

付 属 資 料

1. エバリュエーションチームレポート（全文）

NOTE OF UNDERSTANDING OF THE JOINT
EVALUATION ON THE NATIONAL WEED
SCIENCE RESEARCH INSTITUTE PROJECT

NOTE OF UNDERSTANDING OF THE JOINT EVALUATION ON
THE NATIONAL WEED SCIENCE RESEARCH INSTITUTE PROJECT

With five more months before the termination of the cooperation period for The National Weed Science Research Institute Project on April 17, 1985 as stated in the Record of Discussion, the Japanese Evaluation Team organized by Japan International Cooperation Agency and headed by Mr. Akira KAKIMOTO, visited the Kingdom of Thailand from November 13, to November 27, 1984 to carry out an overall review and evaluation of the project performances together with the Thai Evaluation Teams headed by Mr. Yookti SARIKAPHUTI. Both evaluation teams agreed to convey to their authorities concerned the results of their studies and recommendations, referred to in this report of the joint evaluation on the National Weed Science Research Institute Project attached herewith.

Bangkok, Thailand

November 20, 1984

Akira Kakimoto

Akira KAKIMOTO

Leader

The Japanese Evaluation Team

Yookti Sarikaphuti

Yookti SARIKAPHUTI

Director-General

Department of Agriculture

Ministry of Agriculture and Cooperatives

as Leader of the Thai Evaluation Team

SUMMARY REPORT
OF THE JOINT EVALUATION ON THE NATIONAL
WEED SCIENCE RESEARCH INSTITUTE PROJECT

1. INTRODUCTION

Aimed at resolving the pressing weed problems in Thailand, this project was initiated with the period of five years, based on the Record of Discussion signed on April 18, 1980 (hereafter to as R/D), for the purpose of strengthening research activities on weed biology and physiology, weed control and herbicides in the National Weed Science Research Institute, Botany and Weed Science Division, Department of Agriculture.

Activities of this project include the transfer of technology through dispatching of Japanese Experts, training of Thai researchers and supplying of equipment.

2. OBJECTIVES OF EVALUTION

- 2.1 To make overall review of the results of this project performance so far obtained since the beginning of the project prior to the termination of R/D on April 17, 1985.
- 2.2 To discuss about the future measures to be taken after the termination of the R/D period and accordingly make recommendations to the concerned agencies of both governments.

3. METHODOLOGY OF EVALUATION

- 3.1 Evaluation were done, taking November 20, 1984 as a base date.
- 3.2 Concerned national organizations for this evaluation were as follows :
 - 1) Organizations in charge of the project ;
 - Department of Agriculture (DOA)
 - Ministry of Agriculture and Cooperatives (MOAC)
 - 2) Organization for conducting activities ;
 - Botany and Weed Science Division

- 3.3 Evaluation was conducted based on the "Master Plan" of the R/D.
- 3.3.1 Concerning research activities, evaluation was carried out on the results of the transfer of technology and the cooperative research work for the respective research subjects.
- 3.3.2 Concerning the dispatch of Japanese Experts, the training of Thai researchers in Japan and the supply of equipment and machinery, evaluation was carried out on the actual performance.
- 3.3.3 Concerning countermeasures to be taken by the Thai side as presented at the previous Joint Committee Meeting, reviews were carried out on the actual performance.
- 3.3.4 Concerning the measures to be taken after the termination of the R/D period, discussion was carried out on the research subjects to be continued.

3.4. Evaluation was conducted jointly by the Japanese Evaluation Team and Thai Evaluation Team consisting of the members as listed below :

The Japanese Evaluation Team

1. Akira KAKIMOTO (leader)
2. Shooichi MATSUNAKA
3. Tokuichi KUSANAGI
4. Hiroshi TAKASAWA
5. Seigo MATSUMOTO

The Thai Evaluation Team

- | | |
|--|---------------------------|
| 1. Yookti SARIKAPHUTI (Leader) | Department of Agriculture |
| 2. Tanongchit WONGSIRI (Acting Leader) | " " |
| 3. Visut CHANDRANGSU | " " |
| 4. Somsak SESAVEJ | Budget Bureau |
| 5. Chaiwat WISESWITAYAWET | DTEC |
| 6. Tirath VIPUTTIKULLAVART | " |
| 7. Sirisak SIRIPHOL | Civil Service Commission |

4. RESULTS OF THE EVALUATION

The Joint Evaluation Team recognized that the research activities based on the master plan for the R/D have satisfactorily progressed, and the research conditions have been prepared in consequence of the efforts of both Thai and Japanese Governments.

However, the purpose of the project has not been completely achieved because of the delayed completion of the research facilities, the reorganization of the Department of Agriculture, and some weed problems that occurred after the project started.

The results of the evaluation on respective subjects are shown in Appendix I. The outlines are as follows :

4.1 Evaluation of research activities

4.1.1 The goals have been achieved

1. Distribution and identification of weeds

- Distribution and identification of major weeds
- Ecological and morphological features

2. Biological characteristics

1) Gramineous Weeds

- Wild rice
- Echinochloa crusgalli

3. Weed control/management and yield losses

1) Direct-Seeded Rice

- Suggested guide for weed control

2) Field Crops

- Suggested guide for weed control

3) Transplanted Rice

- Suggested guide for weed control

4. Herbicide

1) Herbicide Evaluation

- Suggested guide for weed control

5. Mechanical control

4.1.2 Research subjects to be continued

1. Biological characteristics

1) Gramineous Weeds

- Pennisetum spp.

2) Broadleaf Weeds

- Euphorbia spp.
- Sphenochlea zeylanica

3) Aquatic Weeds

- Water hyacinth

4) Cyperaceae Weeds

- Eleocharis dulcis

2. Biology and control of non-agricultural weeds
 - plant - physiological features of major weeds
 3. Herbicide
 - 1) Herbicide physiology
 - Selectivity of herbicide activity
 - 2) Herbicide Residue
 - Residual activity of herbicides in soil or in water
 4. Other
 - Technical and economical evaluation of appropriated production technology
- 4.2 Concerning the dispatch of Japanese Experts, 6 researchers have been sent on long-term assignments, while 13 researchers have been sent on short-term assignments. It is recognized that the experts have been sent adequately as planned, and have contributed much to the implementation of the project. In addition, 2 Japanese short-term experts were sent for setting up instruments and machinery.
- 4.3 Concerning the training programme, 2 counterparts for a study tour and 10 counterparts for technical training were sent to Japan. It is recognized that all counterparts were sent for adequate training to Japan as planned. The counterparts have acquired deeper knowledge and many are now carrying out research independently under their own technical leaderships. In particular, 1 counterpart is studying for preparation of a doctoral dissertation in Japan.
- 4.4 Concerning the supply of instruments and machinery, gas-chromatographs, glass net houses, equipment for research, vehicles and other equipment valued at about 268,051 thousand yen have been provided, not including those which will be provided in the 1984 fiscal year.
- 4.5 The Thai side has assigned counterparts to Japanese Experts, and provided offices, laboratories and experimental field in accordance with the Master Plan of the R/D. Consequently, the activities of the Japanese Experts progressed smoothly.
- 4.6 Many of the research results have been published. Other publications are expected (soon).

4.7 The Joint Committee meetings were held 4 times in the year. Joint meetings between Japanese experts and Thai counterparts were held whenever necessary. Discussions have been made about the research plans, results of research, training of counterparts, research equipment, requirement of experts.

5. RECOMMENDATION

This project was to terminate on April 17, 1985. However, in consideration of the objectives and background described in the Master Plan of the R/D and in order to attain the aim of remaining research subjects satisfactorily, additional cooperation on research works, as listed in Appendix II, is necessary.

In view of this circumstance, it is recommended to the concerned Japan and Thai governmental agencies that the technical cooperation period should be extended until the end of March 1987 in order to fulfill the anticipated objectives.

Appendix I

1. Research Performance in the Project
2. Results of the Assignments of Japanese Experts
3. Results of Training and Study Tour of Thai Researchers
4. List of Instruments and Machinery

Appendix II

Research Subjects to be Continued

APPENDIX I 1. Research Performance in the Project

Subject	Sub-title	Results obtained	Future challenge
1. Distribution and identification of weeds	Distribution and identification	Brief survey of major weeds in Thailand was almost finished, but identification of some weed species still remained.	To collaborate distribution by questionnaires, followed by Map Exhibition. Exact identification of some species; <i>Monochoria</i> spp or <i>Polygonum</i> spp, depends on future experiments.
	Ecological and morphological features	Germination, dormancy and morphology, and anatomical features were almost studied. As a result, "Major Weeds in Thailand" that is involving the result of 1 and 2 (sub-title) has been compiled.	The surface structure of seeds and leaves will be observed and compiled.
2. Biological characteristics 1) Gramineous Weeds	Wild rice	Distribution, seed physiology, and growing behaviors of wild rice were studied and compiled in the Project Report No. 2.	To make proper identification of wild <i>Oryza</i> spp. To establish control technology of wild rice in deep-water rice.
	<i>Echinochloa crusgalli</i>	Germination of seeds as related to water regime in <i>Echinochloa crusgalli</i> , These items have been so far studied.	To learn weed loss of rice due to these weed species. To learn the mechanism of reproduction and the change of longevity of the seeds buried in the soil.
	<i>Pennisetum</i> spp.	Brief survey of distribution has been done and experiments on seed germination and growing behaviors have been just started in 1984.	To collaborate the distribution of three <i>Pennisetum</i> spp. ecological research as related to control and utilization.

Subject	Sub-title	Results obtained	Future challenge
(continued) 2) Broadleaf Weeds	Euphorbia spp.	Aspects of yield loss due to <i>Euphorbia geniculata</i> in corn, seed emergence and root distribution and physiological features as related to control have been studied.	To reconfirm and/or collaborate some items, particularly tolerance to water stress. To establish control technology.
	Sphenochlea zeylanica	Germination and emergence of <i>Sphenochlea zeylanica</i> .	To learn yield loss of rice due to these weed species. To learn the mechanism of reproduction and the change of the longevity of the seeds buried in the soil.
3) Aquatic Weeds	Water hyacinth	Brief survey of distribution has been made and as a result, existence of some eco-type has been confirmed.	To make distribution by eco-type. To learn the mechanism of reproduction, growth analysis as mass production and others for control as well as utilization.
4) Cyperaceae Weeds	Eleocharis dulcis	Distribution, life cycle and the aspects of reproduction in <i>Eleocharis dulcis</i> .	To learn yield loss of rice due to these weed species. To learn the mechanism of reproduction and change of longevity of seeds buried in the soil.
3. Weed control/management and yield losses 1) Direct-Seeded rice	Suggested guide for weed control	"Suggested Guide for Recommendation of Weed Control in Thailand", based on the survey and research experiments of project staff has been compiled tentatively.	To improve the guide by elaborate investigation.

Subject	Sub-title	Results obtained	Future challenge
(continued) 2) Field	Suggested guide for weed control	"Suggested Guide for Recommendation of Weed Control in Thailand", based on the survey and research experiments of project staff has been compiled tentatively.	To improve the guide by elaborate investigation.
3) Transplanted rice	Suggested guide for weed control	"Suggested Guide for Recommendation of Weed Control in Thailand", based on the survey and research experiments of project staff has been compiled tentatively.	To improve the guide by elaborate investigation.
4. Biology and control of non-agricultural weeds	Plant-physiological features of major weeds	Installation of main equipment and operation technique transfer of some major apparatus were almost complete. The allelopathy study was started from May, 1984, extracts of some weed plants was approved to have severe fish-toxicity.	To make technology transfer of equipment, followed by training and discipline to apply it for research findings. To investigate the allelopathy and fish-toxicity of the extracts in major weeds.
5. Herbicide 1) Herbicide Evaluation	Suggested guide	"Suggested Guide for Recommendation of Weed Control in Thailand", based on the survey and research experiments of project staff has been compiled tentatively.	To improve the guide by elaborate investigation.
2) Herbicide Physiology	Selectivity of herbicide activity	Selective action of some herbicides of rice varieties and weed species, particularly, effect of propanil in photosynthesis and respiration of rice varieties have been studied.	To make clear the selectivity of main herbicides in field crops and rice varieties, particularly that of glyphosate, a very promising one.

Subject	Sub-title	Results obtained	Future challenge
(continued) 3) Herbicide Residue	Residual activity of herbicides in the soil or in water	Residuality of diuron and bromacil in the soil has been investigated. The analytical methods of paraquat in water has been established.	To make sure the residual activity of paraquat in water and that of 2,4-D and 2,4,5-T and triazine type herbicides in the soil.
6. Others	Technical and economical evaluation of appropriate production technology	Farmer's field experiments in upland have been started in 1984.	To reconfirm the result of the experiments in corn and to start the experiment in paddy rice in 1985.
	Mechanical control	Present situation was analysed and future challenge of a mechanical control method as related with other control methods was offered.	

2. Results of Assignment of Japanese Experts

Fiscal Year	1980	1981	1982	1983	1984
Mayor Fields					
1. Leader	Sep.30 ←		K.NODA		→ Apr.17/85
2. Weed Biology	Feb.6 ←	S.SHIBAYAMA	→ Mar.31	May,3 ← K.KOJMA	→ May,2/85
		Mar.16 ← M.ITO	May,31 → H.NAKAMURA	Jun.28 → H.SAKA	Aug.10 → Aug.31 S.AKITA
			Dec.10 → H.NAKAMURA		
			Nov.26 → F.KUBOTA	Jan.25 →	
3. Weed Control	Dec.25 ←		H.HYAKUTAKE	→ Mar.31	May,3 ← → May,2/85 J.HARADA
4. Herbicide	Feb.6 ← M.YUKIMOTO	Mar.5 ← K.ISHIZUKA	May,4 →	Apr.7 → Jun.6 T.YAMADA	May,10 → Aug.9 H.OMOKAWA
5. Agronomy/Coordination				Oct.5 ←	T.NIBE → May.2/85
6. Others			Aug.22 → Aug.28 K.NAKAGAWA		Sep.11 → Sep.30 Y.MURATA
			Aug.22 → Aug.28 T.BABA		Oct.29 → Dec.28 S.ISHIHARA

3. Results of Training and Study Tour of Thai Researchers

Fiscal Year	1980	1981	1982	1983	1984
Major Field					
1. Weed Biology			<p>Mar. 12 → Sep. 16 CHANPEN P.</p> <p>Mar. 30 → May, 15 PALTOON K.</p> <p>Nov. 20 → May, 25 PATCHAPIN W.</p>	<p>Apr. 5 → Aug. 22 MANEESA T.</p> <p>Apr. 5 → Nov. 4 CHAIYOT S.</p> <p>Jul. 6 → Jan. 25 TAWEE S.</p>	
2. Herbicide	<p>Mar. 19 → Prateep K.</p>	<p>Mar. 4 → Jun. 16 CHA-UM P.</p> <p>Nov. 5 → Feb. 4 SOMCAHT K.</p>	<p>Mar. 4 → Sep. 3 CHA-UM P.</p>		<p>Nov. 1 → Oct. 24/85 SOMBAT C.</p>
3. Study Tour			<p>Mar. 22 → Mar. 31 BIKSH S.</p>		<p>Jun. 18 → Jun. 29 TANONGCHIT W.</p>

4. List of Instruments and Machinery

Fiscal Year	Major Item	Total Price (thousand yen)
1980	<ul style="list-style-type: none"> - Laboratory instruments (Large Rotary Microtome, Large Freezing Microtome, Sunlight Style Incubator, High Speed Centrifuge, Stereoscopic Microscope, Biophot - Microphot - etc.) - Field experimental instruments (Wagner Pots etc.) - Facilities (Glass Net House, Center Tables, Air Conditioner etc.) - Vehicles (Microbus 1) - Office equipment (Slide Processor, Copy Machine, Electric Typewriter, Camera etc.) - Others (Chemicals, Books etc.) 	38,965
1981	<ul style="list-style-type: none"> - Lab. instruments (Gas chromatograph, High Speed Centrifuge, Electric Analytical Balance, Warburg Manometric Aparatus, Recording Spector-photometer, Homogenizer, ATP Photometer, Freeze Dryer, Desolved Oxigen Meter, Scanning Electron Microscope etc.) - Field exp. instruments (Soil Sieve Machine, Pryheliometer, Wagner Pots etc.) - Facilities (Center Tables, Sink Cabinets, Drying shelf etc.) - Vehicles (Station Wagon 1, Pick-Up Truck 1) - Office equipment (Typewriter, Cleaner, Culcurator etc.) - Others (Chemicals, Books etc.) 	75,035

Fiscal Year	Major Item	Total Price (thousand yen)
1982	<ul style="list-style-type: none"> - Lab. instruments (Drying Oven Constant Temperature, Auto-Still, Oxygen Electrode Equipments, Sunlight Style Lowtemperature Incubator, Low-temperature Incubator, Microscope etc.) - Field exp. instruments (Wagner Pots, Turn Tables etc.) - Facilities (Glass Net House, Sink Unit, Fume Hood, Drying Shelf etc.) - Vehicles (Microbus 1, Pick-Up Truck 1) - Office equipment (Copy Machine, Typewriter, Auto-Printer, Refrigerator etc.) - Others (Chemicals, Books etc.) 	86,021
1983	<ul style="list-style-type: none"> - Lab. instruments (Gas Chromatograph, Liquid Scintillation Spectrometer, G.M. Survey Meter, VAN SLYE Glass System, Standard Gasgenerator, ATP Photo-meter, Flow Type Fish-Toxic Testing Apparatus etc.) - Field exp. instruments (Wagner Pots, Waving Board, Air-compressor, Rice Planting Machine etc.) - Facilities (Concrete Drain, Filting Apparatus of Tap Water etc.) - Office equipment (Personal Computer Unit, Slide Projector, Video TV set, Air Conditioner etc.) - Others (Chemicals, Books, Movie Films etc.) 	68,030
1984	In process of procurement	(50,000)
	Grand total	268,051

APPENDIX II The Subjects to be Continued

Subject	Sub-title	Future challenge	
Biological characteristics 1) Gramineous Weeds	Pennisetum spp.	To collaborate the distribution of three Pennisetum spp. ecological research as related to control and utilization	
	2) Broadleaf Weeds	Euphorbia spp.	To reconfirm and/or collaborate some items, particularly tolerance to water stress. To establish control technology.
		Sphenochlea zeylanica	To learn yield loss of rice due to these weed species. To learn the mechanism of reproduction and change of longevity of seeds buried in the soil.
	3) Aquatic Weeds	Water hyacinth	To make sure distribution by ecotype. To learn the mechanism of reproduction, growth analysis as mass production and others for control as well as utilization.
	4) Chyperaceae Weeds	Eleocharis dulcis	To learn yield loss of rice due to these weed species. To learn the mechanism of reproduction and change of longevity of seeds buried in the soil.
Biology and Control of Non-Agricultural Weeds	Plant-physiological features of major weeds	To make technology transfer of equipment, followed by training and discipline to apply it for research findings. To establish the control sequence system of <i>Mimosa Pigra</i> .	
Herbicide 1) Herbicide Physiology	Selectivity of herbicide activity	To make clear the selectivity of main herbicides in field crops and rice varieties, particularly that of glyphosate.	
	2) Herbicide Residue	Residual activity of herbicides in the soil or in water	To make sure the residual activity of paraquat in water, and that of 2,4-D and 2,4,5-T and triazine type herbicides in the soil.
Other	Technical and economical evaluation of appropriate production technology	To reconfirm the result of the experiments in corn and to start the experiment in paddy rice in 1985.	

2. 討議議事録(R/D)

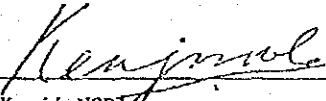
THE RECORD OF DISCUSSIONS BETWEEN THE JAPANESE
IMPLEMENTATION SURVEY TEAM AND THE AUTHORITIES
CONCERNED OF THE GOVERNMENT OF THAILAND ON THE
JAPANESE TECHNICAL COOPERATION FOR THE NATIONAL
WEED SCIENCE RESEARCH INSTITUTE PROJECT

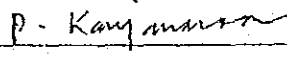
The Japanese Implementation Survey Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Dr. Kenji NODA visited Thailand from 9th to 23rd April 1980 for the purpose of working out the details of the technical cooperation program concerning the National Weed Science Research Institute (hereinafter referred to as "NWSRI") Project in Thailand.

During its stay in Thailand, the Team exchanged views and had a series of discussions with the Thai authorities concerned in respect of the desirable measures to be taken by both governments for the successful implementation of the above-mentioned Project.

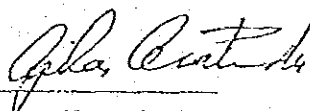
As a result of the discussions, the Team and the Thai authorities concerned agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Bangkok, THAILAND, 18th April 1980


Dr. Kenji NODA
Leader
Japanese Implementation Survey Team
Japan International Cooperation Agency
JAPAN


Dr. Prakob KANJANASOON
Director General
Department of Agriculture
Ministry of Agriculture and Cooperatives
THAILAND

In the presence of


Mr. Apilas OSATANANDA
Director General
Department of Technical and Economic Cooperation
THAILAND

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of Thailand will cooperate with each other in implementing the National Weed Science Research Institute Project (hereinafter referred to as "the Project") through basic and applied weed researches for the purpose of crop production increase and environmental improvement in Thailand.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II. DISPATCH OF JAPANESE EXPERTS

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
2. The Japanese experts referred to in 1 above and their families will be granted in Thailand the privileges, exemptions and benefits no less favorable than those accorded to experts of third countries working in Thailand under the Colombo Plan Technical Cooperation Scheme.

III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense such machinery, equipment and other materials necessary for the implementation of the Project as listed in Annex III, through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
2. The articles referred to in 1 above will become the property of the Government of Thailand upon being delivered c.i.f. to the Thai authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

IV. TRAINING OF THAI PERSONNEL IN JAPAN

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to receive at its own expense the Thai personnel connected with the Project for technical training in Japan through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
2. The Government of Thailand will take necessary measures to ensure that the knowledge and experience acquired by the Thai personnel from technical training in Japan will be utilized effectively for the implementation of the Project.

V. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THAILAND

1. In accordance with the laws and regulations in force in Thailand, the Government of Thailand will take necessary measures to provide at its own expense:-
 - (1) Services of the Thai counterpart personnel and administrative personnel as listed in Annex IV;
 - (2) Lands, buildings and facilities as listed in Annex V;
 - (3) Supply or replacement of machinery, equipment, instrument, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than those provided through JICA under III above;
 - (4) Transportation facilities and travel allowance for the Japanese experts for the official travel within Thailand;
 - (5) Suitably furnished accommodations for the Japanese experts and their families.

2. In accordance with the laws and regulations in force in Thailand, the Government of Thailand will take necessary measures:-
 - (1) To meet expenses necessary for the transportation within Thailand of the articles referred to in III above as well as for the installation, operation and maintenance thereof;
 - (2) To exempt customs duties, internal taxes and any other charges, imposed in Thailand on the articles referred to in III above;
 - (3) To meet all running expenses necessary for the implementation of the Project.

VI. ADMINISTRATION OF THE PROJECT

1. Director General of the Department of Agriculture, Ministry of Agriculture and Cooperatives, the Government of Thailand will be responsible for the administration and implementation of the Project, and the Japanese experts will provide necessary guidance and advice on technical matters for implementation of the Project.
2. For the effective implementation of the Project, a Joint Committee consisting of the members as listed in Annex VI will be established and meet at least once a year.
3. The Committee will formulate the details of the Master Plan referred to in Annex I and the annual work plan of the Project. The details of the Master Plan and the annual work plan will be submitted to the authorities concerned of the two Governments.

VII. CLAIMS AGAINST JAPANESE EXPERTS

The Government of Thailand undertakes to bear claims, if any arises, against the Japanese experts engaged in the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in Thailand except for those arising from the willful misconduct or gross negligence of the Japanese experts.

VIII. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this Attached Document.

IX. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from the date of signature.

ANNEX I. MASTER PLAN

1. In Thailand weeds cause severe reduction of crop production, particularly of direct-seeded rice, short-height field crops, rubber, pineapple and so on, as well as contamination in environment such as aquatics and unarable lands.

The solution of weed problem is, therefore, so important to achieve the targets of Thailand's Fourth National Development Plan. Weed Research in Thailand, however, are far behind that of diseases and pest insects in the plant protection fields. This project will be carried out at the NWSRI, Bangkok and other relevant local experimental stations, which conducts basic and applied research for weed control and/or management procedures without having its side-effects.

2. The Project will comprise the following activities;
 - 1) Research in the following:-
 - a) Ecology and physiology of principal weeds for their control
 - b) Weed control and/or management procedures in paddy and field crops
 - c) Control methods of weeds harmful to environment
 - d) Herbicide residues and proper application of herbicide
 - 2) Exchange of research information, materials and reports
 - 3) Development of research capabilities of the Thai weed researchers in the field in 1) above
 - 4) Other activities to be agreed upon between the authorities concerned of the two Governments.

ANNEX II. JAPANESE EXPERTS

1. Team Leader
2. Experts:--
 - 1) Weed Biology
 - 2) Weed Control
 - 3) Herbicide Biochemistry
3. Coordinator/Liaison Officer

Notes:--

- 1) Short-term experts of the above-mentioned fields or others may be dispatched when necessities arise.
- 2) Experts on herbicide biochemistry may be dispatched on short-term assignment.

ANNEX III. LIST OF THE ARTICLES TO BE PROVIDED BY THE GOVERNMENT
OF JAPAN

1. Equipments, instruments, tools, their spare parts and other materials for laboratory work.
2. Machineries, instruments, tools, their spare parts and other materials for field work.
3. Fertilizers, agricultural chemicals and materials for research work.
4. Audio-visual aids and related articles.
5. Books and other necessary printed matters.
6. Vehicles.
7. Other necessary equipments and materials.

ANNEX IV. LIST OF THAI COUNTERPART OFFICIALS AND OTHER PERSONNEL

1. Counterpart to Japanese Team Leader (Director of Technical Division, Department of Agriculture)
2. Counterpart Researchers to the Japanese Experts
3. Assistant Researchers
4. Clerical and other personnel including a secretary, a typist and drivers
5. Field workers

ANNEX V. LIST OF LANDS, BUILDINGS AND FACILITIES

1. Lands:-

- 1) Experimental fields at NWSRI
- 2) Other necessary fields at local experimental stations

2. Buildings at NWSRI:-

- 1) Office rooms for the Japanese Team Leader and Experts
- 2) Laboratory rooms
- 3) Green houses
- 4) Store-houses
- 5) Shed and workshop
- 6) Car garages

3. Other necessary lands and buildings

ANNEX VI. COMPOSITION OF THE JOINT COMMITTEE

1. Chairman:-

Director General, Department of Agriculture (DOA),
Ministry of Agriculture and Cooperatives (MOAC)

2. Thai-side:-

Director of Technical Division, DOA
Director of Rice Division, DOA
Director of Field Crop Division, DOA
Director of Horticulture Division, DOA
Director of Agricultural Engineering Division, DOA
Director of Rubber Division, DOA
Director of Foreign Agricultural Relation Division, MOAC
Representative of Budget Bureau
Representative of DTEC
Chief of NRSRI, Technical Division, DOA
Other personnel appointed by the Chairman

3. Japanese-side:-

Team Leader
Experts (Long-term)
Coordinator/Liaison Officer
Representative of JICA

Note: An Official of the Embassy of Japan may also
attend the Joint Committee as an observer.

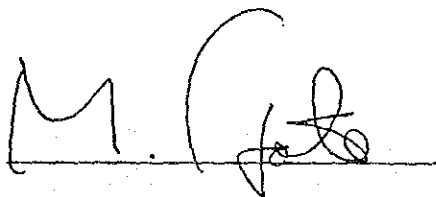
3. 討議議事録（延長R/D）及び T.S.I

THE RECORD OF DISCUSSIONS ON EXTENTION OF
THE PERIOD OF THE TECHNICAL COOPERATION FOR
THE NATIONAL WEED SCIENCE RESEARCH INSTITUTE
PROJECT

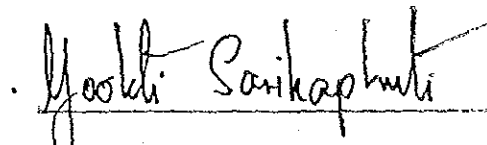
The Japan International Cooperation Agency (hereinafter referred to as "JICA") , with regard to the recommendations made by the Thai and Japanese Joint Evaluation Team which conducted the evaluation survey from November 13 to 27, 1984, had a series of discussions through the Resident Representative of JICA in Thailand, Mr. Michimoto Goto with the authorities concerned of the Government of the Kingdom of Thailand in view of the extention of the period of the Technical Cooperation for the National Weed Science Research Institute Project based on the Record of Discussions (hereinafter referred to as "R/D") which was signed in Bangkok on April 18 ,1980, and will be terminated on April 17, 1985.

As a result of the discussions, JICA and the authorities concerned of the Government of the Kingdom of Thailand agreed to recommend to their respective Governments to carry out a follow-up cooperation and to extend the technical cooperation for the above-mentioned Project until March 31, 1987 in order to attain the anticipated objectives of the technical cooperation.

Bangkok, March 21 1985



Michimoto Goto
Resident Representative
of Japan International
Cooperation Agency

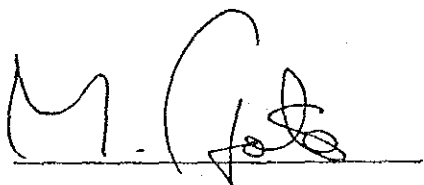


Yookti Sarikaphuti
Director-General
Department of Agriculture
Ministry of Agriculture and
Cooperatives

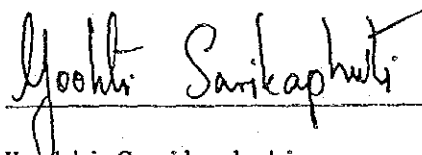
TENTATIVE SCHEDULE OF IMPLEMENTATION
ON THE JAPANESE TECHNICAL COOPERATION
FOR THE NATIONAL WEED SCIENCE RESEARCH
INSTITUTE PROJECT

The Resident Representative of the Japan International Cooperation Agency in Thailand, Mr. Michimoto Goto and the authorities concerned of the Government of the Kingdom of Thailand have jointly formulated the Tentative Schedule of Implementation concerning the Japanese Technical Cooperation for the National Weed Science Research Institute Project(hereinafter referred to as "the Project ") as annexed hereto.

This has been formulated in connection with the Attached Documents of the Record of Discussions of the Project signed on March 21 1985, between JICA and Thai authorities concerned on condition that the necessary budget will be allocated for the implementation of the Project and the Schedule is subject to change within the framework of the Record of Discussions when necessity arises in the course of the implementation of the Project.



Michimoto Goto
Resident Representative
of Japan International
Cooperation Agency



Yoohki Sarikaphuti
Director- General
Department of Agriculture
Ministry of Agriculture and
Cooperatives

ANNEX I. RESEARCH ACTIVITIES OF THE TECHNICAL COOPERATION

Item	Year			Remarks
	1985	1986	1987 3/31	
1. Biological Characteristics 1) Gramineous Weeds	Pennisetum spp.	↔	↔	
	Euphorbia spp.	↔	↔	
	Sphenochlea zeylanica	↔	↔	
	Water hyacinth	↔	↔	
3) Aquatic Weeds	Eleocharis dulcis	↔	↔	
	Plant-physiological features of major weeds	↔	↔	
2. Biology and Control of Non-Agricultural Weeds	Selectivity of herbicide activity	↔	↔	
	Residual activity of herbicides in the soil or in water	↔	↔	
3. Herbicide 1) Herbicide Physiology	Technical and economical evaluation of appropriate weeds control technology	↔	↔	
	2) Herbicide Residue	↔	↔	
4. Other		↔	↔	
		↔	↔	

ANNEX II. JAPANESE CONTRIBUTION

Item	Year	1985	1986	1987 3/31	Remarks
1. Assignment of Experts (Long-term Assignment)					
1) Weed Biology /Leader		↔	↔	↔	
2) Weed Control		↔	↔	↔	
3) Agronomy /Coordination		↔	↔	↔	
2. Assignment of Experts (Short-term Assignment)					
1) Weed Biology		↔	↔	↔	
2) Weed Control		↔	↔	↔	
3) Herbicide		↔	↔	↔	
4) Others		↔	↔	↔	About 3 personnel a year. Assignment of Experts in the field of " Others " shall be studied by the Joint Committee.
3. Acceptance of Trainees		↔	↔	↔	2 or 3 personnel a year
4. Provision of Equipment, Machinery, and Materials		↔	↔	↔	

ANNEX III. THAI RESPONSABILITIES

Item	Year	1985	1986	1987 3/31	Remarks
1. Counterparts and Other Personnel		↕	↕	↕	
2. Administrative Personnel		↕	↕	↕	
3. Facilities		↕	↕	↕	
4. Local Cost		↕	↕	↕	

4. 合同委員会議事録

(第1回～第5回)

Minutes

The First Joint Committee Meeting for the National Weed Science Research Project in Thailand

- Date : 10.00 - 12.00, May 19th, 1981
- Venue : Meeting Room, Administrative Office, Department of Agriculture
at Bangkok, Bangkok.
- Participant :
- Chairman : Dr. Risk Sayamanon (Deputy Director General, DOA)
- Thai-side :
- Dr. Winit Changsri (Director, Tech. Div., DOA)
 - Mr. Jiroj Itharattana (Staff, DTEC)
 - Dr. Vijai Nopamornbodi (Chief, Nat. Agr. Project, DOA)
 - Mr. Chak Chakkaphak (Staff, Agri. Engineering Div., DOA)
 - Dr. Paitoon Kittipong (Chief, Weed Br., Tech. Div., DOA)
 - Dr. Somchai Khomvilai (Staff, ibid)
- Japanese-side :
- Dr. Kenji Noda (Project, Leader)
 - Mr. Sei-ichi Igarashi (1st Secretary Embassy of Japan)
 - Mr. Kawakami (Staff, JICA Bangkok office)
 - Mr. Hiroshi Hyakutake (Project, Expert)
 - Mr. Hidejiro Shibayama. (Project, Expert)
- Observers :
- Miss Yupin Dhitaphichit (Project Secretary)
 - Mr. Tawee Sangtong (Staff, Weed Br., Tech. Div., DOA)

Discussion (according to the Agenda)

I. Report of the activity for 1980 :

Dr. Noda, after extending his thanks for cooperation of the authorities concerned with this project in Thailand, briefly reported on the dispatch of long-term and short-term experts from JICA and processes of receiving and setting up of 1980's equipments and made public of the equipments, showing the list. Concerning with the use of the equipments, two barriers to be solved were noted by K. Noda :-

- 1) increase of electric capacity facility
- 2) improvement of water supply facility

Dr. Noda explained that the special budget for urgent need for the item 2) had already been requested to JICA. Approved.

II. Planning of the activity for 1981 :

- 1) Equipments to be supplied in a 1981 fiscal year (April to March in Japan) :

Dr. Noda explained the process of listing up the draft of equipments to be supplied in 1981 and afterwards showed the budget estimated by item as well as the list of equipments.

No objection.

Concerning the equipments to be supplied next year, the chairman and Dr. Winit explained the plan for the construction of the 2nd floor of NWSRM building. A 2.3 million Baht had been already allocated for this year (from October 1980 to September 1981), followed by 0.5 million Baht in last year, by which half of the 2nd floor's building bone was constructed. It has been tentatively estimated that 1.5 million Baht is required to complete the second floor. The deficiency is to be requested to the Thai Government next year (a fiscal year from October in 1981). However, the construction of 2nd floor would be made effort to complete up to the end of this year by means of postponement of the time of payment in the exchange of "Contract" which is scheduled next month (July) or by use of extra money within DOA in advance.

Dr. Winit asked whether there is a possibility of the grant aid in the coming year, concerning the development of this project, because it is very difficult to secure the budget for building construction from the Thai Government.

Dr. Noda introduced an opinion of Japanese officer presented in the Leader's Conference held in last February at Tokyo, i.e. "a small grant aid may be under consideration when applied putting the top priority of requests on it". Further, Dr. Noda stressed that such application should be required with the details of purpose and design by which its necessity can be understood distinctly by Japanese Government.

2) Training of counterparts in Japan :

Dr. Noda explained that three out of four members of training candidates in Japan who have been offered by the Department of Agriculture has just been allocated to this project. One person should be added according to the situation of training budget of JICA if possible.

Dr. Paitoon asked a question on the possibility of additional allocation of a trainee to this project. Dr. Noda replied he has heard that such additional allocation of the trainee is generally made in order to earlierness of application form acceptance in JICA. Accordingly, there may be less possibility of its success in the case of no sending of A2-3 form of more than number of candidates allocated like Thailand.

Mr. Igarashi said that it is preferable to send A2-3 form of 4 candidates via DTEC and Embassy of Japan if the Thai-side desires regardless of the number indicated by JICA. He would request it to JICA, Tokyo, on no commitment basis.

Dr. Paitoon confirmed training purpose and terms of three candidates : that is, Weed biology for 6 months, Weed Control by Herbicides for 6 months and Methods of Herbicide Analysis for 3 months.

3) Dispatch of short term experts :

Dr. Noda explained two short term experts to be expected based on the discussions with Japanese Experts and NWSRI staff, indicating an appendix of description for them. No objection.

Mr. Chak asked for an opinion about the role of mechanical weeding in weed control and plan of dispatching its expert in this project. Dr. Noda said it is very important to develop a method of mechanical weeding suitable to field conditions in Thailand because a final target of advanced weeding technology should be an intergrated control of several weeding methods. Accordingly, dispatch of mechanical weeding expert should be planned in later years of this project if possible. Agreed.

4) Master plan of this project and Research Subjects of Japanese experts in 1981 :

Dr. Noda explained the master plan of cooperative research in this project and subjects to be employed by Japanese experts in 1981, indicating appendixes concerning them. No objection.

5) On the Second Joint Committee for 1981/1982 :

Dr. Noda moved that the Second Joint Committee for 1981/1982 is preferred to be held at an appropriate time while the 1981's consultation team is staying in Bangkok. They will attend as observers. No objection.

III. Others :

Dr. Vijai asked for an opinion of the construction of Central Training Centre and/or facility where the result of Research obtained should be instructively extended to extension specialists. Dr. Noda suggested it must be considered and planned as a part of the small grant aid already discussed in item II.

Closed at 12.00

Minutes

on

The Second Joint Committee Meeting for the National
Weed Science Research Institute Project in Thailand

Date : 10.00 - 12.00, March 17th, 1982

Venue : Meeting Room, the 4th floor of the Headquarter Building,
Department of Agriculture, Bangkok, Bangkok.

Participant :
Chairman : Dr. Thanongchit Wongsiri (Deputy Director-General,
DOA)

Thai-side :

Dr. Winit Changsri (Director, Tech.Div.,DOA)
Mr. Sutin Susila (Chief,DTEC)
Mr. Pornchai Pookamana (Rice Div.,DOA)
Mr. Chote Sithibuth (Field Crop Div.,DOA)
Mr. Sakol Suthesarn (Tech.Div.,DOA)
Mr. Chanuan Ratanawaraha (Pl.Path.&Zool.Div.,DOA)
Mr. Chak Chakkaphak (Agri.Eng.Div.,DOA)
Dr. Paitoon Kittipong (Chief Weed Branch,DOA)
Dr. Prateep Krasaesindh (Staff,Weed Branch,DOA)
Dr. Somchai Khomvilai (ibid)

Japanese-side :

Dr. Kenji Noda (Project Leader)
Mr. Akira Kasai (Director,JICA Bangkok Office)
Mr. Sei-ichi Igarashi (1st Secretary,Embassy of Japan)
Mr. Hiroshi Hyakutake (Project Expert)
Dr. Hidejiro Shibayama (ibid)

Observers :

Mr. Hideo Chisaka (Leader, JICA Consult.Team)
Mr. Toru Ikeuchi (Member, JICA Consult. Team)
Mr. Shigeharu Morohashi (ibid)
Mr. Yukitoshi Ishizuka (ibid)
Dr. Kozo Ishizuka (Short-term Expert)
Dr. Misako Ito (ibid)

(Recording) :

Miss Yupin Dhitaphichit (Project Secretary)

Materials presented :

1. Report on Process and Strengthening of the National Weed Science Research Institute Project in Thailand (English)

- Appendix
1. Master plan of cooperative research work
 2. Research themes of Expert in 1982
 3. Equipment's supplied and to be planned to supply
 4. Performance and future plan of Expert dispatch
 5. Past training and future plan of counterparts

- Reference
1. JICA Budgetary of 1980 & 1981
 2. Thai Government's budgetary of 1980 & 1981

2. Minutes of the first Joint Committee Meeting held in 1981

Summary of Discussions :

Dr. Thanongchit, chairman extended the address, followed by self-introduction of attendant.

Discussions have been proceeded according to the agenda.

1. The activity of project during the past year :

Dr. Noda reported briefly the activity of project; that is, the process of cooperative work between Japanese Experts and Thai researchers, dispatch of short term experts, process and achievement of training in Japan, based on the report submitted. Dr. Paitoon supplemented the results of Mimosa pigra control by cooperative work.

No question

2. Master plan of project performance in a coming and future years : Principal discussions and opinion concerned are as follows.

1) Mr. Chanuan and Mr. Chak asked for the idea of cooperative work in the project on biological control and mechanical control of weeds, respectively. Dr. Noda said those might be available to be taken to performance if both Governments of Thailand and Japan shall be employed appropriate measure. At present less experts of these fields in Japan seem to indicate difficulty of performance of these subjects.

2) Dr. Paitoon asked for an opinion to increase members of study tour of VIP persons and training of Thai researchers in Japan. Mr. Ishizuka (JICA) said allocation of three persons in this project is under consideration, though not finally decided.

Mr. Kasai (JICA Bangkok) supplemented number of training persons is difficult to increase from the present situation of JICA in Japan.

3) Dr. Paitoon said, in response of Mr. Ikenaga's asking, termination of the 2nd floor construction is scheduled to be May 28th, based on the contract. Furthermore, he replied to increase the electric capacity in NWSRI building as the need arises.

3. Others :

Dr. Winit asked for an opinion about the possibility of JICA Grant aid for strengthening the project. Mr. Kasai said it is very important to place it in top priority among request of Thai's Government. Mr. Igarashi suggested, as the decision of 1983 is not made, It is on hope the content of request is indicated to the Embassy of Japan as well as DTEC in writing with high priority as soon as possible, if DOA strongly desires.

Closed : 12.00

Minutes

on

The Third Joint Committee Meeting for the National
Weed Science Research Institute Project in Thailand

Date : 10.06 - 12.00, April 12, 1983

Place : Meeting Room, the 2nd floor of the MWSRI Building, Bangkok,
Bangkok

Participants: Chairman : Mr. Yookti Sarikaphuti (Director General, DOA)

Thai-side: Mr. Sutin Susila (Staff, Columbo Plan, DTEC)

Dr. Tanongchit Wongsiri (Deputy Director General, DOA)

Mr. Visut Chandrangsu (Director, Botany & Weed Sci.
Div.)

Mr. Chai Prechachat (Staff, Rice Research Institute)

Mr. Sansern Piriyaathamrong (Staff, Horti. Res. Insti.)

Khun Pranee Phattanasriskul (Staff, Rubber Res.
Insti.)

Mr. Chong Chinnupatam (Staff, Planning Division)

Khun Jinda Can-orn (Staff, Field Crop Res. Insti.)

Dr. Somchai Khomvilai (Staff, Weed Science Branch)

Miss Maneesa Teerawatsakul (Chief, Weed Control
Groups)

Japanese-side:

Dr. Kenji Noda (Leader)

Mr. Hiroshi Hyakutake (Expert)

Mr. Akira Kasai (Director, JICA Office)

Mr. Y. Ohata (Attached to MOAC, Agri. Foreign
Relation Div.)

Mr. K. Kawakami (Staff, JICA Office)

Observers: Dr. T. Kusanagi (JICA Consultation Team)

Dr. K. Ishizuka (JICA Consultation Team)

Mr. Y. Ishizuka (JICA Consultation Team)

- Agenda : 1. Report of 1982's performance
2. Planning of 1983's performance
- 1) Experts
 - 2) Training
 - 3) Equipment
 - 4) Others

Discussion

1. Opening and greeting (Chairman)
2. Report of the activity for 1982 was made by Kenji Noda, Japanese leader as follows:

The 2nd floor of the laboratory building for the Project was constructed around August, 1982. The room of the Scanning Electron Microscope was improved by means of the urgent supply budget of the JICA. In October, the equipment supplied by that time was set up or installed at respective laboratory rooms as follows:

- 1st floor:
 1. Weed ecology room
 2. Plant physiology I room
 3. Plant physiology II room
 4. Microtechnique room
 5. Chemical analysis room
- 2nd floor:
 1. Scanning electron microscope room
 2. Bio-chemistry room
 3. Meeting room
 4. Library room
 5. Expert and secretary rooms
 6. Staff rooms

Three short term experts and four-every-short term experts were dispatched during the 1982's fiscal year, as indicated in the Brief Information delivered.

A long term expert, Dr. Shibayama was back to Japan to end his assignment, his research findings were printed and distributed to personnel allied. As for study tour or training in Japan, Dr. Riksh Syamananda, Deputy Director General of DOA, Dr. Paitoon Kittipong, representative of Weed Science Section, and Mrs. Chanpen Prakongwongs were/are in Training in Japan 9 days, 1.5 months and 6 months respectively.

3. Planning of 1983's Implementation
 - 1) Experts of Agronomy/coordination, mechanical control and Agro-economic evaluation of weed control technology are to be invited in 1983. It was said by K. Noda that the expert of Agronomy and coordination should have a responsibility for agronomic survey of evaluation of farmer's technology in addition of project coordination job. There is no objection.
 - 2) Training (see appendix 2)

3) Equipment

Equipment sets for Audio-Visual aids and related articles was requested from Thai-side. There is no objection. Several different ideas on radio isotope equipment were offered and no agreement between Thai and Japan or within Japanese Experts exists. Therefore, K. Noda offered that this matter should be discussed within the Isotope Committee of Department of Agriculture more. Other equipment listed in Appendix 3 was not due to objection. (Those are depending on the Budget allocated to the project).

4. Others

Mr. Visut offered the hope of extending the project after finalizing in 1985. As far the Grand-aid for Strengthening the project activity it was no decided, still under discussion because of no detailed design and planning use this year.

Minutes
of
The Fourth Joint Committee Meeting for the National Weed
Science Research Institute Project in Thailand

Date : February 7th, 1984
Time : 10.00-12.00
Place : Meeting Room No.1, Department of Agriculture Building
Agenda :

1. Report of 1983' Project Performance
2. Planning of 1984's Project Performance
 - 1) Expert dispatch
 - 2) Counterpart training in Japan
 - 3) Equipment and Machinerics
 - 4) Others

Participants :

Chairman : Mr. Yookti Sarikaphuti (Director-General, DOA)

Members (Thai side) :

Dr. Tanongchit Wongsiri (Deputy Director-General, DOA)
Mr. Montri Rumakhom (Director, Entomology & Zoology Div.)
Mr. Chanuan Ratanawaraha (Director, Planning & Technology Div.)
Mr. Chak Chakkaphak (Head, Research & Testing, Agricultural Engineering Div., DOA)
Mr. Visut Chandrangsu (Director, Botany & Weed Science Div.)
Dr. Paitoon Kittipong (Chief, Weed Science Branch)
Mr. Suvit Pushpavesa (Staff, Rice Res. Insti., DOA)
Mr. Somboon Tongsakul (Staff, Pesticide Application Tech., DOA)
Mr. Noppadon Napapon-amonchit (Staff, Horticulture Res. Insti.)
Mr. Nawarat Sermsri (Staff, Field Crop Res. Insti.)
Mr. Bodee Navawongs (Staff, Rubber Res. Insti.)
Dr. Somchai Khomvilai (Staff, Botany & Weed Science Div.)

Members (Japanese side)

Dr. Kenji Noda (Leader)
Mr. Akira Kasai (Director, JICA Office)
Mr. K. Kawakami (Staff, JICA Office)

Mr. H. Hyakutake (Project Expert)
Mr. K. Kojima (Project Expert)
Mr. T. Nibe (Project Expert/Coordinator)

Observers : Dr. Toshio Masuda (Leader, JICA Guidance Team)
Dr. Hiroshi Nakamura (Member, JICA Guidance Team)
Mr. Takeshi Adachi (Member, JICA Guidance Team)
Mr. Seigo Matsumoto (Member, JICA Guidance Team)

Discussion (summarized)

Chairman announced the opening of this Joint Committee Meeting and said DTEC Representative can't attend but report the result of this meeting. At first he welcomed and introduced the JICA Guidance Team, headed by Dr. Masuda, composed of Dr. Nakamura, Mr. Adachi, and Mr. Matsumoto. On suggestion of Chairman, Dr. Masuda extended a brief address to participants. Next, Dr. Noda, Project Leader, expressed the thanks to the Thai-authorities concerned for the good performance of this project.

Chairman expressed to process the meeting discussion following the agenda :

1. Following up the minutes of last year's Joint Committee by page (delivered) was made. No question/objection.

2. Reports of the performance in 1983 :

1) The outline of expert dispatch was reported by Dr. Noda. That is, Dr. Shibayama left in March, 1983 and his successor, Mr. K. Kojima arrived on May, and Mr. Nibe, Expert/coordinator, arrived in October. Mr. Hyakutake extended his term of assignment until the end of March, 1984. As short term expert, Dr. Yamada for herbicide residue, and Dr. Saka for weed physiology were invited.

2) Training in Japan was reported by Noda. Dr. Riksh, Deputy Director-General, had short term study tour in March, Dr. Paitoon, Chief of Weed Science Branch had study tour of one month and half throughout Japan. Mrs. Chanpen had technical training of three months at Agricultural Biology Institute, Okayama University.

3) Equipment to be provided by 1983's budget is now mainly preparing for shipment, and was discussed based on the list delivered.

Chairman offered what the problem of sintilation spectrometer is? Concerning it, several discussion was made. Mr. Hyakutake explained the necessity of sintilation spectrometer (RI) to research the behaviors of herbicides in plant as well as security of setting it up in laboratory.

Dr. Tanongchit said there is no problem in providing it, based on the talk with NT person, OAEP and Mrs. Patoom, Chief of RI Laboratory, DOA. Further, he suggested Mrs. patoom helps to proceed and introduce the RI facilities in the Project.

Chairman summarized and confirmed no problem of providing RI facilities to this project.

3. Chairman proceeded to item II, 1984's planning. Dr. Noda explained a brief outline of planning.

1) Experts. Long term experts; Dr. Noda, Mr. Kojima and Mr. Nibe will continue to do. A successor of Mr. Hyakutake and two term experts for herbicides and weed physiology, respectively are scheduled. Thai-side already sent their A1 Form to Japan. Some technical experts may come, too, according to the situation.

Dr. Paitoon said to take up another short term expert for utilization of water hyacinth because it is a serious problem in Thailand. He recommended Dr. Oki, Okayama University. Further, he said other two short term experts to be invited by JICA . Mechanical control expert and tissue culture expert. Chairman emphasized again necessity and importance of water hyacinth utilization in Thailand.

Dr. Noda supplimentarily explained that mechanical control expert and economical evaluation expert were requested last year and their A1 Form is being kept in JICA Tokyo. Regret to say, such appropriate experts seem to be very difficult to find out in Japan. Tissue culture is a somewhat different field from weed biology and it will require new equipment to do it.

Mr. Chsk commented being back to a mechanical expert. Mechanical control expert was discussed last year and requested. Mechanical control by small equipment is very important between row in rice or in soy beans fields after rice in wet lands mainly in the norther Thailand. Further, he said some examples of experts in Japan, Prof. Junsaka, Kyoto University and so on.

2) Counterpart training in Japan. Dr. Noda said the change of training system. In previous years candidates started in March and were carried over in a next fiscal year after April. However, this procedure was not allowed, the two persons decided in 1983 are to start in early April of a next fiscal year by means of 1984 budget. Further, Mr. Matsumoto (JICA Tokyo) expressed the number of trainees expected in 1984. Five persons including two persons already decided in 1983 will be available in 1984 fiscal year (April to March next year).

Chairman hoped inquiring that long term training for MS or Ph.D degree concerning the project is possible or not in the coming time.

Mr. Kasai replied that the degree program depends on Ministry of Education. JICA officially proceed the technical training only.

3) Chairman went on discussion to the equipment to be provided in 1984. The tentative plan estimated by Japanese experts was introduced by Dr. Noda. One more video set should be requested because one set out of two sets requested last year did not allow. Micro-bus is desired if possible. These must be requested with the detailed reason of necessity. Further, growth chamber, attachment of sinteration spectrometer, and transpiration meter for photosynthesis are considered.

Mr. Chanuan requested the spray equipment of chemical application by helicopter for cooperative work of Mimosa control. Noda replied no problem in it because of not so high cost.

Chairman went on items to others.

Mr. Montri inquired on invitation of biological control experts. Although it is considered at an initial time, such expert is very difficult to look for in Japan and the Kasert university have already NBRC where biological control for weed is has been performed. Then, this matter should be given up, said Dr. Noda.

Chairman finally hoped greatly the extension of this project expressing several reasons; delayed start of actual project performance, delayed arrival of equipment and machineries, being provided imperfect equipment, unsatisfactory transfer of several research technologies, retarded completion of the second floor, delay of re-organization of DOA, and no well-ordered experiment-field facilities, and closed this Joint Committee Meeting at 12.00.

Minutes
of
The Fifth Joint Committee Meeting for the National Weed
Science Research Institute Project in Thailand

Date : November 22, 1984
Time : 10.00-12.00
Place : Meeting Room No. 1, Department of Agriculture
Agenda : 1. Announcement
2. Adoption of Last Year's Minutes
3. Reporting the Recommendation Document of the Evaluation Teams
of NWSRI Project
4. Other Matters

Participants :

Chairman: Mr. Yookti Sarikaphuti (Director-General), DOA

Members (Thai-side) :

Mr. Visut Chandrangsue (Director, Botany & Weed Science Div., DOA)
Dr. Paitoon Kittipong (Chief, Weed Science Branch, Botany & Weed
Science Div., DOA)
Mr. Tirath Viputtikulavart (Programme Officer, DTEC)
Mrs. Prokong Wongprichai (Budget Bureau Office)
Mr. Somsak Sesavej (Budget Bureau Office)
Mr. Kasem Prasutsangchan (Foreign Agricultural Relation Div., MOAC)
Mr. Chak Chakkaphak (Director, Agricultural Engineering Div., DOA)
Mr. Visut Pushpavesa (Rice Research Institute, DOA)
Mr. Anan Vattanatangum (Training & Transfer of Technology Office, DOA)
Mrs. Patoom Snitwongse (Agricultural Chemistry Div., DOA)
Mr. Vijai Nopamornbodi (Planning & Technical Div., DOA)
Mr. Bodee Navawongs (Rubber Research Institute, DOA)
Dr. Somchai Khomvilai (Weed Science Branch, Botany & Weed Science Div.,
DOA)

Members (Japanese-side)

Dr. Kenji Noda (Leader, NWSRI Project)
Mr. Akira Kasai (Director, JICA Bangkok Office)
Mr. Hideaki Kasahara (Staff, JICA Bangkok Office)
Dr. Jiro Harada (Expert, NWSRI Project)
Mr. Kiyoshi Kojima (Expert, NWSRI Project)
Mr. Teruhiko Nibe (Expert, NWSRI Project)

Observers :

Mr. Akira Kakimoto (Leader, Japanese Evaluation Team)
Dr. Shooichi Matsunaka (JICA, Japanese Evaluation Team)
Dr. Tokuichi Kusanagi (JICA, Japanese Evaluation Team)
Mr. Hiroshi Takasawa (JICA, Japanese Evaluation Team)
Mr. Seigo Matsumoto (JICA, Japanese Evaluation Team)

Discussion (summarized) :

Chairman extended the welcome address to the Evaluation Team for NWSRI Project, headed by Mr. A. Kakimoto. Chairman summarized the recommendation document of the two Evaluation Teams (Japanese and Thai sides) with appreciation; that is, the project terminates in April 1985, but two parties evaluated the objectives, background and Master Plan of the project, and considered the additional cooperative works to be continued and emphasized the necessity of extension of the technical

cooperation until the end of March, 1987 (See Recommendation Report).

Next Agenda No.2 was adoption of the Minutes of the Joint Committee Meeting in last year. The Minutes was discussed page by page for amendment and additional statement. (There is no objection and statement on page 1 and 2). Mr. Chak offered on page 3 the amendment of the name for Dr. Jun Sakai, Kyushu University. Mr. A. Kasai offered the amendment of expression in page 4. That is, "officially" must be changed to "principally".

Chairman said this is the examine of the Minutes of the Joint Committee Meeting held on 7th February, 1984 (see Minutes of last year).

Chairman preceeded Agenda to the report of Evaluation Team for NWSRI Project and asked for explaining it to a representative of the Japanese Team.

Mr. Kakimoto said the purpose and process of the evaluation by Thai and Japan Evaluation Teams, and he hoped the realization of the result of evaluation.

Afterwards, Mr. Takazawa explained the report detailly. That is, he said the process of evaluation, the satisfactory performance of research work based on Master Plan, future challenge to be continued etc. and finally read again "the key part of Recommendation Document" (See Recommendation Document).

Chairman asked any comment and doubt on Mr. Takasawa's explanation. Dr. K. Noda explained supplementarily the research performance until the termination of the project, April 1985.

Chairman inquired the next step of the extention after approved by Japanese Government, budgetary etc. Mr. Takazawa explained that the next first step is to get approval of Thai Government and send the official document to request the extention to the Japanese Government. When the Japanese authorities received it, they will make negotiation of the future procedures via diplomatic channel, such as the period of extention, research subjects and so on. Chairman said it is very easy to present the document of DTEC and to get agreement in principle.

Mr. Chak said the appreciation of the dispatch of Mr. Ishihara who is Mechanical Weed Control Expert, but there is no future challenge of it in the appendix, and then proposed the activity of mechanical weed control in more two years because it is very important concerning the weed control programme.

Mr. Matsumoto said that it is very difficult to find the expert on a mechanical weed control field in Japan. On strong request of Thai-side, Mr. Ishihara has been sent this time. Dr. Noda further explained there is a very few mechanical weed control expert in Japan. Mr. Ishihara is now mading survey and consideration of the situation of mechanical weed control in Thailand. Based on his report, Thai side should consider any coming measures, regardless of this project.

Dr. Matsunaka supplementarily explained that mechanical weed control is not so important in Japan, and then it is hard to find the mechanical weeding expert in Japan, though it may be very important in Thailand.

Mr. Chak insisted again the dispatch of short term expert in the coming time because he wants to discuss the mechanical weed control programme in Thailand.

Chairman said this is the expression of a keen interest in mechanical weed control, and then proposed to sign the supplement document on this item that is only additional requirement to consideration in future. He emphasized that the rural is poor, out of herbicides and insecticides. Small tools for weed control is needed, when taking consideration of this problem.

Further, concerning Appendix of the report, chairman explained the problem of water hyacinth. "The Governor of Bangkok" invited Dr. Noda and myself to advisors to solve this weed problem".

Mrs. Patoom said, referring the research on the behaviors of herbicides in plants, using simulation techniques is very important because RI is broadly used in Thailand. The facility of this research would be strengthened in the coming two years of extension. Dr. Matsunaka said that this matter will be discussed afternoon.

Chairman went on the discussion in general. Mr. Tirath said the report was sent from DOA to DTEC, Embassy of Japan and Japanese Government, and after that, DOA and a representative of Japan will sign for project extension. Chairman said there is no problem to proceed such step because we have enough time to do it before termination of the project.

Chairman finally expressed sincere thanks to Japanese Government, Evaluation Team, Embassy of Japan and JICA Bangkok Office and added any constraints and problems concerning this project will be solved in our part.

(Adjourned at 12.00)

5. 昭和59年度供与機材リスト

昭和59年度 供与機材

大型機材

番号	品名及び仕様	メーカー名	数量	単価	金額
2-2	陽光式低温恒温器 NL-50R	池田理化	1		1,430,000
2-3	全自動試料燃焼装置 306B オキシダイザー用試薬 1パック付	バックカード	1		8,755,000
2-4	ドラフトチェンバー ISA-12 ファン付	池本理化	1		920,000
2-5	オートシッパ付分光光度計 U-1080	日立製作所 (池田理化)	1		2,525,000
2-6	プレハブ低温室 1.5坪 0~4℃ コンプレッサー PCU-1500W 電源 { 室内 220V 50Hz 1φ コンプレッサー 380V 50Hz 3φ 予備品: Fan motor, relay Electric box ass'y, Electric compo ass'y	サンヨー	1		1,350,000

小 型 機 材

番号	品名及び仕様	メーカー名	数量	単 価	金 額
3-1	標本撮影装置 KN-821 AC220V トランス付	夏目製作所 (池本)	1		210,000
3-2	郡落相対照度計 NS-2	三紳工業	1		134,000
3-3	落射照明装置 SMZ-10用 フィルター付	ニコン (日本フォト)	1		32,000
3-4	描画装置 SMZ-10用	ニコン (日本フォト)	1		76,000
3-5	グリーンメーター SP-AD-501	ミノルタ (キムラ)	1		297,000
3-6	ハンディアスピレーター A-2S 減圧計付	東京理化 (池本)	2	74,000	148,000
3-7	ネオクールアスピレーター BP-51 AC 220V トランス付	ヤマト科学	2	370,000	740,000
3-8	クールニクスサーモバス CTE-310	"	1		308,000
3-9	薄層クロマト用展開槽 200-B 200 × 200 mm	柴田化学 (池本)	4	20,500	82,000
3-10	フラクションコレクター SF-100	東洋科学 (池本)	1		371,000
3-11	クイックエバポレーター S-10 (試験管8本架) 付属品：試験管10本、テフロンシーリング 8ヶ ネオプレンシーリング8ヶ	東京理化 (池本)	1		355,000
3-12	分液ロート台 (大)	池本理化	1		9,300
3-13	" (小)	"	2	5,500	11,200
3-14	簡易試験管洗浄機 GW-35 大・中・小 ブラシ10本付	平山製作所 (池本)	1		121,500
3-15	マグネチックスターラー 40-211	池本理化	4	52,500	210,000
3-16	ガラス細工用バーナー LPG用	"	1		10,000
3-17	フイゴ (足踏式) ガスチューブ2m付	"	1		6,000
3-18	マグネチックスターラー 40-207	"	2	33,000	66,000

番号	品名及び仕様	メーカー名	数量	単 価	金 額
3-19	ウォーターバス 40-207用	池本理化	2	23,000	46,000
3-20	陽光ランプ D400	東 芝	4	14,500	58,000
3-21	反射笠 SN4032A	"	2	2,700	5,400
3-22	ソケット Y39M	"	2	3,100	6,200
3-23	安定器 4MT205H	"	2	40,000	80,000
3-24	ミニ放射線検出器 SK-100	金田理化 (池本)	1		147,000
3-25	マイクロピペット 4710 2-10 μ l チップ 1,000ヶ付	エッペンドルフ (池本)	2	52,000	104,000
3-26	マイクロピペット 4710 10-100 μ l チップ 1,000ヶ付	"	2	52,000	104,000
3-27	マイクロピペット 4716 100-1000 μ l チップ 1,000ヶ付	"	2	52,000	104,000
3-28	マイクロピペット 4716 1-5ml チップ 75ヶ入 14ヶ付	フィン	2	48,000	96,000
3-29	アルコール温度計 -20 100 $^{\circ}$ C	池本理化	20	330	6,600
3-30	フラスコレシーバー, コルク製 60 mm	"	10	320	3,200
3-31	" 75 mm	"	10	380	3,800
3-32	" 90 mm	"	10	460	4,600
3-33	ラボジャッキ 15 \times 15 cm	"	5	6,000	30,000
3-34	電顕用 Colum Liner	日製産業	10	25,800	258,000
3-35	実験室用流し台ユニット 鉛板張り IMA-II-120	池田理化	1		330,000
3-36	ロータリーエバポレーター N-1	東京理化	1		175,000
3-37	遠心分離器 H-300 ローター, 50ml \times 6本, 15ml \times 12本付	国産遠心器 (池田)	1		855,000
3-38	ホモジナイザー AM-11 5-1000ml (処理量) タイマー付	日本精機 (池本)	1		365,000
3-39	ピンセット, 外科・無鈎 130mm ステンレス	池本理化	20	750	15,000
3-40	ミクロスパーテル 180mm ステンレス	"	50	160	8,000
3-41	PHメーター用交換電極, ZEROMATIK IV用セット	ベックマン (池本)	10	44,300	443,000

番号	品名及び仕様	メーカー名	数量	単価	金額
3-42	PHメーター用交換電極, ZEROMATIK SS-3用セット	ベックマン (池本)	10	44,300	443,000
3-43	" " PH 51用	横河電機 (池本)	10	21,600	216,000
3-44	" " TOA. HM-5ES用, 白金電極	東亜電波 (池本)	10	10,300	103,000
3-45	" " 比較電極	"	10	5,700	57,000
3-46	" L-7LC用, # 6300	日立堀場 (池本)	10	12,300	123,000
3-47	ロータリーエバポレーター(N-1)用 センタージョイント	東京理化 (池本)	20	7,400	148,000
3-48	" シール	"	20	4,200	84,000
3-49	ロータリーエバポレーター(R120)用 センタージョイント	柴田化学 (池本)	20	5,150	103,000
3-50	" シール	"	20	3,100	62,000
3-51	連続分注器 J-5 No. 1140	平沢製作所	2	15,500	31,000
3-52	スプリング, ノズル付 " J-10 No. 1150 スプリング, ノズル付	(池本) " "	2 2	16,500	33,000
3-53	連続分注器(J-5)用, 硝子筒 JS-5P	"	10	2,400	24,000
3-54	" シリコン管 JG-3	"	10	420	4,200
3-55	" 金属ワッシャー J-5H	"	10	310	3,100
3-56	連続分注器(J-10)用 硝子筒 JS-10P	"	10	2,800	28,000
3-57	" シリコン管 JG-3	"	10	420	4,200
3-58	" 金属ワッシャー J-10H	"	10	310	3,100
3-59	連続分注器(J-5)用 ゴムリング J-5R	"	10	100	1,000
3-60	連続分注器(J-10)用 ゴムリング J-10R	"	10	100	1,000
3-61	分光光度計用石英セム 10ミリ	池本理化	6	8,350	50,100
3-62	分光光度計用ガラスセム 10ミリ	"	6	2,550	15,300

番号	品名及び仕様	メーカー名	数量	単 価	金 額
3-63-1	カメラレンズ, ニコンフレックス 500 ミリ F 8	ニコン (日本フォト)	1		77,000
3-63-2	カメラレンズ, アサヒ SMCP 500 ミリ F4.5	ペンタックス (日本フォト)	1		132,000
3-64	カメラケース, ハクバメタルケース	ハクバ (日本フォト)	2	26,000	52,000
3-65	カメラレンズ保存ケース, LG型 デシケーター	井内盛栄堂 (池本)	2	66,000	132,000
3-66	オートドライデシケーター, OH型, ドライユニット付 200Vトランス付	"	4	62,000	248,000

圃場関係機材

番号	品名及び仕様	メーカー名	数量	単価	金額
4-1	テンシオメーター DK-200 エアプール式, 受感部10cm, オーガ 1m 1ヶ付	大起理化 (池本)	10	13,000	130,000
4-2	テンシオメーター, エアプール式, 受感部30cm	"	5	11,100	55,500
4-4	ワグネルポット 1/2000, ゴム栓付 プラスチック製	池本理化	500	2,210	1,105,000
4-5	木枠網篩 1mm	"	2	15,000	30,000
4-6	" 2mm	"	2	15,000	30,000
4-7	" 4mm	"	2	15,000	30,000
4-8	" 9.52mm	"	2	15,000	30,000
5-7	雑誌“雑草研究”各1冊 Vol. 28-3, 28-4, 29-1, 29-2	丸善	4冊	1,000	4,000
5-8	雑誌“日本作物学会誌”各1冊 Vol. 50-4, 51-1, 51-2, 51-3 51-4, 52-1, 52-2, 52-3, 52-4, 53-1, 53-2, 53-3	"	12冊	2,400	28,800

実験用ガラス器具

番号	品名及び仕様	メーカー名	数量	単 価	金 額
6-1	ナス型フラスコ ㉞ 24 300 ml	池本理化	10	2,100	21,000
6-2	" 500 ml	"	10	2,600	26,000
6-3	" 1 l.	"	10	3,000	30,000
6-4	ポリ洗浄ビン 250 ml. 12ヶ入	"	20	1,250	25,000
6-5	ナス型フラスコ ㉞ 19 50 ml.	"	20	1,050	21,000
6-6	" 25 ml.	"	20	1,500	30,000
6-7	三角フラスコ 2000 ml.	"	10	2,100	21,000
6-8	" 1000 ml.	"	10	1,100	11,000
6-9	" 500 ml.	"	10	620	6,200
6-10	" 300 ml.	"	50	420	21,000
6-11	" 200 ml.	"	100	310	31,000
6-12	" 100 ml.	"	200	310	62,000
6-13	" 50 ml.	"	100	310	31,000
6-14	マイクロシリンジ ハミルトン 10 μ l	ハミルトン (池本)	10	7,100	71,000
6-15	ガラスロート 並 60 ϕ	池本理化	10	310	3,100
6-16	桐山ロート VB-8	桐 山 (池本)	10	3,100	31,000
6-17	" SB-21	"	10	3,400	34,000
6-18	ジムロート 上・下 ㉞ 19-29 30cm	池本理化	10	8,900	89,000
6-19	" " ㉞ 19-24 30cm	"	10	8,900	89,000
6-20	駒込ピペット 並 2 cc	"	100	88	8,800
6-21	" " 5 cc	"	100	144	14,400
6-22	" " 10 cc	"	100	210	21,000
6-23	駒込ピペット用シリコン帽 2 cc	"	20	70	1,400
6-24	" 5 cc	"	20	100	2,000
6-25	" 10 cc	"	20	250	5,000
6-26	共栓付試験管 ㉞ 13 10 ml.	"	200	560	112,000
6-27	トラップ球 ㉞ 29 - 29	"	4	8,750	35,000
6-28	" ㉞ 29 - 24	"	4	8,500	34,000
6-29	" ㉞ 29 - 19	"	4	8,250	33,000

番号	品名及び仕様	メーカー名	数量	単価	金額
6-30	パスツールピペット, ウィートン 7.5 × 228 200本入	ウィートン (池本)	5箱	3,000	15,000
6-31	" " 200本入		4箱	2,500	10,000
6-32	硬質ガラス棒ピン, 平底リム付 30φ × 120mm	池本理化	200	260	52,000
6-33	ワールブルグ VESSEL, タイプA CT-STL-18	大岳製作所 (池本)	25	6,700	167,500
6-34	" タイプB "	"	25	7,800	195,000
6-35	シャーレ, ガラス 9cmφ	池本理化	300	160	48,000
6-36	プラスチックメスシリンダー 500ml.	"	10	850	8,500
6-37	" 1000ml.	"	10	1,200	12,000
6-38	" 2000ml.	"	5	2,400	12,000

消 耗 品

番号	品名及び仕様	メーカー名	数量	単 価	金 額
7-1	桐山ロート用ろ紙 8mm 50枚入	桐 山 (池本)	20	410	8,200
7-2	" 21mm 50枚入	"	20	520	10,400
7-3	ラボ用カラーテープ 1.3cm巾, 赤・白・青・緑・橙(5色)	平沢製作所 (池本)	10組	2,400	24,000
7-4	TLCプレート WATMAN LK6 5×20cm 75枚入	ワットマン (池本)	2	21,600	43,200
7-5	" " 20×20cm 25枚入	"	2	19,000	38,000
7-6	粉末ろ紙, タイプD 500g	東洋ろ紙 (池本)	10	6,180	61,800
7-7	シンチレーター 大701A-1038	日製産業 (日本フォト)	10	21,600	216,000
7-8	フィラメント α-9用501A-1073 10ヶ入	"	10	22,700	227,000
7-9	試料台 φ15×10 (1組10)	"	50	4,540	227,000
7-10	セーム皮	ハクバ (日本フォト)	5	3,200	16,000
7-11	フィルムホルダー T665	ボラロイド (日本フォト)	50	2,200	110,000
7-13	RI用フィルム 8"×10" 100枚入	フジ (日本フォト)	2	42,200	84,400
7-14-1	現像剤 RD-3 19 1.	"	2	11,500	23,000
7-14-2	定着液 F-19 19 1.	"	2	11,500	23,000

薬 品

番号	品名及び仕様	メーカー名	数量	単 価	金 額
8-1	ヘキサン 500 ml.	関東化学	1		600
8-2	酢酸エチル 500 ml.	"	1		700
8-3	イオン交換樹脂 Bio-Rad 1ℓb. AG 50W-X8(H) 100-200メッシュ	パイオラッド (関東化学)	1		46,400
8-4	石英砂 500 g.	関東化学	5	600	3,000
8-5	活性炭素 クロマトグラフ用 500 g.	和光純薬 (関東化学)	5	4,480	22,400
8-6	シリカゲル 60 G TLC 15μm 500 g.	メルク社 (関東化学)	2	4,500	9,000
8-7	" 60 GF 254 " " 500 g.	"	2	4,900	9,800
8-8	" 60 H " " 500 g.	"	2	4,900	9,800
8-9	Cation exchange resin "ZEROLIT 225(Na)" SRC 14 52-100mesh 1kg.	室町化学 (関東化学)	1		38,000
8-10-1	ガスクロ用カラム充填剤 100ml. 5% carbowax 20, 5% KOH chromosorb W-HP 60-80mesh	ガスクロ工業 (関東化学)	1		17,000
8-10-2	" 100 ml. 5% OV-101 gaschrom Q 100-120mesh	"	1		35,600
8-11	ガスクロ用カラム充填剤 5% S-E 30 chromosorb W 60-80mesh AW-DMCS	ガスクロ工業 (関東化学)	1		13,400
8-12	" 5% silicone DCQF-1, chromosorb W 80-100mesh, AW-DMCS	"	1		12,400
8-13	" 2% PGA chromosorb W 60-80mesh, AW-DMCS	"	1		12,600

番号	品名及び仕様	メーカー名	数量	単価	金額
8-14	ガスクロ用カラム充填剤 5% Silicone OV-17 chromosorb W 60-80 mesh AW-DMCS	ガスクロ工業 (関東化学)	1		18,300
8-15	ガスクロ用カラム充填剤 1.5% neopentyl glycol snocinate chromosorb W 60-80 mesh AW-DMCS	"	1		12,600
8-16	ガスクロ用カラム充填剤 5% silicone DC-200 chromosorb W 80-100 mesh AW-DMCS	"	1		12,600
8-17	ガスクロ用カラム充填剤 5% XE-60 chromosorb W 60-80 mesh AW-DMCS	"	1		21,000
8-18	ガスクロ用カラム充填剤 2% OV-101 chromosorb W 60-80 mesh AW-DMCS	"	1		19,000
8-19	ガスクロ用カラム充填剤 5% OV-1 chromosorb G 60-80 mesh AW-DMCS	"	1		25,200
8-20	四塩化炭素 500 ml.	関東化学	2	600	1,200
8-21	硝酸銀 500 g.	"	2	54,000	108,000
8-22	ピリジン 500 ml.	"	2	1,700	3,400
	合 計				¥28,040,000

Ser. No.	Item No.	Author(s)	Date	Title	Publisher or Place published	Quantity	Price (Jap. Yen)	Amount (Jap. Yen)
2	1	Kistner, D.H.	1958	The evolution of the Pygostenini (Coleoptera, Staphylinidae)	Tervuren, 198 pp.	1		3,000
	2	Boucek, Z.	1974	A revision of the Leucospidae (Hymenoptera: Chalcidoidea) of the world	Brit. Mus., 241 pp.	1		2,500
	3	Smith, C.N.(ed.)	1966	Insect colonization and mass production	Academic Press, 618 pp.	1		4,000
	4	DeBach, P.	1974	Biological control by natural enemies	Cambridge Univ. Press 323 pp.	1		2,000
	5	Malyshev, S.I.	1966	Genesis of the Hymenoptera and the phases of their evolution	Methuen, 319 pp.	1		4,000
	6	Sachtleben, H.	1962	Bericht uber die 9 Wanderrersammlung Deutscher Entomologen	Deut. Akad., 336 pp.	1		1,500
	7	Comstock, J.H. et al. (eds.)	1931	A manual for the study of insects	Comstock Publ., 401 pp.	1		4,000
	8	Brohmer, P. et al. (eds.)		Die Tierwelt Mitteleuropas, Diptera VI (II)	Quelle & Meyer, xvii, 24 pp.	1		2,500
	9	Jaeger, E.C.	1944	A source-book of biological names and terms	Charles Thomas, 323 pp.	1		3,000
	10	Miller, D.	1956	Bibliography of New Zealand Entomology	DSIR, 492 pp.	1		3,000
	11	Clark, L.R. et al. (eds.)	1967	The ecology of insect populations in theory and practice	Methuen, 232 pp.	1		2,000
	12	Leclereq, M.	1969	Entomological parasitology. The relations between entomology and the medical sciences	Pergam Pergamon Press, 158 pp.	1		2,500
	13	Rudd, R.L.	1964	Pesticides and the living landscape	Univ. Wisc. Press, 320 pp.	1		3,500

Ser. No.	Item No.	Author(s)	Date	Title	Publisher or Place published	Quantity	Price (Jap. Yen)	Amount (Jap. Yen)
2	14	Kilgore, W.W. & Doult, R.L.	1967	Pest control. Biological, physical and selected chemical methods.	Acad. Press, 477 pp.	1		4,000
	15	Ridgway, R.L. & Vinson, S.B.	1976	Biological control by augmentation of natural enemies.	Plenum, 480 pp.	1		5,000
	16	Matsuda, R.	1965	Memoirs of the Amer. Ent. Inst., 4.	Amer. Ent. Inst., 334 pp.	1		4,000
				Subtotal		16		50,500
5	1	Jenkins, D.W. (ed.)	1960	Biological control of insects of medical importance.	Amer. Inst. Biol. Sci. 144 pp.	1		1,000
	2	Mayr, E.	1969	Principles of systematic zoology.	McGraw Hill Book., 428 pp.	1		3,000
	3	Brown, R. W.	1954	Composition of scientific words.	George W. King, 882 pp.	1		3,500
	4	Brues, C.T. et al.	1954	Classification of insects.	Cambridge, 917 pp.	1		5,000
	5	CSIRO	1974	The insects of Australia. I, II.	Melbourne Univ. Press; 1029 pp., 146 pp.	2		11,000
	6	Huffaker, C.B. & Messenger, F.S. (eds.)	1974	Theory and practice of biological control.	Academic Press, 783 pp	1		6,500
	7	Tuxen, S.L. (ed.)	1956	Taxonomists glossary of genitalia in insects.	Munks Gaard, 283 pp.	1		3,700
	8	Mulford, W. (ed.)	1952	Forest entomology.	McGraw Hill Book., 351 pp.	1		2,800
	9	Fernald, H.T.	1935	Applied entomology.	McGraw Hill Book., 405 pp.	1		3,200
	10	Snodgrass, R.E.	1935	Principles of insect morphology.	McGraw Hill Book., 667 pp.	1		4,300

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5	11	Clausen, C.P.	1940	Entomophagous insects.	McGraw Hill Book., 688 pp.	1		6,000
					Subtotal	12		50,000
6	1	Imms, A.D.	1957	A general textbook of entomology.	Methuen, 886 pp.	1		4,200
	2	Eyles, A.C.	1973	Monograph of Diaches Dohrn.	Otago Daily Times, 465 pp.	1		3,300
	3	Peck, O.	1963	A catalogue of the Nearctic Chalcidoidea (Insecta: Hymenoptera: Hymenoptera).	Can. Ent., 1092 pp.	1		20,000
	4	Schmid, F.	1970	Le genre Rhyacophila et la famille des Rhyacophilidae (Plecoptera).	Ent. Soc. Can., 230+52 pp.	1		4,500
	5	Dalmat, H.T.	1955	Black flies (Simuliidae) of Guatemala.	Smith. Inst., 425 pp.	1		4,000
	6	Fullaway, D.T. & Krauss, N.L.H.	1945	Common insects of Hawaii.	Tongg Pub., 228 pp.	1		3,000
	7	Snyder, T.H.	1956	Annotated subject-heading bibliography of termites to A.D. 1954	Smith. Inst., 305 pp.	1		2,500
	8	Snyder, T.H.	1961	Supplement to the annotated, subject-heading bibliography of termites. 1955 to 1960.	Smith. Inst., 137 pp.	1		1,500
	9	Joseph, C.	1953-1957	The Hippoboscidae or louse-flies (Diptera) of mammals and birds. Part I, II.	442 pp., 611 pp.	2		5,500
	10	Louis M. Roth & E.R. Willis	1960	The biotic associations of cockroaches.	Smith Inst., 470 pp.	1		3,500
	11	Koch, H. & H. Goossen	1961	Handbuch der Pflanzenkrankheiten.	Paul Parey, 627 pp.	1		7,000
	12	Brian, M.V.	1965	Social insect populations.	Academic Press, 135 pp.	1		2,500
	13	Heckman, C.N.	1979	Rice field ecology in northeastern Thailand.	W.Junk, 228 pp.	1		3,500
					Subtotal	14		65,000

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7	1	Bischoff, H.	1929	Biologie der Hymenopteren.	Julius Springer, 598 pp.	1		5,000
	2	Fringes, M. & Fringes, H.	1960	Sound production and sound reception by insects - bibliography.	Pennsylv. Sta. Univ. Press, 108 pp.	1		2,000
	3	Stary, P.	1979	Aphid parasites of the central Asian area (Hymenoptera, Aphidiidae).	W. Junk, 124 pp.	1		1,500
	4	Labeyrie, V.	1981	The ecology of Bruchids attacking legumes (Pulses).	W. Junk, 233 pp.	1		3,000
	5	Hoy, J.M.	1963	A catalogue of the Eriococcidae (Homoptera: Coccoidea) of the world.	Owen, R.E., 260 pp.	1		2,500
	6	Hoy, J.M.	1962	Eriococcidae (Homoptera: Coccoidea) of New Zealand.	Ditto, 219 pp.	1		2,000
	7	Balduf, W.V.	1959	Obligatory and facultative insects in rose hips.	Univ. Illinois Press, 194 pp.	1		2,800
	8	Thomas, S.R.T.	1962	De plagen van en kele cultuurgewassen in West Nieuw Guinea.	Bull. Econ. Affairs, 126 pp.	1		1,500
	9	Jositowic, M.	1973	Zastita bilja 124 - 125 XXIV.	Inst. Plant Prot., 293 pp.	1		1,300
	10	Morley, D.W.	1954	The evolution of an insect society.	George Allen & Unwin Ltd., 215 pp.	1		1,800
	11	Macleod, R.D.	1959	Key to the names of British butterflies and moths.	Isaac Pitman & Sons, 86 pp.	1		800
	12	Sundby, R.	1957	Borsk Ent. Diasskrift, Suppl. II.	John Griegs, 153 pp.	1		1,000
	13	Kono, T. & Papp, C.	Handb 1977	Handbook of agricultural pests.	Dept. Agr., 205 pp.	1		800
	14	Crichton, M.I. (ed.)	(ed.) 1977	Proceedings of the second Int. Symposium on Trichoptera.	W. Junk, 359 pp.	1		3,500

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7	15	Sung Yoon, L.	1969	A list of forest insect pests in Korea.	For. Res. Inst., 458 pp.	1		3,500
	16	O'Rourke, F.J.	1970	The fauna of Ireland.	Mercier Press, 175 pp.	1		1,000
	17	Jekson, B.D.	1905	A glossary of botanic terms.	Duckworth & Co., 371 pp.	1		3,300
	18	Hungerford, H.B. & Matsuda, R.	1960	Keys to subfamilies, tribes, genera and subgenera of the Gerridae of the world.	Univ. Kans. Sci. Bull 631 pp.	1		3,500
	19	Morrison, H. & Morrison, E.R.	1966	An annotated list of generic names of the scale insects.	Agr. Res. Serv., 206 pp.	1		1,000
	20	Forsyth, J.	1966	Agricultural insects of Ghana.	Ghana Univ. Press, 163 pp.	1		2,200
	21	Berland, L.	1958	Hymenopteres de France, 1, 2.	Boubee & Cie, 155, 159, 184 pp.	2	1,500	3,000
	22	Hinton, H.E.	1945	A monograph of the beetles.	Brit. Mus., 443 pp.	1		4,500
				Subtotal		23		51,500
9	1	Handlirsch, A.	1887	Monographie der mit Nysson und Bembex verwandten Grabwespen.	Wien, 1443 pp., 25 pls.	1		38,000
	2	Linsley, E.G. & Gressitt, J.L.(eds.)	1972	Robert Leslie Usinger Autobiography of an entomologist.	Pac. Ent., Soc., 330 pp.	1		3,700
	3	Hicks, E.A.		Check-list and bibliography on the occurrence of insects in bird's nests.	Iowa Sta. Coll., 681 pp.	1		12,000
	4	Gressitt, J.L.(ed.)	1963	Pacific Basin biogeography.	Bishop Mus. Press, 561 pp.	1		4,500
	5	Fulmex, L.	1962	Parasitensekten der Blattminierer Europas.	W. Junk, 203 pp.	1		4,000
	6	Wroclaw, L.	1971	Les Tachyphex Kohli (Hym., Sphecidae).	Panstowe Wyd. Naukowe, 464 pp.	1		3,700

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9	1	Handlirsch, A.	1887	Monographie der mit Nysson und Bembox verwandten Grabwespen.	Wien, 1443 pp., 25 pls.	1		38,000
	2	Linsley, E.G. & Gressitt, J.L.(eds.)	1972	Robert Leslie Usinger Autobiography of an entomologist.	Pa. Ent. Soc., 330 pp.	1		3,700
	3	Hicks, E.A.		Check-list and bibliography on the occurrence of insects in bird's nests.	Iowa Sta. Coll., 681 pp.	1		12,000
	4	Gressitt, J.L.(ed.)	1963	Pacific Basin biogeography.	Bishop Mus. Press, 561 pp.	1		4,500
	5	Fulmex, L.	1962	Parasitensekten der Blattminierer Europas.	W. Junk, 203 pp.	1		4,000
	6	Wroclaw, L.	1971	Les Tachyphex Kohl (Hym., Sphetidae).	Panstwowe Wyd. Naukowe, 464 pp.	1		3,700
	7	Woods, R.S.	1966	An English glossical dictionary for the use of taxonomists.	Pomona Coll., 331 pp.	1		3,500
	8	Clausen, C.P.	1956	Biological control of insect pests in the continental United States.	USDA, 151 pp.	1		1,100
	9	WHO	1963	Symposium on culture procedures for arthropod vectors and their biological control agensits.	WHO, pp. 433 - 622	1		1,300
	10	Geyer, J.W.	1961	Symposium on entomological problems.	Dept. Agr. Tech. Serv. 220 pp.	1		1,700
	11	MatepNdJlbl	1958	Transactions of the 1st Int. conference of insect pathology and biological control.	Praha, 653 pp.	1		4,500
	12	Bequaert, J.	1922	Ant in their diverse relations to the plant world.	Amer. Mus. Nat. Hist., 583 pp.	1		1,300
	13	Wheeler, W.H.	1922	Key to the genera and subgenera of ants.	Amer. Mus. Nat. Hist. 78 pp.	1		500

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9	14	Thurhill, L.D.(ed.)	1963	Proceedings of the Tenth Pacific Science Congress.	Bishop Mus. Press, 464 pp.	1		3,000
	15	Kemner, N.A.	1934	Systematische und biologische Studien uber die Termiten Javas und Celebes.	Almq. Vist. & Wikesells, 263 pp.	1		3,700
	16	Hurd, P.D.	1955	The Megachilinae bees of California.	Univ. Calif. Press, 247 pp.	1		2,500
	17	Dennis, C.J.	1970	Laboratory manual for introductory entomology.	Brown Co., 109 pp.	1		2,500
				Subtotal		17		92,500
10	1	Coulson, J.R.	1981	Use of beneficial organisms in the control of crop pests.	Ent. Soc. Amer., 62 pp.	1		300
	2	Haworth, J. et al.	1981	Inventory of applied field research in Malaria (1975 - 1980).	UNDP/World Bank/WHO, 56 pp.	1		1,000
	3	Mayer, M.S. & Melanghlin, J.R.	1975	An annotated compendium of insect sex pheromones.	Inst. Food Agr. Sci., 46 pp.	1		1,000
	4	Woon Hah Park	1972	Illustrated Encyclopedia of Fauna & Flora of Korea. Vol. 13	Min. Ed. Korea, 751 pp.	1		12,000
	5	Chang-whan Kim	1970	Ditto, Vol. 11	Min. Ed. Korea, 891 pp.	1		15,000
	6	Persson, B.		Flight activity of Noctuids (Lepidoptera).	Zool. Inst. Lund, 59+IX, 112 pp.	1		3,000
	7	Gerberich, J.B.	1968	Bibliography of papers relating to the control of mosquitoes by the use of fish.	Fish. Tech. Pap., 70 pp.	1		1,200
	8	MacNay, C.G.	1955	Insect distribution maps of Canada. Vol. 1-3.	Rep. Can. Ins. Pest Review, 442 pp.	3	1,000	3,000

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10	9	JICA	1981	Proceedings of the Guatemala-Japan Joint Conference on Onchocerciasis Research and control. JICA, 230 pp.		1		1,500
	10	Chang-whan Kim (ed.)	1976	Distribution atlas of insects of Korea. Ser. 1, Lep.	Korea Univ. Press, 200 pp.	1		8,500
	11	Chang-whan Kim (ed.)		Ditto, Ser. 3, Hym. & Diptera.	Korea Univ. Press, 356 pp.	1		10,000
	12	Goldschmidt, R.B. & Hannah, A.	1951	The Pedoptera effect in <i>Drosophila melanogaster</i> .	Univ. Calif. Press, 290 pp.	1		2,200
				Subtotal		14		58,700
11	1	Tanaka, T.	1934	The cytological studies of the alimentary canal of <i>Simulium pictipes</i> Haten: its structure and metamorphosis.	Kagoshima Imp. Coll. Agr. Forest., 100+23 pls.	1		1,300
	2	Mickel, C.E.	1928	Biological and taxonomic investigations on the Mutillid.	US Gov. Print. Office, 351 pp.	1		2,000
	3	Mound, A.	1971	Gall-forming Thrips and allied species (Thysanoptera: Phlaeo-thripinae) from Acacia trees in Australia.	British Mus., 76 pp.	1		1,600
	4	Nesbitt, H.H.J.	1951	A taxonomic study of the Phytoseiniate (Family Laelptidae) predaceous upon Tetranychidae of economic importance.	E.J. Brill, 64 pp.	1		1,000
	5	Moreton, B.D.	1958	Beneficial insects. Bull. No. 20.	Her Majesty's Sta. Office, 49 pp.	1		700
	6	Bodvarsson, H.	1970	Studies of <i>Onychiurus armatus</i> (Tullberg) and <i>Folsomia quadriculata</i> (Tullberg) (Collembola). Ent. Solisk., 181 pp.		1		2,000
	7	Vecht, J. & Fischer, F.C.J.	1972	Hymenopterorum Catalogues, Pars 8. Pal. Eumenidae.	W. Junk, 199 pp.	1		3,200

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11	8	Schmid, F.	1968	La sous-famille des Apatanines en inde (Trichoptera, Limnophilidae).	Can. Ent., 45 pp.	1		1,000
	9	Pielou, D.P.	1969	Contribution towards a monograph of the fleas of New Guinea.	Ent. Soc. Can., 77 pp.	1		1,600
	10	Pui-Yip So	1967	A preliminary list of the insects of agricultural importance in Hong Kong.	J.R. Lee, 39 pp.	1		1,100
	11	Jepson, W.F.	1954	A critical review of the world literature on the Lepidopterous stalk borers of tropical Gramineaceous crops.	Comm. Inst. Ent., 127 pp.	1		1,500
	12	Mochida, O. & Okada, T.	A li 1971	A list of the Delphacidae (Homoptera) in Japan with special reference to host plants, transmission of plant diseases, and natural enemies.	Kyushu Agr. Exp. Sta., 106 pp.	1		1,400
	13	Guiglia, D. & Magistretti	1969	Indice delle Pubblicazioni della Societa Entomologica Italiana dal 1869 al 1968.	Fratelli Paganotipog. Ed., 147 pp.	1		1,700
	14	Kellogg, R. & Carmichael, L.	1962	The United States National Museum.	Smith. Inst., 195 pp.	1		600
	15	Holt, P.C. Hoffman, L.R. et al. (eds)	1969	The distributional history of the Biota of the Southern Appalachians. Part I: Invertebrates.	Virg. Polytech. Inst., 295 pp.	1		1,700
	16	Snodgrass, R.E.	1954	The dragonfly larva.	Smith. Inst., 38 pp.	1		800
	17	Mathews, E.G.	1972	A revision of the Scarabaeine dung beetles of Australia.	Austr. J. Zool., Suppl. No. 9, 330 pp.	1		2,200
	18	Bugbee, R.E.	1967	Revision of Chalcid wasps of genus <u>Eurytoma</u> in America.	Smith. Press, Proc. USNM 3533, 433 - 552 pp.	1		800
	19	Kennedy, J.S.	1961	Insect polymorphism.	Roy. Ent. Soc., 115 pp.	1		1,700
	20	Smith, R.C., Kelly, E.G. et al.	1943	Common insects of Kansas.	Kans. St. Pr., 440 pp.	1		2,200

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II	21	Wenzel, R.L.	1944	On the classification of the histereid beetles.	Field Mus. Press, 151+8 pls.	1		2,200
	22	Kontkanen, P.	1950	Quantitative and seasonal studies on the leafhopper fauna of the field stratum on open areas in North Karelia.	Suomalaisen Kirj. Sev., 91 pp.	1		1,800
	23	Barbut, M.	1952	Rapport du Conseil de l'Experimentation et des Recherches Agronomiques.	Imp. Offic., 288 pp.	1		2,300
	24	Richmond, E.A.	1920	Studies on the biology of the aquatic Hydrophilidae.	Amer. Mus. Nat. Hist., 94+16 pls.	1		2,000
	25	Betrem	1941	Musee Heude Notes d'Entomologie Chinoise.	Chang-hai Univ. 1' Aurore, 188 pp.	1		1,800
	26	Bounhiol, J.J.	1938	Recherches experimentales sur le determinisme de la metamorphose chez les Lepidopteres.	Lab. Dev. Org., 199 pp.	1		3,000
	27	Arora, G.L. et al.	1969	Bibliography of family Bruchidae (Coleoptera).	Res. Bull. Panjab Univ., 81 pp.	1		500
	28	Wardojo, S. et al.	1978	Pesticide management in Southeast Asia.	BIOTROP, 247 pp.	1		500
	29	Whiteside, S.B.	1950	Soil survey of Prince Edward Island.	Exp. Farm. Serv., 83 pp.	1		1,000
	30	Berthold, L.	1927	Insect-musicians and cricket champion of China.	Field Mus. Nat. Hist., 28 pp.	1		600
	31	Simmonds, F.J.	1969	Commonwealth Agricultural Bureau, CIEC.	Comm. Inst. Ent., 103 pp.	1		800
	32	Kellogg, R.	1952	United States Nat. Museum, 1957 Annual Report.	Smith. Inst., 132 pp.	1		300

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11	33	Smith. Inst.	1966	Smithsonian Year 1966.	Smith. Inst., 409 pp.	1		1,300
	34	Perkins, R.C.L. & Swezey, C.H.	1924	The introduction into Hawaii of insect that attack Lantana.	Haw. Sug. Plant. Assoc. 83 pp.	1		1,500
	35	Dodd, A.P.	1940	Biological campaign against prickly-pear.	Comm. Agr. Board, 177 pp.	1		1,200
	36	Dessart, P.	1972	Revision des especes europeennes du genre <u>Dendrocerus</u> Ratzebur, 1852 (Hym., Cersphronoidea).	Ass. san lucratif, 310 pp.	1		1,800
	37	Gupta, V.K.	1975	Ichneumonological explorations in India.	Univ. Delhi, 64 pp.	1		1,000
	38	Batra, S.E. et al.	1981	Insects and fungi associated with carduus thistles (Compositae).	USDA, 100 pp.	1		500
	39	Banks, N.	1947	Studies of South American Psamocharidae, II.	Bull. Mus. Comp. Zool., 486 pp.	1		1,500
				Subtotal		39		55,700
12	1	Davidson, A.G. et al.	1967	Important forest insects and diseases of mutual concern to Canada, the United States and Mexico.	Dept. For. Rur. Devel. Can., 248 pp.	1		2,000
	2	Garmain, P. & Townsend J.F.	1952	Control of apple insects.	Exp. Sta. New Haven, 84 pp.	1		1,500
	3	Watanabe, C.	1937	A contribution to the knowledge of the Braconid fauna of the Empire of Japan.	Hokkaido Imp. Univ., 202 pp.	1		2,600
	4		1966	Proc. FAO Symposium on integrated pest control. 2.	FAO, 186 pp.	1		500

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12	5		1966	Proc. FAO Symposium on integrated pest control. 2.	FAO, 129 pp.	1		400
	6	OILB	1969	Proc. 4th Symposium on integrated control in orchards.	UNESCO, 190 pp.	1		700
	7	Edwards, J.G.	1949	Coeloptera or beetles, east of the great plains.	Ed. Broghers, 181 pp.	1		3,500
	8	Duavies, D.E.	1952	Seasonal breeding and migrations of the desert locust, north eastern Africa and the middle East.	Brit. Mus., 57 pp.	1		2,000
	9		1955	Aequivos do Museu Nacional, XLIII, II.	Rio de Janeiro, 212 pp.	1		4,500
	10	Shiraki, T.	1954	Catalogue of injurious insects in Ryukyu Island.	Pac. Sci. Bd. Nat. Res. Coun., 159 pp.	1		2,000
	11	Avidov, Z.	1970	Biology of natural enemies of citrus scale insects and the development of methods for their mass production.	Hebrew Univ., 247 pp.	1		1,700
	12	Inf. Div.	1969	Insect distribution maps. Canada. Vol. 4 and cumulative index.	Can. Dept. Agr., 51 pp.	1		800
	13	Hemming, F.	1953	Copenhagen decisions on zoological nomenclature.	ICZN, 135 pp.	1		4,000
	14	Lindberg, H.	1949	On stylopisation of Araeopids.	Tvarm. Zool. St., 40 pp.	1		800
	15	Huffaker, C.B.	1975	Integrated pest management.	Univ. Cal., 341 pp.	1		2,200
	16	Miller, C.D.	1970	The nearctic species of <u>Pnisalio</u> and <u>Sympiesis</u> (Hymenoptera: Eulophidae).	Mem. Ent. Soc. Can., 121 pp.	1		2,000
	17	Malaise, R.	1945	Tenthredinoidea of south-eastern Asia.	Berl. Bakt., 288+20 pls.	1		5,000
	18	Arnold, J.W.	1964	Boold circulation in insect wings.	Mem. Ent. Soc. Can., 62 pp.	1		1,700

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12	19	Martin, J.C.	1956	A taxonomic revision of the Triaspidine Braconid wasps of nearctic America (Hymenoptera).	Can. Dept. Agr., 155 pp.	1		2,000
	20	Gressitt, J.L.	1970	Biogeography of Laos.	Pac. Ins., 96 pp.	1		900
	21	Swirski, E.	1974	List of publications by members of the Division of Entomology (1922 - 1972)	Div. Sci. Pub., 176 pp.	1		1,300
	22	Thomas, S.	1962	Check list of pests on some crops in west Irian.	Dept. Econ. Aff., 126 pp.	1		1,700
	23	Snodgrass, R.E.	1954	Insect metamorphosis.	Smith. Inst., 124 pp.	1		1,800
	24	Roth, L.M. & Wills, E.R.	1954	The reproduction of cockroaches.	Smith. Inst., 49 pp.	1		1,700
	25	Chao, H.-F.	1953	The external morphology of the dragon fly <i>Onychogomphus ardens</i> Needham.	Smith. Inst., 56 pp.	1		1,500
	26	Snodgrass, R.E.	1937	The male genitalia of Orthopteroid insects.	Smith. Inst., 107 pp.	1		2,000
	27	Roth, L.M. & Willis, E.D.	1957	The medical and veterinary importance of cockroaches.	Smith. Inst., 147 pp.	1		2,200
	28	Snodgrass, R.F.	1957	A revised interpretation of the external reproductive organs of male insects.	Smith. Inst., 60 pp.	1		1,000
	29	Tech. Dev. Lab.	1956	Clinical memoranda on economic poisons.	Pub. Health Serv., 78 pp.	1		800
	30	USDA	1958	Locust and other insect control in technical cooperation programs in the near East, South Asia, and Africa. 1951 - 57.	USDA, 147 pp.	1		2,000
	31	Austen, M.E.E.	1920	The house-fly as a danger to health.	Brit. Mus., 20 pp.	1		300
	32	Waterston, J.	1921	The louse as a menace to man.	Brit. Mus., 20 pp.	1		300
	33	Auten, M.E.E.	1920	The house-fly.	Brit. Mus., 52 pp.	1		400

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12	34	Waterston, J.	1920	Fleas.	Brit. Mus., 20 pp.	1		200
	35	Esaki, T. & Ito, S.	1954	A tentative catalogue of Jassoidea of Japan, and her adjacent territories.	JSPS, 315 pp.	1		2,000
	36	British. Mus.,	1958	List of serial publications in the library of the Department of Entomology	Brit. Mus., 109 pp.	1		800
	37	Lep. Soc. Jap.	1967	Contributions to the biology of Formosan butterflies.	Lep. Soc. Jap., 154 pp.	1		1,800
	38	Richards, O.W.	1956	Handbooks for the identification of British Insects. Hymenoptera. Introduction and keys to families.	Roy. Ent. Soc. Lond., 94 pp.	1		1,500
	39	Eady, R.D. & Quinlan, J.	1963	Ditto, Hymenoptera. Cynipoidea.	Ditto, 81 pp.	1		1,500
	40	Ferriere, C. & Kerrich, G.J.	1958	Ditto, Hymenoptera.	Ditto, 40 pp.	1		1,000
	41	Nixon, G.E.J.	1957	Ditto, Hym., Proctotrupoidea.	Ditto, 107 pp.	1		1,500
	42	Sakagami, S.F. & Michener, C.D.	1962	The nest architecture of the sweat bees. A comparative study of behavior.	Univ. Kana. Press, 135 pp.	1		2,800
	43	Penniket, J.D. (ed.)	1964	Records of the Canterbury Mus. Vol. VIII, No. 1.	Caxton Press, 79 pp.	1		1,800
	44	Snodgrass, R.E.	1956	The anatomical life of the mosquito.	Smith. Inst., 87 pp.	1		1,300
	45		1974	Distribution atlas of the insects of Korea.	104 pp.	1		1,000
	46	Lee, C.E.	1971	Illustrated encyclopedia of Hteroptera of Korea.	Sanwa Pub., 1060 pp.	1		5,000
				Subtotal		46		80,000

Ser. No.	Item No.	Author(s)	Date	Title	Publisher or Place published	Quantity	Price (Jap. Yen)	Amount (Jap. Yen)
13	1	Qadri, M.A.H.	1948	On Indian insect types. External and internal anatomy of the Buffalo-louse. I.	Aligarh Musl. Univ. 21+9 pls.	1		800
	2	Qadri, M.A.H.	1950	Ditto. Biology, life-history and external and internal anatomy.	Aligarh Musl. Univ. 35+7 pls.	1		1,000
	3	Alam, S.M.	1951	Ditto. The skeleto-muscular mechanism of <i>Stenobracon deesae</i> Cameron (Braconidae, Hymenoptera). An ectoparasite of sugar-cane and juar borer of India.	Aligarh Musl. Univ. 76+9 pls.	1		1,800
	4	Alam, S.M.	1953	Ditto, Part II, (III).	Aligarh Musl. Univ. 75+7 pls.	1		1,100
	5	Sander, K.	1956	Ditto. The early embryology of <i>Pyrrilla perpusilla</i> Walker (Homoptera), including some observation on the later development.	Ditto, 61+12 pls.	1		1,000
	6	Akbar, S.S.	1957	Ditto. The morphology and life-history of <i>Leptocorissa varicornis</i> Fabr. (Coreidae, Hemiptera). A pest of paddy crop in India.	Ditto, 53+9 pls.	1		1,000
	7	Akbar, S.S.	1958	Ditto. Part II.	Ditto, 49+7 pls.	1		800
	8	Farooqi, M.M.	1963	Ditto. The embryology of the mustard sawfly <i>Athalia proxima</i> Klug (Tenthredinidae, Hymenoptera).	Ditto, 68+10 pls.	1		1,200
	9	Allen, H.W.	1975	The genus <i>Tiphia</i> of the Indian subcontinent.	USDA, 96 pp.	1		900
	10	Needham, J.G.	1901	Aquatic insects in the Adirondacks.	Univ. Sta. N.Y., 230 pp.	1		2,500
	11	Adams, C.C.	1928	Insects and health.	Ditto, 216 pp.	1		1,800
	12	Clarke, J.M. & Felt, E.P.	1925	Key to gall midges.	Ditto, 239 pp.	1		2,000

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13	13	Jamback, H. & Collins, D.L.	1955	The control of blackflies (Diptera: Simuliidae) in New York.	Univ. Sta. N.Y., 113 pp.	1		1,500
	14		1959	Records of the South Australian Museum.	S. Aust. Mus., 97 pp.	1		1,300
	15	Benson, R.B.	1968	Hymenoptera from Turkey. Symphyta.	Sflstf & Son, 99 pp.	1		1,800
	16	Thompson, W.R. (ed.)	1956	The International Congress of Entomology. LXXXVIII, No. 7.	Ent. Soc. Can., 192 pp.	1		1,300
	17	Enteman, W.M.	1904	Coloration in Polistes.	Carneg. Inst., 88 pp.	1		1,800
	18		1972	A list of plant diseases, insect pests, and weeds in Korea.	Korean Soc. Plant Prot., 424 pp.	1		1,500
	19		1945-1972	Bibliography on the plant protection of Korean plants.	Pi. Prot. Soc. Korea, 113 pp.	1		1,500
	20	Haupt, H.H.	1927	Monographie der Psammocharidae (Pompilide) mittel- und Osteuropas.	367 pp.	1		2,200
	21	Kinosita, E.	1940	Journal of the Fac. Agriculture, 40 (4)	99 pp.	1		1,300
	22		1969	Insect-plant interactions.	Nat. Acad. Sci., 93 pp.	1		1,000
	23	Pritchard, A.E.	1951	The north American gall midges of the tribe Lestremiini; Itonididae (Cecidomyiidae); Diptera.	Univ. Cal. Press, 36 pp.	1		1,000
	24	Nohara, K.	1970	Study of the biological and chemical control of citrus pests, with special reference to the integrated control of <i>Unaspis yanonensis</i> (Kuwana) and <i>Panonychus citri</i> (McGregor).	Spec. Bull. Yamaguchi Agr. Exp. St. 23, 92 pp.	1		2,200
	25	Yukawa, J.	1971	A revision of the Japanese gall midges (Diptera: Cecidomyiidae).	Kagoshima Univ., 203 pp.	1		2,500
	26	Hottes, F.C. & Frison, T.	1931	The plant lice, or Aphididae, of Illinois.	Sta. Illin., 326 pp.	1		5,500

Ser. No.	Item No.	Author(s)	Date	Title	Publisher or Place published	Quantity	Price (Jap. Yen)	Amount (Jap. Yen)
13	27	Townes, H. et al.	1965	Mem. Amer. Ent. Inst. No. 5	Amer. Ent. Inst., 661 pp.	1		6,000
	28	Townes, H. & M.	1966	Ditto, No. 8.	Ditto, 367 pp.	1		4,500
	29	Townes, H.	1969	Ditto, No. 11.	Ditto, 300 pp	1		4,000
	30	Townes, H.	1969	Ditto, No. 12.	Ditto, 537 pp.	1		5,500
	31	Townes, H.	1969	Ditto, No. 13.	Ditto, 307 pp.	1		3,800
	32	Townes, H. & Chiu, S.C.	1970	Ditto, No. 14.	Ditto, 372 pp.	1		4,000
	33	Townes, H.	1971	Ditto, No. 17.	Ditto, 372 pp.	1		4,000
	34	Townes, H. & M.	1973	Ditto, No. 19.	Ditto, 416 pp.	1		4,000
	35	Ophen, J.D.	1958	Livre du 4e Congres int. Agr. Medit.	Ditto, 604 pp.	1		8,000
	36		1963	Proc. 9th Pac. Sci. Congr.	Dept. Sci. Bangkok, 150 pp.	1		1,400
				Subtotal		36		87,500
17	1	Baltsar, V.	1946	Prodromus Chrysididarum ru Publica Cechoslovakiae.	Prod. Hym. Cech., 40 pp.	1		400
	2	Nordstrom, F. & Ophuin M.	1961	De Fenoskaniska svarmarnas ach spinnemas utbredning.	C.W.K. Gleeerup, 92 pp.	1		3,700
	3	Kennedy, J.S. & Ainsworth, M.	1948	Laboratory studies on the spraying of Locusts at rest and in flight.	Anri-Locust Res. Cent, 64 pp.	1		700
	4	Gunn, D.L. & Perry, F.C.	1948	Behavior of the desert Locust in Kenya in relation to aircraft spraying.	Ditto, 70 pp.	1		800
	5	Norris, M.J.	1950	Reproduction in the African migratory Locust in relation to density and phase.	Ditto, 50 pp.	1		600
	6	Ellis, P.E.	1951	The marching behavior of hoppers of the African migratory Locust in the laboratory.	Ditto, 48 pp.	1		600

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17	7	Joyce, R.J.V.	1952	The ecology of grasshoppers in East Central Sudan.	Anti-Locust Res. Cent. 99 pp.	1		700
	8	Davey, J.T. & Johnston, H.B.	1956	The African migratory Locust in Nigeria.	Ditto, 91 pp.	1		800
	9	Yuasa, H.	1922	A classification of the larvae of the Tenthredinoidea.	Ill. Biol. Mon., 172 pp.	1		4,000
	10	Krombein, K.V. (ed.)	1958	Hymenoptera of America north of Mexico. Synoptic catalog.	US Gov. Print., 305 pp.	1		1,700
	11	Riley, N.D.	1964	A brief historical sketch.	12th Int. Cong. Ent., 48 pp.	1		400
	12	Kellogg, C.R.	1967	Entomological excerpts from Southeastern Chine (Fukien Province)	Claremont Manor, 88 pp.	1		2,000
	13	Evans, J.W.	1952	The injurious insects of the British commonwealth.	Commonw. Inst. Ent., 242 pp.	1		2,800
	14	Bodenheimer, F.S.	1958	Animal ecology Today.	276 pp.	1		8,000
	15	Huxley, M.A.	1932	Problems of relative growth.	Butler & Tanner, 276 pp.	1		6,000
	16	Reitz, L.P. (ed.)	1960	Biological and chemical control of plant and animal pests.	Amer. Assoc. Adv. Sci., 273 pp.	1		3,000
	17	Dethier, A.M.	1947	Chemical insect attractants and repellents.	Maple Press, 289 pp.	1		3,000
	18	Jacobson, M.	1965	Insect sex attractants.	John Wiley, 154 pp.	1		3,000
	19	Gregg, R.E.	1963	The ants of Colorado.	Univ. Colorado Press, 792 pp.	1		7,000
	20	Wigglesworth, V.B.	1947	The principles of insect physiology.	Methuen, 434 pp.	1		7,000

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17	21	Mani, M.S.	1950	Introduction to zoology.	Mainotra Broth., 801 pp.	1		12,000
					Subtotal	21		68,200
18	1	Kato, M.	1932	Monograph of Cicadidae.	Kanshodo, 450 pp.	1		8,000
	2	Snedecor, G.W.	1948	Statistical methods.	Iowa St. Coll. Press, 485 pp.	1		4,000
	3	Rothschild, M. & Clay Theresa		Fleas flukes and cuckoos.	Collin, 304 pp.	1		4,000
	4	Cummins, K.W. et al.	1965	Experimental entomology.	Reinher Pub., 176 pp.	1		2,500
	5	Peterson, A.	1956	Fishing with natural insects.	Columbus, 176 pp.	1		3,000
	6	Otto Bank Haas	1926	Novitates Macrolepidopterologicae.	Dresden, 238 pp.	1		3,800
	7	Lees, A.D.	1955	The physiology of diapause in arthropods.	Cambridge Univ., 151 pp.	1		1,800
	8	Pierce, G.N.	1949	The song of insects.	Harvard Univ., 329 pp.	1		5,000
	9	Taylor, T.H.C.	1937	The biological control of an insect in Fiji.	Imp. Inst. Ent., 239 pp., 23 pls.	1		7,000
	10	Ross, H.H.	1948	A textbook of entomology.	John Willey & Sons, 532 pp.	1		4,000
	11	Plath, O.E.	1934	Bumble bees and their ways.	McMillan, 201 pp.	1		4,000
	12	Chu, H.F.	1949	How to know the immature insects.	Brown Co., 234 pp.	1		2,000
	13	Novak, V.J.A.	1966	Insect hormones.	Methuen, 428 pp.	1		4,000
	14	Carson, R.	1962	Silent spring.	Hourgton Miffin Co., 368 pp.	1		3,500
	15	Simpson, G.G.	1962	Principles of animal taxonomy.	Columbia Univ. Press, 247 pp.	1		4,000

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18	16	Williams, F.X.	1931	The insects and other invertebrates of Hawaiian sugar cane fields.	Hawaii, 400 pp.	1		5,200
	17	Miller, J.M. & Keen F.D.	1960	Biology and control of the western pine beetle.	US Gov. Print., 381 pp.	1		3,700
	18		1946	Catalog de los Dipteros de Chile.	Imp. Univ., 250 pp.	1		2,800
	19	William, W.G. & Jose Luis Carrillo, S.	1959	Lista de Insectos en la Collection de la Oficina de Estudios Especiales, SA. G.	Agric. Canad., 254 pp.	1		1,500
	20	Lechevalier, P.	1950	Encyclopedie entomologique, Ser. A.	609 pp.	1		4,500
	21	Brown, A.W.A.	1958	Insecticide resistance in Arthropods.	WHO, 240 pp.	1		3,000
	22	Patton, R.L.	1963	Introductory insect physiology.	Saunders Co., 245 pp.	1		3,000
	23	Steinhaus, E.A.	1947	Insect microbiology.	Comstock Pub., 763 pp.	1		5,000
	24	Sowerby, C.	1936	China's natural history.	Roy. Asiat. Soc., 108 pp.	1		4,000
	25	Williams, C.B.	1958	Insect migration.	Collins, 240 pp.	1		2,500
	26	C. Thompson, J.L.	1954	Biology of deserts.	Int. Biol. Tavistock, 224 pp.	1		2,800
				Subtotal		26		98,600
26	1	Hirvenoja, M.	1973	Revision der Gattung Cricotopus van der Wulp und ihrer Verwandten.	Ann. xool. Fenn., 363 pp.	1		4,000
	2	Hazarika, S.H.	1952	Destructive insects of eastern Pakistan and their control.	East Bengal Gov. Press, 98 pp.	1		4,000
	3	Snodgrass, R.E.	1954	Insect metamorphosis.	Smith. Inst., 124 pp.	1		2,000
	4	Gilmour, D.	1961	Biochemistry of insects.	Academic Press, 343 pp.	1		4,000

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26	5	Campbell, F.L. (ed.)	1956	Physiology of insect development.	Univ. Chicago Press, 167 pp.	1		3,500
	6	Gough, H.C.	1945	A review of the literature on soil insecticides.	Imp. Inst. Ent., 161 pp.	1		3,800
	7	Villiers, P.A.	1952	Hemipteres de l'Afrique noire.	Inst. franc. d'Afr., 256 pp.	1		4,200
	8	Eichler, W.	1952	Behandlungstechnik parasitärer Insekten.	Akad. Verlag, 286 pp.	1		6,500
	9	Carroll, W.J. et al.	1966	Forest Lepidoptera of Canada.	Dept. Forest., 294 pp.	1		3,500
	10	Logan, J.A. et al.	1953	The Sardinian project.	Johns Hopkins Press, 415 pp.	1		8,000
	11	USDA	1941	Insects in relation to national defence.	USDA, 613 pp.	1		2,500
	12	Leonard, M.D. (ed.)	1928	A list of the insects of New York.	Ithaca, N.Y., 1121 pp.	1		12,000
	13	Pammel, L.H.	1911	A manual of poisonous plants.	Torch Press, 977 pp.	1		19,000
	14	Yunus, A.H. H.T.	1980	List of economic pests, host plants, parasites and predators in West Malaysia.	Min. Agr. Malaysia, 538 pp.	1		3,500
	15	Koehler, C.S. & Wilcoxson, R.D.	1972	Plant protection in Turkey, Iran, Afghanistan, and Pakistan.	Univ. Calif., 74 pp.	1		2,000
	16	Smith, R.F. & Schlegel, E.	1974	Report of the Sakel crop pest management conference.	Univ. Calif., 82 pp.	1		2,000
	17	Raski, D. & Grogan, R.G.	1972	Crop protection in the Mediterranean Basin.	Univ. Calif., 78 pp.	1		2,000
	18	Smith, R.J. & Thomason, I.J.		Plant protection problems southeast Asia.	Univ. Calif., 66 pp.	1		1,000

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26	19	Sakit, A.R. & Pertamina, P.	1974	A report on Seminar, workshop and training in pesticide management.	Univ. Calif., 298 pp.	1		3,000
	20	Sasser, J.N. et al.	1972	Crop protection in Senegal, Niger, Mali, Ghana, Nigeria, Kenya, Tanganyika and Ethiopia.	Univ. Calif., 61 pp.	1		2,000
	21	Salvador, S. & Salvador, E.	1973	Management of pesticides and protection of the environment.	Univ. Calif., 37 pp.	1		2,000
	22	Day, B.E.	1974	Pest management and the efficient use and safe handling of pesticides in South Vietnam.	Univ. Calif., 39 pp.	1		2,000
	23	Yates, W.E. et al.	1974	Analysis of pesticide use in Pakistan.	Univ. Calif., 43 pp.	1		2,000
	24	Caltagirone, et al.	1972	The crop protection situation in Guatemala, Honduras, Nicaragua, Costa Rica, Panama and Guyana.	Univ. Calif., 81 pp.	1		2,000
	25		1975	A report on Seminar and workshop in pesticide management.	Ramon Magsaysay Cent., 150 pp.	1		2,500
	26	Zimdahl, R.L. (ed.)	1973	Weed science in the developing countries of the world.	Univ. Calif., 33 pp.	1		2,000
	27	Bampot, N.	1965	Entomology in Thailand upto 1964.	Kasetsart Univ., 46 pp.	1		1,000
	28		1964	Studies on the natural enemies of insect pests of rice.	Comm. Agr. Bur., 80 pp.	1		1,800
				Subtotal		28		107,800
32	1	Kohl, F.F.	1915	Die Crabronen der palaarktischen Region.	Alfred Holder, 453 pp., 13 pls., 171 pp.	1		16,000

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32	2	Chpman, A.R.	1970	The United Kingdom contribution to the International Biological Programme. 1970 progress report.	Roy. Soc., 58 pp.	1		1,200
	3	Barr, B.A. et al.	1975	Rice: field losses to insects, diseases, weeds and other pests.	UC/AID, 64 pp.	1		2,000
	4	Simmonds, F.J.		Preliminary list for a directory of biological control.	Int. Adv. Comm. BC., 68 pp.	1		1,000
	5	WHO		Directory of scientific workers active in the fields of invertebrate pathology and or biological control as applied to public health entomology.	WHO, 16 pp.	1		700
	6	Knight, K.L. & Wheeler, N.K.		A record of the entomological work done by navy specialists during world war II.	93 pp.	1		2,000
	7	Mao, Y.T.	1968	World list of rice workers 1968.	FAO, 110 pp.	1		1,200
	8		1961	Supplement to list of entomologist of the Pacific area.	Pac. Sci. Assoc., 32 pp.	1		800
	9		1955	List of entomologists of the Pacific area.	Pac. Sci. Assoc., 84 pp.	1		1,000
	10		1955	List of entomologists of the Pacific area.	Pac. Sci. Assoc., 82 pp.	1		1,000
	11	Hill, D.S.	1974	Synoptic catalogue of insect and mite pests.	Univ. Hong Kong, 150 pp.	1		3,000
	12	Pauliah, R.	1950	Les Corylophidae d'Afrique (Coleoptera).	Ifa-Dakar, 126 pp.	1		8,500
	13	Licent, E.(ed.)	1935	Vingt deux annees d'exploration dans le Nord de la Chine.	Pub. Mus., 43 pp.	1		6,000

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32	Le Pere P. et al.		La Montagne boisee dans le nord-est de la Chine.		1		4,800
14	Peck, O.	1964	Synopsis of nearctic Ichneumoninae Stenopneusticae with particular reference to the northeastern Region (Hymenoptera).	Mem. Ent. Soc. Can., 36 pp.	1		1,300
15	Curran, C. & Kaufeld, C.	1937	A multitude of books and serials concerning insects and spiders.	96 pp.	1		200
16	Kohl, F.F.	1918	Die Hautflüglergruppen "Specinae" IV.	Univ. Buch. Akad. Wiss., 171 pp.	1		4,500
17	Riek, E.	1963	Insects of Australia.	Jacaranda Press, 128 pp.	1		800
18	Collins, F.H.	1965	Authors' & printers' dictionary.	Oxford Univ. Press, 442 pp.	1		1,300
19	Reitter, E.	1963	Kafer. Form und Farbe - Fülle und Pracht.	Belsler Verlag, 256 pp.	1		1,500
20	Danesch, O.	1965	Schmetterlinge. I.	Belsler Verlag, 256 pp.	1		1,500
21	Fabre, J.H.	1882	Nouveaux souvenirs entomologiques.	Ch. Delagrave, 349 pp.	1		15,000
22	Essig, E.O.	1953	Some new and noteworthy Aphidae from western and southern South America.	Proc. Calif. Acad. Sci., 59-164 pp.	1		1,200
23	Sogawa, K.	1973	Feeding behavior of the brown planthopper and brown planthopper resistance of indica rice mudgo.	Nogoya Univ., 151 pp.	1		800
24	Sakai, S.	1970	Dermapterorum catalogus praeliminaris II.	Daito Bunks Univ., 177 pp.	1		800
25	JICA	1975	Report of Japan-Indonesia Joint food crop research program.	JICA, 269 pp.	1		1,000

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32	27	Petersen, B.	1956	The zoology of Iceland. III. Hymenoptera.	Copenhagen, 176 pp.	1		1,800
	28	Davis, D.R.	1969	A revision of the American moths of the family Carposinidae (Lepidoptera: Carposinoidea).	Smith. Inst., 105 pp.	1		1,000
	29	Ardo, P.	1957	Studies in the marine shore dune ecosystem with special reference to the Dipterous fauna.	Opusc. Ent. Suppl. 1, 255 pp.	1		2,300
	30	Andersen, N.M.	1975	The Limnogonus and Neogerris of the Old World.	Ent. Scand. Suppl. 7, 96 pp.	1		1,000
	31	Ander, K.	1939	Vergleichend-anatomische und phylogenetische Studien über die Ensifera (Saltatoria).	Opus. Ent. Suppl. 2, 306 pp.	1		2,700
	32	Hasselrot, T.B.	1960	Studies on swedish bumblebees (genus <i>Bombus</i> Latr.).	Opusc. Ent. Suppl. 17, 192 pp.	1		2,400
	33	Sato, M. et al. (eds.)	1982	Special issue to the memory of retirement of Emeritus Prof. M. Chujo.	Nagoya, 185 pp.	1		3,000
	34	Chu, Y.I.	1969	On the bionomics of <i>Lycocoris</i> <i>beneficus</i> (Hiura) and <i>Xylocoris galacticus</i> (Fieber) (Anthocoridae, Heteroptera).	J. Fac. Agr., Kyushu Univ., 136 pp.	1		1,800
	35	Buxton, P.A.	1930	Insects of Samoa, 9 (1).	Brit. Mus., 31, 6 pls.	1		1,700
	36	Buxton, P.A.	1935	Insects of Samoa, 9 (2).	Brit. Mus., 33-104 pp.	1		2,300
	37	Perkins, R.C.L. & Cheesman, L.E.	1928	Insects of Samoa, 5 (1).	Brit. Mus., 58 pp.	1		2,000
	38	Inst. Trop. Agr.	1977	Bull. Institute of Tropical Agriculture Kyushu University.	Kyushu Univ., 287 pp.	1		3,000
	39	Sylvén, E.	1958	Studies on fruit leaf Tortricids (Lepidoptera).	Stockholm, 135-296 pp.	1		1,900

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32	40	Gay, F.J.	1971	The Termitinae (Isoptrera) of temperate Australia.	Aus. J. Zool., Suppl. 3, 36 pp.	1		800
	41	Singh, S.	1971	Agromyzidae exploration in India.	St. John's Coll., 73 pp.	1		900
	42	Arora, G.L. et al.	1969	Bibliography of family Eruchidae (Coleoptera).	Res. Bull. Panjab Univ., 81 pp.	1		1,300
	43	Dirks, C.O.	1937	Biological studies of Maine moths by light trap methods.	Univ. Maine, Bull., 31-162 pp.	1		1,500
	44	Joseph, K.J.	1967	Studies on Oriental Brachymeria (Chalcidoidea). Dept. Zool.	Calicut Univ., 92 pp.	1		1,500
	45	Hunter, S.J.	1899	Alfalfa, Grasshoppers, bees: their relationship.	Univ. Kansas Bull., 152 pp.	1		1,900
	46	Moure, J.S. & Michener, C.D.	1955	A contribution toward the classification of Neotropical Eucerini (Hymenoptera, Apoidea).	Dusenla, 239-331 pp.	1		1,900
	47	Roepke, W.	1942	Rhopalocera Javanica.	H. Veenman & Zonen, 363-453 pp.	1		2,300
	48	Hoof, H.A.V.	1958	An investigation on the biological transmission of a non-persistent virus.	Wageningen, 96 pp.	1		2,000
	49		1973	Mosquito control. Some perspectives for developing countries.	Nat. Acad. Sci., 63 pp.	1		1,000
	50	Hummelen, P.J.	1974	Relations between two rice borers in Surinam, <u>Rupela albinella</u> (Cr.) and <u>Diatraea saccharalis</u> (F.), and their hymenopterous larval parasites.	Med. Land. Wag., 88 pp.	1		1,700
	51	Huber, L.L. et al.	1928	The european corn borer and its environment.	Ohio Agr. Ext. St., 196 pp.	1		2,500

Ser. No.	Item No.	Author(s)	Date	Title	Publisher or Place published	Quantity	Price (Jap. Yen)	Amount (Jap. Yen)
32	52	Britton, W.E.	1909	Eight report of the state entomologist, 1908.	Conn. Agr. Ext. St., 763-848 pp.	1		1,800
	53	Poulton, W.B.	1903	Experiments in 1893, 1894, and 1896 upon the colour-relation between lepidopterous larvae and their surroundings, and especially the effect of lichen-covered bark upon <i>Odontopera bidentata</i> , <i>Gastropacha quercifolia</i> , etc.	Trans. Ent. Soc. Lond., 311-374 pp.	1		1,200
	54	Mosq. News,	1970	Manual for mosquito rearing and experimental techniques.	Amer. Mosq. Contr. Assoc., 109 pp.	1		1,200
	55	Pont, A.C.	1972	A review of the Oriental species of <i>Atherigona Rondani</i> (Diptera, Muscidae) of economic importance	Contr. Sorghum Shoot Fly, 27-104 pp.	1		1,000
	56	Brown, C.H.	1956	Scientific serials.	Assoc. Coll. Ref. Lib., 189 pp.	1		2,500
				Subtotal		56		133,000
33	1	1961-1965		California Agriculture.	Div. Agr. Sci. Univ. Calif.	31	200	6,200
	2	FAO	1967	Background papers prepared for the FAO Symposium on crop losses. Rome, Oct. 1967	FAO, 97 pp.	1		1,000
	3	FAO	1967	Papers presented at the FAO Symposium on crop losses. Rome, Oct. 1967	FAO, 330 pp.	1		2,500
	4	FAO	1965	FAO's contribution to the evolution of international control of the desert locust, 1951-1963.	FAO, 142 pp.	1		2,000
	5	FAO	1963	First meeting of the FAO working party on pesticide residues. Rome, Dec. 1963	FAO, 23 pp.	1		600

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33	6	FAO	1965	Second session of the FAO working party on pesticide residues (Extract). Rome, May 1965. FAO, 47 pp.		1		1,000
	7	FAO	1965	FAO conference on Quelea bird and water hyacinth control in Africa. Douala, 1965. FAO, 29 pp.		1		700
	8	FAO	1965	First session of the FAO working party of experts on resistance of pests to pesticides. Rome, Oct. 1965. FAO, 106 pp.		1		1,500
	9	FAO	1966	Second session of the FAO committee on the control of the sunn pest of cereals. Teheran, April 1966. FAO, 21 pp.		1		500
	10	FAO	1966	Second session of the FAO working party of experts on resistance of pests to pesticides. Rome, Oct. 1966. FAO, 8 pp.		1		300
	11	FAO	1967	Second session of the near east plant protection commission. Tripoli, May 1967. FAO, 36 pp.		1		800
	12	FAO	1967	Seventh FAO ad hoc conference on the control of olive pests and diseases. Palermo, May 1967. FAO, 28 pp.		1		700
	13	Taylor, A.L.	1967	Introduction to research on plant nematology. FAO, 133 pp.		1		3,500
	14	Lamb, K.P. & Gressitt, J.L.	1976	Ecology and conservation in Papua New Guinea. Wau Ecol. Inst., 153 pp.		1		2,200
	15	Grijpma, P.	1974	Contribution to an integrated control programme of <u>Hypsipyla grandella</u> (Zeller) in Costa Rica. Verkrjding van de Graad, 147 pp.		1		4,000
	16	Ponsen, M.B.	1972	The site of potato leafroll virus multiplication in its vector, <u>Myzus persicae</u> . Med. Land., 147 pp.		1		2,000

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33	17	Koch, V.J.M.	1973	Abondance de <i>Hypothenemus hamie</i> Ferr., Scolyte des graines de cafe, en fonction de sa plante-hote et de son parasite <i>Cephalonomia stephanoderis</i> Betrem, en cote d'Ivoire.	Med. Land., 84 pp.	1		1,300
	18	Wirtz, P.	1973	Differentiation in the honeybee larva.	Med. Land., 153 pp.	1		2,000
	19	Barel, C.J.A.	1973	Studies on dispersal of <i>Adoxophyes orana</i> F.v.R. in relation to the population sterilization technique.	Med. Land., 107 pp.	1		1,500
	20	Brussel, E.W. van	1975	Interrelations between citrus rust mite, <i>Hirsutiella thompsonii</i> and greasy spot on citrus in Surinam.	Landb. Suriname, 66 pp.			
	21	Wolf, J.M.P.M. van der	1961	Virus transmission and vector control in seed potatoes.	Grafische Ind., 88 pp.	1		1,500
	22	S. Thomas, R.T.	1964	Some aspects of life history, genetics, distribution, and taxonomy of <i>Aspidomorpha adbaerens</i> (Weber) (Cassidinae, Coleoptera).	Tijd. v. Ent., 167-264 pp.	1		1,700
	23	Clark, D.P. et al.	1969	Field studies on the Australian plague locust.	Anti-Locust Bull., 101 pp.	1		3,000
	24	Staal, G.B.	1961	Studies on the physiology of phase induction in <i>Locusta migratoria migratoroides</i> R. & F.	Lab. v. Ent., 124 pp.	1		2,800
	25	Cobben, R.H. et al.	1960	The Heteroptera of the Netherlands antilles. I-V.	Lab. v. Ent., 97 pp.	1		1,800
	26	Peters, D.	1967	Potato leafroll virus, its purification from its vector <i>Myzus persicae</i> .	H. Veenman & Zonen, 100 pp.	1		2,500
	27	Ruinard, J.	1958	Investigations into bionomics, economical importance and possibilities of control of the sugarcane stalkborers in Java.	Ahrend-Globe, 222 pp.	1		4,000

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33	28	Wardojo, S.	1969	Some factors relating to the larval growth of the Colorado potato beetle, <i>Leptinotarsa decemlineata</i> Say (Coleoptera: Chrysomelidae), on artificial diets.	Lab. v. Ent., 75 pp.	1		1,500
	29	Minks, A.K.	1967	Biochemical aspects of juvenile hormone action in the adult <i>Locusta migratoria</i> .	Arch. Neerland., 175-257 pp.	1		1,500
	30	Veen, K.H.	1968	Recherches sur la Maladie, due a <i>Metarrhizium anisopliae</i> chez le criquet pelerin.	Wageningen, 77 pp.	1		1,700
	31	Abdallah, M.D.	1963	Interaction of some organophosphorus compounds in susceptible and resistant houseflies.	Lab. v. Ent., 97 pp.	1		1,500
	32	Schoonhoven, L.M.	1962	Diapause and the physiology of host-parasite synchronization in <i>Bupalus piniarius</i> L. (Geometridae) and <i>Eucarcelia rutilla</i> Vill. (Tachinidae).	Lab. v. Ent., 111-174 pp.	1		1,000
	33	Mackerras, I.M.	1971	The Tabanidae (Diptera) of Australia. V.	Aust. J. Zool. Suppl. 4, 54 pp.	1		1,000
	34	Raizenne, H.	1957	Forest sawflies of southern Ontario and their parasites.	Canada Dept. Agr., 45 pp.	1		1,000
	35	Balch, R.E.	1952	Studies of the balsam woolly aphid, <i>Adelges piceae</i> (Ratz.) and its effects on balsam fir, <i>Abies balsamea</i> (L.) Mill.	Dept. Agr., Canada, 76 pp.	1		1,300
	36	Rothschild, M. et al.	1970	Maturation of the male rabbit flea (<i>Spilopsyllus cuniculi</i>) and the oriental rat flea (<i>Xenopsylla cheopis</i>): some effects of mammalian hormones on development and impregnation.	Trans. zool. Soc. Lond., 105-188 pp.	1		2,200

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33	37	Bequaert, J.	1944	The north American species of Ancistrocerus, Proper (Hymenoptera, Vespidae).	Ent. Amer., 225-286 pp.	1		1,800
	38	Guiglia, D.	1953	Gli Oxybelini d'Italia (Hymenoptera: Sphecidae).	Genova, 55-158 pp.	1		1,500
	39	Berland, L.	1955	Les Arachnides de l'Afrique noire francaise.	Inst. Franc. d'Afr., 130 pp.	1		2,000
	40	Klinger, J.	1959	Die Bedeutung der Kohlendioxyd-Ausscheidung der Wurzen fur die Orientierung der Larven von Otiorrhynchus sulcatus F. und anderer bodenbewohnender phytophager Insektenarten.	La Concorde, 205-269 pp.	1		1,300
	41	Mathys, G.	1957	Contribution a la connaissance de la systematique et de la biologie du genre Bryobia en Suisse romande.	La Concorde, 189-284 pp.	1		2,000
	42	Snoflak, J.	1952	La monographie de Triaspis Hel. de la Tchecoslovaquie. Acta Ent. Mus. Nat., 285-395 pp.	Ent. Mus. Nat., 285-395 pp.	1		2,000
	43	Cobben, R.H.	1968	Evolutionary trends in Heteroptera. Part I.	Lab. v. Ent., 475 pp.	1		5,500
	44	El-Ibrashy, M.T.	1965	A comparative study of metabolic effects of the corpus allatum in two adult Coleoptera, in relation to diapause.	Lab. v. Ent., 65 pp.	1		1,000
	45	De Kort, C.A.D.	1969	Hormones and the structural and biochemical properties of the flight muscles in the Colorado beetle.	Lab. v. Ent., 63 pp.	1		1,000
	46	Veen, K.H.	1968	Recherches sur la maladie, due a Metarrhizium anisopliae chez le criquet pelerin.	Lab. v. Ent., 77 pp.	1		1,000

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33	47	Ticheler, J.H.G.	1961	Etude analytique de l'Epidemiologie du Scolyte des graines de cafe, <i>Stephanoderes hampei</i> Ferr., en cote d'Ivoire.	Lab. v. Ent., 49 pp.	1		800
	48	Cobben, R.H.	1960	Die Uferwanzen Europas.	Hernsdorf, 209-263 pp.	1		800
	49	Yaman, I.K.A.	1960	Natural control in cabbage root fly populations and influence of chemicals.	Lab. v. Ent., 57 pp.	1		1,000
	50	Dinther, J.B.M.	1960	Insect pests of cultivated plants in Surinam.	Lab. v. Ent., 159 pp.	1		2,000
	51	Hafez, M.	1961	Seasonal fluctuations of population density of the cabbage aphid, <i>Brevicoryne brassicae</i> (L.), in the Netherlands, and the role of its parasite, <i>Aphidius</i> (<i>Diaeretiella</i>) <i>rapae</i> (Curtis).	Lab. v. Ent., 104 pp.	1		1,300
	52	Fahmy, H.S.M.	1961	Persistence of DDT nad Parathion residues on a plant surface as influenced by weather factors.	Lab. v. Ent., 64 pp.	1		1,000
	53	Chun, M.W.	1972	Dynamics of feeding responses in <i>Pieris brassicae</i> Linn as a function of chemosensory input:	Lab. v. Ent., 162 pp.	1		2,000
	54	Ankersmit, G.W.	1964	Voltinism and its determination in some beetles of cruciferous crops.	Lab. v. Ent., 60 pp.	1		1,000
	55	Brader, L.	1964	Etude de la relation entre le Scolyte des rameaux du cafeier <i>Xyleborus compactus</i> Eichh., et sa plante-hote.	Lab. v. Ent., 109 pp.	1		1,800
	56	Cobben, R.H.	1958	Biotaxonomische einzelheiten uber niederlandische wanzen (Hemiptera, Heteroptera).	Lab. v. Ent., 46 pp.	1		1,000
	58	Roepke, W.	1957	The Cossids of the Malay Region (Lepidoptera: Heterocera).	Lab. v. Ent., 60 pp.	1		1,300
	59	Kellogg, V.L.	1892	Common injurious insects of Kansas.	Univ. Kansas, 126 pp.	1		2,300
	60	Classsen, P.W.	1917	Studies in Kansas insects.	Bull. Univ. Kansas, 315 pp.	1		2,700

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33	61	Washburn, F.I.	1904	Injurious insects of 1904.	Bull. Agr. Ex. Sta., 13-197 pp.	1		2,200
	62	Ruggles, A.G.	1922	State entomologist of Minnesota.	Agr. Ex. Sta., 151 pp.	1		1,700
	63	Hawkins, J.H.	1936	The bionomics and control of wireworms in Maine.	Bull. Maine Agr. Exp. Sta., 146 pp.	1		2,000
	64	Somes, M.P.	1914	The Acrididae of Minnesota.	Bull. Agr. Exp. Sta., Minnesota, 100 pp.	1		1,500
	65	Hardy, D.E.	1958	Guide to the insects of Connecticut. VI.	State Geol. Nat. Hist. Surv. Bull., 218 pp.	1		2,000
				Subtotal		95		113,300
100	1			Annual Review of Entomology, 1-7	1956-1962 Ann. Rev. Inc. 11-26 1966-1981	7	6,000	42,000
	2	Otero, L.S.	1971	Brazilian insects and their surroundings.	Koyo Shoin Co., Tokyo 181 pp.	1	6,000	96,000
	3	Uchida, S. et al. (eds.)	1932	Iconographia Insectorum Japonicorum.	Hokuryukan, Tokyo, 2241 pp.	1		3,500
	4	Ishii, T. et al. (eds.)	1952	Econographia Insectorum Japonicorum	Hokuryukan, Tokyo, 1738 pp., 203 pp.	1		29,000
	5	Matsumura, S.	1931	6000 Illustrated Insects of Japan-Empire.	Kanae Shoin, Tokyo, 1488 pp.	2		29,000
	6	Esaki, T. et al.	1938	Insectorum Japonicorum Illustratio Inconographica Coloribus ad Naturam Depicta.	Sanseido, Tokyo, 426 pp.	1		32,000
	7	Yokoyama, M.	1954	Butterflies of Japan in color.	Hoikusha, Osaka, 125 pp.	1		25,000
						1		19,000
						1		2,000

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100	8	Kinki Kochu Dikokai (ed.)	1955	Colored Illustrations of the Insects of Japan. Coleoptera.	Hoikusha, Osaka, 196 pp.	1		3,000
	9	Esaki, T. et al.	1955	Colored Illustrations of the Insects of Japan. Orthoptera, Odonata, Hemiptera, Neuroptera, Lepidoptera, Hymenoptera, Diptera.	Hoikusha, Osaka, 190 pp.	1		2,000
	10	Ito, S. et al.	1977	Colored Illustrations of the Insects of Japan. Vol. II.	Hoikusha, Osaka, 385 pp.	1		3,200
	11	Esaki, T. et al.	1957	Icones Heterocerorum Japonicorum in coloribus naturalibus.	Hoikusha, Osaka, 318 pp.	1		3,500
	12	Esaki, T. et al.	1958	Ditto, Vol. II.	Hoikusha, Osaka, 303 pp.	1		3,500
	13	Issiki, S. (ed.)	1969	Early stages of Japanese moths in colour. Vol. II.	Hoikusha, Osaka, 237 pp.	1		3,500
	14	Shirozu, T. (ed.)	1972	Insects life in Japan. Vol. 3. Butterflies.	Hoikusha, Osaka, 278 pp.	1		4,700
	15	Shirozu, T.	1960	Butterflies of Formosa in Colour.	Hoikusha, Osaka, 481 pp.	1		6,200
	16	Shirozu, T. et al.	1960	Early stage of Japanese butterflies in Colour Vol. I.	Hoikusha, Osaka, 142 pp.	1		3,700
	17	Shirozu, T.	1962	Ditto, Vol. II.	Hoikusha, Osaka, 139 pp.	1		3,600
	18	Nakane, T.	1966	Hyojun Genshoku Zukan Zenshu, Konchu.	Hoikusha, Osaka, 187 pp.	1		1,800

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100	19	Kawada, A. et al.	1959	Natural colour common insects of Japan.	Sanseido, Tokyo, 146 pp.	1		1,800
	20	Shirozu, T. et al.	1966	Hyojun Genshoku Zukan Zenshu, Butterflies and Moths.	Hoikusha, Osaka, 188 pp.	1		1,800
	21	Shiraki, T.	1955	Illustrated pocket book of the insects in colour II.	Hokuryukan, Tokyo, 318 pp.	1		2,700
	22	Sasaji, H.	1971	Fauna Japonica. Coccinellidae.	Tokyo Denki Daigaku Press, Tokyo, 340 pp.	1		5,900
	23	Kawai, T.	1967	Fauna Japonica. Plecoptera.	Tokyo Denki Daigaku Press, Tokyo, 211 pp.	1		5,000
	24	Chujo, M.	1969	Fauna Japonica. Erotylidae.	Ditto, 316 pp.	1		8,000
	25	Habu, A.	1967	Fauna Japonica. Carabidae-truncatipennes Group.	Ditto 338 pp.	1		5,700
	26	Shiraki, T.	1968	Fauna Japonica. Syrphidae, Vol. II.	Ditto, 243 pp.	1		5,300
	27	Shiraki, T.	1968	Fauna Japonica. Syrphidae, Vol. III.	Ditto, 272 pp.	1		5,300
	28	Kano, R.	1967	Fauna Japonica. Sarcophagidae.	Ditto, 168 pp.	1		5,000
	29	Kato, M.	1961	Fauna Japonica. Cicadidae.	Ditto, 72 pp.	1		4,000
	30	Habu, A.	1962	Fauna Japonica. Chalcididae:	Ditto, 232 pp.	1		12,000
	31	Azuma, S.	1975	Insects of Okinawa.	Fudokisha, Naha, 143 pp.	1		1,800
	32	Takara, T. et al.	1973	Insects of Okinawa.	Gakken, Tokyo, 184 pp.	1		5,500
	33	Fisher, J.		The world of birds.	Boubleday & Co., 288 pp.	1		25,000
	34	Karp, W.		The Smithsonian Institution	Smith. Inst., USA, 125 pp.	1		500

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100	35	Mori, I.	1934	Coloured Butterflies from Korea.	Chosen Insatsu Co., 86 pp.	1		18,000
	36	Ehara, S. (ed.)	1980	Illustrations of the mites and ticks of Japan	Zenkoku Noson Kyoiku Kyokai, Tokyo, 562 pp.	1		10,000
	37	Shirozu, T.	1965	Butterflies of Japan Illustrated in colour.	Hokuryukan, Tokyo, 265 pp.	1		27,000
	38	Iwata, K. et al.	1982	Japanese wasp and bee life illustrated phylogenetically.	Kodansha, Tokyo, 162 pp.	1		12,000
	39	Tabuchi, Y.	1962	The life of paper wasps of Japan.	Kodansha, Tokyo, 183 pp.	1		5,000
	40	Esaki, T. et al.	1958	Selected butterflies of the world. Illustrated in colours.	Hokuryukan, Tokyo, 146 pp.	1		28,000
	41	Okuno, T. et al.	1977	Diseases and pests of cultivated trees and shrubs in colour.	Koikusha, Osaka, 365 pp.	1		3,500
	42	Imazeki, R. et al.	1957	Colored illustrated of Fungi of Japan.	Hoikusha, Osaka, 181 pp.	1		3,700
	43	Nakamura, K. et al.	1963	Japanese Reptiles and Amphibians in colour.	Hoikusha, Osaka, 214 pp.	1		4,000
	44	Miyake, S. et al.	1978	The Crustacean Anomura of Sagami Bay.	Hoikusha, Osaka, 200+161 pp.	1		19,000
	45	Imaizumi, Y. et al.	1970	The handbook of Japanese Iavel Mammals. Vol. I.	Shinshichosa, Tokyo, 350 pp.	1		7,000
	46	Imaizumi, Y. et al.	1966	A natural history of Mammals of the world. Insectivora & Dermaptera.	Ditto, 356 pp.	1		20,000

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100	47	Imaizumi, Y. et al.	1966	A natural history of Mammals of the world. Marsupialia.	Monotremate & Shinshichosa, Tokyo, 523 pp.	1		31,000
	48	Inoue, H. et al.	1959	Iconographia Insectorum Japonicorum Vol. I (Lep.)	Colore naturali edita. Hokuryukan, Tokyo, 284 pp.	1		10,000
	49	Nakane, T.	1963	Ditto, Vol. II. (Col.)	Ditto, 443 pp.	1		10,000
	50	Asahina, S. et al.	1967	Ditto, Vol. III.	Ditto, 358 pp.	1		10,000
	51	Asahina, S. et al.	1965	Ditto, Vol. III.	Ditto, 358 pp.	1		10,000
	52	Asahina, S. et al.	1971	Entomological essays to commemorate the retirement of Prof. K. Yasumatsu.	Hokuryukan, Tokyo, 389 pp.	1		12,000
				Subtotal		75		622,700
101	1			Lambdillionea 70 (1-12)	1970	5	400	2,000
				71 (1-8)	1971	4	400	1,600
	2			Proc. Entomological Society of Washington	55 (1-6) 1953 56 (1-6) 1954	6 6	500 500	3,000 3,000
	3			Lloydia	12 (2-4) 1949 17 (1,3,4) 1954 18 (1,2) 1955	3 3 2	500 500 500	1,500 1,500 1,000
	4			China Jour. Sci. Arts	2 (1-4) 1924	4	1,500	6,000
	5			China Jour.	15 (5), 18 (1), 32 (2,3) 1931-1940	4	1,000	4,000
	6			Ann. Rept. East Malling Res. Sta.	1949, 1951, 1952, 1954	4	1,000	4,000
	7			Reports of the State Apiarist	1921-1930 1931-1948 1949-1954	18 18 6	400 400 400	7,200 7,200 2,400

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101	8			Acta Hymenopterologica 1 (1-3)	1958-1961	3	1,500	4,500
	9			Plant Prot. Bull., Taipei 4 (1-4)	1962	4	500	2,000
				5 (3)	1963	1	600	2,000
				8 (1,2)	1966	2	600	1,200
	10			Acta Oeconomico-entomologica Sinica 1 (1-4)	1958	4	700	2,800
	11			Plant Prot., Suwon 1, 2	1962-1963	2	500	1,000
	12			Agr. Biology, Suwon 5	1961	1	400	400
	13			Jour. Appl. Zool. 1 (1), 2 (1), 3 (1)	1958-1960	3	600	1,800
	14			Jour. Royal Agr. Soc. England 139-141	1978-1980	3	1,800	5,400
	15			Oryza 1 (1), 2 (1), 3 (1), 4 (1), 5 (1), 6 (1,2)	1962-1969	7	800	5,600
	16			Proc. Tall Timbers Conf. on Ecol. Animal Control by Habitat Management 3, 4, 5	1971-1973	3	1,000	3,000
	17			Marcellia 30 (Suppl.)	1962	1	700	700
				31 (1-4)	1963-1964	4	700	2,800
	18			IBP News 1-4, 6-12, 14, 15, 17, 18, 20-22, 24	1964-1973	19	200	3,800
	19			Occasional Pap. Ent., California 22-24, 26, 27	1976-1978	5	300	1,500
	20			CIBC, Report 1974-1979		5	500	2,500
	21			Technical Bull., CIBC 1-12	1961-1969	12	1,000	12,000
	22			Chinese Insects Reports (Ouchi, Y.)		38		4,000
	23			Annals of Zoology 1 (1-8)	1955-1956	8	350	2,800
				2 (1-12)	1957-1958	12	350	4,200
				3 (1-12)	1958-1961	12	350	4,200
				4 (1-8, 10, 11)	1962-1964	10	350	3,500
				5 (1,3,6,7)	1965-1967	4	350	1,400
	24			Jour. Agr. Res. 26(2), 29(1), 30(7-9), 34(2,5,7, 9), 1923-1927		9	500	4,500
	25			Jour. Min. Agr. 40(10), 41(2)	1934	2	500	1,000

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101	26			Pac. Sci. Assoc. Inf. Bull.	14(1-6), 15(1-6), 16(1-6), 17(1,4,5), 20(3), 24(2-6), 25(1-6), 26(1-6), 27(1-6), 28(1-6), 29(1-3) 1962-1977	34	50	1,700
	27			Hawaii Coop. Econ. Pest Report	1971-1980			5,000
	28			Occasional Pap. Rhodesian Museum	1-13, 15-17 1932-1952	16	500	8,000
	29			Repertorium Entomologicum	6-10 1929-1933	33	200	6,600
	30			Sieboldia	1(1-4), 2(1-4), 3(1-4), 4(1-4) 1952-1969	14	800	11,200
	31			OILB, Bull. SROP	1973(1-4), 1974(1-3), 1975(1-4), 1976(1-4), 1977(1-5), 1978(1-3), 1979(1,4), 1980(1-7), 1981(1-4), 1982(1-3)	39	700	27,300
	32			OILB, Publications		7		3,000
	33			EPPO Bull.	3(1-3), 4(1-4), 5(1-4), 6(1-5), 7(1-3), 8(1,2), 9(1,2,4), 10(2-4), 11(1-4), 12(1-4), 13(1,2)	36	1,000	36,000
	34			EPPO Bull.	Nos. 3-10 1972-1973	8	800	6,400
	35			OILB, Publications		13	400	5,200
	36			Ohio Jour. Sci.	53(1-6), 54(1-6), 55(1-5) 1953-1955	17	1,000	17,000
	37			Nature and Life, Taegu	7(1-2), 8(1-3), 9(1,2), 10(1,2), 11(1) 1977-1981	10	1,000	10,000
	38			Entomologists' Newsletter, New Delhi	1(1-12), 2(1-11), 3(1-12), 4(1-12), 5(1-12), 6(1-7), 7(1-12) 1971-1977	74	150	11,100

Ser. No.	Item No.	Author(s)	Date	Title	Publisher or Place published	Quantity	Price (Jap. Yen)	Amount (Jap. Yen)
101	39			Smithsonian Contributions to Zoology 46, 48, 56, 62, 99 108, 110, 113-116, 118-120, 122, 128 140, 147-9, 154, 157, 162, 167, 168, 169, 171, 180, 181, 184, 185, 188, 192-4, 198 205, 210, 211, 215, 218, 220, 227, 232, 251, 261, 273, 279, 282, 283, 285, 287, 295, 298 303, 310, 314, 317, 322, 325, 327, 329, 330, 343, 345, 350, 370	1970-1971 1972-1973 1973-1975 1975-1979 1980-1982	6 10 20 18 14	400 400 400 400 400	2,400 4,000 8,000 7,200 5,600
				Subtotal.		626		298,700
102	1			Hilgardia 2(13) - 4(11)	1927-1970	116	400	46,400
				Subtotal		116		46,400
103	1			The serological museum, Bulletin 16-36	195601966	21		3,000
	2			California Agriculture 16(1) - 36(5/6)	1962-1982	29		5,000
	3			Insect liberations in Canada; The Canadian Agricultural insect pest review; others		27		6,000
				Subtotal		77		14,000
104	1			Graellsia 33, 1979	312 pp.	1		2,500
	2			Bulletin OEPF No. 2, 1971	143 pp.	1		700
	3			Report of the Int. EPPO/OILB 1969	111 pp.	1		600
	4			Int. Seminar on Integrated pest control 1969	77 pp.	1		400
	5			Rapport de la 5e Session du Conseil 1969	18 pp.	1		300

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104	6	FAO	1965-67	Report of the FAO Symposium		3	200	600
	7	CIBC	1971	Report, CIBC	42 pp., 28 pp.	2	400	800
	8	Avidov, Z.	1970	Biology of natural enemies of citrus scale insects and the development of methods for their mass production.	247 pp.	1		2,000
	9			Record of Proceedings, Vol. I. 12th Pac. Sci. Cong., Canberra.	Australian Acad. Sci., 480 pp.	1		3,500
	10			Congress records, Vol. 14. 11th Pac. Sci. Cong. Council of Japan.	497 pp.	1		3,500
				Subtotal		13		14,900
105	1			Plant Protection 22 (112-113), 1972	144 pp.	1		1,500
	2	TARC	1976	Rice plant - and leafhopper incidence in Malaysia and Indonesia.	Yatabe, 64 pp.	1		800
	3	Compere, H.	1931	A revision of the species of Coccophagus, a genus of hymenopterous coccid-inhabiting parasites.	Smith. Inst., 132 pp.	1		1,600
	4	Byers, G.W.	1961	The crane fly genus Dolichopeza in N. America.	Univ. Kansas, 665-924 pp.	1		2,200
	5			Abstracts of papers. Int. Seminar on integrated pest control.	Ent. Soc. India, 112 pp.	1		1,000
	6	Key, K.H.L.	1972	A revision of the Psednurini (Orthoptera: Pyrgomorphidae).	Aust. J. Zool., 72 pp.	1		800

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105	7	CSIRO	1973	Annual report 1972-73. CSIRO, Entomology.	CSIRO, 144 pp.	1		800
	8	Ander, K.	1942	Die Insekten fauna des baltischen Berusteins nebst damit verknupften zoogeographischen problemen.	Lund, 82 pp.	1		2,500
	9	Vecht, J. and F.M.A. van Breugel, 1968		Revision of the nominate subgenus Sceliphron Lat. (Hym., Sphecidae).	Tijd. v. Ent., 185-255 pp.	1		1,000
	10	Matthews, E.G.	1974	A revision of the Scarabeine dung beetle of Australia, II.	Aust. J. Zool., 211 pp.	1		2,000
	11	Lieftinck, M.A.	1968	A review of old world species of Thyreus Panzer.	Leiden, 139 pp.	1		2,000
	12		1967	Experimental approaches to pesticide metabolism.	Nikko, 296 pp.	1		1,300
	13		1968	Proc. Joint US. Japan Seminar on microbial control of insect pests.	Fukuoka, 167 pp.	1		1,500
				Subtotal		13		19,000
106	1			Proceedings of Hawaiian Ent. Society 15(3)-24(1), 1955-1982		20	2,000	40,000
	2			Esakia 1-19, 1960-1982		15	1,000	15,000
	3			Arkiv f. Zoologi 27(1)-30(3), 1935-1938		6	2,000	12,000
	4			Trans. Acad. Sci. St. Louis 24(7)-26(2), 1922-1929		4	1,000	4,000
	5			Boll. Soc. Ent. Italiana 105(1/3)-108(8/10), 1974-1976		12	1,000	12,000
	6			Memorie Soc. Ent. Italiana 48, 52, 53, 55, 1974/1976		4	1,500	6,000
	7			Memorie 6(13)-17(1), 1971-1973		3	1,500	4,500
				Subtotal		64		93,500

Ser. No.	Item No.	Author(s)	Date	Title	Publisher or Place published	Quantity	Price (Jap. Yen)	Amount (Jap. Yen)
106 (A)	1			WHO Publications		981		40,000
107					Subtotal	981		40,000
	1			Annales Soc. ent. France 11(3)-17(1), 1975-1981		8	1,200	9,600
	2			Jour. Econ. Ent. 46(1)-65(6), 1953-1972		9	1,300	11,700
	3			Jour. Med. Ent. 1(2)-3(1), 1964-1966		5	700	3,500
	4			Nota pratica 2-16, 1938-1942		12	200	2,400
	5			Photographie und Forschung, Heft 2 - 3(4), 1935-1940		19	150	2,850
					Subtotal	53		30,050
108	1			Resenas Cientificas 1933	Madrid, 166 pp.	1		2,000
	2			Hilgardia 34(5), 40(1), 41(3), 1963-1972		3	400	1,200
	3			Smithsonian Contributions to Zoology, 114, 208, 310, 343 1972-1981		4	400	1,600
	4			Bull. ent. Res. 31(1)-66(3), 1940-1976		8	1,000	8,000
	5			Report, Comm. Ent. Conf. 5,6,7,8, 1948-1964		4	1,300	5,200
	6			Entomologische Arbeiten 7(1), 1956	492 pp.	1		3,000
	7			Deutsche Ent. Zeits. I-III, IV-V, 1976		2	2,000	4,000
	8			Pacific Science 30(2), 1976		1		800
	9			Annali del Museo Civico Storia Naturale, LXXX, 1975 343 pp.		1		3,000
	10			Boll. Museo Civico Storia Naturale di Venezia, 27, 1975		1		1,300
	11			Acta Ent. Musei Nat. Pragae 25, 1947		1		1,500
	12			Oryza 1(1), 1962		1		1,000
	13			Folia Universitaria 3, 5, 1949, 1951		2	1,500	3,000

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108	14			Deutsche Ent. Zeits. (N.F.) 3-4, 5, 1962		2	1,300	2,600
	15			Bull. Soc. ent. France 81(1/2), 1976		1		1,000
					Subtotal	33		39,200
109	1			IRRI Reporter 79(2)-81(1), 1979-1981		7	50	450
	2			Rice Entomology Newsletter 1-4, 1974-1976		4	200	800
	3			IRRN 1(1)-8(1), 1976-1983		41	300	12,300
	4			Sphecos 1-5, 1979-1982		5	300	1,500
					Subtotal	57		15,050
110	1			Entomophaga 16(1)-27(1), 1971-1982		47	800	37,600
					Subtotal	47		37,600
111	1			Biocontrol news and information 1-3, 1980-1982		10	1,000	10,000
	2			Korean Jour. Zoology 13(1)-14(3), 1970-1971		7	700	4,900
	3			Ann. Soc. ent. France 51-68, 1932-1951		3	1,200	3,600
	4			Farming Japan 19(4)-12(2), 1976-1978		11	250	2,750
					Subtotal	31		21,250
112	1			Pacific Insects 1(1)-15(3/4), 1959-1973		47	700	32,900
					Subtotal	47		32,900
113	1			Agra University Jour. Research 20(1)-28(3), 1971-1979		19	1,200	22,800
	2			Bull. Ent. Soc. America 2(4)-27(4), 1956-1981		100	400	40,000
					Subtotal	119		62,800

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