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Quarterly Report
April 1-June 30, 1982
Activities of the
International Fertilizer Section

Fertilizer Technical Assistance

RSSA No. TVA 1-74

National Fertilizer Development Center
Tennessee Valley Authority
Muscle Shoals, Alabama 35660

July 26, 1982

International Fertilizer Section

Quarterly Report

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Summary

Six contracts were approved during the quarter. A contract with the International Atomic Energy Agency provided the procurement of TVA ³²P tagged triple superphosphate for research purposes. A contract with USDA International Training Division provided a two-day training program for a government official from Saudi Arabia. Three university contracts include (1) procurement of TVA ³²P tagged monocalcium phosphate for research purposes with the University of Alberta, Canada; (2) a one-day training program for 16 participants in the International Shortcourse on Agricultural Resource Development with Alabama A&M University; and (3) a two-day training program with Clark University for a government official from Portugal.

NFDC/IFDC cooperative work included a joint administrative meeting; a seminar featuring the Secretary-General of the International Organization for Chemical Sciences in Development; bench-scale production of sulfur-sandwiched urea and the construction of a special bench-scale urea melter; TVA Maintenance Branch participation in IFDC's maintenance and production training program this fall; SCU research information collaboration; and a training course for college and university teachers.

The first offering of the International Shortcourse on Agricultural Resource Development (ISCARD) consisted of 16 participants from 9 countries. On the basis of the blend between classroom work and field work, the participants assessment indicated that this course was the best training program that they had ever been involved with. Two additional two-day training programs were conducted for AID and USDA/OICD representatives.

Work continued on the digest of TVA publications sponsored by AID and on the technical update on urea-ammonium phosphate. One patent was reviewed for AID and a TVA version of AID Fertilizer Specifications was submitted to AID as a revision of the 1977 AID Small Business Memo. TVA/IFS provided capability assessment information to the General Manager's office as input to a total TVA international capability. Negotiations are in progress for specific TVA roles in AID-bioenergy efforts.

Presentations were made at the National Alliance of Business Youth Motivation Task Force, Alabama A&M University. A slide presentation was given on "Rome: An International Glimpse" to the sixth-grade class at Martin Lake School, Huntsville, Alabama.

There were 110 technical visitors to NFDC from 47 foreign countries during the quarter. IFS staff responded to 32 letters from 17 different countries. An engineer from Japan ended a one-year work-study program with NFDC on June 18.

Foreign Travel Summary

J. C. Roetheli	May 5-June 2	Austria; New Zealand
E. A. Harre	June 12-20	Austria

IFS Staff Travel Summary

T. Byrd, Jr.	April 7-9	Normal, AL
C. B. Kresge	April 20	Washington, DC
T. Byrd, Jr.	April 30	Huntsville, AL
T. Byrd, Jr.	May 18	Normal, AL
C. B. Kresge	May 18-20	Washington, DC
C. B. Kresge	June 2-4	Washington, DC
T. Byrd, Jr.	May 24-	Blacksburg, VA
	June 25	Asheville, NC
		Knoxville, TN
		Blairsville, GA
		Normal, AL
		West Tennessee

Contracts and Agreements

TV-58079A, International Atomic Energy Agency, Vienna, Austria. This contract provides for the procurement of TVA ³²P tagged triple superphosphate for research purposes. It was approved on April 21.

TV-58075A, United States Department of Agriculture, Washington, D.C. This contract provided a two-day training program for Sulaiman Subaihi, Ministry of Agriculture and Water, Saudi, Arabia. It was approved on April 29.

TV-58086A, The University of Alberta, Edmonton, Alberta, Canada. This contract provided for the procurement of TVA ³²P tagged monocalcium phosphate for research purposes. The contract was approved on May 20.

TV-59371A, Alabama A&M University, Normal, Alabama. An agreement between TVA and Alabama A&M University for a cooperative one-day training program for participants from developing countries was approved on May 21. This was part of the five-week International Shortcourse on Agricultural Resource Development.

TV-58087A, Instituto de Asuntos Nucleares, Bogota, D.E., Colombia. This contract provides for the procurement of TVA ³²P tagged triple superphosphate for research purposes. The contract was approved on May 24.

TV-58090A, Clark University, Worcester, Massachusetts. This contract provided a two-day training program for Antonio Aires, Klentejo Planning Region, Portugal. It was approved on June 24.

IFDC/NFDC Cooperative Work

A TVA/IFDC administrative meeting was held June 10. The following agenda items were discussed: U.S./India Agricultural Inputs Working Group Meeting, June 3-4 in Washington, D.C.; TVA National Fertilizer Conference, August 18-19, in St. Louis; Shortcourse in Modern Fertilizer Technology for College and University Teachers, June 14-18, at NFDC; International Shortcourse on Agricultural Resource Development, May 24-June 25, in the Tennessee Valley; 12 upcoming training programs at IFDC; granulation of large-size urea in TVA curtain-granulation pilot plant; update on status of ammonia from coal, urea plant expansion, and curtain granulation demonstration-scale unit; recent granulation work by IFDC for IMC; sulfur-sandwiched urea technology experiments by IFDC for NFDC; joint working group on nitrification and urease inhibitors; additional office space for IFDC Agro-Economic Division; reorientation of priorities in phosphoric acid and nitrogen efficiency work in Chemical Development; formation of interdivisional research committee at TVA; establishment of a fertilizer history section in TVA library; and TVA/Commonwealth Agricultural Bureaux agreement to provide fertilizer technology abstracts.

A seminar under joint sponsorship on May 13 featured Pierre Crabbé, Secretary-General of the International Organization for Chemical Sciences in Development (IOCD). Dr. Crabbé spoke on "A New Challenge for a World at a Crossroad" and also led an informal discussion after a dinner in his honor by the local section of the American Chemical Society. His slide-illustrated presentation laid out ways chemical professionals can help with world hunger, health, and humanities efforts and the need for organized efforts therein. In addition, TVA persons attended an IFDC seminar on "Problems and Potential for Fertilizer Use in Asia," presented by Dr. Kenneth Pretty and Dr. Helmut Von Uexkull of the Potash and Phosphate Institute. Also, IFDC persons attended a TVA meeting on May 24 at which U.S. university research cooperators reported on the results of their trials with SCU on rice. Both TVA and IFDC participated in the "N in Crop Production" symposium, May 25-27, in Sheffield; the symposium was cosponsored by TVA and the American Society of Agronomy.

At TVA's request, IFDC prepared with its bench-scale coating equipment 44 1-kg lots of a new product called sulfur-sandwiched urea. Basically, regular SCU was coated with a layer of urea and then another coating of sulfur. During July and August the N release rate from these lots will be evaluated via "sausage bag" tests in the field. TVA constructed a special bench-scale urea melter for the work at IFDC.

TVA received a request from IFDC for Maintenance Branch participation in IFDC's maintenance and production training program this fall. TVA observed an IFDC hemihydrate test in IFDC's pilot plant. Availability of SCU for shipment to the Philippines was explored by TVA, but the request by the Philippines via IFDC was later canceled. SCU research information was obtained from IFDC for the TVA Field Programs Branch.

Upon request of IFDC, copies of about 100 slides from the TVA training course for college and university teachers were provided for CEFER (Brazil). Dr. Cynthia Connolly, IFDC Assistant Training Coordinator, received a tour of TVA plant facilities and the TVA Agricultural Research Farm. TVA provided, upon request of IFDC, a 1-1/2 day training program for a chemical engineer and an agronomist with Toros Fertilizer and Chemical Company, Istanbul, Turkey..

AID RSSA Projects on Transfer of Fertilizer Technology

Shortcourses

Sixteen international agricultural officials representing nine countries from Africa, Southeast Asia, and the Middle East completed the first offering of the International Shortcourse on Agricultural Resource Development. With its beginning in Blacksburg, Virginia, five of the TVA Valley states were a part of the five-week (May 24-June 25) instructional program that highlighted such techniques as role playing, team teaching, simulation, small groups, and field trips. The course was organized and developed through cooperative planning by USDA/OICD/ITD, The University of Tennessee, and the Tennessee Valley Authority. Student, instructor, and USDA critiques of the course will be evaluated in light of opportunities for improvement of the course for future offerings.

In cooperation with USDA/OICD/ITD, a two-day (May 10-11) training program in agricultural research organization and planning was conducted at NFDC/IFDC for M. Myer Ali, Director of Agricultural Research, Bangladesh Jute Research Institute.

As part of a program for AID under the direction of Clark University in Worcester, Massachusetts, a two-day program in agricultural planning was conducted for Antonio Aires, President of the Klentejo Planning Region, Portugal.

Publications

Work continued on the digest of TVA publications sponsored by AID and on the technical update on urea-ammonium phosphate.

Document Review

Upon request of John Malcolm, AID/S&T/AGR, and under the direction of R. D. Young, a patent (U.S. Patent 4,287,040) and proposal of work to be supported by AID was reviewed. The patented process is a variation of the arc process for nitrogen fixation. Dr. Malcolm was provided with a review and related documentation which pointed out the severe economic drawback of any arc process because it is so energy-intensive. It also emphasized that the meager amount of test work by the inventor was insufficient to support his claims.

AID Fertilizer Specifications

A TVA version of AID Fertilizer Specifications as a suggested revision of the 1977 AID Small Business Memo on this subject was submitted to AID Commodity Management/CPS. Frank Johnson, Engineering Services Branch, and George Hoffmeister, Development Branch, spent considerable time drafting the revision. Mike McAllister, AID Commodity Management, indicated that the TVA version, with a small amount of modification, would be printed in the next few months as the revised Small Business Memo. Some concerns that Ted Clayton at IFDC had about bag specifications in the revised version were relayed to Mr. McAllister.

TVA International Capability Assessment

All operational offices of TVA submitted to the TVA Washington Office international capability assessment statements for their offices. The International Fertilizer Section (IFS) with input from the division's and manager's offices prepared the statement for OACD. The composite statement for TVA was assimilated from the office statements for potential use by the TVA General Manager's office as information for AID and possibly other international development organizations.

AID Proposal for TVA Technical Assistance in Bioenergy

Conrad Kreage participated in early discussions and information gathering toward later negotiations which are likely to result in an AID RSSA with TVA under which TVA would play a significant role in AID bioenergy efforts in developing countries.

Cooperative Work with Other Agencies

The U.S./India Bilateral Working Group Meeting on Agricultural Inputs and Allied Technology was finally consummated. The meeting was held in Washington, D.C. on June 3-4. Participants from TVA in the fertilizer session were chemical engineers Hubert Balay and Glenn Blouin and Soil Scientist Conrad Kreage. Leadership in developing a major part of the fertilizer program was undertaken by IFS of TVA. The working group report and reports of the three other working groups were presented to the bilateral Agricultural Subcommittee which met June 8-9 in Washington, D.C.

IFS played an active role in exploring with the American Chemical Society past president and the National Academy of Sciences possible TVA participation in the Chestava II Conference to be held in Manila this December, including an action working group following the conference. It was finally decided that TVA probably would not take an active role in these events. IFDC will be an active participant in the conference.

A visit to NEFC and IFDC by the Secretary General of the International Organization for Chemical Sciences in Development (IOCD) was coordinated by IFS and the Division of Chemical Development. Secretary-General Pierre Crabbé's visit allowed valuable interchange among IOCD, NEFC, and IFDC toward future cooperative efforts.

TVA assisted the East-West Resource Systems Institute of the East-West Center in Hawaii by reviewing a draft article, entitled "Projected Global Nitrogen Needs in the Year 2000 and Alternate Supply Sources." Tom Foster, Economics and Marketing Research Branch, performed the review.

Upon the request of the Potash and Phosphate Institute (PPI), a 1-1/2 day program was conducted for 10 visitors from Brazil. The visitors represented the PPI-IPI Brazil Program, ANDA, and the SOTAVE Fertilizer Company. NFDC and IFDC were two stops on a two-week U.S. fertilizer tour.

The steering committee for the International Shortcourse on Agricultural Resource Development met with Jim Gulley, USDA/IOCD/ITD, and country representatives from Zaire and Burundi concerning a proposed two-week offering of the course in Central Africa. The country representatives and Mr. Gulley will go back to their organizations and discuss the elements brainstormed with others before a definite proposal is made. NFDC will then decide whether it can meet such a request.

A request was received from the Fertiliser Association of India for a speaker at its annual seminar to be held this December in New Delhi. The subject of the presentation was still under negotiation at the end of the quarter. It would have something to do with the manufacture of phosphate fertilizers.

Foreign Travel

Two NFDC staff members completed overseas trips during the quarter.

<u>Name</u>	<u>Purpose</u>	<u>Dates</u>	<u>Country</u>	<u>Funded by</u>
J. C. Roetheli	To attend the 5th International Alcohol Fuels Technology Symposium and to meet with government officials and hold discussions on biomass.	May 5- June 2	New Zealand Australia	TVA
E. A. Harro	To attend FAO/UNIDO/World Bank Working Group on Fertilizers.	June 12-20	Austria	TVA

Technical Visitors

During the quarter, there were 110 technical visitors to NFDC from 45 foreign countries. The foreign visitors spent a total of 457 person days at NFDC. One visitor from Japan completed his one-year work-study program on June 18.

The following visited IFS staff for discussions:

- April 5 Mr. Asher Golan, Granot Industries, Tel-Aviv, Israel
- April 28 J. Breet, Manager, Agricultural Service; P. Luttig, General Manager, Co-op Society; S. Van Der Merwe, Commercial Manager, Co-Op Society; F. Botha, Commercial Manager, Co-Op Society; F. Swanepoel, Chief Agronomist, Co-Op Society; and M. Du Plessis, farmer, Sentrachem Fertilizer Co., Republic of South Africa
- May 4 Asep Tjandrawidjaja, Department of Agriculture, Bogor, Indonesia
- May 7 Sam Lancuba and C. B. Lim, Phosphate Cooperative of Australia Ltd., Melbourne, Australia
- May 10-11 M. Myser Ali, Bangladesh Jute Research Institute, Dacca, Bangladesh
- May 13 Pierre Crabbé, International Organization for Chemical Sciences in Development, Paris, France
- May 21 M. S. Vaidya, The Dharamsi Morarji Chemical Co., Ltd., Bombay, India
- May 24 Charles S. Williams, Triomf Fertilizer Ltd., Republic of South Africa
- May 26 Ambassador Kemal Homoud, Jordanian Ambassador to Peking, China, and Marwan Homoud, Student, University of Texas, Arlington
- May 27 Charles S. Williams, Triomf Fertilizers Ltd., Republic of South Africa
- June 8 Nam D. Le, International Fertilizer Development Center, Muscle Shoals, Alabama
- June 11 Rafael Hernandez and Patricio Vargas, Federacion Nacional de Arroceros (Rice), Bogota, Colombia
- June 15 Nine International students from six countries, Department of Fisheries, Auburn University
- June 17 Manatake Mihara, Mitsui & Co., Ltd., Tokyo, Japan
- June 22 Antonio Afreu, Klentejo Planning Region, Portugal
- June 22 R. S. Vyan, Research Superintendent, Dharamsi Morarji Chemical Co., Ltd., Bombay, India
- June 22 Xinia Vanton, Costa Rica; Isabel Bovet, Barcelona, Spain; Rene Ardilen, Chile

- June 28 Gene Philipps, D. M. Weatherly & Co., Atlanta, Georgia;
Ian Stander, Kurt Constant, and P. S. Coetzee, Chemical
Engineers, Sasol Fertilizers, Sasolburg, South Africa
- June 28 Tsuioshi Yamada, Executive Director, PPI-IPI Brazil Program;
Marcos Rocha, Executive Director, ANDA, Brazil;
and Elisio Contini, Researcher, EMBRAPA, Brazil
- Batista Franco Furtado, Ewerton Carvalho, Jr., Alvizio
Baltar, Jose Rafael de Medeiros, Mori Rocha Lima, Vincius
Pessoa Barreto, and Antonio M. Freire, SOTAVE Fertilizer
Company, Brazil

International Training

Yorio Utsumi, Chemical Engineer, Rasa Industries, Ltd., Tokyo, Japan, completed his one-year work-study program on June 18. His program emphasis was on wet-process phosphoric acid and urea phosphate.

Tor Holba, Mechanical Engineer, Norsk Hydro A/S, Norway, began a work-study program in the Development branch on June 21. He will complete his program in nitric phosphates on August 5, 1982.

All arrangements were made for a work-study program on wet-process phosphoric acid in the Development Branch for Mordechai Lahav, Chemical Engineer, Roten Fertilizers, Ltd., Tel-Aviv, Israel. Mr. Lahav's program will commence on July 8, 1982, and continue for 10 to 11 months.

International Correspondence

During the quarter IFS staff responded to 32 letters from 17 different countries. In addition to IFS correspondence, other OACD staff members prepared 50 letters from 23 different countries.

IFS Staff Activities

Taylor Byrd, Jr. represented TVA as one of 30 participants in a College Youth Motivation Task Force Program sponsored by the National Alliance of Business. The program was held April 7-9 at Alabama A&M University in Huntsville, Alabama.

Conrad Kreuge traveled to Knoxville, Tennessee, on April 20 to participate in a meeting of international representatives of the TVA operational offices and Betsey Horsmon of the TVA Washington Office. The purpose was to discuss a proposed TVA international capability announcement statement that could be made available to AID and other international development organizations.

Taylor Byrd, Jr. presented a 60-minute slide presentation on "Rome: An International View" to the sixth-grade class of Martin Lake School, Huntsville, Alabama, April 30. Approximately 70 students attended.

Taylor Byrd, Jr. served on a master's thesis committee for Mr. Arthur Okara upon request of the School of Graduate Studies, Alabama A&M University. Guidance was given in developing the thesis proposal. Final review and evaluation is scheduled for July 1982.

Conrad Kresge traveled to Washington, D.C., during the period May 18-20. Purposes were (1) to discuss with AID/S&T/bioenergy officials and other TVA representatives an AID proposal for TVA to provide technical assistance in the area of biomass for developing countries, and (2) to help coordinate the arrangements and program for the U.S./India Agricultural Inputs Working Group scheduled to meet in Washington, D.C., on June 3-4, 1982.

Jane Mackey, R. D. Young, and Conrad Kresge attended an NFDC/IFDC seminar May 13 on "A New Challenge for a World at a Crossroad," presented by Pierre Crabbé, Secretary-General of IOCD.

Conrad Kresge traveled to Washington, D.C., during the period June 2-4 to participate in the U.S./India Working Group on Agricultural Inputs and Allied Technology.

An IFS staff meeting was held June 10 at which Conrad Kresge announced his resignation from TVA effective July 10, 1982.

Conrad Kresge attended the "N in Crop Production" symposium May 25-27, in Sheffield, Alabama. The symposium was cosponsored by TVA and the American Society of Agronomy and its affiliated societies.

Taylor Byrd, Jr. participated extensively in the International Short-course in Agricultural Resource Development, May 24-June 25, as an instructor and course coordinator.

Conrad Kresge conducted a 50-minute presentation and discussion of World Hunger to a contemporary issues class at Brooks High School in Killen, Alabama, on May 5.

International Fertilizer Section Training

Taylor Byrd, Jr. participated in a three-day "Skills Assessment Workshop" offered by TVA for managers. The focus was on developing critical management skills and identifying areas to be strengthened through training and other appropriate measures. Conrad Kresge attended the third day of the workshop in which the employee's supervisor was briefed and participated in the formulation of the development plan.

Donna Emmons attended a meeting April 28 on ordering office supplies.

Conrad Kresge attended a one-half day TVA course on "Sexual Harassment."

Jane Mackey, Donna Emmons, R. D. Young, Taylor Byrd, Jr., and Conrad Kresge attended the second quarterly meeting of OACD Manager's Office employees.

Abstracting Service for CAB

During the quarter, Jane Mackey produced 285 abstracts in fertilizer technology, analytical methods, and economics for Commonwealth Agricultural Bureaux's Soils and Fertilizers. Approximately 150 of the abstracts thus far submitted will appear in the June issue of that publication.

Persounel

At the end of the quarter, employees in the section were:

C. B. Kresge, Administrator
Taylor Byrd, Jr., Assistant Administrator
D. S. Emmons, Secretary
R. D. Young, Chemical Engineer (one-fourth time)
J. J. Mackey, Technical Reports Writer (four-fifths time)