FATS AND PROTEINS RESEARCH FOUNDATION, INC.

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"THE DIRECTOR'S DIGEST"
D. M. Doty
Technical Director

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No. 13

To make sure that all of our friends and contributors are familiar with the scope of the research program of FPRF an outline of the projects that have been active during the current year is attached. We hope you feel that it is a well-balanced program which will yield results of value to you.

A report covering six months work on the project "Use of Inedible Fats in Portland Cement" has just been received from R. L. Johnson. The summary of this report follows:

> "The work thus far has shown that if a concrete is made with an emulsion containing grease and properly compacted it will yield significant strength increases over controls made without grease. It will also give improved surfaces from the standpoint of appearance, texture and gloss or brightness. Workability will be improved. Water resistance will be considerably superior to ordinary concrete.
>
> The overall results have been encouraging and subsequent laboratory studies tied in with commercial production runs should see the development of successful uses of emulsified grease in making an improved concrete at a relatively low cost."

Some additional specific findings from this study will be of particular interest.

1) Inorganic admixture emulsions containing animal fats were superior to similar emulsions containing soybean oil.

2) The lower grades of fat containing 15+% free fatty acids gave better results than did the better grades of animal fat.

3) A mixture of fatty acids in the proportions present in tallow was not as effective as animal fat.

4) The cost of adding the admixture containing fat is not excessive. The value of the materials added to a concrete block would be about 1/3¢.

DMD:gs
Enclosure

FATS AND PROTEINS RESEARCH FOUNDATION, INC.
RESEARCH PROJECTS 1964-1965

PROTEINS

Processing and Chemical Studies

1. Enzymatic Rendering to Produce High Quality Protein Meal
   Contractor: Battelle Memorial Institute and The Theobald Industries.
   Objective: To produce economically, a high protein meal of uniform high nutritive quality irrespective of the raw materials used for rendering.

2. Quality of Rendered Protein By-Products
   Grantee: U.S.D.A. Eastern Utilization Laboratory.
   Objective: To determine and evaluate the factors influencing the quality of protein from the rendering process.

3. Chemical Derivatives of Collagen
   Contractor: The Gelatine and Glue Research Association, England.
   Objective: To produce new useful compounds from collagen and to develop adequate new cross-linking methods for preparing soluble animal glue of superior quality.

4. Use of Animal Protein for Structural Plastics
   Contractor: Stanford Research Institute.
   Objective: To determine the feasibility of preparing collagen derivatives as intermediates for structural plastics.

Nutritional Studies

1. Feeding Trials with Meat Meal from the Enzymatic Rendering Process
   Grantees: Rutgers University, University of Illinois, North Carolina State University, Cornell University.
   Objective: To evaluate the nutritive quality of enzymatically rendered meat meal in rations of chicks, swine and calves.

2. Meat and Bone Meal in Swine Rations
   Grantee: North Carolina State University.
   Objective: To re-evaluate meat and bone meal as an ingredient in practical, economical growing - fattening rations for swine.

3. Meat and Bone Meal in Broiler Rations
   Grantee: University of Delaware.
   Objective: To re-evaluate meat and bone meal as an ingredient in practical, economical rations for broilers.

Chemical Studies and Industrial Utilization

1. New Uses and Processes for Fats
   Contractor: Battelle Memorial Institute.
   Objective: To produce and evaluate new potentially useful compounds from animal fats.

2. Microbial Modification of Fat
   Contractor: Jules Porsche and Associates.
   Objective: To determine the feasibility of producing useful derivatives of animal fat through microbial action.

3. Fat in Concrete
   Contractor: R. L. Johnson.
   Objective: To determine the value of fat in admixtures for Portland cement to improve strength and water repellant properties of concrete.

4. Fat-Derived Detergents
   Contractor: Harris Research Laboratories.
   Objective: To evaluate the detergency of biodegradable, fat-derived detergents.

5. Method of Producing Fat-Sugar Complexes for Animal Feeds
   Contractor: Russell Thackery and Associates.
   Objective: To produce fat-sugar complexes by a new method and to determine the value of the product in livestock feeds.

Nutritional Studies

1. Fats in Rations for Dairy Cattle
   Grantee: Arizona State University.
   Objective: To determine the value of fat and fat-sugar complexes in rations for dairy cattle under high temperature stress.

2. Fats in Beef Cattle Rations
   Grantee: North Carolina State University.
   Objective: To confirm the value of fat and sucro-glycerides in growing-fattening rations for beef cattle.

Agricultural Sprays

1. Fat-Sugar Complexes as Adjuvants in Agricultural Sprays
   Grantees: University of Arizona, University of Illinois, Purdue University, University of California at Davis, Louisiana State University, Washington State University.

Objective: To establish the effectiveness of fat-sugar complexes as surfactant adjuvants to enhance the activity of herbicide, pesticide, hormone and nutritional sprays.

"DEFENSIVE" RESEARCH

Salmonella Control

1. Terminal Heating of Animal By-Product Protein
   Contractors: Allbright-Nell and Darling & Company
   Objective: To design, construct and test equipment that will destroy Salmonella economically in animal and poultry by-product protein from the rendering operation.

Odor Control

1. Equipment for Odor Control
   Contractor: Battelle Memorial Institute
   Objective: To furnish engineering and technical advice on plant and equipment design for odor control by the air dilution method.