

**THE WORLD BANK GROUP ARCHIVES**

**PUBLIC DISCLOSURE AUTHORIZED**

**Folder Title:** Agriculture and Rural Development - Conferences - US Department of Agriculture - Correspondence

**Folder ID:** 1852590

**Series:** Subject files of the Office of the Director of the Economics and Policy Division

**Dates:** 01/01/1979 - 12/31/1986

**Fonds:** Records of the Agriculture and Rural Development Sector

**ISAD Reference Code:** WB IBRD/IDA AGR-4445S

**Digitized:** 05/04/2023

To cite materials from this archival folder, please follow the following format:  
[Descriptive name of item], [Folder Title], Folder ID [Folder ID], ISAD(G) Reference Code [Reference Code], [Each Level Label as applicable], World Bank Group Archives, Washington, D.C., United States.

The records in this folder were created or received by The World Bank in the course of its business.

The records that were created by the staff of The World Bank are subject to the Bank's copyright.

Please refer to <http://www.worldbank.org/terms-of-use-earchives> for full copyright terms of use and disclaimers.



THE WORLD BANK

Washington, D.C.

© International Bank for Reconstruction and Development / International Development Association or

The World Bank

1818 H Street NW

Washington DC 20433

Telephone: 202-473-1000

Internet: [www.worldbank.org](http://www.worldbank.org)

**PUBLIC DISCLOSURE AUTHORIZED**

AGREP  
DIVISION FILES

Conferences - USDA of Agriculture

1479-86

**DECLASSIFIED**  
WBG Archives



**1852590**

A1992-004 Other #: 10 Box # 210668B

Agriculture and Rural Development - Conferences - US Department of Agriculture -  
Correspondence

## OFFICE MEMORANDUM

✓ T Bertrand

conference

DATE May 19, 1986

TO Assistant Directors and Division Chiefs, Agriculture and Rural Development

FROM John A. Hayward and Ted Davis, AGR *JAH*

EXTENSION 61771/60085

SUBJECT Training Visit to USDA Research Stations

In our efforts to provide answers to farming problems in LDCs we frequently leave little time to review agricultural research being undertaken here in the United States. Yet the U.S. Department of Agriculture is conducting some of the most advanced research in the world on crops and technical problems which are directly relevant to our needs.

At the Beltsville Agricultural Research Center, one of the world's largest and most diversified agricultural research complexes, just 15 miles from Washington D.C., over 900 scientists are working on a range of topics from animal production, through biological control, crop diversification, environment protection, horticulture and pesticides to vegetables, viruses and weeds (see Annex 1 for details). Similarly, on the many USDA research stations distributed throughout the States, work is being conducted in the widest range of ecological conditions against a background of economic extremes. For example research stations in Texas are investigating crop production technology, water and soil management, cropping systems etc. in soils ranging from fine sands to cracking clays. Many of the problems faced by Texas farmers, including very low and uncertain rainfall, extreme wind erosion and the need to diversify out of cotton and grain crops are reminiscent of the Sahel at its worst. USDA scientists are tackling these basic problems on a broad front.

In order to make some of this expertise and experience available to Bank agriculturists, AGR is organizing the following training visits to USDA research stations in September 1986.

- (i) An introductory one-day visit to the Beltsville Agricultural Research Center on Tuesday, September 2, 1986, when USDA has agreed to make a special overview presentation of the Center and to arrange for all Coordinators of National Research Programs to describe their work. An opportunity will be provided for Bank staff to visit field trials and laboratories and to establish contact with research scientists for follow up visits as appropriate. Transportation from the Bank will be organized by AGR.

- (ii) A one-week visit to three research stations on the Southern Great Plains of Texas: Bushlands, Big Springs and Temple, from Sunday September 7 to Saturday September 13, 1986. A mission statement from USDA outlining the work objectives at each station is attached as Annex 2. Participants will fly to Amarillo and then be taken by coach, accompanied by the research station Directors, to the stations and farms. We propose that participants should be grouped in teams, each of which will be responsible for a particular topic e.g. land management practices, agroclimatology, pest control techniques, crop production methods etc. On completion of the tour each team will produce a summary report on its topic; these reports when combined will be circulated throughout the Bank. The anticipated cost for the Texas tour, including air fare from Washington to Amarillo near Bushlands) and from Dallas to Washington, hotel accommodation and ground transport will be approximately \$1,000 per participant. This cost would be borne by the Regions for their staff.

All participants on the Texas tour would be expected to take part in the Beltsville visit as this would be a good introduction to the USDA national program.

We would be grateful if you would discuss the above with your agricultural staff and complete the attached form for nominations. Completed forms must be returned no later than Friday June 20, 1986.

cc: Messrs. Schuh, Argyle, Le Moigne  
USDA

JAHayward/sm

May 19, 1986

John A. Hayward, AGRPT (Rm. N-1159)

.....

**Training Visit to USDA Research Stations - Nominations  
for the Visits to USDA Research Centers are as follows:**

- (i) September 2, 1986. Beltsville ARC (1 day)  
(No priority order need be indicated)

-----  
-----  
-----  
-----  
-----

- (ii) September 7-13, 1986 Texas Research Stations (7 days)  
(Nominations in priority order please)

-----  
-----  
-----  
-----  
-----

The cost of this tour (approximately \$1,000 per participant) will  
be borne by .....

**THE BELTSVILLE AGRICULTURAL  
RESEARCH CENTER**

---

## Research Index

<b>Animals</b>	<b>Contact</b>	<b>Pg</b>
Coccidiosis		
Cattle/sheep	<i>R. Fayer</i>	13
Poultry		
Anticoccidials; Immunology; <i>In vitro</i> cultivation; Pathogenicity	<i>M. D. Ruff</i>	13
Dairy cattle		
Genetic evaluation; Herd improvement	<i>F. N. Dickinson</i>	14
Lactation; Milk composition; Milking hygiene/ techniques; Milking machines; Physiological genetics	<i>R. H. Miller</i>	15
Helminthic diseases		
Cattle/sheep		
Anthelmintic resistance; Biological control; Evaluation/mode of action of anthelmintics; Vaccine development	<i>R. Fayer</i>	13
Swine		
Biological control; Diagnosis; Evaluation of an- thelmintics; Immunology; Vaccine develop- ment	<i>K. D. Murrell</i>	13
Improvement/evaluation programs	<i>F. N. Dickinson</i>	14
Index Catalogue of Medical & Veterinary Zoology	<i>J. R. Lichtenfels</i>	12
Mastitis		
Antibiotic therapy; Immunization; Milk leukocytes	<i>R. H. Miller</i>	15
Meat		
Grading/inspection; Nutrient composition; Post- slaughter processing; Preservation/shelf life; Quality/safety assurance	<i>A. W. Kotula</i>	15
National Cooperative Dairy Herd Improvement Program	<i>F. N. Dickinson</i>	14
National Dairy Sire & Cow Genetics Evaluation Programs	<i>F. N. Dickinson</i>	14
National Parasite Collection	<i>J. R. Lichtenfels</i>	12
Nematodes, systematics/identification	<i>J. R. Lichtenfels</i>	12

<b>Animals (cont'd)</b>	Contact	Pg
<b>Nutrition</b>		
Cattle/sheep/goats		
Digestion/absorption; Feed evaluation; Forage utilization; on Growth; on Milk production; Nutrient/energy metabolism; Rumen fermentation	<i>P. W. Moe</i>	17
Poultry		
Animal excreta as feed for	<i>N. C. Steele</i>	16
Swine		
Animal excreta as feed for; Fiber utilization; Genetic-mutation interactions; Lipid synthesis; Trace element absorption	<i>N. C. Steele</i>	16
Turkeys		
Glycogen synthesis/utilization; Nitrogen-endocrine interactions; Protein utilization; Temperature-humidity-reproduction; Trace element absorption	<i>N. C. Steele</i>	16
Parasite classification/distribution	<i>J. R. Lichtenfels</i>	12
Parasite literature index	<i>J. R. Lichtenfels</i>	12
Pesticide effects on animals	<i>P. C. Kearney</i>	11
<b>Poultry</b>		
Nutrient composition; Post-slaughter processing; Preservation/shelf life; Quality/safety assurance	<i>A. W. Kotula</i>	15
Protozoan diseases		
Coccidiosis/histomoniasis	<i>M. D. Ruff</i>	13
<b>Reproduction (cattle, swine)</b>		
Endocrinology; Estrus detection; Fertility; Ovulation; Semen preservation; Sperm, fertilizing capacity	<i>H. W. Hawk</i>	17
<b>Sarcocystis (cattle, sheep)</b>	<i>R. Fayer</i>	13
<b>Toxoplasmosis (cattle, sheep)</b>	<i>R. Fayer</i>	13
<b>Turkey reproduction</b>		
Artificial insemination; Egg production; Endocrinology; Fertility/hatchability; Semen production/preservation	<i>T. J. Sexton</i>	15

<b>Insects</b>	Contact	Pg
Aerosol propellants	<i>D. K. Hayes</i>	10
Aircraft disinsection		
Analytical data on	<i>K. R. Hill</i>	8
Formulations/propellants	<i>D. K. Hayes</i>	10
Attractants		
Isolation/identification	<i>M. Jacobson</i>	9
Synthesis/structure-activity relationships	<i>J. R. Plimmer</i>	10
<b>Bees</b>		
Honey Bees		
Diseases/pests; Nutrition; Pollen substitutes; Population dynamics	<i>H. Shimanuki</i>	33
Identification of; Pollinators (wild bees)	<i>J. R. Coulson</i>	23
Beneficial insects		
Importation programs; Introduction; Parasites/predators	<i>J. R. Coulson</i>	23
Chemical communication/insect behavior	<i>J. R. Plimmer</i>	10
Coleoptera (beetles), systematics	<i>P. M. Marsh</i>	23
<b>Control</b>		
Biological rhythms, manipulation of	<i>D. K. Hayes</i>	10
Chemosterilization	<i>A. B. Borkovec</i>	9
Disruption of endocrine processes	<i>J. A. Svoboda</i>	33
Face fly control	<i>D. K. Hayes</i>	10
Insect control chemicals		
Analytical instrumentation/techniques for; Regulation of; Spray adjuvants	<i>K. R. Hill</i>	8
Insecticides		
Application equipment	<i>L. E. Campbell</i>	30
Chemical nomenclature/common names; Computerized data	<i>E. M. Osborne</i>	8
Controlled release formulations; Fly larvacides; Formulation	<i>D. K. Hayes</i>	10
Molting inhibition	<i>J. A. Svoboda</i>	33
for Ornamentals	<i>R. H. Lawson</i>	19
Sterility techniques	<i>D. K. Hayes</i>	10
Using insect pathogens (virus/milky spore/spiroplasma production cultures)	<i>J. L. Vaughn</i>	33
Using insect semiochemicals (pheromones)	<i>J. R. Plimmer</i>	10
Using natural insect enemies	<i>J. R. Coulson</i>	23
Using natural products, biologically active	<i>M. Jacobson</i>	9
Using nematodes	<i>R. V. Rebois</i>	33
for Vegetables/mushrooms	<i>R. E. Webb</i>	21
Diapause/development	<i>D. K. Hayes</i>	10

<b>Insects</b>	Contact	Pg
Diptera (midges, flies), systematics	<i>P. M. Marsh</i>	23
Ecology	<i>J. L. Vaughn</i>	33
Entomology, systematics	<i>P. M. Marsh</i>	23
Feeding deterrents	<i>M. Jacobson</i>	9
Fumigants		
Admin./eval. of activity of new compounds; for Food products/greenhouses	<i>D. K. Hayes</i>	10
Synthesis	<i>J. R. Plimmer</i>	10
Fungi-insect symbiosis	<i>P. L. Lentz</i>	33
Growth regulators		
Admin./eval./activity	<i>D. K. Hayes</i>	10
Chitin synthesis inhibitors	<i>A. B. Borkovec</i>	9
Isolation/identification	<i>M. Jacobson</i>	9
Juvenoids	<i>A. B. Borkovec</i>	9
Molting inhibitors	<i>J. A. Svoboda</i>	33
Synthesis/mode of action	<i>A. B. Borkovec</i>	9
Synthesis/structure-activity relationship	<i>J. R. Plimmer</i>	10
Gypsy moth mating disruption	<i>R. H. Lawson</i>	19
Heteroptera (true bugs), systematics	<i>P. M. Marsh</i>	23
Homoptera (aphids, scales, leafhoppers, treehoppers), systematics	<i>P. M. Marsh</i>	23
Hormones		
Neurohormones		
Diapause; Livestock insects	<i>D. K. Hayes</i>	10
Juvenile hormones/juvenoids; Reproduction	<i>A. B. Borkovec</i>	9
Plant screening for juvenile hormones/juvenoids	<i>J. A. Duke</i>	24
Steroids	<i>J. A. Svoboda</i>	33
Synthesis/mode of action	<i>A. B. Borkovec</i>	9
Hymenoptera (wasps, sawflies), systematics	<i>P. M. Marsh</i>	23
Introduced Beneficial Insects Voucher Specimen Collection	<i>J. R. Coulson</i>	23
Isoptera (termites), systematics	<i>P. M. Marsh</i>	23
Lepidoptera (moths), systematics	<i>P. M. Marsh</i>	23
Livestock insects	<i>D. K. Hayes</i>	10
Mites, systematics	<i>P. M. Marsh</i>	23
Molting	<i>J. A. Svoboda</i>	33

<b>Insects (cont'd)</b>	Contact	Pg
Neurotransmitters		
Diapause; Livestock insects	<i>D. K. Hayes</i>	10
Reproduction	<i>A. B. Borkovec</i>	9
Orthoptera (grasshoppers, crickets, katydids, earwigs, cockroaches), systematics	<i>P. M. Marsh</i>	23
Oviposition stimulants, synthesis/structure-activity relationships	<i>J. R. Plimmer</i>	10
Pathogens of insects		
Bacterial/viral/spiroplasma; Environmental effects on; Identification; Tissue culture of	<i>J. L. Vaughn</i>	33
Pheromones		
in Air, analysis for/management	<i>A. W. Taylor</i>	11
Composition/behavioral studies	<i>J. R. Plimmer</i>	10
Isolation/identification; Synthesis	<i>J. R. Plimmer</i>	10
	<i>M. Jacobson</i>	9
Physiology/biochemistry	<i>J. A. Svoboda</i>	33
Pollinators	<i>J. R. Coulson</i>	23
Pyrethrum substitutes	<i>M. Jacobson</i>	9
Repellents (insects affecting man/animals)		
Isolation/identification	<i>M. Jacobson</i>	9
Synthesis/structure-activity relationships	<i>J. R. Plimmer</i>	10
Reproduction inhibitors,		
Admin./eval. of activity of new compounds	<i>D. K. Hayes</i>	10
Mutagenic/non-mutagenic; Synthesis/mode of action; Toxicology of	<i>A. B. Borkovec</i>	9
Reproduction/sterilization		
Genetic/hormonal regulation; Tissue culture	<i>A. B. Borkovec</i>	9
Scale insects, systematics	<i>P. M. Marsh</i>	23
Steroid metabolism	<i>J. A. Svoboda</i>	33
Tissue culture of insects	<i>J. L. Vaughn</i>	33
Toxicants		
Ident./admin./eval. of new compounds	<i>D. K. Hayes</i>	10
Synthesis	<i>M. Jacobson</i>	9
Transmission of plant spiroplasma diseases	<i>J. L. Vaughn</i>	33
Vision, insect	<i>D. K. Hayes</i>	10
Weed control insects	<i>J. R. Coulson</i>	23

Plants	Contact	Pg
Adaptation (field/forage/veg. crops, weeds) Competition/survival; Species distribution; Yield to Stress	<i>W. J. VanDerWoude</i> <i>W. P. Wergin</i>	31 31
Aflatozin detection	<i>G. R. Chandra</i>	28
Aging/senescence (hort. crops), postharvest Biochemistry; Ethylene/hormone action; Inhibitors of; Respiration	<i>J. D. Anderson</i>	31
Anticancer activity, screening plants for	<i>J. A. Duke</i>	24
Berries, propagation/tissue culture	<i>M. Faust</i>	20
Biological waste (agri., munic., agro-indust.) Crop sensitivity to heavy metals; for Production of agri./hort. crops; Revegetation/land reclamation with	<i>J. F. Parr</i>	9
Cell culture Anther culture (wheat, rice, tobacco); Biochemical selection (high lysine rice/wheat); Foreign genomes introduction	<i>G. W. Schaeffer</i>	30
Crop diversification (new crops)	<i>J. A. Duke</i>	24
Disease control, natural plant products	<i>A. G. Gillaspie</i>	32
Economic botany	<i>J. A. Duke</i>	24
Electron microscopy Cryo-technology; Freeze etching	<i>R. L. Steere</i>	34
Environmental modification/control Growth rooms/chambers; Lighting Field crops Horticultural crops Measurement instruments; Principles of greenhouses; Temperature/humidity	<i>W. J. VanDerWoude</i> <i>L. E. Campbell</i> <i>W. J. VanDerWoude</i> <i>L. E. Campbell</i>	31 30 31 30
Ethnobotany	<i>J. A. Duke</i>	24
Flower color pigments	<i>R. H. Lawson</i>	19
Flowers/plants (see Ornamentals) Postharvest physiology (flowers) Postharvest preservation; Storage	<i>J. D. Anderson</i> <i>A. E. Watada</i>	31 20
Fruit diseases Bacterial/viral; Fungal (small fruits) Postharvest	<i>M. Faust</i> <i>A. E. Watada</i>	20 20

Plants (cont'd)	Contact	Pg
Fruits/fruit trees Anatomy of Disease screening; Germplasm collection/introduction Dwarf; Physiology/metabolism Postharvest physiology Postharvest quality evaluation/maintenance Propagation/tissue culture Apple Peach Quality, environmental effects on; Soil factors in nutrition Taxonomy Virus indexing	<i>M. Faust</i> <i>H. E. Waterworth</i> <i>M. Faust</i> <i>J. D. Anderson</i> <i>A. E. Watada</i> <i>M. Faust</i> <i>G. W. Schaeffer</i> <i>M. Faust</i> <i>R. E. Perdue</i> <i>H. E. Waterworth</i>	20 28 20 31 20 20 30 20 28 28
Fungi, pathogenic/nonpathogenic Cytology; Ecology; Life history; Taxonomy	<i>P. L. Lentz</i>	33
Genetics & breeding Alfalfa Apples Barley Bean disease resistance Berries Cereal, protein improvement Chimeras Cotton resistance to stress Forage grasses Grapes Mushrooms Ornamentals Peaches; Pears Potatoes Resistance/tolerance to stress Rhizobium, gene mapping Safflower disease resistance Small grains Soybeans Disease resistance Insect resistance Nitrogen fixation/nodulation; Seed quality Sugarbeets Sunflower disease resistance Tobacco Tomatoes Turf Vegetables, other Wheat	<i>J. H. Elgin</i> <i>M. Faust</i> <i>J. H. Elgin</i> <i>A. G. Gillaspie</i> <i>M. Faust</i> <i>J. H. Elgin</i> <i>R. H. Lawson</i> <i>W. P. Wergin</i> <i>J. H. Elgin</i> <i>M. Faust</i> <i>R. E. Webb</i> <i>R. H. Lawson</i> <i>M. Faust</i> <i>R. E. Webb</i> <i>W. P. Wergin</i> <i>G. W. Schaeffer</i> <i>A. G. Gillaspie</i> <i>J. H. Elgin</i> <i>G. W. Schaeffer</i> <i>A. G. Gillaspie</i> <i>J. H. Elgin</i> <i>J. H. Elgin</i> <i>A. G. Gillaspie</i> <i>T. C. Tso</i> <i>R. E. Webb</i> <i>J. H. Elgin</i> <i>R. E. Webb</i> <i>J. H. Elgin</i>	28 20 28 32 20 28 19 31 28 20 21 19 20 21 31 30 32 28 30 32 28 30 32 28 28 21 28 21 28
Germplasm (all plants) Collection/introduction; International exchange	<i>H. E. Waterworth</i>	28

Plants (cont'd)	Contact	Pg
Grasses, taxonomy	<i>R. E. Perdue</i>	28
Hardening, drought/temperature effects on	<i>W. P. Wergin</i>	31
Herbicides		
Evaluation, new/registered; Formulation; Mechanism of action; Movement through plant membranes	<i>D. L. Klingman</i>	11
Degradation of	<i>P. C. Kearney</i>	11
Hormonal treatment of seeds/plants	<i>J. D. Anderson</i>	31
Hormones (see Plant growth regulators)	<i>J. D. Anderson</i>	31
Horticultural crop production equipment		
Energy efficient culture systems; Greenhouses/plant lighting facilities; Light/radiation systems; Mulching systems; Pesticide application equipment	<i>L. E. Campbell</i>	30
Identification	<i>R. E. Perdue</i>	28
Insect transmission of spiroplasma diseases	<i>J. L. Vaughn</i>	33
Instrumentation		
Composition analysis; Defect detection; Quality evaluation	<i>K. H. Norris</i>	21
Instruments		
Computerized spectrophotometers; Mathematical analysis; Radiation measurement; Vibrational analysis; Stress testing	<i>K. H. Norris</i>	21
Legumes		
Edible (beans, lima beans, other)	<i>A. G. Gillaspie</i>	32
Taxonomy	<i>R. E. Perdue</i>	28
Mushrooms (wild), poisonous/nonpoisonous	<i>P. L. Lentz</i>	33
Mycoplasma-like organisms (spiroplasmas)	<i>R. L. Steere</i>	34
Narcotic plants		
Control of	<i>D. L. Klingman</i>	11
Taxonomy/ecology	<i>J. A. Duke</i>	24
National Fungus Collection		
Fungus herbarium, computerized; Fungus nomenclature; New taxa index; Plant-pathogens catalogue; Stevenson mycological library	<i>P. L. Lentz</i>	33
Nematodes		
Free living in soil; taxonomy/biology; Distribution; Physiology/host-parasite interactions; Plant parasitic; Reniform/root-knot/soybean cyst; Taxonomy/biology; Ultrastructure	<i>R. V. Rebois</i>	33

Plants (cont'd)	Contact	Pg
Nematode control		
Biological/chemical/natural products; Plant resistance	<i>R. V. Rebois</i>	33
Nitrogen fixation		
Grass- <i>Spirillum</i> ; <i>Rhizobium</i> species/strains	<i>G. W. Schaeffer</i>	30
Soybean disease- <i>Rhizobium</i> interactions	<i>A. G. Gillaspie</i>	32
Soybean- <i>Rhizobium</i>	<i>G. W. Schaeffer</i>	30
Oilseed		
Crops/diseases (sunflower, safflower)	<i>A. G. Gillaspie</i>	32
Plant screening for	<i>J. A. Duke</i>	24
Organization for Economic Cooperation and Development	<i>G. R. Chandra</i>	28
Ornamentals (florist/nursery crops; see Flowers)		
Chemical treatments	<i>R. H. Lawson</i>	19
Germplasm collection/introduction	<i>H. E. Waterworth</i>	28
Ornamental diseases (bacterial, fungal, viral)	<i>R. H. Lawson</i>	19
Pest control chemicals		
Analytical instrumentation/techniques for	<i>K. R. Hill</i>	8
Pesticides		
Application equipment	<i>L. E. Campbell</i>	30
Chemical nomenclature/common names;		
Computerized data	<i>E. M. Osborne</i>	8
Herbicides	<i>D. L. Klingman</i>	11
Insecticides (see Insects: Control)		
Plant uptake/translocation	<i>P. C. Kearney</i>	11
Photoregulation		
Phytochrome: Photoperiod; Genetic control	<i>F. W. Snyder</i>	31
Weed seed germination	<i>D. L. Klingman</i>	11
Photosynthesis (field/forage/veg. crops, weeds)		
Carbon metabolism/distribution; Translocation; Genetic control	<i>W. J. VanDerWoude</i>	31
Plant growth regulators, natural/synthetic		
Assays; Isolation/identification; Mode of action; Plant response to; Plant screening for activity; Synthesis	<i>J. D. Anderson</i>	31
Plant response/resistance to		
Acid/alkaline soils; Air pollutants; Heat/cold, chilling/freezing; Mineral deficiency/toxicity	<i>W. P. Wergin</i>	31
Potatoes		
Physiology/biochemistry; Tissue culture	<i>R. E. Webb</i>	21

Plants (cont'd)	Contact	Pg
Produce		
Compositional changes; Handling/packaging; Refrigeration/storage; Shelf life; Transportation	A. E. Watada	20
Radiation measurement	L. E. Campbell	30
	K. H. Norris	21
Remote sensing (field crops)	J. H. Elgin	28
SEA National Foundation Seed Project	G. R. Chandra	28
Seedborne fungal pathogens/diseases	G. R. Chandra	28
Seeds		
Certification/international trade; Cold tolerances of agronomic seeds; Dormancy/germination; Growth compounds; Protein accumulation; Quality Taxonomy	G. R. Chandra	28
	R. E. Perdue	28
Seedling vigor/deterioration	G. R. Chandra	28
Small farms (vegetable crops)		
Culture; Nutrition; Plant density; Seasons/rotations; Pest control methodology	R. E. Webb	21
Small grains, collection/computerized data	H. E. Waterworth	28
Soilborne disease control		
Biological/cultural; Chemical, fungicides/seed treat- ment; Integrated pest management	G. C. Papavizas	34
Soilborne pathogens		
Effect of soil amendments on; Interaction with soil microbes, mycoparasitism/antagonism; Survival in soil	G. C. Papavizas	34
Spirochetes, nitrogen-fixing	R. L. Steere	34
Stress, environmental		
on Field/forage/hort. crops., cultural/chemical ameliorization of on Seeds/seedlings Testing instruments	W. P. Wergin	31
	G. R. Chandra	28
	K. N. Norris	21
Sugarcane, diseases/control, natural plant products	A. G. Gillaspie	32
Sugarcane Quarantine Facility	A. G. Gillaspie	32
Sweet sorghum diseases	A. G. Gillaspie	32
Taxonomy/nomenclature, computerized data	R. E. Perdue	28

Plants (cont'd)	Contact	Pg
Tobacco		
Culture; Diseases; Homogenized leaf curing; Leaf/ smoke chemistry; Physiology/biochemistry; Pro- duction of safer smoke	T. C. Tso	28
Tropical plants, taxonomy/ecology	J. A. Duke	24
Turf, establishment/management	J. H. Elgin	28
U.S. National Seed Herbarium	R. E. Perdue	28
Vegetable diseases		
Bacterial/fungal/viral	R. E. Webb	21
Bean/lima bean diseases	A. G. Gillaspie	32
Fungal, soilborne	G. C. Papavizas	34
Nature of resistance; Noninfectious	R. E. Webb	21
Postharvest	A. E. Watada	20
Soybean diseases	A. G. Gillaspie	32
Vegetables		
Edible legumes	A. G. Gillaspie	32
Germplasm collection/introduction	H. E. Waterworth	28
Postharvest physiology	J. D. Anderson	31
Postharvest quality evaluation/maintenance	A. E. Watada	20
Virus indexing	H. E. Waterworth	28
Viroids/viroid diseases	R. L. Steere	34
Viruses (cucumoviruses, satellite, other divided genome viruses)	R. L. Steere	34
Virus diseases of plants		
Cucumoviruses/ring spot; Insect-transmitted	R. L. Steere	34
Weeds		
Control of	D. L. Klingman	11
Natural insect enemies of	J. R. Coulson	23
Noxious	R. E. Perdue	28
Physiology of; Seed germination	D. L. Klingman	11
World Rhizobium Study-Collection Center		
Ecology; Inocula	G. W. Schaeffer	30

<b>Soil, Air, Water</b>	Contact	Pg
Agroecosystems technology	<i>P. C. Kearney</i>	11
Analytical chemistry, instrumentation/techniques	<i>K. R. Hill</i>	8
Biological wastes (agr./munic./agro-industrial)		
Composting/trenching/surface application; Crop sensitivity to heavy metals in; Microbial content of; Production of agr./hort. crops with; Revegetation/land reclamation with	<i>J. F. Parr</i>	9
Climatology		
Affecting crop loss	<i>J. A. Duke</i>	24
Precipitation patterns	<i>E. T. Engman</i>	31
Fertilizer chemistry	<i>A. W. Taylor</i>	11
Hydrology/hydraulics		
Computerized data	<i>J. B. Burford</i>	31
Flood flow prediction; Modeling; Remote sensing; Water yield	<i>E. T. Engman</i>	31
Land use effects on water resources	<i>E. T. Engman</i>	31
Meteorology	<i>E. T. Engman</i>	31
Minimum tillage		
Herbicides in; Nitrogen; Soil moisture	<i>A. W. Taylor</i>	11
Weed control	<i>D. L. Klingman</i>	11
Organic residues as soil amendments	<i>J. F. Parr</i>	9
Pest control chemicals		
Adjuvants; Analytical instrumentation/techniques; Distribution/persistence of; Regulation of	<i>K. R. Hill</i>	8
Pesticides		
Arsenical compounds; Chemistry of; Effects in aquatic organisms; Degradation products; Movement in soils; Transformation in soils	<i>P. C. Kearney</i>	11
Environmental fate; Volatilization of	<i>A. W. Taylor</i>	11
Pheromones in air, analysis for/management of	<i>A. W. Taylor</i>	11
Pollution as plant nutrient source	<i>W. P. Wergin</i>	31
Soil moisture	<i>E. T. Engman</i>	31

<b>Soil, Air, Water (cont'd)</b>	Contact	Pg
Soils		
Nitrogen requirements/transformation/denitrification; Phosphates; Physical chemistry	<i>A. W. Taylor</i>	11
Water data bank/computerized publications	<i>J. B. Burford</i>	31
Water resources	<i>E. T. Engman</i>	31
Watersheds	<i>E. T. Engman</i>	31

\*U.S. GOVERNMENT PRINTING OFFICE : 1982 O-522-011/3778\*

ANNEX 2

RESEARCH OUTLINE AT TEXAS STATIONS

BUSHLAND, TEXAS

Research Unit:

Southern Plains Area (College Station, Texas)  
Conservation & Production Research Laboratory

**Address:**

Soil and Crop Management Research  
Bushland, Texas 79012

**Soil and Crop Management Research**

Research Leader - P.W. Unger

To develop basic knowledge and understanding of weather and climate in relation to the water supply for crop growth and yield; to develop basic knowledge and understanding regarding the influence of soil characteristics on soil and water conservation, and on soil-water-plant relationships; to develop improved soil and crop management practices and soil fertility systems for both irrigated and/or nonirrigated cropland that will give more efficient water and fertilizer use, improved erosion control, and greater crop yields; and to develop energy-efficient cropping practices.

**Address:**

Sunflower Research  
Bushland, Texas 79012

**Sunflower Research**

Research Leader - G.J. Seiler, Acting Research Botanist

To develop germplasm for improving sunflower hybrids that are adapted to the Southern Plains and have high levels of resistance to insect pests, pathogens, and drought; and to develop methods of improving sunflower production and protection efficiencies with minimum adverse environmental impact on agroecosystems.

**Address:**

Wind-Powered Irrigation Research Unit  
Bushland, Texas 79012

**Wind Powered Irrigation Research**

Research Leader - R.N. Clark, Agricultural Engineer

To develop on-farm wind-powered systems for pumping and distributing water for irrigation. Emphasis is placed on developing pumping systems that are independent of electric utilities and liquid petroleum fuels. Wind-powered pumping systems that assist conventional fuels are being refined for greater efficiencies and reduced costs. Wind-powered pumping systems include wind turbines, power conditioning equipment, irrigation pumps, and storage.

**Address:**

Conservation and Production Research Laboratory  
Bushland, Texas 79012

**Conservation & Production Research Laboratory**

Research Leader - B.A. Stewart, Soil Scientist

The mission is to (1) develop basic knowledge and understanding of weather and climate in the Southern Plains in relation to moisture supply for crop growth; (2) evolve improved soil, water, and fertility management systems for both irrigated and nonirrigated cropland for higher water-use efficiency and erosion control; (3) develop systems for utilizing wind power for irrigation pumping; (4) develop improved germ plasm, insect and disease resistance and control, and management practices for sunflower; and (5) problems associated with the transport of feeder calves from the southeastern states to feedlots in the Southern Plains. These objectives are achieved through research activities of a multidisciplinary staff organized into five Research Units: (1) Water Management; (2) Soil and Crop Management; (3) Wind-Powered Irrigation; (4) Sunflower; and (5) Shipping Fever.

**Address:**

Water Management Research  
Bushland, Texas 79012

**Water Management Research**

Research Leader - J.T. Musick, Agricultural Engineer

To develop water management practices which reduce irrigation water requirements and groundwater depletion and increase water use efficiencies in the Southern Ogallala (about 8 million acres of irrigated land); to develop basic understanding of crop response to water deficits and plant water stress in a variable high evaporative demand climate; to develop and evaluate optimized water and energy efficiencies by improving irrigation system designs and use in scheduling and management of water in crop production systems; and to develop basic knowledge and understanding of micrometeorological relationships of irrigated crops and remote sensing of crops and soils for improved water management.

**RESEARCH OUTLINE AT TEXAS STATIONS**

**BIG SPRING, TEXAS**

**Research Unit:**

Southern Plains Area (College Station, Texas)  
Cropping Systems Research Laboratory

**Address:**

Wind Erosion and New Crops Research Unit  
Big Spring, Texas 79720

**Conservation and Production Systems Research**

Research Leader - D.W. Fryrear, Agricultural Engineer

The mission of the Wind Erosion and New Crops Research Unit of the Big Spring and Vernon Work Sites is: (1) minimize soil blowing with tillage and soil amendments; (2) develop basic understanding of inheritance characteristics of guar with respect to pest and drought resistance and gum quality, and incorporate new crops including guar into cropping systems that reduce wind erosion and maintain or improve soil productivity; (3) develop basic understanding of the combined role of soil roughness, residues from potential new crops, and TERBARS on soil moisture utilization and erosion; (4) determine how erosion and continuous dryland crop production influences soil productivity.

RESEARCH OUTLINE AT TEXAS STATIONS

TEMPLE, TEXAS

Research Unit:

Southern Plains Area (College Station, Temple, Texas)

**Address:**

Grassland, Soil and Water Research Laboratory  
Temple, Texas 76503

**Grassland, Soil & Water Research Laboratory**

Research Leader - Earl Burnett, Laboratory Director

The mission of this Laboratory is to develop technology for maximizing forage and crop production; revegetating depleted, brush-infested watersheds, controlling noneconomic brush and weeds; breeding forages with increased quality and yield potential; and solving problems relating to soil and water management, soil fertility, erosion, hydrology and water quality. The mission is achieved through the research activities of a multidisciplinary staff of scientists and engineers organized into four Research Units: (1) Forage Improvement, (2) Grassland Protection, (3) Soil and Water Resources, and (4) Crop Systems Evaluation.

**Address:**

Soil & Water Resources Research  
Temple, Texas 76501

**Natural Resources Systems Research**

Research Leader - C.W. Richardson, Agricultural Engineer

The mission of the Soil and Water Resources Unit is to (1) develop techniques for predicting, evaluating, and managing the quantity and quality of runoff from agricultural lands; (2) develop models of agricultural management systems; (3) develop tillage systems that improve crop productivity, runoff water quality, and reduce erosion; (4) determine the fate of selected herbicides in water and soils; (5) develop improved methods for establishing grasses and legumes in pasture and range; and (6) develop fertilizer practices to optimize nutrient uptake efficiency and crop production in conservation tillage systems.

**Address:**

Forage Improvement Research  
Temple, Texas 76501

**Forage Improvement Research**

Research Leader - P.W. Voigt

The mission of the Forage Improvement Research Unit is to (1) develop new germplasm of pasture and range grasses with improved forage quality and production, winterhardiness, drought resistance, seedling establishment, seed fertility and retention, disease resistance, and adaptation of problem soils; (2) determine phylogenetic relationships among different species, through interspecific hybridization, in order to broaden the gene pool available for germplasm development; (3) develop breeding procedures using apomixis; and (4) determine mechanisms responsible for genetic differences in drought resistance, seedling establishment, and other characteristics.

**Address:**

Grassland Protection Research  
Temple, Texas 76501

**Grassland Protection Research**

Research Leader - R.W. Bovey, Supervising Research Agronomist

The mission of the Grassland Protection Research Unit is to (1) perform basic scientific research on the physiology, morphology, ecology, and phenology of important range and pasture weed and brush species; (2) use scientific knowledge to develop biological, chemical and mechanical weed and brush control practices; (3) investigate weed and brush control practices on the establishment, production, composition, and quality of forages; and (4) determine herbicide residues in soils, plants, and water sources and methods to modify residues.

**Address:**

Crop Systems Evaluation Research  
Temple, Texas 76501

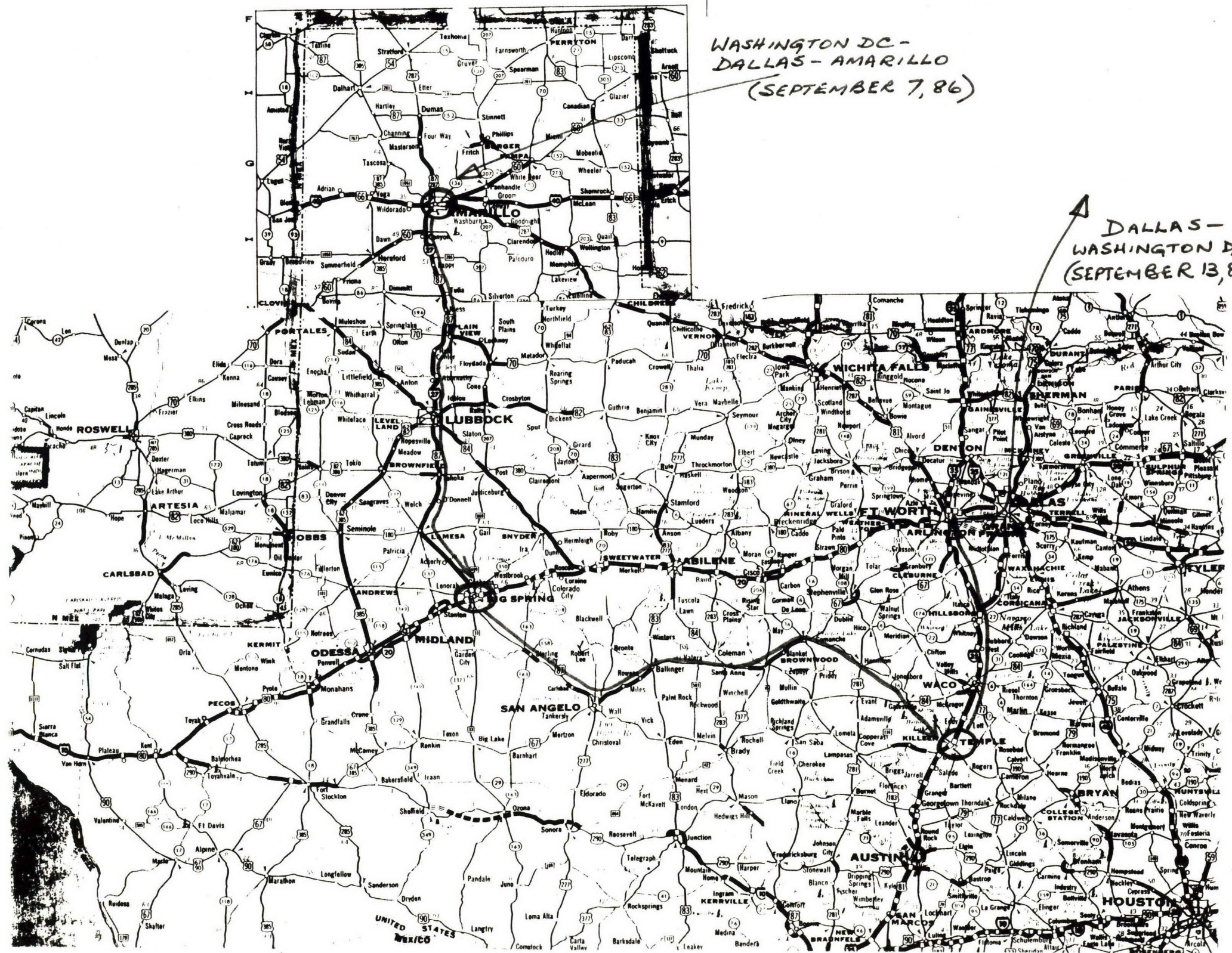
**Crop Systems Evaluation Research**

Research Leader - Joe T. Ritchie, Soil Scientist

The mission is to develop a computerized system of crop evaluation that integrates weather, soil, management and plant genetic characteristics. This system is envisioned to work in a global context, thus eliminating the need for regional specific details. In developing the system, the Unit should generate the technology needed to make the system global and useful. The goal is to use the system to minimize farm risks due to weather and other uncertainties, to estimate foreign and domestic crop yields, to evaluate government policy and to define research needs where fundamental understanding of crop growth processes and interactions are lacking.

WASHINGTON DC -  
DALLAS - AMARILLO  
(SEPTEMBER 7, 86)

DALLAS -  
WASHINGTON D.  
(SEPTEMBER 13, 86)





United States  
Department of  
Agriculture

Office of  
International  
Cooperation  
and Development

Washington, D.C.  
20250

USDA

November 23, 1983

Dear Colleague:

In 1984 the U.S. Department of Agriculture will again offer developing nations a number of short courses concerned with agriculture and rural development. Catalogs providing detailed information about these programs are enclosed. If any of these courses would help meet training needs for projects managed by your agency, we would be happy to have you nominate course participants.

May we also ask your assistance in distributing these catalogs to colleagues within your agency who may find this information useful. Depending upon your organization, of course, this could include Rural Development Officers, Agricultural Officers, Education Officers, Women in Development Officers, Project Managers, or others. Likewise, you or your colleagues may wish to pass the catalogs on to various ministry offices, universities, or other organizations which may want to fund trainees themselves or which may have funding support from other donors. We appreciate your assistance on this.

If you need additional copies of this catalog or if you have questions, please let me know. My address is:

David P. Winkelmann  
Deputy Administrator for International Training  
Room 4118 - Auditors' Building  
Office of International Cooperation and Development  
United States Department of Agriculture  
Washington, D.C. 20250  
U.S.A.

Cable Address: AGRI/WASH 64334, Winkelmann OICD

The continued strong enrollment in these courses each year, coupled with the strong positive feedback we receive from participant evaluations, gives us confidence that these programs are playing an important role in the development process in many nations. We would welcome your ideas as to how programs might be improved, though, or if there are other subjects you feel would be useful. Our goal is to be of service to you and the development process.

Sincerely,

*David P. Winkelmann*

David P. Winkelmann  
Deputy Administrator for  
International Training



The Office of International Cooperation and Development  
is an agency of the  
United States Department of Agriculture



United States  
Department of  
Agriculture

Foreign  
Agricultural  
Service

Washington, D.C.  
20250

*Mr. Rieberg*  
*File*  
*ADC - USDA* *Can we discuss*  
*ide.*  
*12/10*

December 9, 1981

Dr. Graham Donaldson  
Chief Economics and Policy Division  
The World Bank  
Room N-1124  
801 19th Street, N.W.  
Washington, D.C. 20433

Dear Graham:

The attached letter was sent to Alan Tracy recently by the program manager for the Soybean Association, Mr. John Baize. Essentially the letter proposes that agencies within the U.S. Government identify specific infrastructure projects which would ultimately be funded by the World Bank. While I am aware that USAID and the Bank attempt to inform one another of their activities, I am not aware of any case where a formal project proposal was submitted by the U.S. Government through its executive director.

If you can shed any light on the subject, it would be greatly appreciated.

Sincerely,

*Lloyd Harbert*

Lloyd Harbert

Attachment

*Discussed with*  
*L. Harbert 12/14 who*  
*advises that a*  
*letter saying that this*  
*would not be an*  
*acceptable approach*  
*has gone back to*  
*the ASR from Tracy*  
*Er.*

*GD*

*A decision, this should be brought to the*  
*attention of the E.D.'s Office*

*R*

*12/14*

## ASA Washington Office

CAPITOL GALLERY BLDG.  
600 MARYLAND AVE., S.W.  
SUITE 510  
WASHINGTON, D.C. 20024  
PHONE (202) 554-7804

December 2, 1981

Mr. Alan Tracey  
General Sales Manager  
Foreign Agricultural Service  
U.S. Department of Agriculture  
Washington, DC 20250

Dear Alan:

During the USAEDC Cooperator Workshop in Baltimore I brought up the issue of whether or not it would be possible for USDA to establish a working group to assist developing countries to receive World Bank loans as a means of constructing infrastructure facilities conducive to expanded U.S. agricultural exports. I take this opportunity to follow up on that discussion and provide you with a more detailed description of what I was thinking.

Because of the budget cuts which are justifiably being sought by President Reagan, it is impossible at this time to fund either a direct commodity loan program or the GSM-301 intermediate credit program. Nevertheless, if we are to expand our exports to the many developing countries of Africa, Southeast Asia, and Latin America it is imperative that we assist those nations to construct the needed infrastructure such as offloading elevators, silos, feed mills, railcar loading facilities, etc. Originally the intermediate credit program was designed to perform this valuable role, but it has not been funded to date and there is no indication that it will be funded for some time. Some of the nations may be able to get private financing for the facilities, but in most cases the interest rates are so high that the structures could not be built and operated profitably.

The World Bank (International Development Agency and International Finance Corporation) has the authority, obligation, and resources to assist the developing countries to construct these facilities. However, in many cases the developing countries do not have the expertise or vision to request funding. I believe that it is possible that the U.S. government through USDA and the other agencies can assist the developing



**Soybeans**  
American Soybean Association

Mr. Tracey  
Page two  
December 2, 1981


countries in a manner which will serve our interests by helping them to identify, plan, and request funding for the infrastructure facilities. There is no doubt that if we were successful the developing countries would be appreciative of our efforts and would be more likely to buy their imported agricultural commodities from the United States in the future. Also, we must not forget that any facilities built to facilitate imports into the developing countries can generally be used to facilitate exports as well.

I envision the program working in such a manner that it would allow USDA through the attaches and trade offices to identify needed infrastructure facilities the lack of which are minimizing U.S. exports to that market. After determining which facilities are of most benefit to the developing country and the United States a team made up of representatives of several agencies (for instance FAS, OICO, OPIC, AID, and Treasury) could visit the country and collectively put together a proposal for that country to submit to the World Bank or some other multinational lending institution to fund its construction. In turn, the U.S. executive director to the World Bank or the other lending institutions would make a special effort to expedite consideration of the proposal and achieve its funding. U.S. manufacturers which could supply the needed facilities would be notified in advance to allow them to prepare bids on the project.

This approach has several advantages. First, the funding for the projects would come from the World Bank rather than the U.S. Treasury. Second, the projects could be identified that would benefit the U.S. more than any other exporter. Third, the process would not require a lot of resources from the U.S. government in preparing the proposals for submission to the various multinational lending institutions. And fourth, the U.S. would enhance its position with the developing countries by assisting them to maximize their development.

If you feel that this approach is practical I would be happy to discuss it with you in the future.

Sincerely,

  
John Baize  
Washington Program Manager

Mr. Montague Yudelman, Director, AGR

March 12, 1980

Graham Donaldson, Chief, AGREP

USDA Analysis of Food Needs in Developing Countries

The attached excerpt from a USDA study outline is of some interest. Apart from being of use to us as a background to our food policy work, you will note that they propose to make use of an approach and methodology developed in AGREP.

cc: H.G. van der Tak (CPSVP)  
V. Rajagopalan (CPSVP)  
A. Ray (PAS)  
D.C. Pickering (AGR)  
L.E. Christoffersen (AGR)  
D. Turnham (AGR)  
  
A. Berg (PNP)  
H. Walters (AGR)

GDonaldson:mt

### Scope of Work

The International Economics Division of ESCS/USDA is charged with responsibility for an annual report assessing global food production and needs. For the report to be prepared by April 1980, detailed analysis is required to develop an improved estimate of the "food gap", i.e. the difference between available supplies and food consumption needs, in the poorest countries. In particular, the Division desires to incorporate an analytical approach developed recently by researchers at the World Bank (reported by Knudsen and Scandizzo, 1979) which provides specific quantitative estimates of the "food gap" in developing countries.

Analysts in ESCS/USDA will be unable to complete such an analysis with presently available resources within the specified time period and the Division wishes to utilize for such work a contractor having the requisite expertise. The work to be conducted includes the following tasks:

- a. Estimate per capita food availability, effective market demand and food needs for 41 low income countries (below \$625) and 12 other food-deficit developing countries taking into account differences in the level and distribution of per capita income;
- b. Analyze the amount of food imports required over and above historical levels that would close the so-called nutrition gap, i.e., the difference between effective demand and some widely accepted standard of minimum need;
- c. Determine the level of concessional food aid that would be required given each country's capacity to finance imports at world market prices;
- d. Advise ESCS analysts on the proper use of the results in the overall global assessment being prepared.

#### Methods to be Used

The approach will draw heavily on a model developed at the World Bank and reported by Knudsen and Scandizzo which projects market demand, food needs, percent and number of the malnourished population to calculate so-called nutrition gaps given information on age distribution of the population, per capita income, income inequality (as measured by a Gini coefficient), per capita availability of food both from foreign and domestic sources, and a country specific calorie income elasticity (either assumed or directly estimated based on household consumption survey data).

#### Information to be provided by USDA

In order to minimize the time necessary to make the program operational on the Washington Computer Center and begin the country estimates, a programmer and a part-time research assistant will be made available for a total of approximately three weeks beginning on or about February 11, 1980. Actual computer runs will be made on USDA facilities. Also, commodity supply and other country data being prepared by ESCS for the overall report will be provided for use in the analysis.

*File*  
USDA Econ. Res. ~~PS~~  
~~FSC~~  
GD.

A RESEARCH PLANNING FRAMEWORK  
FOR THE INTERNATIONAL ECONOMICS DIVISION

September 13, 1979  
International Economics Division  
Economics, Statistics, and  
Cooperatives Service  
U.S. Department of Agriculture

A Research Planning Framework  
for the International Economics Division

Contents

	<u>Page</u>
Introduction.....	1
Role and Missions of IED.....	3
Organization of IED.....	5
IED in relation to other Agencies and Institutions.....	6
USDA Agencies.....	7
Foreign Agricultural Service.....	7
Office of the General Sales Manager.....	8
Office of International Cooperation and Development.....	8
Other USDA Agencies.....	9
Other Government Agencies.....	9
International Organizations.....	10
Universities.....	10
Scope of the IED Research Program.....	10
The Regional Branches.....	10
Situation and Outlook.....	11
Country Agriculture Structure.....	12
Demand, Trade, and Development.....	13
World Analysis Branch.....	15
Commodity Analysis.....	15
Estimation.....	16
Price Analysis.....	16
Agricultural Statistics.....	17
Trade Policy Branch.....	18
Policy Intelligence.....	19
International Commodity Policy.....	20
International Economic Policy .....	21
Policy Systems.....	22
Agricultural Development Branch.....	22
Development Statistics.....	23
Growth and Development.....	23
Trade and Development.....	24
Resources and Technology.....	25
Building IED's Analytical Capability.....	26
Data Needs and Development.....	40
Current Data Availability.....	40
On Line Direct Access.....	40
Limited Access Computer Files.....	40
Individual Researcher Computer Files.....	40
Hard Copy Data Books and Computer Printouts.....	41
Section and Researcher Files.....	41
Economic Data Bases.....	41
Other Agricultural Data Bases.....	42
Country Data.....	42

	<u>Page</u>
Data Needs.....	43
Country-Commodity Data Needs.....	44
Maintenance and Accessibility of Data and Data Systems Management.....	44
Conclusion.....	46
Immediate Operational Priorities.....	46
Data Development.....	46
Global Aggregation.....	47
Methodological Research.....	47
Staff Development.....	48
Appendix.....	51
IED Publications.....	51
Periodicals.....	51
Non-Periodicals.....	52

A RESEARCH PLANNING FRAMEWORK  
FOR THE INTERNATIONAL ECONOMICS DIVISION

INTRODUCTION

This document is the first step in developing a comprehensive research program for the International Economics Division (IED). Its purpose is to create a 3-year planning framework for the development of detailed plans of work for each branch in IED. This document sets forth the mission and responsibilities of IED, its organizational structure, relations with other agencies, scope of the research program, data needs and development, and a description of activities to be undertaken in building the analytical capability to address priority research issues.

The generation of economic intelligence necessary to the formulation and implementation of U.S. domestic and international food, agricultural, and related policies has become increasingly dependent upon a thorough understanding of the performance of food and agricultural systems in other countries of the world. Changes in agricultural and trade policies in other countries, weather aberrations, and economic and financial conditions have profound immediate and long run effects on U.S. food and agricultural production, consumption, prices, and trade. Conversely, policies and programs, weather, and adjustments in American agriculture have international repercussions. A thorough understanding of the likelihood, magnitude, and timing of the effects of these types of phenomena are prerequisites to the effective formulation and implementation of U.S. domestic and international policies in food, agriculture, and related areas.

This interdependence between the U.S. economy and the economies of other nations has been increasing for the past 25 years. During this period the volume of world trade, agricultural and non-agricultural, has more than quintupled. Agricultural trade has nearly tripled, significantly outpacing the increased volume of world agricultural production. The nations of the world are now more dependent upon one another than ever before for agricultural raw materials, food, and fiber.

The vitality of the U.S. agricultural sector has become highly dependent on international trade. The output from one of every three acres is now sold abroad, and one-fourth of farm income is derived from these sales. Moreover, agricultural exports contribute importantly to national well-being by offsetting much of the large U.S. nonagricultural trade deficit. The U.S. agricultural trade surplus is expected to reach \$20 billion in 1979/80. The production, processing, assembling, and distribution of these agricultural exports increases all economic activity and generates more than one million full-time jobs.

Events in the early 1970's signaled an abrupt shift for U.S. and world agriculture. A decline in world grain production in 1972 coupled with dramatic increases in the demand for U.S. exports and the drawing down of stocks led to increased concern about the ability of the world to meet its growing food needs. Policy actions by many countries--notably the USSR, the European Community, and Japan--to protect their consumers from the adverse impacts

of food shortages and high prices added to world demand for grain. Other economic policy decisions have also had a profound impact on agriculture and the domestic economy. Rising energy prices, beginning with the OPEC price increase in 1974, have added to farmers' production costs in the United States and in the developed countries. Increased oil import bills for many countries have reduced the amount of foreign exchange available to import food. Changes in monetary policy in the 1970's, especially dollar devaluations and the shift from fixed to floating exchange rates for the major world currencies, have affected the competitive position of nations in the world agricultural economy.

Together these changes have created an international environment for U.S. food and agriculture characterized by increased uncertainty and instability. This, in turn, has increased the needs for more comprehensive information and analysis of the effects of international events on U.S. and world agriculture.

The changed international environment for U.S. agriculture raises a number of important research questions. The following is an illustrative but not all-inclusive list of the type of current high priority research issues that bear examination. Other important questions will emerge over time:

- ° What are of the likely effects of alternative U.S. farm programs on the volume of U.S. exports, on regional supply and demand in the rest of the world, on world market prices, and on the U.S. market share?
- ° What will be the volume of U.S. agricultural exports under alternative world weather scenarios?
- ° What influence have world economic conditions upon U.S. agricultural exports, including the effects of exchange rate changes, inflation, the ability of developing countries and centrally planned economies to finance imports, and the expansion of global liquidity?
- ° What will be the long-run supply-demand balance for food in the world and its regions? What is the effect of income growth on the demand for livestock products and feed grains? What are the physical limits to growth in agricultural supply and the possibilities for technological change to relax those constraints?
- ° What effects do increased energy prices have on world agricultural exports, both directly, and through indirect influences such as fertilizer prices and freight rates?
- ° What are the implications for the United States of recent and possible future changes in barriers to international agricul-

tural trade, particularly non-tariff barriers--e.g., the likely effects of the Tokyo Round of the MTN and of the expansion of the European Community upon U.S. agricultural exports?

- ° What are the likely effects and costs to the United States of proposed measures to deal with world price instability and food security in the developing countries? How do non-tariff trade barriers affect world price instability?
- ° What is the optimum U.S. export policy in the face of oligopolistic world grains markets? Issues include sales to centrally planned economies, international grain agreements, the grain cartel issue, the New International Economic Order proposals, and bilateral agreements.
- ° What will be the nature of adjustment in the U.S. market from increasing import competition from, for example, foreign beef, sugar, and dairy products?
- ° What are the long-term effects of economic growth and agricultural development in low-income countries on future U.S. commercial agricultural exports, including the effects of foreign aid, food aid, and trade preferences?

IED must respond to these and questions of a similar nature that will emerge in the future. This requires the development and maintenance of a knowledge base and analytical expertise that spans the agriculture of all regions of the world and the global commodity and currency markets that link those regions through international trade.

#### ROLE AND MISSIONS OF IED

The mission of Economics in ESCS is to provide information that leads to increased public understanding and improved public policy decision-making on food, agriculture, resources, and rural America. The specific role of Economics is (1) to provide timely, relevant, and accurate economic intelligence; (2) to conduct special analytical studies in support of policy formulation and execution; and (3) to conduct a continuing program of indepth research elucidating the economic relationships characterizing agriculture, rural resources, and the food system. Explicit recognition of the importance of world agriculture to domestic producers and consumers provided the impetus to establish IED as an integral component of the Economics unit in ESCS. In the area of international agriculture, IED has the same role as Economics.

The Specific mission of IED includes:

- ° Providing intelligence on current international agricultural and economic developments.

- ° Conducting special analyses of current issues for specific input into international agricultural policy formulation and the operation of programs implementing those policies.
- ° Conducting indepth economic research to identify and empirically estimate the interrelationships between the U.S. and world food and agricultural systems.\*

The Activities of IED that are carried on to accomplish the missions include:

- ° Collecting and interpreting current information on world, regional, and country agricultural and economic developments, including commodity supply-utilization, policies, weather, monetary conditions, and political and institutional developments.
- ° Forecasting food and agricultural production, utilization, stocks, trade, and prices for the world, regions, and individual countries.
- ° Conducting analysis and research in support of foreign market development, CCC (Commodity Credit Corporation) short and intermediate term credit, P.L. 480 programs, foreign agricultural development, and other foreign food and agricultural programs.
- ° Determining the effects of foreign economic and agricultural growth and development on the supply and demand for food and agricultural products.
- ° Identifying and evaluating the effects of foreign agricultural and trade policies on U.S. and world production, consumption, and trade of food and agricultural products.
- ° Timely dissemination of current information and research results on world, regional, and country food and agricultural systems for use by the public, government officials, international organizations, university researchers, foundations, and other institutions.

---

\*It is useful for delineating IED functions to distinguish between research and analysis although they are usually inseparable activities in practice. Research relates to analysis in a way analogous to capital formation in relation to current production. Research involves the discovery of basic facts and relationships and the development of analytical methods that describe and explain the fundamental character and operation of the agricultural economy. Analysis is concerned with the application of these relationships, facts, and methods to the peculiar set of circumstances surrounding specific questions about how the agricultural economy reacts to changes in the forces internal or external to it.

## ORGANIZATION OF IED

The International Economics Division is the primary source of information on world, regional and country food and agricultural systems for the entire Federal government. Its responsibilities include not only accumulating and interpreting what is known, but also augmenting the knowledge and understanding of international agriculture through its research program. Emphasis in IED is, therefore, on developing a rigorous country/region research program. The research product is intended for primary use in the many international agricultural programs of USDA and other federal agencies. These programs include foreign food aid allocations, short and intermediate-term export credit allocations for market expansion, product market development, and foreign agricultural development. Such research provides a fundamental base for policy analysis and short-term forecasting.

The program of the IED is a blend of current intelligence, near-term outlook, policy analysis and indepth research on world, regional, and country food and agricultural developments that take account of economic and agricultural development, foreign agricultural and trade policies, and regional /country food and agricultural systems. To ensure the careful integration of these diverse activities, the Director of IED is assisted by Assistant Directors for Research and for Situation and Outlook.

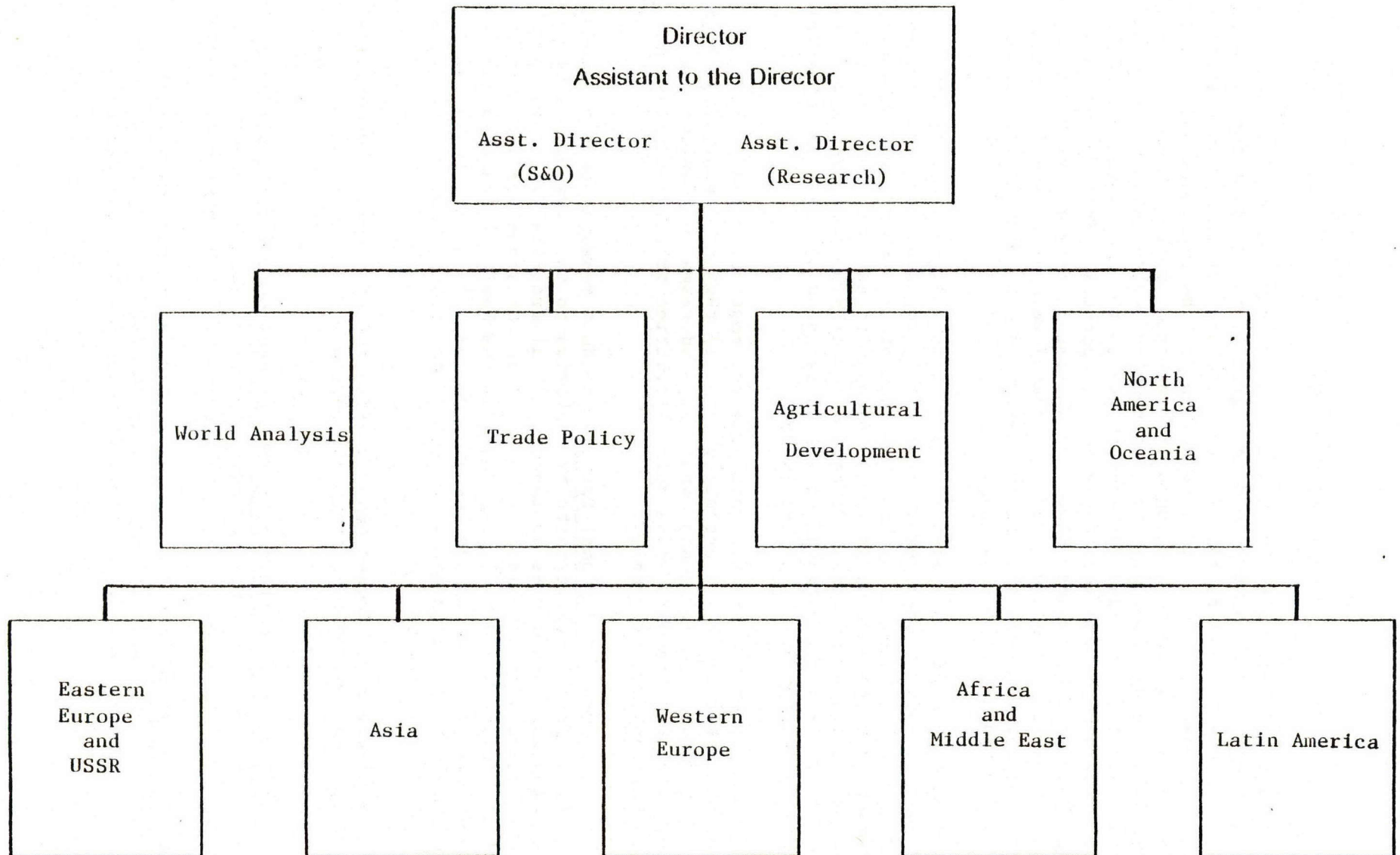
To meet its responsibilities for supplying information, policy analysis, and indepth research, IED is organized into (1) regional branches with geographically focused intelligence, analysis, and research missions, and (2) subject matter branches whose responsibilities broadly span any geographic configuration (figure 1):

- ° The six geographic Regional Branches conduct research on the demand for U.S. agricultural exports by countries in the region, on the supply of competing commodities or imports, on alternative U.S. trade and development programs and policies, and on the structure and performance of its counties' agriculture. Each of the Regional Branches has responsibility for situation and outlook, as well as indepth research and analysis of the meaning for world and U.S. agriculture of regional and country developments.

Three additional branches have research responsibilities encompassing a world perspective that spans all regions.

- ° The Agricultural Development Branch is responsible for analysis and research on the long-run, aggregate aspects of economic growth and agricultural development and trade, especially in developing countries.
- ° The Trade Policy Branch functions as the center for analysis and research on international agricultural and food trade policies, economic policies, and U.S. foreign policies for food and agriculture.

Figure 1



Organization of International Economics Division

- ° The World Analysis Branch is responsible for preparation of the Agency's assesment of the current world food and agricultural situation and outlook and for price analysis and forecasting research. This branch ensures the consistency of country and regional forecasts made by the regional branches. The Branch also has the responsibility for developing, maintaining, and coordinating the Division's data systems.\*

#### IED IN RELATION TO OTHER AGENCIES AND INSTITUTIONS

IED's relationships with other agencies and institutions derive from its primary function of assessing the impacts that result from interactions of the domestic and international agricultural economies produced by events and policies around the world. These relationships are conditioned by IED's:

- ° Position as the primary source within the Federal Government for information on food and agricultural matters for individual countries and regions.
- ° Unique capability for providing technical expertise on specific international agricultural issues and events, while at the same time relating such analysis to broader policy consideration within USDA and other government agencies.
- ° Access to the most comprehensive agricultural data systems in the United States or in international organizations.

Most relationships between IED and other government agencies and private and international institutions consist of analytical staff support for government policies and programs by activities such as:

- ° The collection and provision of data to meet the specific needs of collaborating agencies and other public and private institutions.
- ° Analysis of agricultural and related developments in relation to their future impact upon government programs.
- ° Fundamental research to better understand the underlying relationships that determine the potential impact of alternative agricultural, trade, and development policies of U.S. and foreign governments upon the domestic and world agricultural economies.
- ° Development of methodologies, data systems, and institutional arrangements for efficiently accomplishing the above tasks.

---

\*The organization, operation, and management of the IED data system is the subject of a separate planning effort.

- ° Collaboration with other agencies and institutions to strengthen IED'S ability to accomplish its mission, support U.S. policy objectives, and provide services to the U.S. public, in ways that:

- Provide support and encouragement of appropriate research and analysis by other institutions by direct or cooperative financing of research projects and by professional consultation and review.
- Provide for an exchange of findings, data, and methodologies that strengthen IED'S research and analytical capacity and that, particularly in the case of universities and research institutions, establish recruitment channels for scientists.

#### USDA Agencies

IED'S various collaborations with other USDA agencies comprise the largest and most intense part of its relationships outside the agency. Most of the contacts described below represent traditional activities of the Division. In the past, much of the analytical and research service provide to other USDA agencies was the byproduct of Division activities whose planning only took into general account the needs of other USDA agencies. Services were frequently provided at the outside agencies' initiative, usually on an ad hoc basis, and had only a residual claim on the Division's resources. In the future, IED will take advantage of opportunities for more completely integrating the servicing of outside agencies into the Division's program of research and analysis.

#### Foreign Agricultural Service (FAS)

IED'S services to FAS involve the provision of research and analysis that provide an overview useful to the development of policies and programs within its mission, and the supply of data and analysis useful to the implementation of specific ongoing programs and policies. FAS, in turn, is the Division's primary source for foreign agricultural data and is a very important source for commodity and policy expertise.

The services provided by IED include:

- ° Assessment of the world food situation, providing a comprehensive overview of the future course of the world agricultural economy that relates trade, nutritional, developmental, and foreign assistance considerations.
- ° Medium and long-term projections of production, consumption, and trade of agricultural commodities.
- ° Close cooperation in the forecasting of foreign agricultural production, consumption, and trade, including the development of short-term agricultural trade forecasting models.
- ° Country and regional analyses that provide data and methodologies useful to current situation and outlook work and to the development of U.S. policies involving these countries and regions.

- ° Special studies that assess the impact on the U.S. and world agricultural economies of economic and political events and of U.S. and foreign agricultural policy alternatives, such as those that examine alternative trade, reserve, and pricing arrangements for grains; international commodity agreements; and the impact of potential macroeconomic, energy, and international financial developments.

#### Office of the General Sales Manager (OGSM)

Because of the trade promotion and food aid responsibilities of this Agency, most of the activities of interest to FAS are also of value to OGSM. The need here is for a more specific tailoring of IED activities to specific OGSM activities, to include:

- ° Identification of country markets that offer potential for expanded U.S. exports.
- ° Assessment of the impact of alternative marketing strategies upon U.S. agricultural exports, particularly the potential for CCC credit arrangements to expand U.S. agricultural exports.
- ° Assessment of the relationship between the agricultural development of individual countries and their present and future agricultural trade and food aid requirements, with particular reference to OGSM's enhanced responsibilities under P.L. 480 Title III (Food for Development).
- ° Development of data and methodologies useful to the programing and implementation of current food aid and trade promotion programs, including the assessment of the financial situation of individual countries and the examination of the relationship between income distribution, nutritional status, and food aid needs.
- ° Continued preparation of the Global Assessment of Food Production and Needs prepared by ESCS for OGSM.\*

#### Office of International Cooperation and Development (OICD)

The Division's relationship with this organization is based on OICD's participation in programs to promote foreign agricultural development and its role as coordinator of USDA participation in international organizations

---

\* P.L. 480, Section 408(b) requires the Secretary of Agriculture to transmit annually to the Congress a "global assessment of food production and needs" intended to be useful in the programming of P.L. 480. ESCS has prepared this report since it was first mandated in 1976. It has related the current world food situation to the agricultural, economic, financial, and nutritional conditions existing in the developing countries, with particular emphasis on the poorest countries.

dealing with agriculture. OICD, in turn, is a primary source to the Division for information on the activities of international agricultural organizations.

IED provides technical support based on its country expertise and analytical capacity for dealing with policy and agricultural development matters involving OICD's:

- ° Participation in programs and projects in individual foreign countries.
- ° Development of policies and strategies for promoting foreign agricultural development, both within a USDA and an overall U.S. Government context, with particular attention to the relationship between food aid and development activities.
- ° Development of U.S. positions on agricultural and food issues in such organizations as the United Nations Food and Agricultural Organization (FAO--including the Committees on Agriculture, World Food Security, and Food Aid Policies and Programs), the World Food Council (WFC), United Nations Conference on Trade and Development (UNCTAD), and Organization for Economic Cooperation and Development (OECD).

#### Other USDA Agencies

From time-to-time, IED is called upon to provide analysis and data to USDA agencies whose primary mission is domestic in scope, but which must deal with questions having international ramifications. Examples are analyzing the impacts of crop set-aside decisions done in collaboration with the Agricultural Stabilization and Conservation Service and assisting the Farm Credit Administration in assessing the future international and domestic setting for its program of work.

#### Other Government Agencies

IED's relationships with non-USDA government agencies such as the Departments of State, Treasury, and Commerce, AID, CIA, and OMB consist of providing data and analytical support of a type that mirrors that for USDA. Except for the CIA and AID, these agencies have very small staffs for agriculture and have need to draw upon the ESCS capacity to supply information and analysis both about specific countries and broader agricultural policy and development questions.

The relationship with CIA has elements of collaboration, complementarity, and competition in areas of mutual expertise. AID has a sizable staff with specialized agricultural expertise, but their program and project orientation often leaves them with inadequate information and analysis relating to certain countries or to some questions requiring an overview of the relationship between agricultural development and broader domestic and foreign policy issues. While IED usually works on an ad hoc basis with AID to provide information and analysis, a well-defined and coordinated relationship has yet to evolve. IED's preparation of agricultural and food

production indices under contract to AID is the most institutionalized of such arrangements.

### International Organizations

IED's relationship with international organizations and institutions--such as FAO, the World Food Council, the World Bank Group, International Food Policy Research Institute (IFPRI), and the international research institutes has the character of professional collaboration. Parties to the collaboration often exchange data and findings, review methodologies and perspectives, and coordinate research efforts on subjects of common interest. For instance, FAO supplies extensive data on foreign agricultural production and trade in exchange for detailed information on U.S. agriculture and foreign countries for which USDA may have more timely or extensive information. IED has also closely consulted with FAO on a broad range of questions, particularly those involving the commodity projections of the two institutions. An ongoing effort of the two institutions is the development of mutually compatible world agricultural production indices.

### Universities

Universities relate to IED by providing a body of specialized research capability that can be drawn upon in executing individual parts of IED's research program or in complementing it. They also constitute a forum for the exchange of views aimed at improving the content of each institution's research program. Finally, they are a crucial source of recruitment of staff for all levels of IED's organization--including the exchange of professional staff from time-to-time for the mutual benefit of both institutions. A major component of the relationship is the provision by IED of international agricultural data for use by university-based researchers. Opportunities also exist for the development of cooperative research projects, such as that underway to evaluate the impact upon U.S. agricultural interests of the enlargement of the European Community. These interactions can catalyze a significant increase in university research on international agricultural problems.

## SCOPE OF THE IED RESEARCH PROGRAM

### The Regional Branches

Each Regional Branch is responsible for:

- ° Monitoring the current agricultural situation and outlook in its region of the world,
- ° Interpreting the meaning of events in the region for U.S. agriculture (particularly for exports and export prices),
- ° Forecasting supply, demand, and trade, and
- ° Analyzing the effects of domestic agricultural developments on that region.

The Regional Branches are additionally responsible for policy analysis and research on the region's agriculture to provide the analytical base for USDA and other federal agencies' agricultural policies and programs directed toward that region. The foundation for most of the global situation and outlook work, program and policy analysis, and other research of IED resides in the programs of the Regional Branches. Presumably, each Regional Branch has a section devoted specifically to situation and outlook, and has one or more research sections.

#### Situation and Outlook

The Situation and Outlook Section within each Regional Branch is responsible for monitoring and interpreting the current food and agricultural supply and demand situation, policy changes, and events (e.g., weather changes or natural disasters) in all countries of the region that affect world commodity markets and U.S. agriculture. The data, forecasts, and analyses are published in regional situation reports and are input the World Analysis Branch for ultimate integration into the Agency's situation and outlook reports and the World Agricultural Situation reports.

The systematic maintenance of data for all countries in a region must receive high priority for the situation and outlook work of each Regional Branch. The data presently available for short-run situation and outlook assessments and for policy analysis and longer-term research are deficient for most countries of the world. In many cases, national data exist but are yet to be incorporated in the IED data bank; in others, little or no data exist. A priority effort is needed to obtain the existing data from national sources and to assess its quality. Country analysts must be acquainted with the data sources, not only to choose among different measures of the same phenomenon, but also to identify improve sources as they become available.

The development of IED's data bank will facilitate the Division's future work, reduce response time, and improve the quality and depth of analysis. Moreover, the investment in data bank development will facilitate and catalyze additional research on world, regional, and country agriculture by other agencies and insitutions.

## Country Agriculture Structure

The analysts responsible for country agriculture research must develop a deep understanding of the agricultural sector. Knowledge of the resource base and technical agronomic issues must be supplemented by an understanding of the policy environment in which the agricultural sector must operate. This is essential to meaningfully interpret current developments and to predict the future course of agricultural production, consumption and trade. Important areas of knowledge include:

- ° The resource endowment and how it is changes through time,
- ° Where and why commodities are grown,
- ° Current technical input-output relationships for principal crops and how they are changing,
- ° The relationship between weather and crop yields,
- ° Risk considerations such as variability in both weather and world prices,
- ° Factor intensities of agricultural production, including energy intensity,
- ° The structure and performance of agricultural factor and product markets and constraints placed by them on the agricultural sector,
- ° Product and factor substitution possibilities in agricultural production, and
- ° The economic, agricultural, and trade policies--and the inter-actions among them--that shape the policy environment.

This knowledge is requisite to the analysis of important questions such as what degree of protection do specific policy measures give foreign agricultural sectors against competition from U.S. exports in their domestic markets, or what is the comparative advantage among countries for the production of commodities competitive with U.S. exports. The latter requires research on the domestic costs of producing such commodities in the principal competing countries that cuts through the distortions caused by policy manipulations of internal prices and exchange rates. Perhaps most important, such knowledge helps identify which nations, groups, or interests gain or lose from the adoption of alternative sets of policy measures. This meets a strongly felt need of policy makers in choosing between policy options. Thus, the country structure analysts provide a foundation of expertise on which situation and outlook specialists and other researchers in the branch and throughout the Division build much of their work.

## Demand, Trade and Development

The IED must have the capability to respond to requests for program and policy evaluation for each region of the world, as well as to carry on longer-term research to identify significant future changes and events. Almost any type of analysis requested of IED involves explicit or implicit estimates of the magnitude of the relevant supply and demand elasticities, interactions among products and inputs, and the effects of variables that shift supply and demand. The quality of the analysis rests on the quality of these estimates.

The needed analytical base in IED at present is weak for many countries and regions of the world. The highest research priority after data bank development in fiscal year 1980 and 1981 in each Regional Branch must be on the development of basic supply-and-demand estimation methods for commodities of most interest to this country. These near-term investments in analytical capability will yield large returns in the longer run in the form of improved quality and speed of response to requests for program and policy evaluation.

Countries within each region will be selected for detailed analysis. While several criteria are relevant for selection, the principal criterion is perhaps the country's importance as an export market for the United States or as a competitor with U.S. agricultural exports. Within this category, markets showing substantial variability or change will have higher priority over more stable and predictable markets. In addition, other countries will be studied in detail because they are important P.L. 480 recipients or have serious food deficits. Finally, countries which are politically important to the United States will also be chosen, as well as certain developing countries for general development or humanitarian reasons.

The individual researchers involved in this supply and demand analysis must be acquainted with recent methodological developments to select the appropriate estimation or modeling techniques, know the data availability and its limitations, and interact effectively with situation and outlook and country agriculture specialists to correctly specify and develop the model for any given country. Analysts in each Regional Branch must keep abreast of the research being done within institutions in the region and in agencies and institutions in the United States and elsewhere to avoid duplication of effort and to maximize the rate of progress in the quantitative research within IED.

Quantitative analysis and modeling are important tools for use together with informed judgement in carrying out the program and policy analysis missions of the Division. In addition, the results of quantitative analysis are needed for policy and program analyses of both short and long-run nature, not only within the Regional Branch itself, but also in the three branches which cut across regions, including, among others, the Policy Systems section of Trade Policy and the Estimation Systems section

of World Analysis. This is a critical functional link across branches in IED.

The quantitative research will include, at a minimum, the estimation of internal supply and demand schedules and stock positions for the principal products of interest to the United States in each country selected to the extent data permit. Where there are important interactions and feedback effects among grains or oilseeds or between them and the livestock sector, multi-product sector modeling may be needed. Where time-series data permit, econometric estimation of the relations is expected using either equilibrium or disequilibrium models where appropriate. Where data constraints are encountered, reliance on mathematical programming modeling may be a useful alternative.

The identification and quantification of the impact of shifters of supply (e.g., technological change and weather) and demand (population and per capita income and its distribution) will also be needed to assess country markets. Where the agricultural sector looms large relative to the rest of the economy, as in most developing countries, more general equilibrium analysis that explicitly treats the most important simultaneities may be required (as in the World Bank's PROLOG modeling approach).

Careful integration of the effects of policy distortions into the models is necessary. Where quantitative restrictions cut the link between domestic and world market prices, and where there exists an import or export monopoly (e.g., a marketing board), the estimation of import demand (or export supply) relations is needed. Similarly, work needs to be done to account for changes in policy interventions in order to improve predictions of future policy changes. Finally, the relationships between agricultural product and factor markets require study because the distributional or factor market adjustments will usually determine if a policy will be changed and in what manner.

Some types of program evaluation requests also require more in marketing research. The efficiency with which a country's internal marketing system functions affects matters such as its response to policy changes, its ability to absorb P.L. 480 imports, and the benefits to be derived from U.S. market development work. The Regional Branches may need to allocate some resources to research of this kind in selected countries. For example, the estimation of the costs and benefits of market development activities might include an assessment of the extent to which a country's imports are differentiated by country of origin in the eyes of its consumers or of important decision-makers. Such an assessment would not only aid in analyzing international commodity trade (both total trade and the U.S. share of selected markets), but also in estimating the benefits to the United States from export promotion activities.

The analytical base constructed in the Regional Branches over the next 2 to 3 years will determine to a very considerable extent the success or failure of IED in achieving its overall mission. (This is true whether staff analysis requests concern the individual region themselves or the impacts upon the United States and the global system as a whole.) The Regional Branches must become repositories of detailed knowledge on the agriculture of the rest of the world to provide the indepth analytical capability for the region. The other 3 branches will be responsible for taking a global view and aggregating across regions to draw conclusions about the implications of events in the rest of the world for the United States. Their research responsibilities are discussed below.

### World Analysis Branch

The World Analysis Branch is the primary locus for the Agency's food and agricultural outlook and situation work. It is also responsible for commodity-related staff analyses and longer term research projects. These functions require the development and maintenance of commodity-based analytical capacity for forecasting U.S. and world commodity market conditions under alternative weather, demand, or other assumptions. This analytical base will enable the Branch to contribute substantively, as well as organizationally, to the total forecasting programs of the Agency.

Development of the base needed for forecasting, analysis, and research will require substantial investment in staff, information systems, and quantitative tools. Priority activities in FY 1980 and 1981 are (1) the acquisition of new, as well as the development of existing staff to provide national and international commodity expertise, (2) upgrading and expansion of the data base development and management program, and (3) development of a quantitative framework to underpin the Branch's forecasting and staff analyses. The Branch is organized into the four units listed below. Elements of all three of the high priority investment areas are to be found in each of the sections.

### Commodity Analysis

The Commodity Analysis Section has primary responsibility for preparation of the Agency's short to medium-term assessments of the food and agricultural situation and outlook. The section's activities range from planning and scheduling reports to coordinating inputs from other IED branches and, through the North America Branch, NED branches. Consistency checks and the aggregate analyses needed to integrate the other branches' inputs to a consistent whole are performed in this branch.

The section also participates in Agency and Department-wide commodity-related analyses of questions such as parity pricing and wheat set-asides. The section also conducts research needed to strengthen understanding of world commodity markets, to improve the ability to forecast and project, and to improve the capacity to accurately estimate the impact of market changes on the United States. The section provides outlook and situation information, background analyses, and research results to the WFAOSB and the Interagency Commodity Estimates Committees. Commodity Analysis also coordinates the ESCS component of the World Crop Report, prepares the World Agricultural Situation and the Outlook for U.S. Exports, and contributes to the Agricultural Outlook and the Farmer's Newsletter, as well as the agency's "World Agricultural Highlights."

Critical to meeting all of the section's responsibilities noted above is the development of: (1) a core staff with indepth commodity-specific and cross-commodity expertise, and (2) an expanded, and upgraded system of multi-country/multi-commodity data bases.

#### Estimation

The Estimation Section is responsible for the development and maintenance of a framework of quantitative models and methods that support the forecast and staff support analysis done in this and other Branches in IED. The Section's responsibilities include both primary model design and development, coordination, and integration of forecast modeling with the work of the other branches of IED and NED. The section will undertake original forecasting modeling where needed to upgrade existing work, to bridge gaps, or to strengthen linkages; wherever possible, the analysts will draw on existing models done elsewhere in World Analysis, other branches of IED, the Agency, or outside the Agency.

The section's personnel will work closely with Commodity Analysis personnel and other Division model users on staff support requests or research questions requiring their quantitative expertise. The personnel in the section also undertake periodic, systematic evaluations of forecasting--both inside and outside the agency--and of alternative forecasting methodologies. Critical to meeting the section's responsibilities is the (1) development of a core of quantitative expertise and a functional, on-line analytical framework, and (2) integration of the section's personnel as much as possible into day-to-day forecasting and staff support operations both within World Analysis and in the other branches of IED and NED.

#### Price Analysis

The Price Analysis Section is responsible for the overall price dimension of the Division's outlook and situation work as well as a program of more indepth, price-related staff support and research. The section's most

visible outlook and situation product will continue to be the price monitoring appearing in the monthly Food and Agriculture Update, the World Agricultural Situation, the Foreign Agricultural Trade of the United States, Agricultural Outlook, and related publications. Reporting in the future will emphasize not only traditional indicators of price movements in international trade, but also broader measures such as exchange rates, freight rates, changes in costs of production, and input prices.

The analysis and research underpinning the section's price projects includes work on price transmission between markets, the relation between futures prices and U.S. import and export unit values, the impact of exchange rates on commodity prices and marketing margins, and price spreads between U.S. domestic prices and import and export market prices for major traded commodities.

Common to all of these items is the need (1) to expand and upgrade the Division's data base on prices and related variables, and (2) to develop a broad qualitative and quantitative understanding of price-quantity relationships and the price transmission process. As with the other sections of World Analysis, considerable emphasis will be put on drawing on existing work being done in other branches of IED and NED and concentrating the section's resources on developing an aggregate analytic capacity.

#### Agricultural Statistics

The Agricultural Statistics Section is responsible for the collection, processing, and reporting of information on world and U.S. food and agricultural production, consumption, and trade. It shares this responsibility, especially for collection, with the Regional Branches. The section's on-going data collection and processing responsibilities include maintenance of existing IED data bases such as that used to prepare the world food and agriculture production indices, the U.S. agricultural trade data base, price data bases and more detailed product-specific area, yield, and production data bases.

The section's on-going information reporting responsibilities include publication of the monthly Foreign Agricultural Trade of the United States and annual U.S. Agricultural Trade Statistical Reports; preparation of reports on trade involving special public programs such as the Food for Peace Program, the Plant Quarantine Program, and the Meat Import Program; compilation of materials for the Grain Market News Service, the USDA Agricultural Statistics Handbook, and the Farm Index; and generation of the indices of World Food and Agricultural Production.

Common to all of these responsibilities is the capacity (1) to identify and collect key information, and (2) to process the information quickly and cheaply, whether the end product is for incorporation into the section's publications or for use as an input into research, analysis, or situation and outlook reporting in other areas of IED or NED.

A substantial portion of the section's resources will be allocated to expanding and upgrading information collection and processing. Expansion of existing data bases and development of several new data bases in cooperation with the regional Branches will be a priority item in fiscal years 1980 and 1981. Data are now severely lacking on oilseeds (including meal and oil byproducts), livestock (including numbers, products, and feed inputs), and a number of other key products and inputs. Stocks and trade data in the grain and cotton data bases are limited and, in many cases, unreliable.

The section will also undertake development of the systems support program needed to ensure that the Agency's data bases are compatible and readily accessible, and to ensure quality control of the data included in the bases. The section will assign top priority to developing the linkages necessary to ensure the compatibility of the Agency's large-scale, multi-purpose data bases and the smaller, outlook-oriented data base developed by the OASIS staff. As with the other sections of World Analysis, much of the Statistics Section's work will entail close coordination of work done in other sections of IED and liaison work with agencies outside ESCS, such as the FAS commodity divisions and the FAO statistics offices.

#### Trade Policy Branch

The Trade Policy Branch is responsible for policy analysis and longer term, indepth research on international agricultural and trade policies and on macroeconomic and monetary policies, particularly those that act across country and regional divisions. The primary task of the Branch is to assess the impacts of policy changes on the supply and demand of major traded agricultural commodities. These assessments include the prediction of what would happen if certain programs were instituted or policies changed and of what the present sets of policies and programs will bring if left unchanged.

The Branch's responsibilities include the monitoring, analyzing, and reporting of current international policy developments in a manner analagous to the situation and outlook responsibilities of the Regional Branches. In addition, the Branch develops and maintains analytical models to be used for policy analysis and for making medium to long-run projections of world, regional, and country food and agricultural supplydemand balances and trade. These models, developed in collaboration with the Regional, World Analysis, and Agricultural Development Branches, will be made available to a wide range of users both within IED and USDA, and outside the Department.

The staff in the Trade Policy Branch collaborates closely with analysts in the Regional Branches to identify globally significant country and regional policy developments requiring indepth research. Information developed in the Regional Branches--such as estimates of supply and demand elasticities for commodities entering world trade, identification of the principle shifters of supply and demand schedules, or information on domestic agricultural policies--provides an indispensable base for the policy analysis and research of the Trade Policy Branch. Trade Policy also provides assistance to other Branches in the form of model development or research results useful for assessing the effects of international policy developments on country or regional agriculture.

To carry out the Branch's policy analysis and research responsibilities requires building a knowledge base on the range of policy interventions that affect international trade and developing the analytical capability to analyze the effects of those policies (and other factors such as weather and technological change) on regional markets, trade flows, and prices. This effort to build the knowledge base and analytical capability will include constructing and maintaining models for projecting trade in major agricultural commodities, monitoring methodological developments to improve trade projections and policy analysis modelling, and cataloging the principal international policies affecting agricultural trade.

#### Policy Intelligence

The policy intelligence Section provides quick-reaction analysis of the impact of current and prospective developments in the United States and abroad that have broad impact upon U.S. and foreign agricultural production, consumption, and trade. It does so in conjunction with its activities of monitoring and reporting policy developments around the world, and of coordinating the Division's involvement with international organizations dealing with agriculture, particularly on matters of agricultural and trade policy. The analysis draws upon information and analytical techniques from sources that are readily available and quickly applicable.

The need for a "first cut" quick reaction generally gives a short-run focus to the analysis and places primary emphasis on the relative magnitude and direction of impacts, as opposed to the more detailed and precise results produced by lengthier and more indepth studies carried out in the other sections of the Branch. The section conducts some longer-term research on questions for which members of the section possess expertise or specialization unique to the Division, particularly for the development of analytical techniques especially useful in the analysis of short-term policy impacts.

The section works closely with other parts of the Branch and the Division and provides leadership in preparing analyses of events with "across-the-board," multi-country impacts or in coordinating policy analyses involving several countries or regions. The section will work more and more closely

with the Policy Systems section of the Branch as it develops the modeling capability to give a more systematic approach to policy analysis.

### International Commodity Policy

The International Commodity Policy Section has responsibility for policy analysis and indepth research on a broad spectrum of international agricultural and trade policies that affect the supply and demand of agricultural commodities of export interest to the United States. These policies and programs encompass policies of individual countries, policies and programs of international organizations such as the United Nations Commission on Trade and Development (UNCTAD), and U.S. commercial and concessional trade policies.

The research program of the Branch will involve the development of world trade models for the major traded commodities. These models will be designed to address the implications of policy changes for world commodity trade patterns and for regional/country production, consumption, stocks and prices. To assess the implications of policy changes in international commodity trade on the U.S. economy, the trade models can be linked to multi-period domestic-policy simulation models that include a wide range of characteristics of U.S. agriculture. The prototype for this kind of model development and linkage is the development of a world wheat trade model linked to WHEAT-SIM, a simulation model of the U.S. wheat economy.

The development of world trade models that can be linked to domestic policy simulators represents an investment in analytical capability that will enhance IED's staff support and policy analysis work. Such trade models will be developed in the process of research and analysis of the effects of policy changes on commodity production, consumption, stocks, prices and trade.

The policy issues requiring research, or that will be the subject of special analyses in the International Commodity Policy Section, include issues relating to competition in world commodity trade, international food security/stability, agricultural adjustment, and issues that span the above categories.

Research on factors affecting competition in world commodity markets addresses the implications of tariffs and non-tariff measures, balance-of-payments constraints, resource endowments, exchange-rate changes and other policy interventions on the volume of commodity trade. This area of research emphasizes especially the implications of tariff and nontariff measures on U.S. commodity market shares.

Research on alternative stabilization and food security policies entails evaluation of international buffer stocks, emergency food reserves, food insurance schemes, and compensatory financing programs for food deficit

countries. The analyses focus on implications of such measures for U.S. grain prices, exports, grain reserves, cost, and consistency with domestic policy objectives.

Analysis of adjustment policies--policies which assist the efficient functioning of agricultural product and factor markets--focuses on direct and indirect governmental intervention in agricultural markets. Direct intervention measures include price and income stabilization, reserve stock policies, surplus disposal programs, and trade barriers. Indirect policy measures include those that indirectly influence resource entry or exit in the farm sector--structural adjustment programs, land use programs, and other measures--that improve infrastructure of agricultural sectors and linkages with the general economy.

Research responsibilities that cut across those areas listed above include subjects such as: the evaluation of the structure and performance of the grain sectors by comparing the policies of major exporters; the structure of world oilseeds trade under imperfectly competitive conditions and its effect on market prices; the phasing of livestock cycles in major meat producing countries; effects of freight rates on trade; optimal strategies for U.S. trade with centrally planned economies; and the value of world crop information to the efficient functioning of trade and domestic marketing systems.

#### International Economic Policy

The Trade Policy Branch must be concerned not only with trade and agricultural policies, but also with international economic policy in general since it too affects agricultural trade. This section is responsible for preparation of the global macroeconomic assumptions utilized in the Division's situation and outlook projections, drawing in part upon work of the Agricultural Development Branch. In addition, it is responsible for longer-term research to more adequately understand and quantify the relationships between agricultural trade and international economic policy. This includes the relationships among U.S. agricultural exports, exchange rates, inflation, energy prices, monetary policy, and the general economy. For example, the effect of global monetary expansion on nominal commodity prices is weakly understood, but without an understanding of this relationship, it is difficult to forecast nominal commodity prices. Similarly, the move from fixed to quasi-floating exchange rates introduced a new source of risk in world trade, and the implications for commodity markets have not been worked out. Similarly, the Schuh hypothesis that the U.S. agricultural sector will have to bear more adjustment under flexible exchange rates due to international capital flows has not been empirically tested. If true, this has important implications for future U.S. farm income stabilization policy.

In the developing and centrally planned countries which must ration foreign exchange at the official exchange rate, balance-of-payments constraints

limit commodity import possibilities. This is related intimately to world petroleum prices and the expansion of global liquidity, as in the creation of SDR's. Understanding the import decision process in such countries will be necessary to predict their import levels, as well as to assess the effects of policy changes upon U.S. exports.

Attempts at global economic modeling (e.g., Project LINK at the University of Pennsylvania and the model at the Division of International Finance of the Board of Governors of the Federal Reserve Bank) are clearly beyond the mission and resources of the IED. However, some staff members need to keep abreast of developments in those areas which may be useful to IED's research programs and analyses. Since in most such modeling efforts the linkage between agriculture and the rest of the economy is weak at best (usually agriculture is treated as exogenous), this an area where the IED must put some resources. This could contribute to improved understanding of the domestic inflationary effects of shocks from the world economy transmitted into U.S. commodity markets.

### Policy Systems

The Policy Systems Section has the responsibility for developing and maintaining global models for use in making intermediate and long-run projections of world food and agricultural production, consumption, and trade. In addition, the section is responsible for making the models accessible to users in other branches in order to analyze the medium to long-run effects of alternative policy changes and of other significant factors--technical change and income and population growth--that affect world supply and demand for food and agricultural commodities.

The major tasks of the section over the next 3 years are to update and revise the current grains-oilseeds-livestock (GOL) model to make it more useful for long-run projections and policy analysis, to develop the GOL into a World Food Model, and and to develop an analytical capability for analyzing the intermediate-run effects of policy changes. In these efforts, major attention will be devoted to developing methods for analyzing the full equilibrium adjustments of policy changes and the time path of adjustment.

This section must work with analysts in the six regional branches, who are responsible for estimation and/or modeling of the markets in selected countries, with the shorter-term modelers and the agricultural statistics group in World Analysis, and with analysts of technological change and development in the Agricultural Development Branch to develop the best possible tools for policy and program analysis.

### Agricultural Development Branch

The Agricultural Development Branch is responsible for current analysis and research on economic growth and agricultural development. The

research is concerned with understanding the relationships among economic growth, agricultural development, and world agricultural trade. This research represents a significant expansion of the breadth and depth of development-related research in ESCS. The United States has a vital interest in agricultural development in other countries, not only from the self-interest of export market development, but also out of humanitarian and political stability. In contrast to the Regional Branches, the work of this branch tends to be more aggregative and longer-run, and cuts across countries in a comparative mode. As part of its research responsibilities it publishes the World Food Situation and the Global Assessment of Food Production and Needs.

The Branch program will be carried out in the four sections discussed below.

#### Development Statistics

The Development Statistics Section is responsible for establishing a comprehensive data system covering the aggregate aspects of economic growth and agricultural development. The expansion in development related research in the Agency requires a concerted effort to acquire the necessary data. Data on development and developing countries will be obtained, evaluated, sorted and organized for ready access and ease of maintenance on an up-to-date basis. A world agricultural trade data system is being developed, and further improvement is underway to more effectively meet the needs of Division analysts and researchers. Other data sets to be developed include national accounts, agricultural inputs, and performance measures for the agricultural and marketing sectors. When the data system has been completed, it will be folded into the central data bank in the World Analysis Branch.

#### Growth and Development

A principal responsibility of this section is to better understand the process of economic development and its relationship to agricultural development. The research concerns identifying and quantifying the sources of development and the linkages between agriculture and the rest of the economy in developing countries. Since the agricultural sector comprises a much larger part of the economy in most developing countries than in high income countries, the interaction between agriculture and the rest of the economy is particularly critical in policy and program analysis in developing countries.

There has been very little research in this area in USDA in recent years. In FY'80 a concerted effort will be made to review agricultural development research conducted elsewhere to determine the state of knowledge on which the Division research program can be built. The work will examine the role of agriculture in developing countries and assess how the structure of agriculture and the nature of the rural sector changes in the development process. Factors to be considered include the natural resource base, appropriate agricultural production and marketing techniques, farm

tenure systems, the rural labor force, labor productivity, and national policies for agricultural and rural development. This Research is expected to help identify appropriate development strategies and to clarify the potential role of the United States in assisting development of the LDC's.

Another area of emphasis in this section is the food situation in developing countries. The current supply and demand situation for major food commodities is largely in the purview of the Regional Branches and the World Analysis Branch. However, the issue of how those supplies are distributed geographically and among socio-economic groups is the concern of analysts in this section. An effort will be made to look beyond the average availabilities to identify the number and characteristics of nutritionally disadvantaged groups, particularly as they relate to economic phenomena such as income distribution and the marketing systems. Research findings will contribute toward improvement in the annual Global Assessment of Food Production and Needs and the ultimate goal of improving the effectiveness of P.L. 480 Food Aid programming to meet the food needs of the poorest segments of society in recipient countries.

Other research relating to the P.L. 480 Program will consider its possible impact on development. There is need to clarify under what circumstances food aid may act as a disincentive to indigenous production and, inversely, how it may make a positive contribution to agricultural and general economic development.

#### Trade and Development

This section will have responsibility for assessing the effects of economic growth and agricultural development on world and U.S. agricultural trade. From the standpoint of U.S. agricultural exports, the relationships between development and trade are critically important. Agricultural success stories, such as South Korea and Taiwan, suggest that our exports may benefit significantly from agricultural development. The extent to which this positive relationship can be generalized needs to be studied. At the same time, agricultural development in other countries may be a source of competition for U.S. exports.

The approach in this section will be to conduct a systematic investigation of the variables that measure or describe the attributes of a nation's economy for a broad range of developing and developed countries and to relate selected variables to trade of agricultural products. This analysis should establish the general relationship between development and trade. The dynamics and complexity of this relationship and the difficulties of variable selection and specification justify a continuing research program to develop progressively better economic growth and trade models.

The information generated will help to identify future markets and to assess market potentials and sources of competition. It will also suggest ways to promote the market development objective of P.L. 480 and help to evaluate alternative market development strategies.

While the above approach is oriented toward how development affects trade, there will be attention given also to how trade affects development. A number of observers have argued that restrictive import policies in high income countries, which limit exports from LDC's, slow down their development and in turn reduce their import demand. Many LDC's also impose a very restrictive set of trade policies often centered around import substitution or revenue oriented export taxes. While foreign exchange shortages and the risks associated with reliance on an unstable international market are legitimate concerns, attention needs to be given to the possible opportunities foregone to achieve apparent short-term benefits.

The investigation of this development-trade relationship will be extended to an assessment of the possible beneficial impact of trade on the development process. This will provide insight into appropriate policy sets for achieving LDC national welfare objectives and provide an analytical basis for improvement in U.S. programs of food aid and technical assistance. Also, the work in this area will assist in establishing a U.S. position in trade negotiations and in furthering U.S. initiatives to promote a world trading system that expands the export opportunities of LDC's.

### Resources and Technology

Agricultural resource endowment and technological change can have important effects on growth in production. In some countries, the physical constraints imposed by the resource endowment can be relaxed by bringing more land into production, usually at increasing cost. There is only a very general idea of the extent and location of potentially arable land, and little analysis of the financial and environmental costs of bringing this land into agricultural production. Many observers have argued that the least costly means of increasing world agricultural output, particularly in the developing countries, is through yield-increasing technological change. The validity of this argument has important implications for determining appropriate investment in agricultural research at the international centers and in LDC national research systems of developing countries.

More work is needed on how to introduce technological change into world agricultural models used for policy and program analysis. Specifically, the models need improved content on how technological change affects crop substitution possibilities, as well as growth (and distribution) of real per capita income and, in turn, demand for food. A related issue is the effect of rising energy prices on the type of technology adopted, not only in developing countries but also in higher income countries.

The Resources and Technology section is concerned with a continuing evaluation of the world/regional/country resource base. Work is continuing on improvement of existing estimates of land expansion potentials. A major interagency USDA effort (ICRIES) is being proposed in which the Natural Resource Economics Division has a significant role, with participation from personnel of this section. This proposal is an extension of an on-going research activity conducted by NRED with funding from AID. Personnel from the Statistics units of ESCS are also involved in providing technical assistance to selected individual countries in efforts to inven-

tory their land resources. Work in this section will build on activities such as these and will initiate complementary research to further improve our knowledge of land resources. Consideration is also being given to an agricultural water supply assessment and outlook in critical areas of the world and implications for agricultural production.

The role of technological change in output expansion is generally recognized but the methodology for measurement is even less well developed than that for resources. Research in this section will be directed toward identifying technological systems characterizing major regions and assessing the potential for technological break-throughs and their impact on production.

Drawing on the above work and other information available from the development research community, this section will contribute to the efforts centered in the Trade Policy Branch to improve the GOL model by developing estimates of appropriate resource and technology constraints to be used in the supply equations.

#### BUILDING IED'S ANALYTICAL CAPABILITY

With the expanded role of IED as defined above, it is clear that an adequate analytical capability in terms of data bank, knowledge base, models, and staff expertise is not now in place. In recognition of this fact, the following matrix is presented as a conception of the fundamental things we should ideally know about every region, particularly for the commodities of major interest to the United States.

The matrix by design does not focus on specific policy issues. Rather, implicit in its construction is the question: what is needed to respond quickly and competently to requests for staff analysis on any of the high priority issues defined in the introduction to this document, as well as to issues which cannot be foreseen. This matrix provides a checklist for Division management to assess where the IED is now and set priorities on what needs to be done to increase the Division's capability in the coming 3 years.

The matrix is organized by country or region of the world. The elements of the analytical base listed on the left can be visualized as tabs on a looseleaf notebook which needs to be filled and kept up-to-date for each country or region. Within each region, the analytical base focuses on the principal commodities of interest to the United States within their internal supply/demand context. An alternative, but more cumbersome, organization of the matrix would be along commodity lines.

The elements of the matrix comprise a comprehensive list of operationally identifiable and verifiable elements of an analytical base. However, with anticipated levels of resources for the Division, this level of detail cannot be maintained for all countries on all commodities in an instantaneously accessible form. The emphasis will be on the commodities

of primary interest to the United States in each of the principal producing regions or markets (present or potential). Within this group, a higher priority is assigned for countries or regions with less stable or predictable markets.

The level of resources allocated to IED will determine what level of detail and speed of access can be maintained for all the elements in the matrix on all the commodities of interest to the United States. The more resources, the faster the potential speed of response. With increasing resources, the information might move from filing cabinets full of reports and sources to loose-leaf notebook summaries to a computerized information retrieval system. It is anticipated that a computerized data bank will be developed over the next three years; however, much of the other information will remain in file cabinets under anticipated levels of resources.

While some level of qualitative information already exists on many of the elements of the analytical base defined in the matrix, the data base and quantitative tools for forecasting and staff analysis are judged to be inadequate. Highest priority is assigned to remedying this deficiency over the next three years. At the top of the list is world data-bank development, beginning with oilseeds and to be followed by livestock, plus data on prices and trade flows of grains. Then the estimates of internal and trade elasticities and shifters of supply and demand of the most important products in the main trading countries must be upgraded.\* Quantitative modeling to upgrade forecasting and policy and program analysis is also given priority. This includes updating and revision of the Division's GOL model.

---

\*For certain countries of the world, such as the PRC, a much more fundamental data construction effort must be carried on and estimation of internal supply and demand coefficients will not be feasible in the near future.

Table 1.--Summary Matrix: Elements of the World Country/Commodity Analytical Capability

## Summary

Knowledge Base/Capabilities	Branch				
	Regional	World Analysis	Trade Policy	Agricultural Development	
General Economic Environment	X	X	X		X
Physical Constraints	X		+		X
Agricultural Production Process	X	X	+		+
Domestic Agricultural Policy	X	+	X		+
Internal Demand	X	X	+		+
Internal Marketing System	X		+		+
Exports and Imports	X	X	+		X
Agricultural Sector Analysis	X	+	+		X
International Market and Economic Environment	+	X	X		X

NOTES:

X = develops and uses information.

+ = uses information.

Table 2.--Detailed Matrix: Elements of the World  
Country/Commodity Analytical Capability

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
General Econ. Environment				
Data on size of the				
country's agriculture				
and its position in the				
world agricultural				
economy and importance				
to the U.S. (total				
production, land area,				
crop and livestock pro-				
duction, ag. exports				
and imports)	X	X	+	+
Data on role of the coun-				
try's agriculture in the:				
national economy (as a				
source of national in-				
come, employment, for-				
oreign exchange earnings				
and as a market for				
nonfarm output)	X	+	+	+
Data on macro variables				
important to the agricu-				
tural sector (size and				
rate of growth in popu-				
lation and per capita				
income (rural vs urban)				
inflation rate, exchange				
rate (official and shad-				
ow rate). GNP, balance				
of payments, unemploy-				
ment, etc. and trends in:				
them	X	X	X	X
Data on farm income - av-				
erage levels and distri-				
bution, number and size				
of farms, aggregate aver-				
age factor proportions				
and productivity levels				
in agriculture	X			+

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
<u>Physical Constraints on Agricultural Production</u>				
Data on land area, total, area now in agriculture, and potential; At what cost could more land come into production?				
Land tenure system	X	+	+	X
Documentation on climatic conditions: levels, seasonal distribution, and year-to-year vari- ability in rainfall and temperature	X	+	+	+
Documentation on soils: type and regional distribution, erosion, and other problems	X			+
Documentation on rivers: irrigation and trans- portation possibilities	X			+
Documentation on topo- graphy: constraints on ag. production (mechanization, erosion, etc.) and on transport	X			+
Maps of homogeneous agri- cultural regions on the basis of physical/ ecological conditions	X			+
<u>Country Agricultural Production</u>				
Supply and distribution data for all principal crops (time series): area, yield, produc- tion, beginning and end- ing stocks, use (food, feed and other), imports and exports).	X	X	+	+

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
Agricultural calendar for principal crops.	X	+		
Input Use: land, labor, capital, purchased in- puts, etc.	X			+
Agricultural technology for principal products: yields and variability, technical coefficients and how changing, use of mechanization, energy: improved varieties, fertilizer, irrigation, etc. Production prob- lems (disease, insects, varieties, etc.) Rela- tion between crop yields: and weather conditions	X	X	+	X
Cropping systems, and how much substitution is possible among crops (including annuals, perennials, and pasture):	x	+	+	+
Data on product and factor: prices (time series): including land, labor, capital, and main inter- mediate inputs.	X	X	+	+
Documentation of degree of: specialization and com- mercialization; size of marketed surplus and its determinants	X			+
Data on livestock produc- tion by species (time series): size and trends of herd/flock, technology used, offtake: rates, total annual slaughter, and existence: of production cycles (phasing and determin- ants)	X	X	+	

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
Domestic resource cost of : production or effective : protection calculations : for principal products; : measures of productivity: : and/or efficiency : :	X	+	+	+
Documentation on invest- : ments in agricultural : research, extension and : rural education, rela- : tion to one or more : international agricul- : tural research centers; : use made of borrowed : technology. : :	X			X
Estimates of own price : elasticity and principal: : cross-price elasticities: : of supply for main pro- : ducts : :	X		X	
Estimates of the magni- : tudes of shifters of ag- : ricultural supply (in- : cluding changing pro- : duct mix), e.g. genera- : tion and diffusion of : improved technology, and: : effect of weather varia- : tion on crop yields. : :	X	+	+	X
Projections of production : of principal products: : short run and long-run : :	X	X	X	

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
<u>Domestic Agricultural</u>				
<u>Policy</u>				
Product and factor price				
policies: Document				
types and evolution of				
policies for principal				
products (e.g., minimum				
or maximum prices, di-				
version payments, spec-				
ial programs for speci-				
fic products, marketing				
quotas, etc) and inputs				
(e.g. fertilizer sub-				
sidies, cheap credit,				
etc.)	X	+	X	+
Trade policies and general:				
economic policies af-				
fecting agriculture				
(Document types and				
evaluation), and their				
relationship to domestic:				
agricultural policy	X	+	X	+
Calculation of effective				
protection of principal				
products	X	+	X	
Documentation of agricul-				
tural technology policy	X	+	X	+
Documentation on infra-				
structure subsidies	X		X	+
Documentation on deter-				
minants of agricultural				
policy: locus of de-				
cision making and what				
are main factors which				
affect decision (e.g.				
net farm income, consum-				
er food prices, balance				
of payments position,				
rate of inflation, etc.	X	+	X	+

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
Estimation of the effect of policy variables on domestic supply and de- mand for principal pro- ducts	X	+	X	
<u>Internal Demand</u>				
Data on food, feed and other use of principal products (time series); trends (aggregate and per capita) and identi- fication of changes in consumption patterns in- cluding degree of pro- cessing and quality, de- gree of self-sufficiency:	X	X	+	+
Nutritional position of population (calorie and protein disappearance)	X			+
Data on price of all prin- cipal products, and es- timation of full matrix of own and cross price elasticities of demand	X	X	+	
Data on demand shifters (including population, per capita income and its distribution, urban- ization, etc) and esti- mation of the magnitudes of their effects	X	X	+	+
Evaluation of substitution possibilities among grains in both human diet and livestock/ poultry feeding	X	+	+	
Projections of consumption of principal products in: short run and long run	X	X	+	+

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
Policies affecting consumption level of individual products and of food in general	X	+	+	+
Assessment of consumer or income distribution effects of policies which distort agricultural production	X	+	X	+
<u>Internal Marketing System</u>				
Document location of demand for principal products	X	+	+	+
Document transportation and communications infrastructure: types, extent, vintage, costs	X	+	+	+
Document storage facilities: types, ownership, capacity, limitations, losses, costs	X	+	+	+
Document stocks behavior: magnitude, ownership, motives, seasonality	X	+	+	+
Document processing facilities: what types, capacity, technology, volume of production; effective protection	X	+	+	+
Documentation on agricultural input supply industries: (e.g. fertilizer, machinery, mixed feeds): size, technology, volume of production, percent of self-sufficiency, costs, protection	X	+	+	+

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
Assessment of cost struc- ture/efficiency of in- ternal marketing and processing system and effect of concentration on farm or consumer prices	X	+	+	+
Ownership of marketing system; corporate, pri- vate, specialized, or cooperative. Size of firms	X	+	+	+
Price determination sys- tem: role of world price and degree to which market-determined.				
Decomposition of dif- ference between farm or consumer prices.				
Regional integration of market	X	X	+	+
Document policies affect- ing marketing costs (regulations, subsidies, etc.)	X	+	X	+
<u>Exports and Imports</u>				
Data on volume, value, and price (c.i.f. or f.o.b.): by product, commercial and concessional. Also, world market share and seasonality	X	X	+	X
Documentation on policies which affect trade: taxes, subsidies, and non-tariff barriers (overt and covert). Ex- change rates (official and shadow). Account for variation in trade policies, identify in- terest groups and tar- gets.	X	+	X	+

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
Analysis of substitution possibilities among countries of origin/destination, i.e. basic for traditional trade patterns, e.g. quality, political factors, backhaul, etc. (Estimate elasticities of substitution or other market share analyses).	X	+	X	+
Physical infrastructure: port facilities, e.g. depth and size of ship, storage and throughput capacity and loading/unloading facilities	X	+	+	+
Estimation of import demand/export supply schedules for countries which cut the link between domestic and world prices via nontariff barriers, e.g. centrally planned and LDC's under foreign exchange rationing	X	+	X	+
Projections of agricultural exports and imports in the short run and long run	X	X	X	+
<u>Country Regional Agricultural Sector Analysis</u>				
Model construction and maintenance to project imports/exports of main agricultural products and to analyze the internal market and trade effects of changes in policies, technology, weather etc.	X	X	X	+

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
Monitor methodological developments in agricul- tural sector analysis	X			+
Monitor research in other institutions on the country's/region's agri- cultural sector	X			
Accounting for past growth: in agricultural produc- tivity and in agricul- tural development in general. Future pros- pects.	X	+	+	X
<u>International Market and Economic Environment</u>				
Data on total volume and value of principal traded commodities, and trade flows. Also freight rates and back- haul possibilities	+	X	X	+
Document international shipping, marketing, market intelligence, and communications infras- tructure, including con- centration of firms in- volved	+	+	X	
Document product differen- tiation in international agricultural trade, both quality and country of origin	+	+	X	
Documentation of interna- tional policies affect- ing agricultural trade, e.g. grains agreements; also, multilateral trade negotiations, North- South dialogue, etc.	+	+	X	

Knowledge Base/Capabilities	Branch			
	Regional	World Analysis	Trade Policy	Agricultural Development
Model construction and maintenance to project trade in important agricultural products and to analyze the effects on regional markets, trade flows and prices of changes in agricultural or trade policies, technology, weather, etc. (both stochastic and deterministic models)	+	X	X	+
Monitor theoretical and methodological developments to improve trade projection and policy analysis modeling approaches	+	X	X	
Monitor empirical research: in other institutions on: world agricultural trade: forecasting and analysis:	+	X	X	+
Analyze the competitive position among the principal exporting countries for main U.S. products	+	+	X	
Document international transmission of technological change and future possibilities, includes documentation of ecological conditions necessary for production of major crops	+	+	+	X
Map global production and trade patterns for major agricultural products	+	+	+	X

## DATA NEEDS AND DEVELOPMENT

### Current Data Availability

Data is stored and maintained in IED under the following main categories: (1) on-line direct-access computer files, (2) limited-access computer files, (3) individual researchers' computer files, (4) hard-copy data books, (5) limited-distribution computer printouts, and (6) section and researcher files.

#### On-Line Direct Access

The principal data files maintained on-line are in OASIS and TDAM.\* These are the FAS grain production, supply and utilization data for 42 selected countries and regions defined in the Grain Oilseed-Livestock Model (GOL) on a crop year basis from 1960. Price data maintained in IED is much less extensive. The data available include internal farm prices for a limited number of countries, U.S. commodity export prices, U.S. export unit values, and international commodity prices. These data have been collected from a large number of sources, including FAO, EC, trade organizations, FAS, and individual countries. Data series are of varying length, period, and quality depending upon the source. There are problems in developing consistent series due to differences in source data. The only other on-line series is the IFS (International Financial Statistics) data obtained by subscription from the IMF (International Monetary Fund).

#### Limited Access Computer Files

Data in this category is in a machine readable form but is maintained mostly as off-line computer files. Examples include source tapes from other organizations such as the Department of Commerce, IMF and the UN. Current U.S. agricultural trade data are also maintained as received on a monthly basis from FAS and other sources. A World Agricultural Trade data base by country, at the 2-digit SITC level, or more, has been developed that provides data from 1962 for about 100 countries. These are based on UN trade tapes which are different from those of FAO and have some inconsistencies. There are also gaps for those years in which data were not recorded.

#### Individual Researcher Computer Files

A number of researchers now maintain data assembled themselves or by others in their own direct access files. No attempt has been made to

---

\*TDAM (Time-Series Data Management System) is an on-line data file designed to be compatible with the most commonly used analytical computer software. OASIS (Outlook and Situation Information System) is an on-line centralized ESCS data file designed to give USDA policymakers and administrators easy access to the most commonly used data series.

determine what files researchers are keeping, but much of the data is copied from system files or is specific to their work. It would be useful to inventory these data at some future date and to integrate series of wider utility into TDAM.

### Hard Copy Data Books and Computer Printouts

It is now becoming difficult to distinguish regular published data series from data printed by other means. A large number of these data series in books are available, e.g., UN, FAO, and IFS statistics. In addition, most of the FAS data is periodically distributed in hard copy, and a number of data series are on microfiche. Thus, with some digging and help by support staff, some information can be found for a wide variety of topics. This data has not been automated although it is of great importance for future research needs. At minimum, such data needs to be cataloged according to type of data and physical location, and the most commonly used materials collected at a central location.

### Section and Researcher Files

Files maintained by individuals and smaller organizational units also contain a great deal of specialized information, but are often not inventoried, and, thus, are of use mainly to those persons maintaining the files.

The various data sources are listed in more detail in the following outline:

### Economic Data Bases

1. International Agricultural Data Bases--TDAM: This is based on the FAS Production, Supply, and Demand data base and contains supply and utilization data for 42 countries or regions for wheat, rice, coarse grains, and cotton. Approximately 2,020 variables are included, providing time series from 1960-1978 on an annual crop year basis. The world and country coverage is compatible with the format used in the GOL model. This crop data is also maintained in the OASIS logical file OSS.
2. Internal Farm Prices Data Base--European Community (EC): The data base contains internal farm prices for major crops of the EC. The time series available vary in length among the various countries and commodities. Many of the time series are too short to be of much use for time-series analysis. The data series are monthly and reside in TDAM logical file IFP.
3. U.S. Commodity Export Prices Data Base: This data base contains U.S. export prices for major agricultural commodities. Crop and commodity coverage includes wheat, rice, corn, sorghum, cotton, soybeans, soymeal, and soyoil. The data is subsumed in TDAM logical file ECP and has monthly frequency.

4. Internal Farm Price Data Base--FAO: The data base contains FAO internal farm prices for relevant commodities for a large number of countries. The data are monthly and reside in TDAM logical file FAO.
5. Export Unit Value Data Base: The data base largely consists of unit values of major U.S. agricultural export commodities. The data frequency are monthly and reside in the TDAM logical file EUV. Unit value data for some major Japanese agricultural imports are also available.
6. Non-Agricultural Data--IMF International Financial Statistics: This data base contains monthly, annual, and quarterly international financial data and some agricultural and non-agricultural commodity data. There are 30,000 variables stored on-line in TDAM logical file IFS as well as another 10,000 variables (for smaller countries) stored off-line.

#### Other Agricultural Data Bases

1. U.S. Trade: This data base contains data for U.S. agricultural import-export trade. It is used to compile Foreign Agricultural Trade of the United States. The source of the data is the U.S. Department of Commerce, Bureau of the Census.
2. P.L. 480 Data Base: Data for the U.S. food aid program are contained in this data base.

#### Country Data

1. Western Europe: Crop data, specifically for grains and oilseeds, are generally adequate, at least for supply, use, and trade. Price information is less adequate for most of these countries. Specifically, data are generally not available on retail food prices or on factor prices and technical coefficients. Most of the basic data available provides information on climate and weather and on general economic indicators. There are a modest number of gaps in the data for livestock and for agricultural policies. The availability of information on physical constraints varies by item; it is generally available for land, fertilizer, and other inputs, but not for port facilities, other transportation, or storage. Policy information is generally adequate, except for Italy and Spain. Relative to the rest of the world, the basic information on Western European countries is good.
2. USSR and Eastern Europe: The substantial effort devoted to the study of USSR agriculture has provided a large amount of useful data on the supply and trade of grains and oilseeds and on livestock; however, pricing and policy information, as well as utilization, are weak. The information on most Eastern European countries is rather sparse, partly due to the shortage of qualified staff in ESCS. Major crop supply and

trade data are rated generally adequate, but data are very weak on uses of crops, pricing and policies, livestock, and on marketing constraints.

3. Africa and Middle East: Information about agriculture is mixed, with serious inadequacies in many countries. For grains, the area, yield, and production data are adequate; but data on use have serious gaps in many cases with respect to the breakdown between food, feed, and other uses. Stocks information is available for only one-half or less of the countries. Trade data for grains are generally available, but price information for most countries is weak. Much less information about oilseeds is available; it is generally better for supply and trade, but very weak for use and prices. Availability of data is adequate on general economic indicators, but generally weak on all other categories, except for a very few countries such as Israel and South Africa where data are quite good.

4. North America and Oceania: The Canadian, Australian, and New Zealand data are generally rated as quite adequate.

5. Latin America: Available information for that region is generally adequate only for crop supply data and for general economic indicators. The trade data are adequate for several countries, but not for all. Data on the various other categories are quite weak for most of these countries. The main exception is that information about Brazil is reasonably complete and adequate for most categories.

6. Asia (7 countries): Crop supply data are adequate for all countries, and utilization and trade data are adequate for most. However, price information is very weak for about half of the countries, even for major grains and oilseeds. Data on climate, weather, and physical production constraints are generally adequate for most of these countries. However, information about transportation and storage is very weak, as are the data on livestock and policies. Overall, the data are relatively good for these countries; the most serious weakness is in prices, with generally adequate price information available only for Japan and India.

#### Data Needs

IED has access to a considerable volume of international agricultural data, but there are also many significant data inadequacies at the country level and some important gaps concerning major commodities. A second major data problem involves the need to improve the maintenance and accessibility of data. This involves striking a balance between expanding the computer-based data system and the continuing need to develop data sets to meet country or task-specific requirements. A

third problem is the need for better management and coordination to build a data system that will serve both the situation and outlook reporting and research and analysis responsibilities of IED.\*

### Country-Commodity Data Needs

A principal deficiency is data on individual countries for use in country-regional forecasting and policy analysis. Data availability for the major geographical regions was discussed above. For individual countries the most serious gap is data on internal prices. Without good internal price data, or with poor data, the Division will be hard pressed to perform its situation and outlook or analytical functions. During 1980-82, high priority will be given to collection of price data with attention first to countries that are major importers of U.S. agricultural commodities and that demonstrate variability in import demand. Additional resources will have to be allocated to the collection of internal product and factor prices. This effort will involve personnel in the Regional Branches as well as in World Analysis. The Agricultural Attache service should also be enlisted in the effort to collect price as well as other categories of data.

Other important categories of country-level data that are lacking include trade-flow data by source and destination for the major traded commodities and for major markets. Data on grain stocks, difficult to obtain, are seriously inadequate for many countries. Weather data are also inadequate for many countries.

With respect to commodities, the most serious data inadequacies concern oilseeds and livestock. For oilseeds, data are needed on supply and utilization of seeds, meal, and oils, crushing rates and capacities, and margins. The World Analysis Branch has made considerable progress in developing an oilseeds data base. The task now is to complete and bring this data base on line as rapidly as possible to make it accessible for situation and outlook, policy analysis, and research activities.

Livestock data are also inadequate. Reliable livestock herd size, herd structure, pasture, slaughter rates, and prices are not available for most countries. Research on the factors affecting the demand for feedgrains in both the short and long-run will be impeded by livestock data shortcomings.

### Maintenance and Accessibility of Data and Data Systems Management

A central computerized international data base and data management system would provide a more effective tool for both research and outlook

---

\*Current planning envisions the installation of a pared-down data base for use in situation and outlook work and a more comprehensive data base to serve IED's analytical and research needs.

and situation analysis than is currently available. The present IED system for data storage, retrieval, and management is seriously inadequate for coordinated research and analysis activities needed on international agriculture and trade in the Division. There is a lack of a clear focus for data base development, maintenance, storage or retrieval of foreign data. This clearly wastes resources on activities such as searching, copying, and reinputing.

The current system for processing and coordinating data tends to be strongly ad hoc. Much of the data effort, as it has evolved, is devoted to fixed commitments which, while they are useful, do not serve IED needs for situation and outlook and policy analysis. Two examples are relevant. First, the indices of agricultural production of individual countries and regions--done on contract for AID--are a major current effort; this extensive data base serves AID and general agricultural development interests well, but is not in a flexible form well suited to trade forecasting and policy analysis. Second, the compilation of U.S. agricultural trade data for FAS represents a major statistical monitoring function that gives inadequate attention to the analytical functions of the Division.

The several groups working on the data do not have the well-coordinated, systematic focus needed to meet analytical requirements. Planning for the collection of data tends to be based on the isolated demands of individual projects. Although large collections of data are received from various international sources such as FAO in computer readable form or are processed and kept in printed volumes, such data are not available in easily accessible automated form.

Some data bases are already computerized and maintained in TDAM and are available for general agency use through OASIS. These include complete series from the International Financial Statistics and FAS supply-utilization data for wheat, rice, coarse grains, and cotton.

Useable computer system development also already exists, mainly OASIS. Other software now in place, such as Speakeasy and the BLS Table Producing Language, can replace some functions now filled by data processing professionals and data clerks. This type of system can be fully realized, but it requires a complete system design to account for people, research objectives, and organizational arrangements.

A note of caution is in order. The first inclination when thinking of a data management system is to say, "Let's get everything on line!" While this is appropriate for certain types of data, it is also the most expensive way of maintaining data files. On-line data storage is reserved for routinely used data; data which is used less frequently can be stored at much lower cost on tape files.

In overall data availability, IED has a large number of specific inadequacies at the country level and some very important major gaps concerning the basic commodities. The specific inadequacies could be remedied in many cases from known sources if country analysts had time and clerical resources to do it. At least two sets of needs exist--detailed and extensive country-specific data and a consistent global set for commodity forecasting and trade policy research.

While further improvement of the computer-base system is needed, older and simpler methods will continue to be needed for some country-specific and task-specific needs.

Among the most urgent needs in IED is better coordination in the development and maintenance of its data base. There are serious weaknesses here at what is the core of any analytical system, and their effects are noticeable throughout the system--no analytical wizardry can overcome them.

#### IMMEDIATE OPERATIONAL PRIORITIES

The research program being proposed for the Division involves several major tasks and will take some years to implement fully. Immediate attention needs to be given to a set of operational tasks that will upgrade the quality of the Division's present output and provide an adequate base for sophisticated research. The following list sets out these tasks and some comments on them.

##### Data Development

- (1) Construct a comprehensive data base for production, trade and utilization of oilseeds;
- (2) Develop a data base for the livestock sector covering livestock numbers, slaughter, product output, and feed utilization;
- (3) Extend and improve the price data gathered in IED;
- (4) Cooperate with FAS to improve the grain data base, particularly in its coverage of stocks and utilization;
- (5) Complete and put into machine readable form the UN and U.S. world trade data now being developed in ESCS;
- (6) Implement a consistent set of decisions on what data should be held, where, and how it is to be held, maintained, and accessed;
- (7) Institute an effective training program so that analysts and support staff can use the computer system, at least at the basic level of retrieving data, generating tables etc.

These tasks must be accorded the highest priority both so that the Division can effectively perform its current tasks and provide the essential base for a research program. They are Division-wide tasks: the primary responsibility for organizing them and ensuring that they are carried out rests with the World

Analysis Branch, but it is essential that the Regional and other Branches provide a substantial input to ensure that the format of the data bases and systems meets the needs of each Branch, and that best available data sources are used.

### Global Aggregation

- (1) A short to medium term trade forecasting model should be made operational incorporating the best available country equations and the structure of the Net Trade Model.\*

Since the main use of this model will be to provide a formal input into the shorter term forecasting system, primary responsibility for the model and its maintenance should rest with World Analysis; but the regional branches have the responsibility to develop, with the assistance of commodity analysts, the country/ regional equations that are plugged into it.

- (2) The GOL model should be maintained and updated--alongside the development of an expanded world food model--until the research program has brought the latter to the operational stage.

Responsibility for this rests with the Trade Policy Branch, but considerable input from regional branches will be required.

- (3) A systematic approach should be established for recording and evaluating the forecasts produced by country, commodity, and global components of IED.

This evaluation system will be a major determinant for the allocation of priorities and resources to improve the performance of IED. World Analysis should serve as the coordinating point to ensure that evaluations are consistently carried out.

### Methodological Research

- (1) Select and use methodology appropriate to the needs of medium-term forecasting and analysis for forecasting the production impacts of weather--e.g., yield ranges, weather probabilities, and critical stress points.
- (2) Select or develop improved methodology for analyzing and forecasting the causes and effects of national farm, food and trade policies and programs.

---

\*The net trade models are systems of export supply and import demand equations for wheat and coarse grain solved simultaneously to forecast both annual net export and import quantities by major trading country and world wheat and corn price levels.

- (3) Develop methods to enable analysts for the major countries to record, analyze, and forecast the availability and utilization of the full range of livestock feeds--including pasture, grains and other crops, non-grain concentrates, and processing wastes.
- (4) Develop improved commodity models for analyzing and assessing the impacts of international commodity policy developments, and link these to domestic policy models.
- (5) Develop methods for forecasting technological change and assessing the effects of such change on agricultural production.
- (6) Develop methods of measuring and forecasting changes in comparative advantage.
- (7) Develop models for assessing the changes in the role of the agricultural sector associated with different stages of economic development, with special emphasis on the role of U.S. food aid programs.

These areas of methodological research are included in the list of immediate operational tasks because the new research mandate requires more rigorous, formal, and consistent treatment of these areas. Operational improvements cannot await the uncertain output of the research program, and effective research in these methodological areas should begin, in any case, with a careful review of existing work and the selection of approaches which are the most appropriate to the operational requirements of IED. Thus, these tasks meet the immediate criteria of improving current operational output by selecting and adapting the best available methodology, and by providing a sound base for further research.

Primary responsibility for these tasks rests with World Analysis for (1) and (3), with Trade Policy for (2) and (4), and with Agricultural Development for (5), (6), and (7).

#### STAFF DEVELOPMENT

During the next 3 years the analytical capability of the staff of IED will have to be increased. This will require increasing the size of the Division and the analytical expertise of its staff.

Currently there are 175 positions allocated to IED, an increase of 60 positions over the previous level of personnel devoted to international agriculture and U.S. agriculture trade. While this represents a considerable increase in resources assigned to this area of work, it does not match the increase in responsibilities assigned to the new IED. As now conceived, IED will have significantly expanded responsibilities to develop, maintain, and use (1) a computerized data base on world agriculture, (2) analytical models for making short-term

forecasts and longer term projections of supply, utilization, stocks and trade, (3) models for evaluating trade and international policy alternatives, and (4) analysis of economic and agricultural development in other countries and its implications for U.S. agricultural trade and development policy. To undertake these increased responsibilities, the level of staff expertise and training will have to be increased and focused on the new needs of the Division. Not only will the Regional Branches have to maintain and develop their indepth knowledge of individual countries, but a major staff development effort directed to expanding the interaction between these and the other branches on data-base development and modelling activities is needed. In addition, while the level of analytical economic skills available to the Division needs to be maintained and improved, the skills needed to expand the treatment of political, agronomic, and weather variables must be obtained by recruitment or training.

The first step in increasing the level of staff expertise in IED is to assess the Division's capabilities in light of those required by its new mandate. This will identify the priority areas for increasing the Division's expertise and should suggest the most appropriate means for achieving this end. Several alternatives are available:

1. Selective recruiting: The analytical skills of the Division's current staff should be assessed and compared with the skills needed to respond to the Division's new responsibilities. Recruitment of new staff should be targeted to overcoming the most serious deficiencies.
2. Division of Labor: The division of labor between the World Analysis and Regional Branches for (1) developing and updating the country data base and (2) accessing the computerized data needs to be specified. Once the procedure for updating the data series is established, the actual updating can be done by support and computer staff. This will free the professional staff of the time consuming task of updating and maintaining their own data series. However, this will not happen until the country analysts are confident they can easily access the computerized data when it is needed. This will require country analysts trained to use the computer terminals themselves (or other individuals assigned to obtain the data they need, when they need it).
3. Division Training Program: During fiscal years 1980 through 1981, IED should undertake a training program to raise the level of its analytical capability. The first step in developing such a program is an assessment of the Division's deficiencies to be addressed by such a program. Topics that should be con-

sidered include: (1) language training for country analysts, (2) research-related international and domestic travel, (3) effective maintenance and use of a computerized data system, (4) the design and use of economic models, (5) international and national trade institutions and how they work, and (6) current status of national and international trade policies and how they influence U.S. agriculture policy.

After the Division's capabilities and needs have been assessed, an intensive program to raise the level of staff expertise in the Division should be implemented.

## APPENDIX

IED PUBLICATIONSPeriodicalsWorld Agricultural Situation (June, September, December)

Analysis of world agricultural production, consumption, trade, and policy developments. Includes sections that focus on major commodities; highlights of agricultural developments in major geographic regions; foreign economic, financial, and monetary developments that influence the demand for U.S. agricultural exports (including some of those subjects that formerly were treated in the discontinued World Economic Conditions in Relation to U.S. Agricultural Trade); world price developments; summary of U.S. agricultural export prospects; world fertilizer developments; and international food and trade policy developments.

Compilation of contribution by individual analysts in the World Analysis, Regional, and Trade Policy Branches, and NED (fertilizer) coordinated by World Analysis. Total distribution of about 7,500 copies, with a mailing list of about 5,600 persons.

Regional Agricultural Situations (annual, between April and June)

Supplements on Africa and West Asia, Asia, Eastern Europe, People's Republic of China, USSR, Western Europe, and Western Hemisphere to the World Agricultural Situation. Reports on agricultural production, consumption, trade, and policy developments in the current year and outlook for the next year. A primary outlet for situation and outlook reporting by the Regional Branches.

Prepared in the Regional Branches. Total distribution varies between 2,000 and 5,000 copies for individual regions, with mailing lists varying between 1,000 and 1,400 persons.

Foreign Agricultural Trade of the United States (FATUS) (monthly)

Primary published source for current detailed monthly statistics on U.S. agricultural trade processed by the World Analysis Branch from raw data obtained from Bureau of the Census. Also includes special statistical compilation and articles providing analysis of major developments affecting U.S. agricultural trade.

Prepared by the World Analysis Branch for FAS with supplemental articles from other IED Branches. Total distribution of about 7,500 copies, with a mailing list of about 5,100 persons.

U.S. Foreign Agricultural Trade Statistical Report (annual, volumes for both calendar and fiscal years)

Supplement to FATUS. Primary outlet for publishing of detailed country-by-commodity and commodity-by-country statistics and special statistical compilations of U.S. agricultural trade on annual basis.

Compiled by World Analysis Branch from Bureau of the Census raw data. Distribution the same as for FATUS.

Outlook for U.S. Agricultural Exports (February, May, August, November)

Forecast of U.S. agricultural exports and imports on a fiscal year basis. Includes summary estimates and analysis of the total level, commodity composition and regional and country direction of U.S. agricultural exports.

Published jointly by ESCS and FAS, with preparation coordinated by the World Analysis Branch. Distribution about the same as FATUS (they share the same mailing list).

Agricultural Outlook (monthly)

ESCS's primary outlet for up-to-date situation and outlook information and analysis. IED analysts contribute individual articles on the foreign situation and outlook and components of broader analyses.

IED contributions coordinated by the World Analysis Branch. Distribution about 13,000, largely by subscription.

### Non-Periodicals

Foreign Agricultural Economic Reports (FAER)

Publishing outlet for most major IED research studies such as the World Food Situation and Prospects to 1985 and Alternative Futures for World Food in 1985. Intended primarily to disseminate information in a semitechnical or semipopular form.

Technical Bulletins

Publishing outlet aimed primarily at technical specialists. The FAER series has generally been used in preference to this series in recent years.

Statistical Bulletins

Outlet for publications of a solely statistical nature such as the Regional Agricultural Production Indices.

Staff Report Series

Unpublished papers containing data, special purpose analysis, and methodology not warranting formal clearance and publication, but still potentially useful to a limited number of research colleagues outside the Department, particularly in the Universities.