to assess the impact of implementing a WIC program in the northern Mariana Islands.

# NUTRITION INFORMATION AND EDUCATION

The purpose of nutrition education and information programs is to communicate research-derived nutrition concepts and dietary guidance to consumers to help them make informed food choices and to maintain diets which promote good health.

Nutrition information and education by USDA takes the form of:

1. Information for the general public distributed through print and electronic media.
2. Communications to scientists and professionals through publications, training programs, and scientific conferences.
3. Community education programs for groups with special needs.
4. Formal education programs in elementary and secondary schools for teachers, parents, food service workers, and children.
5. Technical guidance for food procurement, distribution, and regulatory programs.

These educational and information efforts will exceed \$110 million in fiscal year 1979.

## PUBLIC INFORMATION

SEA's Extension staff, the Human Nutrition Center, and the Office of Governmental and Public Affairs produce the majority of Federal nutrition information materials for the general public and technical audiences. Circulation of these materials has mounted in recent years as consumer interest in nutrition and controversies over dietary goals have grown.

In response to the dissatisfaction of Congress and the public, GPA and the Human Nutrition Center plan to diversify and improve the Department's public information approaches in an attempt to reach a greater number of consumers. GPA is currently preparing a group of reports that will be published under the major title of FOOD. The first of these will be released later this year. It will use a full-color magazine format and brief, popular treatments of such topics as healthy snacks and breakfasts; and it will give guidelines for modifying the calorie, fat, sugar, and salt content of diets.

HNC and GPA will cooperate in developing nutrition fact sheets and in issuing briefs for distribution to radio, television, and the press. The cost and effectiveness of alternative distribution channels such as the Government Printing Office, the Consumer Information Center, the State Cooperative Extension Services, and Sunday newspaper supplements will be explored.

## **Office of Governmental and Public Affairs**

The Office of Governmental and Public Affairs oversees and coordinates the development and dissemination of publications, television materials, posters, and other information materials.

According to a 1978 GAO Report, "Informing the Public About Nutrition: Federal Agencies Should Do Better," (CED 78-75, March 22, 1978), USDA produces a total of 313 different nutrition information materials for distribution to the general public, professionals, and food assistance program recipients.

### **Nutrition Materials Disseminated by USDA<sup>1</sup>**

<u>Agency</u>	<u>No. of materials disseminated</u>	<u>Predominant central themes of materials</u>	<u>Primary intended audience(s)</u>
FNS	18	Basic nutrition, food selection, food service mgmt., food buying, food preparation	Food assistance program participants
SEA-HNC	102	Food composition, food preparation, research on food practices, food selection, food preservation	Professionals, general public
GPA	20	Consumer inform., basic nutrition, food buying, food preservation	General public
FSQS	61	Food buying, food safety	General public
SEA-Ext.	112	Basic nutrition, food selection, food preparation, Federal program information	General public, professionals

<sup>1/</sup> GAO report, Informing the Public About Nutrition, 1978, page 3

Governmental and Public Affairs is currently conducting a survey of food and nutrition information materials. The inventory will provide a complete listing of all materials currently distributed by the Department, the cost of production and distribution, the age and size of the target audience, the percentage of the target audience reached, and any evaluation of the impact of the materials. The Department is working closely with the Department of Health, Education, and Welfare to develop an inventory system which will be compatible to the two Departments.

Governmental and Public Affairs also sponsors a half-hour weekly television program with NBC which reaches 2 million viewers and includes nutrition topics.

## **Food Safety and Quality Service**

The Food Safety and Quality Service distributes pamphlets and leaflets explaining precautions to take in keeping food safe to eat and explaining the various grades of food available to consumers, secondary and adult education schools, and universities; national, regional, and State associations of home economists, dietitians, consumer educators; public health workers; and to the press, radio and television.

For educators and other multipliers of information, a consumer education package is offered consisting of lesson aids, posters, reproducible one-page flyers, leaflets and pamphlets, films, and slide sets. These materials are available in Spanish as well as English, and are offered at bilingual education meetings and exhibits and through the Spanish press and radio.

In addition to these materials, FSQS offers fact sheets on current proposals and actions of the agency dealing with food safety and food grading, and distributes them to a mailing list of consumer organizations, activists, the press, and the general public.

To provide direct price comparison and nutritional value information to consumers at the point of purchase, FSQS requires that meat and poultry products be informatively and truthfully labeled, and that labels be submitted for approval before they are used. Meat and poultry product labels currently must show the product name as defined in a standard, or a common or usual name; the ingredients, listed in order of predominance; the net weight; the USDA inspection mark; and the name and address of the manufacturer, packer, or distributor.

In addition, FSQS requires that photographs or drawings on meat and poultry product labels accurately represent the contents. Although not required, open dating and nutrition information, if used, must be clear and not misleading.

FSQS is currently re-examining its labeling authorities and policies in light of extensive hearings it held with the Food and Drug Administration and the Federal Trade Commission during the fall of 1978. The aim of the project is to ensure that all food labeling is clear, understandable, and provides consumers with the most information at the least additional cost.

## **NUTRITION EDUCATION Science and Education Administration Cooperative Extension, Food and Nutrition Unit**

For the past 60 years, the Science and Education Administration and its predecessor agencies and the Cooperative Extension Services of each of the States have cooperatively conducted a general food and nutrition education program. Through a unique partnership of local, State, and National Government, Cooperative Extension Services diffuse information directly to the people.

Roughly 22.6 percent of Cooperative Extension's total professional staff time is used for home economics programs. More than 3,600 home economists and 135 nutrition specialists, assisted by more than 600,000 volunteers, conduct nutrition education programs to help families identify their nutritional needs, improve food choices, and utilize and conserve resources to improve nutrition.

The goal of the Cooperative Extension's food and nutrition programs is to improve the health and nutritional status of individuals and families. Major objectives of the program are to improve diets; to help consumers cope with inflation; to encourage safe food handling, preparation, and preservation; and to improve food-purchasing practices.

Target audiences for this help are families with young children, low-income families, the elderly, and youth. Cooperative Extension educators use the entire range of information methods: mass media, group meetings, personal contacts, shopping mall programs, correspondence courses, computer-assisted programs, exhibits, and newsletters.

### **Expanded Food and Nutrition Education Program (EFNEP)**

The Federal Government's major nutrition education program for which funds are budgeted is the Expanded Food and Nutrition Education Program (EFNEP). It is administered by the Science and Education Administration at an annual appropriation level of approximately \$30 million and carried out by the Cooperative Extension Services of the States.

EFNEP employs paraprofessionals, trained and supervised by professional nutritionists, to teach low-income families improved dietary practices on an individual basis or in small cluster groups.

More than 1.5 million low-income families, representing 6 million family members, have been enrolled in this indepth food and nutrition education program since 1969. Emphasis is on enrolling homemakers with young children in the program. Currently, 5,673 program aides, trained and supervised by home economists, are employed to reach families in about half of all U.S. counties. Families are taught to improve their diets through increased knowledge of the essentials of nutrition; increased ability to select and buy food; increased ability to prepare and serve balanced meals; improved practices in food storage and sanitation; increased ability to manage resources, which include gardens and food stamps.

Approximately 449,000 families were enrolled in the program last year. Seventy-three percent of the program families have annual incomes less than \$5,000. The average family size is 3.9 persons. Minorities account for 61 percent of participation. Thirty-nine percent of the participating families have an eighth grade education or less.

Section 11(f) of the food stamp title in the 1977 farm bill directs EFNEP to increase its outreach to food stamp families. A proposed program to achieve this goal has been reviewed with representatives from the State Cooperative Extension Services. Communications with the State Cooperative Extension Services regarding this plan are in progress.

EFNEP is operated under a set of "policy guidelines" developed in conjunction with a special EFNEP task force appointed by the Extension Committee on Organization and Policy (ECOP).

### Youth EFNEP

Operated on principles similar to those of adult EFNEP, 4-H EFNEP reaches over 800,000 youths, primarily from low-income urban areas. More than half of these youths come from minority groups. Participation in 4-H EFNEP has remained fairly stable over the past several years. Since the program began in 1970, approximately 3,500,000 youths have participated.

As a result of this program, youths are learning good nutrition practices, how to improve their diets, and how to make the best use of foods available to them. In addition, youth activities in 4-H EFNEP encourage parental involvement and contribute to the personal development of disadvantaged youths.

Volunteers and program aides, many of them from low-income, minority groups, have been the key to much of the success of this program. Last year 60,526 volunteers worked with youths in 4-H EFNEP.

### Food and Nutrition Service

The food assistance programs administered by the Food and Nutrition Service provide nutrition education to school children, pregnant women, low-income families, and others.

Under Section 6(a) (3) of the National School Lunch Act, up to 1 percent of the funds for the child nutrition program have been used for nutritional training and for studies and surveys of the child nutrition programs.

Section 19 of the Child Nutrition Act authorizes a grant program for nutrition education and training. States received funds in fiscal year 1978 based on a formula of 50 cents per child enrolled in schools and institutions, with no State receiving less than \$75,000 annually. Funds for fiscal year 1979 are based on the same formula used in fiscal year 1978.

The grant program provides for (1) nutrition training of education and food service personnel, (2) food service management training of food service personnel, and (3) nutrition education activities in schools and child care institutions. The goal of this program is to provide children with learning activities which will increase their understanding of the relationship of nutrition to health, and help them to develop practices fundamental to their health and well-being throughout life.

FNS administers this program in nonprofit private schools or institutions where the State agency is prohibited from administering it. As of September 30, 1978, 46 State plans and 1 regional office plan had been approved. The State agencies received \$24.8 million of the \$26.2 million available for fiscal year 1978.

Section 18 of the Child Nutrition Act authorizes grants to State educational agencies. Grants were made to three State educational agencies--in Arizona, Minnesota, and Tennessee. These projects offer innovative approaches that integrate nutrition education into child nutrition programs and inform children about the nutritional value of foods; the relationship of nutrition to growth, development, and health; and other considerations necessary for individuals to make wise food choices.

In fiscal year 1978 and again in fiscal year 1979, \$1 million was appropriated for demonstration projects in nutrition education under section 18. The Department's nutrition education activities in the food stamp, WIC, and child nutrition programs will be coordinated in a pilot project that will be supplemented by nutrition information efforts involving supermarkets, senior citizen organizations, employee health programs, unions, health professionals, consumer groups, and community groups serving low-income people. This approach should ensure that media messages and nutrition information activities reinforce each other, thereby extending and strengthening the reach of nutrition messages.

The WIC program specifically includes a nutrition education component. State agencies that administer the WIC program locally are mandated to provide a nutrition education program to all pregnant, postpartum, and breast-feeding mothers and to all parents or caretakers of infants and children who are in the program.

Not less than one-sixth of the funds expended by each State for administrative costs must be spent for nutrition education. In fiscal year 1977, States spent an average of 14.5 percent of USDA/WIC administrative funds on nutrition education.

States are required to develop plans for nutrition education which must include a description of the program, materials to be developed (including bilingual materials), and an evaluation component. General focus of the program will include the relationship of diet to health; current consumer and nutritional issues, such as the importance of copper, fiber, folate, and zinc in pregnancy and the role of fat, sugar, and salt in the diet; and the benefits of consuming a variety of foods, including those provided in the program.

# **DISSEMINATION TO SCIENTIFIC AND PROFESSIONAL COMMUNITIES**

## **Publications**

Nutrition research findings are communicated to the scientific and professional community through technical publications and articles, exhibits and personal contacts at professional meetings and seminars, and correspondence.

Published materials on nutrition are listed in SEA's Technical Information Systems (TIS), headquartered at the National Agricultural Library (NAL). Nutrition research findings are also reported in a periodical entitled Nutrition Program News, prepared by the Consumer and Food Economics Institute and available to the public on request. ESCS researchers publish food consumption and nutrition-related research results and monitoring via a wide array of agency reports, professional journal articles, and special articles. Publications report on a number of nutrition and food policy issues, as well as regular food situation and outlook data. The National Food Review contains excerpts from the research and listings of new publications.

## **National Agricultural Library**

The Food and Nutrition Information and Education Resources Center at the National Agricultural Library is open for use by the public, educators, dietitians, nutritionists, and Cooperative Extension personnel. The Center provides lending and reference services and computer on-line retrieval of information.

The 1977 Food and Agriculture Act expanded the Center's mandate directing it to:

1. Assemble and collect food and nutrition education materials, including the results of nutrition research, training methods, procedures, and other materials related to the purpose of this title.
2. Maintain information and materials in a library.
3. Provide for the dissemination of such information and materials on a regular basis to State educational agencies and other interested persons.

## **Food Service Personnel Training**

In addition to food costs, one of the major determinants of meal quality in the child nutrition programs is the level of skill and training of food service personnel. To meet the needs of this group, a pilot project has been initiated using Extension home economists to train food service managers in the principles of menu planning and quantity food preparation. An evaluation of this project will focus on changes in menu planning, use of donated food, levels of plate waste, and student participation.

## **USDA COORDINATION**

The Human Nutrition Policy Committee within the Department of Agriculture was created in 1978 to coordinate the Department's responsibilities and activities in human nutrition research, education, food assistance programs, and in food safety and quality assurance.

The committee is composed of the Assistant Secretary for Conservation, Research, and Education; the Assistant Secretary for Food and Consumer Services; and administrators of the various Departmental agencies with responsibilities which directly impact nutritional status of the population.

The functions of the committee are to assure close coordination between research activities and the nutritional aspects of other programs in the Department; appraise nutritional implications of current Department policies and programs; identify appropriate program needs; to recommend to the Secretary, through the Program and Budget Review Board, appropriate nutrition policies and programs, and to maintain liaison with other Government agencies or departments concerned with human nutrition, nutrition education, research, or related programs in human nutrition.

The committee is staffed by a nutrition policy coordinator who works closely with the two assistant secretaries and administrators on the committee.

# **INTERDEPARTMENTAL COORDINATION**

## **USDA-FEDERAL COORDINATING COUNCIL ON SCIENCE, ENGINEERING, AND TECHNOLOGY**

The Federal Coordinating Council on Science, Engineering, and Technology (FCCSET), chaired by the Director of the Office of Science and Technology Policy, is the principal coordinating and planning mechanism for research among Federal departments and agencies.

The Food and Agriculture Act of 1977, Section 1406, amends the National Science and Technology Policy, Organization, and Priorities Act of 1976 (90 Stat. 471; 42 U.S.C. 6651(h)) by creating a standing subcommittee to be known as the Subcommittee on Food and Renewable Resources.

In recognition of the need for coordination, the Committee on Health and Medicine and the Committee on Food and Renewable Resources are establishing a joint subcommittee on human nutrition research. The purpose of this subcommittee will be to increase the overall effectiveness and productivity of Federal research efforts in human nutrition.

The Assistant Secretary for Conservation, Research, and Education is the USDA representative to FCCSET.

## **USDA-COMMUNITY SERVICES ADMINISTRATION**

In an effort to meet the nutritional needs of special populations, FNS has initiated a migrant demonstration project to reach migrant farmworker families enrolled in the WIC program as they travel from location to location.

The project will evaluate the effectiveness of alternative administrative procedures in promoting continuity of benefits, reducing barriers to participation, and ensuring provision of food and nutrition education services to migrant families within a selected region.

The \$2.5 million project, conducted with the Community Services Administration, focuses on a core of contiguous States in the midcontinent stream (Texas, Kansas, Nebraska, Missouri, Illinois, Indiana, Ohio, Michigan, Wisconsin, Iowa, Minnesota, Colorado, and North Dakota). Approximately 148 counties within these States are included in the project.

## **USDA-U.S. DEPARTMENT OF DEFENSE**

The Congressional Record from the House, October 11, 1978, and a report from the House Committee on Government Operations entitled "Military Health and Research," September 29, 1978, recommended that at the end of fiscal year 1979 the human nutrition research facilities of the Department of Defense (DOD) at Letterman Army Institute of Research (LAIR) be transferred to USDA. This would represent the transfer of all or part of a research facility

valued at over \$50 million to USDA. The conferees' report specifically recommends the transfer of the nutrition research program from DOD to USDA.

Staffs of the Human Nutrition Center, the Secretary's Office (Nutrition Policy Coordinator), and the Office of the Deputy Chief of Staff for Research, Development, and Acquisition of the U.S. Army, have completed a feasibility study of such a transfer.

## **USDA-U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT**

USDA participates in an interdepartmental committee established to develop, review, and ensure implementation of U.S. policies on development assistance and related matters. The Development Coordination Committee, chaired by the Administrator of the U.S. Agency for International Development (USAID), has a series of subcommittees which concentrate on various aspects of the aid programs.

USDA participates in subcommittees concerned with bilateral aid loans and grants, multilateral aid, food aid, human rights and foreign assistance, and legislative strategy.

## **USDA-NATIONAL SCIENCE FOUNDATION**

In 1979 the National Science Foundation (NSF) initiated a research grants program in human nutrition. USDA participates in the grants review process to ensure that overlap does not occur with USDA's own competitive grants research program.

USDA will also participate with NSF in a collaborative series of workshops devoted to exploring research strategies in nutrition education, methodologies for measuring dietary intake in epidemiological studies, and the collection of baseline data on the content of key nutrients in tissues.

## **USDA-U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE**

Section 1405 of the 1977 Food and Agriculture Act, which designates USDA as the lead agency of the Federal Government for human nutrition research, requires the Secretary to:

"establish jointly with the Secretary of the Department of Health, Education, and Welfare, procedures for coordination with respect to nutrition research in areas of mutual interest."

An informal coordinating group was established in 1978 to permit the two Departments to share information, jointly plan and undertake cooperative research, eliminate gaps and overlaps in program responsibilities, and facilitate integration and collaboration in program services delivered.

In an effort to formalize this USDA-HEW cooperation, the two Departments are reconsidering their representation to the coordinating group. Currently USDA is represented by two assistant secretaries, the administrator of the Human Nutrition Center, and the nutrition policy coordinator from the Office of the Secretary. HEW is represented by the nutrition research director at the National Institutes of Health, the Commissioner of the Food and Drug Administration, and a nutrition coordinator from the Office of the Assistant Secretary for Health. Following designation of appropriate representation, a memorandum of understanding will be developed between the two Departments to formalize their joint efforts.

Notwithstanding the lack of an overall formalized cooperative agreement, USDA has entered into numerous joint activities with HEW on both a formal and informal basis. USDA has invited HEW to participate in planning and policy decisionmaking for the Special Supplemental Food Program for Women, Infants, and Children (WIC).

- The Office of Maternal and Child Health, the Center for Disease Control, and the Public Health Service are represented on the Advisory Committee on Nutrition Evaluation, which was established by Public Law 94-105 to determine how health benefits of the WIC program may best be assessed and evaluated.
- The Office of Maternal and Child Health and the Office of Assistant Secretary for Health are represented on the Advisory Council on Maternal, Fetal, and Infant Nutrition.

HEW is also represented on the National Advisory Council on Child Nutrition, which advises the Department on the school lunch, school breakfast, and other child nutrition programs.

To ensure interdepartmental consistency in research goals and continued coordination, USDA also invited HEW to participate in planning research priorities, and designing research activities at its two new laboratories. Formal agreements have been reached to include HEW's National Institutes on Aging in the development of research at the Tufts center and to involve its National Institutes of Child Health and Human Development in the Baylor research program. USDA has invited these representatives to participate in all stages of planning and development of the research program priorities and implementation plans at these sites.

The informal coordinating group has two subcommittees which are working toward mutual goals. A nutritional guidelines committee composed of three nutritional scientists from each Department is examining the potential for the joint issuance of a dietary guide to be used as a basis for program planning and consumer education programs.

USDA and HEW have joined in an effort to inventory nutrition education and information materials available from each Department. An attempt is being made to define a uniform reporting base for collecting these data. The goal is to avoid duplication and to allow each Department access to materials produced by the other. Further, the inventory will improve the referral of consumers to sources of requested materials.

USDA and HEW have joined in two program evaluation efforts. As an adjunct to an HEW-funded study on family day care, USDA is conducting a study comparing food service (quantity, quality, and costs) in family day-care homes participating in the Child Care Food Program to food service in nonparticipating homes. This study will also provide information on some of the deterrents to participation in the program and offer suggestions for increasing participation.

USDA has contracted with the Center for Disease Control (CDC) to develop a system of continuous data collection for estimating the nutritional status of WIC program participants. These data are compared to similar data for infants and children not participating in the WIC program. In the past, such comparisons have shown positive nutritional benefits for infants and children participating in WIC. A major obstacle to evaluative efforts in the WIC program is obtaining accurate measurements of nutritional status. USDA has entered into an interagency agreement for collaborative efforts with CDC to evaluate the adequacy of commercially available equipment used to measure nutritional status and to determine the most appropriate equipment to be used in programs such as WIC. Through another interagency agreement, CDC is developing and testing methods of quality control of measurements and a training package for improving, weighing, and measuring techniques.

Section 1428 of the 1977 Food and Agriculture Act required the Secretaries of USDA and HEW to formulate and submit to Congress a proposal for a comprehensive nutritional status monitoring system. A joint report submitted to Congress on March 6, 1978, suggested numerous areas for cooperative efforts. Committees within each of the two Departments are working to integrate and coordinate the Health and Nutrition Evaluation Survey (HANES) and Nationwide Food Consumption Survey (NFC'S) studies. A final report outlining the joint nutritional status monitoring system should be announced by mid-summer 1979.

## **PUBLIC PARTICIPATION**

In addition to ensuring that relevant issues are addressed fully and analytically, the Department encourages input on these issues from the widest possible representation of affected interests. Public participation helps the Department to identify and understand potential policy conflicts and to arrive at a satisfactory resolution within the given legislative framework.

Three advisory boards created recently will provide this public participation component to Department decisionmaking processes.

### **Joint Council on Food and Agricultural Science**

The Joint Council, established by the Food and Agriculture Act of 1977, is responsible for fostering coordination of the agricultural research, Extension, and teaching activities of the Federal Government, the States, colleges and universities, and other public and private institutions and persons involved in the food and agricultural sciences.

It provides a forum for the interchange of information and for the analysis and evaluation of the economic, environmental, and social impacts of agricultural research, Extension, and teaching programs conducted by USDA.

### **National Agricultural Research and Extension Users Advisory Board**

The National Agricultural Research and Extension Users Advisory Board, also created by the Food and Agriculture Act of 1977, has general responsibility for preparing independent advisory opinions on the food and agricultural sciences.

It has specific responsibilities for reviewing policies, plans, and goals of USDA programs and consulting with the Secretary on national policies, priorities, and strategies for agricultural research and extension programs.

### **Human Nutrition Advisory Committee**

The Department has received approval to establish an advisory board composed of representatives of those who are affected by Department food and nutrition policies. Representatives will be drawn from consumers; recipients of program benefits; agricultural industry; State and local program personnel, educators, scientists; and HEW.

The board will assist in identifying priority nutrition problems, review USDA programs and policies in relation to those priorities, and recommend policies and programs which are needed to best meet the nutritional needs of the public.

## **FUTURE OBJECTIVES AND THEIR IMPLEMENTATION**

Reorganization within USDA over the past 2 years has raised consumer and nutrition issues and concerns to equal status with farm productivity and agricultural economic goals of the Department. The creation of the Human Nutrition Center within the recently reorganized Science and Education Administration also marks a new commitment to human nutrition issues.

USDA policies and programs over the next several years will focus on INTEGRATION and COORDINATION. The new organizational structure will allow the Department to integrate hard scientific data with social and economic implications of alternative applications of these findings. Further, it will facilitate the monitoring of food consumption patterns and practices for comparison with changes in food production and price. Finally, it will stimulate the coordination of research, education, and food assistance programs with evaluation feedback on the effectiveness of these services and programs in meeting nutrition goals.

The Human Nutrition Policy Committee is the major instrument through which to integrate and coordinate policies to ensure efficient and effective use of limited Departmental resources. The committee meets regularly to address issues which have implications for more than one agency.

## FUTURE RESEARCH OBJECTIVES

The Human Nutrition Center of SEA, organized in 1978, is mandated to conduct research to determine human nutrient needs; to study the composition of foods and the effects of agricultural practices, handling, food processing, and cooking on the nutrients they contain; to conduct the surveillance of the nutritional benefits provided to participants in the food programs administered by the Department; to study factors affecting food preference and eating habits; and to develop techniques and equipment to assist consumers in the home or institutions in selecting food that supplies a nutritionally adequate diet.

The results of this research will need to be translated into usable terms for application to our food assistance delivery programs, our nutrition information and education programs, and our food production policies.

Major breakthroughs in knowledge can result from an expanded nationally coordinated human nutrition research program. The Human Nutrition Research Center will begin coordinating research goals with goals of applied nutrition programs within the Department. As mandated by the Food and Agriculture Act of 1977, the Department will also take lead responsibility in coordinating research goals and implementation with those of other agencies and departments of government which have responsibilities for food and nutrition research.

Objectives for human nutrition research at USDA follow.

## **Research Objectives of the Human Nutrition Center**

**Objective 1:** Increase Knowledge of Human Requirements for Nutrients Necessary for Optimal Growth and Well-Being--Dietary guidance for individuals and families is hindered by inadequate knowledge of the nutrient needs of persons in different stages of life and of the consequences of inadequate or excessive levels of intake. This information is needed as a basis for policy decisions in USDA's feeding programs for groups believed to be at nutritional risk. Research is also needed to establish the extent of biological variability in nutrient needs of individuals of different ages, sex, and genetic background.

The Human Nutrition Center will emphasize studies:

- (a) On aging populations to determine the influence of nutrient intake levels on incidence of osteoporosis and anemias and on immunological response.
- (b) On infant and child populations to determine nutrient needs for optimal prenatal and postnatal growth and development, and to investigate the role of varied nutrient intakes on the lactation process and the quality of human milk.
- (c) On general populations to evaluate degenerative and disease potential at various levels of intakes of dietary fats, sugars, and fiber.
- (d) On general populations to determine the biological function of, requirements for, and interrelationship between, essential nutrients, especially the trace minerals.

**Objective 2:** Determine the Nutrient Composition of Foods and the Effects of Agricultural Practices, Handling, Food Processing, and Cooking on the Nutrients They Contain--Nutritional needs must be translated into foods or food patterns that can best meet these needs. Up-to-date information is needed on the nutrient composition of fresh and processed foods and on the newer fabricated and manufactured food products. New methodologies will be explored for determining and measuring food composition.

**Objective 3:** Improve Nutritional Status Monitoring--Simpler and more reliable methods are needed for assessing nutritional status of population groups to identify groups at high nutritional risk and to monitor changes in the nutritional status of the population at large. In the near future, the Human Nutrition Center will consider the feasibility of developing a new Federal research laboratory devoted to the development of sophisticated techniques to ascertain nutritional status.

**Objective 4: Increase Knowledge of Factors Affecting Food Preferences and Food Habits**--The purpose of nutrition education is to help people improve their nutrition and health through diet selection. We need to know more about the factors which influence food practices, preferences, or choice, and what motivates people to change. Research techniques of psychology, sociology, anthropology, consumer research, and education need to be applied to the study of human behavior with regard to food.

The Human Nutrition Center will expand research activity in the sociological and behavioral aspects of nutrition. It will begin needed research in education and motivation techniques for application to nutrition education delivery programs such as the Department's Extension and child nutrition education programs.

**Objective 5: Improve Techniques and Equipment to Guide Consumers in Selection of Food and Nutritionally Adequate Diets in the Home or in Institutions**--Knowledge of food management procedures and methods of preparing foods for the table to assure retention of nutritional quality and palatability and avoid foodborne illness is needed by consumers and by food service workers in institutions and commercial food sale operations.

Funding of research programs directed by the Human Nutrition Center will total approximately \$26 million in fiscal year 1980. Approximately \$8 million of this amount will be directed to fund extramural mission-oriented research at universities and institutions throughout the country.

The expansion of the Competitive Grants Program will also contribute to the coordination and integration of research. This program adds a flexible new dimension to the Department's research capacity by offering an opportunity to scientists outside the land-grant university system to contribute to the Department's research efforts.

## New Facilities

Section 1424 of Public Law 95-113 requested an assessment of the potential for establishing regional food and nutrition research centers. This section is related to section 1462, which requests a comprehensive study of all agricultural research facilities.

The study required by section 1462 will establish policies and criteria to evaluate the status and future needs for all agricultural research facilities. Of those criteria being considered, the following have relevance to human nutrition research centers.

As a general policy, planning and budgeting for facilities should be an integral part of the total program plan of the agricultural research system. Funding needs should represent the aggregation of all facility needs for specific programs of the system.

The two major criteria guiding decisions on facility needs are first, specific research program requirements and second, implementation policies. In order to expand research capacity, high priority must be given to the development of new or modified facilities.

Implementation criteria directly related to nutrition research facility needs include the following

1. Research should be conducted at widely dispersed locations when:
  - a. elements of the environment, such as soils, climate, pests, etc., vary significantly.
  - b. population groups vary significantly in income, ethnic or racial heredity, cultural practices, etc.
2. Research should be conducted at regional or national centers when:
  - a. integrated, multidisciplinary research teams are needed to address a complex problem and the expense of assembling such teams at dispersed locations would be prohibitive.
  - b. the research issue is one which lends itself to a concentrated, centralized analysis.

Feasibility studies (authorized by section 1424) conducted under these criteria conclude that centralized research centers are most appropriate for the conduct of investigations on the nutritional needs of the elderly and children and for the development of new methodology for nutrition status monitoring. Therefore, long-range human nutrition research goals include initiation of two new facilities to address these research areas, with consideration of the possibility of a third facility.

Feasibility studies have been completed for the development of additional human nutrition research programs at Tufts University in Boston, Massachusetts, and at Baylor University School of Medicine in Houston, Texas.

In fiscal year 1979, Congress appropriated \$21 million for construction of the facility at Tufts and preparations are underway. The President's 1980 budget contains \$2.0 million to initiate research on aging in existing facilities at Tufts.

Research at Tufts will focus on the nutritional needs of the elderly. Investigations will be made of diet and nutritional status and how they influence the onset and course of aging in experimental animals and in people; diet, alone and with other factors, and the manner in which they can delay or prevent the onset of the degenerative diseases associated with the aging; and the ways in which an optimal diet, in combination with other factors, may contribute to health and vigor.

Research at Baylor will be initiated in existing facilities at Baylor Medical School and Texas Children's Hospital, with a 1979 commitment of \$1.5 million for staffing and support.

The Baylor program will determine nutrient requirements during lactation and weaning, including specific investigations of potassium, sodium, and calcium, and the effect of calorie intake on protein requirements. It will also determine nutrient needs of infants, including the effects of growth on body composition.

In an effort to make research findings immediately available to existing programs, Baylor will conduct epidemiologic and demographic studies of the nutritional status and diet of infants and children in the Special Supplemental Food Program for Women, Infants, and Children (WIC).

A study is currently underway to determine the feasibility of adding a third facility in the western region. This study, recommended by the House Conference Report No. 95-1579, 1978, page 10, must specifically address the feasibility of using Letterman Army Hospital at the Presidio in San Francisco, California, in connection with a university as the facility site. The report was completed in March of 1979.

## **FSQS Research Objectives**

Over the past several decades the public has become increasingly dependent upon foods processed outside the home. Few American families today butcher their own beef or poultry. Because the public wants reassurance that it can trust the safety and quality of its food supply, SEA will investigate for FSQS alternative methodologies for evaluating food safety and quality as follows

### **Objective 1: Reduce the incidence of contamination of meat and poultry with chemical residues.**

Research is needed to improve the methodology and to upgrade laboratory capability of discovering unknown or unidentified chemical residues.

### **Objective 2: Reduce transmission of animal diseases to man by development of improved methods for detecting zoonosis.**

The development of a rapid, simple, mass screening test is needed to improve detection of salmonella.

### **Objective 3: Reduce microbial contamination of meat and poultry.**

Microbiological guidelines and standards need to be established for use as indices or product quality and wholesomeness.

## **Monitoring and Surveillance**

These activities, now under the supervision of the Human Nutrition Center, will focus in the future on acceleration of data dissemination and improvement of analytical capacities to monitor changes in food supplies, food choices, preferences or habits, and changes in food prices and market availability.

**Objective 1:** Improve USDA's data collection on nutritional status, and improve arrangements for data sharing among USDA, HEW, and other agencies involved in the collection and analysis of such data.

1. Accelerate the analysis and sharing of data from the 1977-78 Nationwide Food Consumption Survey.
2. Develop a fast and relatively inexpensive method of collecting food consumption information.
3. Integrate the HANES and NFCS collection systems and data base.
4. Correlate NFCS data with market price, food distribution, and availability data collected by ESCS.

**Objective 2:** Improve analytical capabilities and determine the cost effectiveness of nutrition research, education, distribution, safety and quality regulations, and other nutrition programs, as well as agricultural pricing and stabilization programs as they affect the food and nutrition policy of USDA.

1. Devote increased resources in ESCS, the Human Nutrition Center of SEA, and elsewhere in USDA to refining the methodologies used in cost-effectiveness analyses of USDA food and nutrition programs.
2. Determine the nutritional impact of USDA food and nutrition programs and those of other Government agencies. Such policy analysis needs to assess the nutritional implications of alternative policies.  
We need to know:
  - The effect of Government food and nutrition programs on the health, nutritional status, and performance of food program participants.
  - The effect of Government activities in establishing and enforcing food grades and standards, packaging, labeling, advertising requirements, and other measures to regulate marketing practices.
  - The effects on nutrition of welfare and other income subsidies and of income tax, manpower, health, environmental, and other policies.

## Program Evaluation

The basic program evaluation question to be answered is: Does program participation affect an individual's nutritional status? Although it is presumed that programs provide sizable benefits to participants, sufficient evidence does not exist to document the nature and magnitude of benefits generated by nutrition programs. The evaluation of nutrition program impact is complex and involves a substantial commitment of time and resources.

## **Research on the Nutritional Impact of School Feeding**

Considerable research on the food costs and management aspects of school feeding programs has been done, but little has been done to determine whether school feeding has an impact on the diets and ultimately the nutritional status and health of children.

Future studies will evaluate:

1. The impact of school feeding programs on total diet quality: The purpose of the evaluation will be to determine whether the programs have an incremental effect on nutrient intakes, or whether the food provided by them is a substitute for food that would be consumed if the program were not in effect. Included will be an evaluation of the appropriateness of the meal patterns provided to the specific nutritional needs identified for the study population.
2. The impact of school feeding programs on school performance: In addition to measuring any increased intake of nutrients resulting from school feeding programs, studies will weigh the importance of the time at which a meal is eaten. They will compare the school performance of children eating at lunch time with those eating at breakfast.

## **Research on Food Stamps**

1. Impact of the elimination of the purchase requirement on Food Stamp Program: FNS is preparing to assess the recent elimination of the purchase requirement in the Food Stamp Program and other changes in the program brought about by the 1977 Food Stamp Act.
2. Impact of changes in benefits to aged and disabled: A pilot project to test the potential for providing cash rather than stamps to the elderly and handicapped will be made.
3. Long-range impact: A longer range evaluation will assess the impact of food stamps on food expenditures, consumption, and nutrient intake of participants. Where possible, the implications of these changes on nutritional status will be examined.

## **Research on WIC**

1. Multiplier effects of the WIC program: The WIC legislation stress that the program should be an adjunct to good health care. A study will be made to determine the indirect and multiplier effects of WIC on utilization of other health and nutrition services.
2. Impact of WIC: A comprehensive evaluation will be implemented to assess program impact and the extent to which the nutrition delivery system affects program outcome.

## **NUTRITION EDUCATION AND INFORMATION OBJECTIVES**

USDA supports four types of nutrition information and education programs: information and dietary guidance for the general public; community education and counseling for people with special needs, such as low-income families, pregnant women, and young children; formal education through elementary and secondary schools and colleges; and training and professional education programs for scientists, home economists, educators, community workers, and food service personnel.

The scope and diversity of information and education activities of the Department have expanded considerably as a result of increased public and congressional attention. A GAO report, "Informing the Public About Nutrition: Federal Agencies Should Do Better" (March 22, 1978), criticizes the quality, coordination, and effectiveness of nutrition education programs in all departments of Government.

USDA recognizes that concepts used in its nutrition education programs need review and updating to reflect current scientific knowledge of food, diet and health relationships, and changing food consumption practices. We need to use mass media more frequently and effectively to reach the public. We need to offer guidance to voluntary and private sector groups to assist them in developing accurate and current nutrition information for the public.

Sophisticated communications strategies and "campaign" approaches have been shown to have an impact on people's food selections. The commercial world tests its messages for comprehensibility, interests, message recall, and negative reactions prior to use. We need to assess the potential for using these approaches and techniques to reach nutritionally vulnerable groups with information about food and food assistance programs.

The Human Nutrition Center will provide leadership in nutrition education by developing and disseminating accurate information on the dietary needs of people in different age groups, assisting the Department in developing appropriate education and information techniques, strategies, and programs. Information distributed by the Department will be reviewed for consistency, reliability, and validity of concepts and purpose.

Specific objectives include the following

**Objective 1:** Increase the effectiveness of coordination of nutrition education programs within USDA.

1. Coordinate the programs of SEA, FNS, and FSQS to develop a USDA food and nutrition education policy and to promote programs to carry out that policy.
2. Provide leadership for developing nationwide food and nutrition education programs to reach the general public.

3. Provide leadership in developing a nationwide food and nutrition education program for participants (or potential participants) in USDA food assistance programs.

**Objective 2:** Conduct nutrition education research to assess the present status, efficiency, and effectiveness of the nutrition education and intervention programs, and to evaluate alternatives to current program materials and formats.

1. Identify factors which enhance or impede improvement in dietary behavior.
2. Evaluate alternative delivery formats for messages reaching groups with differing lifestyle characteristics and incomes.
3. Evaluate the cost effectiveness and efficiency of alternative delivery systems, such as simultaneous use of multiple communication techniques.
4. Examine means of monitoring changes in consumer information needs due to changes in available food supplies or due to participation in food assistance programs.

**Objective 3:** Improve the quality, reach, and relevance of nutrition education and information materials.

1. Update subject matter to reflect current scientific concepts.
2. Determine which media and materials are most effective in transmitting information to the public and to groups with special needs.
3. Produce materials which are appealing, usable, and have potential to assist consumers in making informed food choices.
4. Develop program strategies which relate to changing social roles: for example, the roles of working women, single men and women, retired people, and children.

**Objective 4:** Increase Federal, State, and local cooperation in nutrition education.

1. Provide a depository for selected nutrition education materials developed at each level of government.
2. Assess the review process for State and federally produced materials, and identify means to improve scientific accuracy and consistency of these materials.

**Objective 5:** Target the nutritional educational services of Cooperative Extension to additional special groups.

1. In addition to its current effort for general and low-income audiences, Extension should develop specific programs for pregnant mothers, infants, and children.
2. Expand programs specifically designed for special groups, such as migrant farm laborers (families) and land-based Indians.

**Objective 6:** Evaluate the need to provide categorical assistance for training of nutrition specialists at institutions of higher education.

1. Currently, USDA provides no support for nutrition education in colleges and universities. The Food and Agriculture Act of 1977 gives USDA authority to provide grants to strengthen undergraduate programs at institutions of higher education, as well as authority to provide grants to scientists at the graduate and postdoctoral level. Studies are needed to determine the need for expanded training of and funding for nutrition specialists.

**Objective 7:** Develop special consumer education programs on food safety.

**Objective 8:** Conduct investigations of the nutrition education components mandated in conjunction with food assistance programs. The aim of these would be:

1. To evaluate the nutrition education component of the WIC, school lunch, and food stamp programs.
2. To identify specific education needs of population groups served by the program.
3. To assess the potential for integrating and coordinating the nutrition education programs with other services and education programs which serve these same recipient groups.

## 1980's: MOVING AHEAD

USDA's programs in 1980 will focus on efforts to coordinate and integrate the human nutrition research, education, and information activities within USDA and on efforts to cooperate with other agencies of the Federal Government in coordinating their activities with those of USDA.

There is a consensus among Federal agencies, the U.S. Congress, consumer groups, and the scientific community that more research on human nutrition is required to optimize the health of U.S. citizens and to provide substantive information as a basis for food assistance and regulatory program decisions. The research priorities outlined by the General Accounting Office, Office of Science and Technology Policy, Office of Technology Assessment, and the Association of Administrators of Home Economics and Agricultural Research Policy Advisory Committee delineated gaps in basic research knowledge.

In the 1980's USDA will direct research efforts to fill these gaps in basic knowledge. The 1980 budget requests increased funds for basic research in human nutrient needs. In addition to augmenting ongoing research at existing USDA facilities, the funds will initiate research on nutrient needs for specific age groups, including study of the elderly at Tufts and studies of infants and children at Baylor.

Analytical methods available to make nutritional status monitoring surveys more precise, efficient, and timely will be refined. USDA will continue to cooperate with HEW to integrate and relate the Health and Nutrition Evaluation Survey (HANES) and the Nationwide Food Consumption Survey (NFCS). Attempts will also be made to relate these data to information collected by the Economics, Statistics, and Cooperatives Service (ESCS) on food supply and food cost changes and their impact on consumer market behavior and food disappearance.

Methodology for evaluation of nutrition intervention and education programs is currently inadequate to provide needed assessments of program impact. In order to have coherent, comprehensive nutrition programs and policies, research efforts must be directed to the development of methodologies to evaluate alternative nutrition interventions. The Human Nutrition Center will cooperate with the Office of Program, Planning, and Evaluation (OPPE) of the Food and Nutrition Service to develop methodologies for examining the nutritional consequences of the food stamp, child nutrition, and WIC programs.

The Food and Nutrition Service will also transfer funds to the Expanded Food and Nutrition Education Program (EFNEP) for the development and evaluation of less costly and more effective methods of reaching low-income people with consumer and nutrition information and education.

Finally, the Human Nutrition Center will increase research on factors influencing food choices, especially among specific nutritionally high-risk groups involved in USDA food assistance or education programs. HNC will expand basic research into sociological, cultural, and behavioral aspects of food choice. It will investigate alternative formats for delivering nutrition messages to different population groups and will evaluate the effectiveness and efficiency of each alternative.

Specific budget requests for fiscal year 1980 reflecting these changes and increases in research priorities and focus are shown in the following budget tables. Increased support is requested for basic research on human nutrition requirements through in-house and extramural facilities and through competitive grants. Specific increases for research on food choice behavior are also requested for HNC and for the competitive grant programs.

The Food and Nutrition Service is requesting increased funding to support program evaluation and impact studies. The Economics, Statistics, and Cooperatives Service also is requesting increases for studies of food supply and cost changes and consumer response to these changes.

The Human Nutrition Center will complete its first full year of operation in USDA in fiscal year 1979. The Human Nutrition Policy Committee of the Department will oversee the Center's efforts to coordinate and integrate the human nutrition research, education, and information activities within USDA and to cooperate with other Government agencies in the coordination of their human nutrition activities with those of USDA. Implementation plans and priorities evolving from this first year of operation will be reflected in future years through the budget process.

HUMAN NUTRITION RESEARCH

(Dollars in thousands)

<u>Account</u>	1978 <u>Actual</u>	1979 <u>Appropriation</u>	1980 <u>Budget</u>
Science and Education Administration			
Human Nutrition Center/Agricultural Research	15,420	22,008	25,770
Cooperative Research	5,345	5,941	5,820
Competitive Grant Office	5,000	5,000	9,000
Total SEA	25,365	32,949	40,590
Economics, Statistics, and Cooperatives Service	989	1,033	1,593
Food and Nutrition Service	1,686	5,787	4,187
Total Research,	28,640	39,769	46,370

FOOD AND NUTRITION SERVICE

(Nutrition Research)

(Dollars in thousands)

<u>Account</u>	1978 <u>Actual</u>	1979 <u>Appropriation</u>	1980 <u>Budget</u>
Food Program Administration	1,236	2,737	1,237
Food Stamp Program Research, evaluation, and demonstration projects (Section 17)	--	350	350
Special Supplemental Food Program for Women, Infants, and Children (WIC) Program evaluation	--	2,250	2,250
Child Nutrition Programs Nutritional Training and Surveys (Section 6)	450	450	450
Total, Food and Nutrition Service	1,686	5,787	4,187

HUMAN NUTRITION RESEARCH

SCIENCE AND EDUCATION ADMINISTRATION  
 Human Nutrition Center/Agricultural Research  
 (Dollars in thousands)

<u>Account</u>	1978 Actual	1979* Appropriation	1980* Budget
Food Composition and Improvement (National Research Program "NRP" 2090)	3,495	4,884	5,937
Human Requirements for Nutrition (NRP 2091)	6,776	9,690	13,246
Food Consumption and Use (NRP 2092)	5,149	7,434	6,587
<b>TOTAL</b>	<b>15,420</b>	<b>22,008</b>	<b>23,770</b>

Competitive Grants - Human Nutrition  
 (Dollars in thousands)

	1978 Actual	1979* Appropriation	1980* Budget
Nutrition Requirements	3,883	3,885	5,885
Food Choice	1,115	1,115	2,615
Food Composition	-0-	-0-	500
<b>TOTAL</b>	<b>5,000</b>	<b>5,000</b>	<b>9,000</b>

Cooperative Research - Human Nutrition  
 (Dollars in thousands)

<u>Account</u>	1978 Actual	1979* Estimate	1980* Estimate
<b>Hatch Act:</b>			
Nutrient requirements	1,054	1,054	1,054
Diet and nutritional status monitoring	700	700	700
Food preferences and eating habits	100	100	100
Food composition	1,000	1,000	1,000
Nutrition education research	100	100	100
<b>TOTAL</b>	<b>2,954</b>	<b>2,954</b>	<b>2,954</b>
<b>1890 Institutions and Tuskegee Institute:</b>			
Nutrient requirements	285	366	366
Diet and nutritional status monitoring	800	900	900
Food preferences and eating habits	700	700	700
Food composition	200	300	300
Nutrition education research	500	600	600
<b>TOTAL</b>	<b>2,485</b>	<b>2,866</b>	<b>2,866</b>
<b>Federal Administration (direct appropriation):</b>			
Nutrient requirements	106	121	--
<b>TOTAL:</b>			
Nutrient requirements	1,445	1,541	1,420
Diet and nutritional status monitoring	1,500	1,600	1,600
Food preferences and eating habits	800	800	800
Food composition	1,200	1,300	1,300
Nutrition education research	600	700	700
<b>TOTAL</b>	<b>5,545</b>	<b>5,941</b>	<b>5,820</b>

\*Final project determinations and classifications have not been made.

HUMAN NUTRITION EDUCATION

(Dollars in thousands)

<u>Account</u>	1978 <u>Actual</u>	1979 <u>Appropriation</u>	1980 <u>Budget</u>
Science and Education Administration			
Extension Home Economics	10,108	10,376	10,376
Adult EFNEP	40,460	41,460	40,460
4-H EFNEP	10,100	10,350	10,100
TIS.	-0-	475	475
Total SEA	60,668	62,661	61,411
Food and Nutrition Service	38,900	47,205	46,723
Food Safety and Quality Service	448	448	448
Total Education	100,016	110,314	108,582

FOOD AND NUTRITION SERVICE(Nutrition Education)  
(Dollars in thousands)

<u>Account</u>	1978 <u>Actual</u>	1979 <u>Appropriation</u>	1980 <u>Budget</u>
Food Program Administration	1,620	1,339	1,356
Special Supplemental Food Program for Women, Infants, and Children (WIC)	9,880	18,233	24,900
Commodity Supplemental Food Program	200	433	467
Total, Special Supplemental Food Programs	10,080	18,666	25,367
Child Nutrition Programs			
Nutrition Education (Section 18)	1,000	1,000	-0-
Nutrition Education and Training (Section 19)	26,200	26,200	20,000
Total, Child Nutrition Programs	27,200	27,200	20,000
Total, Food and Nutrition Service	38,900	47,205	46,723

FOOD SAFETY AND QUALITY SERVICE(Nutrition Education)  
(Dollars in thousands)

	1978 <u>Actual</u>	1979 <u>Appropriation</u>	1980 <u>Budget</u>
How to buy and store food: Radio, TV, Brochures, etc.	348	348	348
Nutrition Labeling	100	100	100
TOTAL	448	448	448