Since Jan. 1, planning for the future in Food Science has been a high priority item. Planning retreats in teaching, extension, research, as well as long range planning meetings, have been held at the Faculty Club to address problems and opportunities. As a result of these meetings, and input through faculty committees, the following mission and objectives have been agreed on.

The Department of Food Science has as its mission the responsibility to:

1. Guide the undergraduate and graduate education of students preparing for professional and technical careers in food science.

2. Identify, develop and apply the appropriate concepts, theories, and emerging methodologies from the fundamental areas of chemistry, biochemistry, microbiology, nutrition, and engineering to the investigation of significant food systems, components, products, and processes.

3. Interpret, adapt, and extend research information to the food industry of North Carolina for orderly change in processing, marketing, and distribution of food products.

The general mission statements have been reduced to a set of objectives which are listed below for 1987-1992.

1. Teaching
   a. Courses for the baccalaureate degree will be continuously reviewed to maintain emphasis upon basic science disciplines with a concomitant science-based understanding of food science concepts/processes. With current limitations in academic hours available for required courses in food science, attention must be directed to ensuring adequate coverage of the breadth of the field.
   b. The graduate academic program will be strengthened by development of new courses that will provide a depth and breadth of knowledge that interfaces discipline and applied areas important to food science. The Graduate Committee recommends implementation of courses in:
      Microbiology of Food Fermentations
      Microbial Pathogens and Toxins in Foods
      Muscle Biochemistry
      Sensory Evaluation
   Courses in Food Toxicology and Food Packaging are being considered for addition to the graduate program. It will be investigated to determine whether the "Food Carbohydrate and Lipids" course can be split into two courses where cereal chemistry is taught within the carbohydrates course.
   Additional courses for the graduate curriculum will be considered on the basis of need and available resources.
   c. Ph.D. candidates will be evaluated for breadth and depth of knowledge in food science in a uniform manner.
   d. A program will be developed and initiated to recruit superior students with strong interests and aptitudes in sciences. Enrollments of 100 in the baccalaureate program and 65 in the graduate program are goals. Based upon anticipated needs of the food industry and departmental resources, a graduation rate of 25 B.S. candidates per year is envisioned.
   e. Emphasis on technology and the development of processing and laboratory skills, stressed in the two-year curriculum in Food Processing, Distribution and Service, will be expanded through cooperative efforts with dairy processing and food service/distribution organizations in North Carolina.
   f. Through cooperative efforts with North Carolina food industries, a program will be developed to identify and recruit students for the associate degree program. An enrollment of 50 in Food Processing, Distribution and Service is a goal.
   g. Contacts will continue to be made with food companies throughout the nation for placement of graduates and to develop opportunities for summer internships. A projected goal is that each undergraduate student will have the opportunity for this experience.
   h. The climate for teaching and advising will be enhanced through faculty and administration support, recognition and reward for excellence.
   i. Opportunities for teaching non-traditional students at non-traditional times will be explored.
2. Research
   a. Research programs will continue to be strengthened in the four areas selected for emphasis: food chemistry/biochemistry, food processing and engineering, food microbiology, and nutrition. Research programs are expected to demonstrate excellence and productivity, while continuing to develop in directions of fundamental and applied importance to food science.
   b. Cooperative research programs with industry, government and other academic units will be strengthened and expanded in order to improve funding opportunities, enhance research effectiveness, and promote experiential opportunities for faculty and students.
   c. Faculty will be productively integrated into the activities of the Center for Aseptic Processing and Packaging Studies and the Southeast Dairy Foods Research Center.
   d. External (extramural) funding will be increased and the additional monies, equipment, and personnel generated will be productively integrated into the food science research program.
   e. Efforts will continue to improve the Department’s “national recognition” in food science research. One avenue to accomplish this will be continued efforts to establish an endowed research chair in Food Science at NCSU. Faculty are also encouraged to present research findings and participate in national and international meetings in food science and discipline areas.
   f. Priorities for acquisition of new research faculty positions will be in the areas of nutritional biochemistry and enzymology. Priorities for replacements will be directed to maintaining or expanding the program as needed.
   g. Space utilization will be improved and program growth will be planned within the available physical structure. Opportunities to expand facilities for food science research will be actively pursued.
   h. The extension function of the department will be supported by research personnel as appropriate.

3. Extension
   a. The North Carolina food industry will be assisted in solving problems through application of appropriate research findings.
   b. Continuing education programs will be provided to assist food processing and food service management, technical and supervisory personnel in North Carolina.
   c. Sanitation, quality, processing efficiency and safety in the food industry will be promoted by working through training programs, forums, industry associations and regulatory groups.
   d. The development and strengthening of the North Carolina food industry will be encouraged by working with entrepreneurs, small business development organizations, local and regional development councils, and state agencies.
   e. Applied research demonstrations will be conducted to assist the North Carolina food industry in solving problems and realizing new opportunities, thus facilitating growth and expansion.
   f. Assistance will be given to the teaching and research programs of the Department, including recruitment of students and job placement.
   g. Support and leadership will be provided to the development of youth in North Carolina through the 4-H program, with special emphasis upon food science-related activities.

Foodservice Manager's Certification Training

Since October, 1983, nearly 1000 foodservice managers and supervisory personnel have received food protection and sanitation certification. The course is designed to improve food handling procedures and to provide expertise in food protection and sanitation. The course is sponsored by the County Health Department and the County Agricultural Extension Service in cooperation with Food Science Extension and the N.C. Dept. of Human Resources, Div., of Health Services. J.E. Rushing did investigative work in 1983 and assessed the need for such a program. For the next three years, he and M.E. Gregory served as the teaching team in conducting the two-day workshops concerned with food safety. Since Jan. 1987, M.E. Gregory has conducted the training, with assistance from county health departments and county extension personnel.

The program has been enthusiastically received and presently the demand for workshops exceeds the manpower available to conduct the training.
The Department of Food Science has been selected by the National Dairy Promotion and Research Board (NDPRB), as the site of one of six regional dairy research centers to be established nationwide. Mississippi State University will be a partner in the Southeast Dairy Foods Research Center.

Much of the funding for the center will be provided by the NDPRB. The board did not announce funding levels for the six centers. However, the proposal submitted by NCSU calls for the board to provide $2 million over a five-year period.

It is proposed that the N.C. Dairy Foundation provide $450,000, and the Miles Laboratories and the Southeast United Dairy Industry Association provide $100,000 each over the five-year period. The dairy board selected the six grant recipients from among 12 proposals involving 32 universities.

Food Science faculty members instrumental in preparing the successful grant proposal were T.R. Klaenhammer, H.E. Swaisgood, and P.M. Foegeding. D.R. Lineback will serve as director of the center.

The research objectives are:

1. Develop new and improved processes for dairy foods through application of emerging biological, thermal and chemical technologies. Specific improvements are sought that will permit new or expanded utilization of milk and milk components through:
   
   A. application of biological technologies to dairy-foods processing through:
   1. development and characterization of immobilized protein, enzyme, and cell systems;
   2. use of genetic technologies for engineering dairy lactic acid bacteria.
   
   B. application of innovative chemical preservation technologies to dairy-foods processing.
   
   C. application and improvement of thermal processing and determination of scale-up parameters for dairy-foods processing.

2. Characterize the effects of thermal, chemical, and biological processes on the properties of milk systems. Increased milk utilization and development of new dairy foods will be sought through the study of processing effects on milk, proteins, enzymes, and flavors.


Dept. Review

The CSRS (Cooperative State Research Service) review is scheduled for September 14–18, 1987. The team members who will conduct this comprehensive review are: Dr. Richard Garner (Chairman)—U.S.D.A., Washington, D.C., Dr. Robert Pearl—Univ. of Calif.—Davis, Dr. Robert Cassens—Univ. of Wisc., Dr. Lowell Satterlee—Penn. St. Univ., and Dr. Frank Busta—Univ. of Minn.

Department Honors

Several department faculty have been recently honored with special recognition. In June, at the U. of Missouri, H.E. Swaisgood received the prestigious "Borden Award" from the American Dairy Science Association. This award recognizes outstanding research accomplishments in the dairy industry. In May, in Lexington, KY, H.E. Fleming, received the "1987 Special Award for Excellence in Technology Transfer," which is presented by the Federal Laboratory Consortium of Technology Transfer. In June, L.G. Turner received an outstanding teaching award for the southern region from the National Association of Colleges and Teachers of Agriculture. In April, L.R. Steenerson, presently a faculty member of Purdue Univ. and a former graduate student of T.R. Klaenhammer, received the "Kenneth R. Keller Research Award" for excellence in doctoral dissertation research in SALS.
Department Activities

H.R. Ball gave an invitational paper in Provo, Utah in March; received, in cooperation with P.M. Foegeding, $36,000 from S.E. Poultry and Egg Assoc. to study "Stability of Aseptically-Packaged Egg in a Commercial Refrigerated Distribution System." R.E. Carawan was elected president of N.C. Assoc. of Coop. Extension Specialists; selected in "Who's Who of Emerging Leaders of America 1987/88." received new funding of $5,000 from Bahlsen of America to study "Reduction in Waste Load from a Bakery—Snack Foods" and $5,000 from House of Raeford to study "Reduction in Waste Load from a Turkey Processing Plant" (in cooperation with B.W. Sheldon). M.A. Daeschel was issued a patent in May for a starter culture for fermented vegetables. P.M. Foegeding received $16,000 funding in May from Dairy Research Foundation for "Involvement of Calmodulin in Sporulation and Germination of Dairy Spoilage Microorganisms." E.A. Foegeding received $14,000 funding from S.E. Poultry and Egg Assoc. for "Development of Rapid Tests to Predict Functional Properties of Raw Turkey Muscle Proteins." D.P. Green, located at the Seafood Lab in Morehead City, received a grant from the Z. Smith Reynolds Foundation for the "Development of a Seafood Processing Facility" in Dare County. He is beginning a newsletter entitled "Seafood Currents" for the N.C. Seafood Industry. M.E. Gregory is serving on the state committee to revise the North Carolina restaurant regulations; is serving on the steering committee for the "International Festival of Raleigh." H.M. Hassan gave an invitational presentation at NIH, Bethesda, MD; received $8,000 in new funding from National Science Foundation for "Research Experience for Undergraduates." A.P. Hansen gave an invitational paper at the Chicago IFT Flavor Symposium in March; in March began a new SALS station project entitled "The Effect of Ingredients, Oxygen Storage and Covalent Bonding on Flavorants Added to Ice Cream." D.D. Hamann gave an invitational paper to International Symposium on Seafood Quality Determination in Alaska. V.A. Jones was elected secretary of the NCSC Sigma Xi Chapter. T.R. Klaenhammer gave an invitational seminar to the Canadian Inst. of Food Science and Technology; received $172,000 three-year funding from Dairy Research Foundation to study "Gene Transfer and Cloning Systems for Lactobacilli." Dr. Klaenhammer has a visiting professor in his laboratory. She is Dr. Jytte Josephsen from the Dept. of Dairy Science at the Royal Veterinary and Agricultural University in Copenhagen, Denmark. K.R. Swartzel gave an invitational presentation to IFT in Las Vegas. S.J. Schwarz received a $3,500 "Faculty Research and Professional Development Grant." H.E. Swails gave two invitational seminars, one a Sigma Xi Public Lecture and one at the Mich. St. Univ. Protein Symposium; was chosen the "Coordinator" of the NCSC Biotechnology Program; has received $14,500 new funding from the Dairy Research Foundation to study "Development of New Analytical Methodology Based on Molecular and Biological Recognition." F.B. Thomas gave an invitational presentation at the Aquaculture Conf. in Annapolis, Md.; is serving on the "Task Force on Farm Economy" appointed by Gov. Martin. B.W. Sheldon has received new funding, $25,000 from N.C. Dept. Natural Resources and Community Development for "Demonstration for Selected Food Processors of a Pollution Reduction System Utilizing Ozonation, Phase II," (in cooperation with R.E. Carawan) and $4,000 from Bio-Lab, Inc. to study "Effect of Hatching Egg Spray on Hatching Egg Quality, Contamination and Hatchability." F.R. Tarver, Jr. was selected national president-elect of Phi Tau Sigma and will serve as president in 1988; is chairman of the Fellows Award Jury of I.F.T. and represented the Poultry Sci. Assoc. at the Am. Soc. Animal Sci. Regulatory Committee meeting in Rockford, Md. D.R. Lineback made invitational presentations to the Maryland Section of I.F.T. and at Am. Assoc. Cereal Chem. in St. Louis; served as review team leader for CSRS review at U. of Ill.; named to Board of Trustees of Food Proc. Instit., Washington, DC; initiated into NCSC Phi Kappa Phi chapter.

Former NCSC professor Wendell S. Arbuckle, 76, a professor emeritus of dairy science at the Univ. of Md. and a world authority on ice cream, died March 22, 1987. Dr. Arbuckle began his teaching career in 1941. He served on the faculties at Missouri, Texas A&M and NCSC before joining the University of Md. faculty in 1949.

Pollution Prevention Conference

On April 30, over 25 speakers and program participants addressed approximately 100 conferences on pollution problems in the food industries. The conference was sponsored by Food Science Extension and "The Pollution Prevention Pays Program" of N.C. Dept. of Nat. Res. and Comm. Dev. The conference was designed to educate food industries about pollution prevention and regulatory officials about food processing issues. R.E. Carawan was the conference chairman, and several department faculty participated in the program.
At the Food Science Club Awards Banquet in April, the B.M. Newell Outstanding Senior Award was presented to Sally Smith, the Ambrosia Chocolate and the Forbes Leadership Awards were presented to Patricia Butcher, and Rabab Saadi received the Leonard and Frances Crouch Scholastic Achievement Award. Sally Smith also received the Agri-Council Outstanding Club Member Award and Penny Amato was chosen Outstanding Graduate Student Member of the Food Science Club.

In May 1987, twenty-six students received degrees from the Food Science Department. Those receiving B.S. degrees include Robert Chestnut (Fayetteville), Lisa Hansen (Garner), Dale Hunt (High Point), John Reitzel (Raleigh), Deborah Shuler (Lexington), Serisa Long (Raleigh), Melanie Senter (Raleigh), Ronald Bowles (Santa Cruz, Bolivia), and Patricia Butcher (Kloof, South Africa). The M.S. degree was awarded to Larry Chandler (Gary), Pam Chang (Michigan), Rose Martinez (Florida), and Sara Morrison-Rowe (Michigan). Kimberly Ball Chandler (Roxby Mount) was awarded a Master of Life Sciences degree. The Ph.D. degree was awarded to Scott Lee (Taiwan), Ta-Chung Wu (Taiwan), and Karen Crippen (Kansas). Eight students, G. Lin Carrington (Mooresville), Thomas Chason (Raleigh), Linda Davis (Crouse), Eric Fowler (Salisbury), Lawrence Price (Seven Springs), Wayne Reavis (Ellenboro), Timothy Smith (Mt. Olive), and Ronald Wynn, Jr., received AA degrees. Linda Davis graduated with the highest academic average (4.0 GPA) in the Agricultural Institute.

Three students have been awarded IFT Graduate Fellowships for the 1987-88 academic year. Donald Higgins received a General Foods Fellowship, and Patricia Butcher and Gray Rushin received Institute of Food Technologists Fellowships. Sara Morrison-Rowe was awarded the Phi Kappa Phi Graduate Student Achievement Award as the outstanding MS candidate at NCSU.

The officers elected to lead the Food Science Club in 1987-88 are: President—Don Higgins, Vice President—Pete Muriana, Secretary—Jennifer Faris, Treasurer—Ann Caugherty, Activities Co-Chairpersons—Vivian Okuroski, Martha Richardson, and Whitney Obrig, and Publicity Chairperson—Suzanne Case. Wesley Sing, a Ph.D. candidate, was elected president of the NCSU Graduate Student Association for 1987-88.