

Quarterly Report  
January 1-March 31, 1982  
Activities of the  
International Fertilizer Section

B620.

Fertilizer Technical Assistance  
RSSA No. TVA 1-74

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

April 27, 1982

International Fertilizer Section  
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Summary

Five contracts and one contract supplement were approved during the quarter. A contract with IFDC provides the services of the TVA Office of Engineering Design and Construction to assist in designing a new IFDC word processing center. The contract supplement was also with IFDC for TVA maintenance of roads and grounds and security and fire services for FY 1982. Two weeks training for a Somalian Government official was committed via a contract with USDA International Training Division. Tagged <sup>32</sup>P or <sup>15</sup>N depleted fertilizers for research purposes were provided through contracts with the International Atomic Energy Agency in Austria, with the Instituto de Asuntos Nucleares in Colombia, and with Woodland Services, MacMillan Bloedel Ltd. in Canada.

NFDC/IFDC cooperative work included a joint administrative meeting; a meeting of the joint working group on urease and nitrification inhibitors; arrangements for tours of NFDC and IFDC facilities by participants in the upcoming "Nitrogen in Crop Production" symposium; collaborative international efforts of IFDC, NFDC, and Alabama A&M University; development of a tentative fluid fertilizer training program in Mexico; estimation of construction costs for a curtain granulation pilot-plant melter at IFDC; arrangements for small-scale coating tests by IFDC for "exploratory" quantities of NFDC sulfur-sandwiched urea; joint attendance at a seminar; and bulk-blending demonstration by IFDC for NFDC pilot course for U.S. fertilizer dealers.

Another envelope stuffer and handout (TVA Curtain-Granulation Process) in the technical update series was completed and distributed. A paper related to fertilizer use efficiency in marketing was prepared and presented at the FAO/FIAC annual meeting.

A training program was conducted upon request of the USDA International Training Division for an official from Saudi Arabia. The international training program on Regional Agricultural Resource Development was further developed in preparation for the May-June offering.

Major work was completed for revision of the Small Business Memo on AID Fertilizer Specifications. AID S&T Bureau was provided with a list of AID-sponsored TVA publications, two TVA nominees for an AID team to evaluate AID input into Egypt, and input toward the AID/TVA RSSA for FY 1983. High level AID and TVA officials met to discuss TVA expertise potentially available to AID; followup efforts were initiated.

Presentations were made to the Alabama Vocational Teachers Association on the future outlook for agribusiness and at the North Alabama Educational Opportunity Center's Career Fair on national and international opportunities in food and agriculture.

There were 99 technical visitors to NFDC from 35 foreign countries during the quarter. IFS staff responded to 31 letters from 19 different countries; other OACD staff members prepared 54 letters to 22 different countries.

An agreement was formulated with Commonwealth Agricultural Bureaux (CAB) to provide TVA abstracting service in fertilizer technology for inclusion in the revised version of the CAB Soils and Fertilizers publication. The number of employees in the section at the end of the quarter was three full time and two part time.

#### Foreign Travel Summary

J. D. Bridges	January 23-31	Switzerland
C. B. Kresge	February 27-March 6	Italy
T. Byrd, Jr.	February 27-March 6	Italy

#### IFS Staff Domestic Travel

C. B. Kresge	February 8-12	Orlando, FL
T. Byrd, Jr.	March 9-10	Birmingham, AL
T. Byrd, Jr.	March 24-25	Huntsville, AL

#### Contracts and Agreements

The following contracts and agreements were completed during the quarter:

TV-58063A, International Fertilizer Development Center, Muscle Shoals, Alabama. This contract provides for the services of Richard Dew and/or Jerry Klaehn, TVA Office of Engineering Design and Construction, to assist IFDC in designing a new word processing center and a new snack bar area in existing facilities located within the main building at IFDC headquarters. IFDC will pay TVA up to \$5,588 for these services. The contract was approved on February 11.

TV-55682A, United States Department of Agriculture, Washington, DC. This contract provided two weeks of training for Hassan M. Ali from Somalia in the area of agricultural development. USDA reimbursed TVA for a total of \$1,200 for training expenses. This contract was approved on January 22.

TV-58065A, International Atomic Energy Agency, Vienna, Austria. This contract provides for the procurement of TVA <sup>32</sup>P tagged superphosphate for research purposes. It was approved on February 1.

TV-58068A, Instituto de Asuntos Nucleares, Bogota, Colombia. This contract provides for the procurement of TVA <sup>32</sup>P tagged triple superphosphate in granulated and liquid forms for research purposes. It was approved on February 10.

TV-58078A, Woodland Services, MacMillan Bloedel Ltd., Nanaimo, B.C., Canada. This contract provides for the procurement of TVA <sup>15</sup>N depleted fertilizer materials for research purposes. It was approved on March 30.

Supplement No. 8 to IFDC Contract No. IFDC-00023/75, TVA's Division of Property and Services and Natural Resource Operations. Costs estimated by TVA for maintenance of roads and grounds and security and fire protection services for IFDC totalled \$46,000 for FY 1982. This was agreed to by IFDC on January 5.

#### IFDC/NFDC Cooperative Work

A TVA/IFDC administrative meeting was held January 25. The following agenda items were discussed: changes in OACD organization; status of TVA work on urea plant expansion, curtain granulation, and ammonia from coal; International Shortcourse on Agricultural Resource Development (ISCARD); FAO/FIAC meetings March 1-5 in Rome; Commonwealth Agricultural Bureaux expanded Soils and Fertilizers and TVA collaboration; NFDC fertilizer bulk blending course for U.S. dealers; Alabama A&M international conference and followup; curtain granulation and ISCARD videotapes; review of IFDC work done for Agrico on production of TSP; fluid fertilizer training course in Mexico; IFDC publication "World Fertilizer Progress into the 1980's"; joint publication in 1983 on world fertilizer situation and outlook; IFDC contract with University of Nebraska; African fertilizer center; and technical assistance to Latin American countries.

The TVA/IFDC working group on N inhibitors met on March 30 to discuss preparation of PPDA fertilizer materials and other N inhibitor-fertilizer combinations and analytical problems with inhibitors, especially PPDA. Concerns and analytical procedures were shared. Informal collaboration on these matters will continue and the group will meet again when a subject of mutual concern is discerned.

Preliminary arrangements were made for tours of IFDC and NFDC facilities by participants in the "Nitrogen in Crop Production" symposium to be held in Sheffield May 25-27, 1982. The symposium is cosponsored by NFDC and the American Society of Agronomy.

Taylor Byrd, Jr. (NFDC), and Paul Stangel, Uzu Mokwanye, and Lew Williams (IFDC) met on February 11 with selected faculty members and administrators at Alabama A&M University to discuss collaborative efforts for developing African nations.

NFDC staff assisted IFDC in the development of a tentative program in fluid fertilizer training in San Fernando, Mexico. The program, scheduled for February 22-26, did not materialize.

Victor L. Sheldon assumed responsibilities as Head of the IFDC Communications Section in early January. We assisted Dr. Sheldon in making contacts in the NFDC Design Branch for special assistance in obtaining equipment drawings for IFDC publications and papers.

Chemical Development Division responded to a request from IFDC for an estimate on construction at IFDC of a curtain-granulation pilot-plant melter like the one at NFDC.

R. D. Young, Fayez Khasawneh, and Conrad Kresge met February 24 with Owen Livingston, Donald McCune, and Jerry Clemmons at IFDC concerning a proposal by TVA for IFDC to do exploratory coating work. NFDC does not have the small equipment needed to produce the "sulfur-sandwiched urea" (SSU)--coating of SCU with urea and then an outer coating of sulfur. IFDC agreed to do some preliminary testing to evaluate the effect on the first sulfur coating and to check their capability to do the work. NFDC agreed to produce a small urea melter for IFDC to assist in this work. IFDC will also use the melter for other purposes. The formal tests probably will be run in April using freshly prepared SCU base materials produced at NFDC. The urea release rate of SSU theoretically should be suitable for row crops such as corn.

IFDC invited NFDC to attend a seminar at IFDC presented by Dr. Mohamed Alal El-Din, Foreign Relations Department, Ministry of Agriculture, Egypt. The topic was "Bio-Fertilizer and Bio-Energy Research in Egypt." Conrad Kresge attended from NFDC.

The Division of Agricultural Development requested that IFDC Technology Division conduct a demonstration of bulk blending in its pilot plant for two offerings of a TVA bulk-blending course. IFDC conducted the demonstration at the first offering (a pilot for U.S. fertilizer dealers conducted for the field programs field staff). The second offering for the dealers never materialized when it was realized that the course was not fully developed. IFDC charged \$1,200 for the single demonstration. Both demonstrations would have cost a total of \$2,000. This work was conducted under existing contract TV55614A (Short-Term Work).

#### AID RSSA Projects on Transfer of Fertilizer Technology

- I. Technical Update on the TVA Curtain-Granulation Process was printed and assigned the publication number Z-129. It is a handy accompaniment to the videotape on the same process completed last quarter. The technical update series will be continued with urea-ammonium phosphate as first priority and urea phosphate as second.
- II. Shortcourses
  - A. The following training shortcourse was conducted in cooperation with the USDA International Training Division:
 

"Agricultural Project Development," a two-day training program for Sulaiman Subaiti, Director of Government Projects, Ministry of Agriculture and Water, Saudi Arabia, March 11-12.
  - B. Preparations continued for conducting the International Shortcourse on Agricultural Resource Development May 24-June 25, 1982, in the Tennessee Valley. It is anticipated

that enrollment will be adequate. Requests were received for shorter versions (approximately 2 weeks) of the course in Zaire during CY 1983 for about five countries in that immediate region and in the Tennessee Valley for a group of 12-16 managers from Indonesia during September 1982.

- III. A paper was prepared and approved for presentation at the March 3 meeting of the FAO/FIAC Working Party on Fertilizer Marketing and Use. Taylor Byrd, Jr. prepared the paper, entitled "Minimizing Fertilizer Losses: Role of Contemporary Marketing Systems and In-Service Training."
- IV. A meeting was held with Division of Agricultural Development director and branch chiefs to explain and receive division commitment to certain RSSA projects. This commitment is essential particularly for completion of preparation for the ISCARD offering this May-June.
- V. On January 21, TVA input toward preparation of the AID/TVA RSSA for FY 1983 was sent to AID Science and Technology Bureau. Statements of work and budgets were proposed for three funding levels.
- VI. AID Fertilizer Specifications. The 1977 Small Business Memo on AID Fertilizer Specifications will undergo revision in 1982. Requirements from TVA for the revision were agreed upon internally and with Mike McAllister of AID/COM/CPS.
- VII. Taylor Byrd, Jr. and Conrad Kresge discussed RSSA projects with AID/S&T/AGR liaison John Malcolm while he was in Muscle Shoals on February 26.
- VIII. Upon request from John Malcolm, we arranged for the nomination of an engineer and a marketing economist from TVA to participate on a team to evaluate AID input into Egypt, specifically in the fertilizer field--both being able to represent the U.S. viewpoint related to the evaluation. AID did not elect to use either of the nominees.
- IX. On March 22, John Malcolm was provided a list of USAID-sponsored TVA publications. This list is being assimilated into a digest on the same subject.

#### Cooperative Work with Other Agencies

A request was received from the TVA Washington Office (TWO) for each TVA program office to prepare an international capability assessment. TWO will then prepare a composite assessment for TVA Board consideration. The assessment is expected to be placed in the hands of appropriate international development agencies such as AID. About this same time (March 24), two members of the TVA Board, OACD Office Manager, and TWO representatives met in AID offices with the AID Administrator and Senior Assistant Administrator for Science and Technology. This same

issue was discussed and it was confirmed that a TVA international capability assessment document would be useful. The program offices assessments are to be completed by April 15 in preparation for a meeting of the office international coordinators in Knoxville on April 20.

The U.S. Embassy in Guatemala called TVA requesting that a meeting at NFDC be arranged on March 22 to discuss rendering ammonium nitrate fertilizer relatively nonexplosive. Guatemala Ministrys of Defense and Agriculture were concerned that insurgents would divest ammonium nitrate imported originally for agricultural purposes. Representatives of the two ministrys, of Guatemalan tobacco growing companies, and of a major fertilizer bulk blending operation in Guatemala, came to NFDC and discussed the alternatives with TVA and IFDC experts. Recommendations were made to (1) blend the ammonium nitrate that has already been imported with at least 40 percent DAP which will produce a nonexplosive mixture, and (2) begin importing CAN to replace ammonium nitrate for top- or side-dressing tobacco.

The USDA has been attempting to solidify meeting dates for the US/India bilateral agriculture subcommission and its inputs working groups. They are expected to meet this year in the United States. The latest proposal made to India was for the subcommission to meet on June 8-9 to consider among other things the reports of the working groups which would meet the previous week. The fertilizer inputs group would meet at NFDC possibly on June 3-4. At the end of March confirmation of these dates by India had not been received.

NFDC initiated an invitation to the International Organization for Chemical Sciences in Development (IOCD) to have one of its officers visit NFDC and IFDC and present a seminar about IOCD. President G. T. Seaborg was not able to come. Secretary General Pierre Crabbé was then invited to visit here during the period May 12-14. The local section of the American Chemical Society is interested in having Professor Crabbé address a meeting of the section during that period but those dates have not yet been confirmed by Professor Crabbé.

John J. Mortvedt, NFDC Agricultural Research Branch, was asked by FAO to review a draft manuscript on a booklet on micronutrients for use by extension personnel in less developed countries.

#### Foreign Travel

Three members of the NFDC staff completed overseas trips during the quarter.

<u>Name</u>	<u>Purpose</u>	<u>Dates</u>	<u>Country</u>	<u>Funded by</u>
J. D Bridges	To attend meeting of the Subcommittee of FAO/FIAC <u>ad hoc</u> Working Party on Fertilizer Statistics.	Jan 23-31	Switzerland	TVA

C. B. Kresge Taylor Byrd	To attend FAO/FIAC meetings and participate in sessions of working parties on economics of fertilizer use and fertilizer marketing and credit and the technical subcommittee; advise U.S. delegate at the 7th Consultation on the FAO Fertilizer Programme.	Feb 27- Mar 6	Italy	AID
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### Technical Visitors

During the quarter, there were 99 technical visitors to NFDC from 35 foreign countries. Sixty-eight percent of these visitors were from developing countries. The foreign visitors spent a total of 196 person days at NFDC, or an average of 1.98 days per visitor compared to 1.25 days per visitor for American technical visitors. There also was one foreign visitor (Japan) on a training program at NFDC.

The following visited IFS staff for discussions:

January 12	Mr. Muayad Al-Mutair, Marketing Department, Saudi Basic Industries Corp. (SABIC), Saudi Arabia
January 18	Site Selection Committee for African Fertilizer Center-- Mr. Joseph K. Famolu, Ministry of Agriculture, Liberia; Mr. Henri Rakotomanana, Ministry of Rural Development, Madagascar; Dr. Mohamed Alal El-Din, Ministry of Agriculture, Egypt; Mr. A.H.A. Razik, Consultant, Egypt; and Professor A. O. Williams, Organization of African Unity, Nigeria
	Bangladesh Fertilizer Equity Study Project--Ms. Selina Begum, Senior Data Analyst; Mr. A.T.M. Rezual Ahsan, Data Analyst; Mr. Mohammed Ali, Data Analyst; Mr. N. M. Anwar Hossain, Statistician; Mr. Mohammed Rezual Hossain, Statistician; Mr. Mohammed Abdul Malek, Data Analyst, Bangladesh
January 20	Mr. E. T. Davie, Division Manager, Phos. Acid; Mr. J. Schultz, General Manager, FEDMIS, Johannesburg, South Africa
February 1	Messrs. C. Verwell and T.H.M. Beaumont, Stamicarbon, Geleen, The Netherlands
February 3	Mr. Henrick Pistorius, H. Pistorius & Co., (Pty) Ltd., Pretoria, South Africa
February 9	Mr. Trevor N. Butterfield, General Superintendent, Granulation, and Mr. Krishna S. Mathur, Supervisor, Research and Development, Procor, Ltd., Alberta, Canada

- February 11 Mr. I. F. Suhadi and Mr. R. Sujanta, Sugar Beet Research Institution, Tasuruan, East Java
- February 18 Mr. Steve Perry, Production Manager, OMNIA, Bordney, England
- February 18 Mr. Eishi Takanashi, Fertilizer Department, Mitsubishi, Tokyo, Japan
- March 4 Dr. George Germing, National Energy Advisor, The Netherlands, and Mr. Ubel Geling, Head, Dutch Greenhouse Growers Association, The Hague
- March 11 Mr. and Mrs. Sulaiman M. Al-Sobaihi, Director, Government Projects, Ministry of Agriculture & Water, Saudi Arabia
- March 15 Mr. Damian De Torres, Market Analyst, Fertilizer and Pesticides Authority, Manila, The Philippines
- March 17 24 international students from 14 African countries
- March 22 Mr. Roberto C. Dalton, President, DIFERSA, Guatemala  
Mr. Miguel Cotera A., Tabacalera Nacional, S.A., Guatemala  
Dr. Emilio Escamilla E., Ministry of Agriculture, Guatemala  
Mr. Illescas O.E. Augusto, Ministry of Defense, Guatemala  
Mr. Delgado A., Agro Industrial Magna, S.A., Guatemala  
Mr. Mario Braeuner, Ministry of Agriculture, Guatemala  
Mr. John W. Kelley, Tabacalera Centroamericana, Guatemala
- March 26 Mr. Chiang Chien Hung and Mr. Chiang Po Yu, Engineers, China Phosphate Industries Corp., Kaosiung, Taiwan
- March 30 Dr. Lars A. Wiersholm, Senior Agronomist, Agriculture Division, Norsk Hydro, Oslo, Norway

#### International Training

Arrangements were made for Tor Holba, young chemical engineer with Norsk Hydro A/S in Norway, to work along with Division of Chemical Development engineers. Mr. Holba will concentrate on nitric phosphates and will be at NFDC from June 17 until early August 1982.

Yorio Utsumi, Chemical Engineer, Rasa Industries, Ltd., Tokyo, Japan, continued his one-year work-study program which began on June 19, 1981. His program emphasis is on wet-process phosphoric acid and urea phosphate.

#### International Correspondence

During the quarter IFS staff responded to 31 letters from 19 different countries. In addition to IFS correspondence, other OACD staff members prepared 54 letters to 22 different countries.

In February, 117 letters were mailed to AID missions concerning the International Shortcourse on Agricultural Resource Development; followup letters were sent to these same missions in March. In addition, 39 letters were mailed to foreign countries concerning the shortcourse.

#### Shipment of Experimental Fertilizer

A shipment of 3 vial display samples of TVA 9-32-0 suspension fertilizer was sent to Mexico City, Mexico. Mr. Jorge Flores Munoz of IMPESSA in Mexico saw a news release on 9-32-0 and wrote directly to TVA General Manager William F. Willis for information and samples.

#### IFS Staff Activities

C. B. Kresge traveled to Orlando, Florida, during the period February 8-12. He attended the 79th Annual Meeting of the Southern Association of Agricultural Scientists, a broad association of specific southern organizations. Main participation was in the Agronomy Division of the Southern Branch of the American Society of Agronomy.

Taylor Byrd, Jr. traveled to Birmingham, Alabama, during the period March 9-10. He attended the Alabama Vocational Agriculture Teachers Association Annual Meeting. A presentation was made as part of a panel discussion "The Future Outlook for Agribusiness" to agribusiness education teachers.

Taylor Byrd, Jr., traveled to Huntsville, Alabama, during the period March 24-25. The purpose was to participate in the North Alabama Educational Opportunity Center's Seventh Annual Career Fair with the theme "Exploring for the Year 2000." Dr. Byrd made a presentation on "Food and Agriculture: National and International Opportunities." He also conducted mock interviews with high school students to provide them an opportunity to become exposed to examples of appropriate behavior for experiencing a successful interview.

An international luncheon meeting was held with office manager and assistant manager and division directors and assistant division directors on January 18 in the CEB Cafeteria. The purpose of the meeting was to discuss TVA expertise, other than in fertilizer technology, that TVA may want to make available to AID and other international development organizations.

R. D. Young, Taylor Byrd, Jr., and C. B. Kresge attended several sessions of the Field Programs Branch Area Directors Staff Meeting at NFDC during the week of February 1-5. The area directors gave reports on TVA fertilizer introduction activities in their respective states. Of particular interest were the popularity of UAP for aerial fertilization of rice in California, 11-55-0 for use in suspension and bulk blends, and the experiences (mainly good) with unloading 9-32-0 suspension in very cold weather. The curtain granulation videotape was shown to the group; considerable interest therein was generated.

C. B. Kresge attended the seminar at IFDC January 21 on "Bio-Fertilizer and Bio-Energy Research in Egypt," presented by Dr. Mohamed Alal El-Din.

An International Fertilizer Section staff meeting was held February 24.

C. B. Kresge participated in a meeting at NFDC on March 12, requested by Juan King, Director of the Center for Urban and Public Affairs. Also participating were representatives of Middle Tennessee State University and Tennessee State, two universities which support the Center; three TVA district administrators, and John Culp and Curtis Brummitt from NFDC. The Center for Urban and Public Affairs is seeking funds under the Caribbean Initiative to do an analysis on total resource development in Haiti as a model for the Caribbean.

#### IFS Training

C. B. Kresge led the discussions during a National Management Association course on "First Line Supervision" held at NFDC during January-March. Eleven TVA managers completed the course.

J. J. Mackey, D. S. Emmons, and C. B. Kresge attended the first quarterly meeting of OACD Manager's Office employees.

#### Publications

The latest in the series of TVA fertilizer technical updates, Curtain-Granulation Process was received from the printers. Five-thousand copies of the two-color production were received and distribution was begun to assist in the transfer of this technology nationally and internationally.

A paper was produced for the FAO/Fertilizer Industry Advisory Committee (FIAC) annual meeting March 1-4 in Rome. Taylor Byrd, Jr. prepared and presented the paper, "Minimizing Fertilizer Losses: Role of Contemporary Marketing Systems and In-Service Training" to the FIAC Working Group on Fertilizer Marketing and Credit.

#### Abstracting Service for CAB

An agreement was formulated between TVA and the Commonwealth Agricultural Bureaux (CAB) under which TVA would make available to CAB its specialized services in the preparation of abstracts on fertilizer technology. CAB is a not-for-profit organization of British Commonwealth countries, which as part of its international information services programme publishes a journal containing abstracts on fertilizer use and is entitled Soils and Fertilizers. CAB would publish TVA's fertilizer technology abstracts in Soils and Fertilizers and reimburse TVA for a portion of the actual direct costs incurred in preparing such abstracts. In anticipation that the contract will be approved soon, Jane Mackey prepared and submitted during the quarter 270 abstracts, some of which would be published in the June issue of Soils and Fertilizers.

Personnel

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)

One employee, Judy Smith, took early retirement as a result of RIF effective January 9, 1982.