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REGIONAL NETWORK ON PESTICIDES FOR ASIA AND THE PACIFIC

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Technical report: Expert Group Meeting on Pesticide Data Collection Systems Pattaya, Thailand, 18-22 May 1987*

Prepared for the Governments of the Member States of the Regional Network (Afghanistan, Bangladesh, China, India, Indonesia, Pakistan, Philippines, Republic of Korea, Sri Lanka and Thailand) and other participating States of the region, by the United Nations Industrial Development Organization, acting as executing agency for the United Nations Development Programme in collaboration with the Economic and Social Council for Asia and the Pacific as the associated agency and the Ministry of Agriculture, Government of the Kingdom of Thailand

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CONCLUSION & RECOMMENDATIONS

1. The Expert Group on the Pesticide Data Collection System felt that the data collection systems have, for the first time, functioned properly with the reporting of the relevant data in the prescribed RENPAF format by the participant countries. Good interpretation and exchange of information between members would be extremely valuable for planning the usage of pesticides in the RENPAF countries. The Exprt Group further felt that the collection system, which has got geared up to meet all requirements, must be strengthened and continued.

2. The Expert Group further felt that, having established the data colection systems, the time has now come for refinement beyond the prescribed 5 formats, having priority to information on demand followed by more detailed analysis of pesticide use by crops and important pests.

3. In view of the importance of the current collection of data and the critical importance of expanding it and facilitating analysis, it is recommended that the PMC be asked to allocate sufficient funds for these purposes.

4. Having noted and agreed the desirability of expanding and improving pesticide data available to RENPAF, the delegates from the six participating countries agreed to complete the submission of their data for 1983, 1984 and 1985 according to the RENPAF format by the end of June 1987 with the exception of Sri Lanka who agreed to submit their information by the end of July 1987.

All delegates undertook to submit data for 1986 by the end of August 1987 including an analysis of pesticide use by crops and major pests, diseases and weeds.

A suitable format for the analysis of data will be designed by RENPAF and distributed by 5 June 1987.

The delegates were strongly of the view that RENPAF members not present at the meeting should be invited to cooperate in the completion, updating and analysis of data in line with the above plan.

5. The Expert Group considered that it should meet once every year to review and update the regional data. These annual meetings should be located, amongst the participating countries giving each country a chance to demonstrate the status of pesticide production and usage as well as the operation of the data collection systems.

6. The Expert Group felt that an orientation programme for the national data collectors should be organized to ensure good quality of information and standardization of data collection.

7. The Expert Group appreciated the offer made by DACOM of the Republic of Korea for an on-line electronic mailing system and recommended it be accepted.

8. All members of the Expert Group expressed their interest to be included in the Regional Agro-pesticide Index and would supply the required data by the end of November 1987.

9. Delegates from the Republic of Korea, Indonesia, India and Thailand pointed out that they are in process of starting or will start computerizing their information on pesticides and agreed that, when these operations are completed, they will submit their data in an agreed form for the RENPAF computer database.

Expert Group Meeting on Pesticide Data Collection Systems
18-22 May 1987, Merlin Hotel, Pattaya, Thailand

I. INTRODUCTION

1. The Expert Group meeting on the Pesticide Data Collection Systems organised with the United Nations Development Organisation (UNIDO) in co-operation with ESCAP/ARSAP convened in Pattaya, Thiland from 18-22 May 1987 at the Merlin Pattaya Hotel.

2. The meeting was the implementation of one of the recommendations made by the Project Management Committee at its meeting held at Manila from 16-18 July 1986. The Expert Group Meeting on Pesticide Data Collection was held with the following objectives:

- to review the current situation in member countries with respect to production, import, export and use data of pesticides;

- to discuss major difficulties in national data collection;

- to acquaint participants with the latest developments in pesticide data collection and dissemination;

- to evaluate the past data collection and dissemination performance of the network, identify the reasons for shortcomings and decide upon measures for improvement.

3. The meeting was attended by six delegates from the Republic of Korea, Indonesia, India, Thailand, Pakistan and Sri Lanka representing their respective governments, two representatives from UNIDO, two from ESCAP and 23 observers from trade, industry, research organisations and the Thai Government Departments. The list of participants is attached as Annex I.

4. The proceedings of the meeting are summarized below:

II. OPENING OF THE MEETING

5. The inaugural address was given by the Director General of the Department of Agriculture of the Kingdom of Thailand, Dr. Yukti Sarikaputi, who expressed great pleasure that Thailand has been chosen as the venue for the RENPAF meeting. He pointed out that 80% of This work in agriculture and approximately one billion that was spent on pesticides. He was therefore concerned about the danger to human beings that might arise from use of these materials. Particularly toxic chemicals are prohibited in Thailand and he hoped for a data collection system which would be used to reduce risks.

In his address, Dr. Dhua began by thanking RENPAF for appointing him as Co-ordinator and reminded the meetign that this is the ultimate year of the project. He hoped it would succeed. He also reminded the meeting of the basic objectives of RENPAF. He regretted that it has not been possible to update the collection of the country data after the year 1982 and stressed the importance of so doing. He intended that such a time lag would be avoided in the future and asked for co-operation in remedying this situation.

The Chief of the ESCAP Agriculture Division, Dr. S.Z. Khan, said that the first summary published after RENPAF took over the following the reduction in the resources of ARSAP threw some light on inter-country differences. This reflected variations in national requirements and control measures. He appealed for further co-operation in the difficult task of data collection. Regional co-ordination of data on pesticides is needed including information on their marketing and use. Mr. Khan pledged that ESCAP would continue to play an active role in this area.

Dr. H.W. Pack, Senior Development Industrial Officer of UNIDO brought warm greetings from the organization. He emphasized the needs of government, industry and the international agencies who provide technical assistance, for comprehensive and reliable data on pesticides. UNIDO is responding to these needs via the establishment of a technical and statistical data base. It is a specialized agency offering complex, integrated and in-depth solutions to production problems and it is ready to provide assistance at any time. Last but not least, Dr. Pack expressed UNIDO's thank to the Kingdom of Thailand for morale and financial support in hosting the workshop.

III. ELECTION OF OFFICERS

6. Dr. S.P. Dhua was elected Chairman, Dr. Rirksh Vice Chairman and Messrs Nihal K. Atapattu of Sri Lanka, Mohammad Mumtaz of Pakistan and E.M. Godbold, UNIDO consultant were elected rapporteurs.

IV. ADOPTION OF THE AGENDA

7. The meeting adopted the modified agenda as presented in Annex II.

V. PRESENTATION OF COUNTRY PAPERS

8. Delegates from the 6 countries, the Republic of Korea, Indonesia, India, Thailand, Pakistan and Sri Lanka presented their papers on pesticides data. These are summarised under agenda item 17.

VI. DATA COLLECTION SYSTEMS

9. Data collection systems are summarized under Agenda item VIII and more fully described in Annex III. In general the systems are good or very good in the Republic of Korea, Pakistan, India and Thailand, but there is no central collection agency in Sri Lanka or Indonesia. The data presented in the meeting illustrated the value of well structured, firmly controlled centralized data collection systems. It was also noted that adjustments of data may be needed to account for differences in timing between calendar year, financial year and seasons of use.

VII. DIFFICULTIES IN DATA COLLECTION AND EVALUATION

10. Data is readily collected and collated in the Republic of Korea, India and Thailand but in Indonesia, there is considerable delay in the supply of information on imports from the Department of Trade. Otherwise data availability is satisfactory. In Pakistan more effective co-ordination is needed between the extension services and private industry. The quality of information, particularly for forecasting purposes, should also be improved. Government in Sri Lanka plays no part in pesticide production and industry made a poor response to the supply data on the RENPAF format. No basic problem was seen by any of the countries in linking it into the RENPAF format.

VIII. SUMMARY OF COUNTRY DATA AND PRESENTATION OF REGIONAL DATA

11. Dr. Dhua summarized the country data on behalf of RENPAF.

The Republic of Korea

The Republic of Korea is self sufficient in pesticide production to the extent of 65% of the country requirement. The country has 23 technical producers and 11 formulators. Usage has been increased from 16,688 mt active ingredient in 1984 to 18,247 mt in 1985. Consumption was divided in 1985 39% insecticides, 33% fungicides and 84% herbicides. Paddy consumed 53% of the pesticide in 1985 mainly to control paddy blast and brown plant hopper on the average usage of pesticide was 8.5 kg of active ingredient per hectare. Emulsifiable concentrates are mostly used followed by granular and wettable powder materials.

After 1982, imports into Korea stabilized. These comprise 42 fungicides, 58 insecticides, 27 herbicides and 7 others. Exports have gone up by 35.5% between 1984 and 1985. The distribution network comprises the National Agricultural Cooperative Federation (NACF), the Horticultural Cooperative Association (HCA) and open markets. The NACE deals with pesticide for paddy rice and handles more than 50% of the total supply. The HCA handles pesticides for horticulture and the private sellers distribute finished products to the farmers.

Indonesia

The Indonesian pesticide market falls into two categories: (a) subsidized pesticide for the BIMAS and (b) non-subsidized pesticides. The subsidized pesticides are used primarily for rice, food crops and certain industrial crops while the non subsidized pesticide are used on non-food crops such as oil palm, tea, rubber and for household purposes. Almost 70% of the pesticides are used under the BIMAS programme. PT PERTANI is responsible for the distribution of BIMAS pesticides. The demand for subsidized pesticides has stagnated as the consumption in 1986/87 was 44,793 mt as against 49,855 mt in 1985/86. There are 14 formulators engaged in the production of pesticides in Indonesia. The formulated pesticide production was 46,679mt in 1984, 50,589mt in 1985 and 53,281 mt in 1986 while active ingredient production was 492 mt in 1984, 3.261 mt in 1985 and 3,286 mt in 1986. There is significant excess formulation capacity since, against a total capacity of 130,000 mt, the actual production was only 53,281 mt. Pesticide data are collected from the Pesticide Committee, the Directorate of Plant Protection, the BIMAS directing unit, the Department of Trade, PT PERTANI, the Department of Health and the industry associations. While very precise data are available in respect of the BIMAS programme the data on agropesticide used for the non-food crops are limited. Centralization of data collection is called for in Indonesia.

INDIA

India, has become the largest manufacturer of basic pesticides among the South Asian and Pacific countries excluding Japan. India is using 125 different types of pesticides. 57 different pesticides are manufactured in the country of which 28 are insecticides, 12 fungicides, 10 herbicides, 3 fumigants, 2 rodenticides and 2 plant growth regulators. The total licenced capacity for these pesticides is about 100,000 mt. HCH (BHC) DDT and malathion account for more than 50% of total production of pesticides. As these products are

available at low prices they have become very popular with the small and marginal farmers. India is able to produce about 85% of its total requirements.

It has been estimated that about 76,000, 80,000, and 92,000 mt of technical grade pesticides will be needed for controlling pests, diseases and weeds etc. during 1986-87, 1987-88, 1988-89 respectively. Efforts are being made to increase the production of technical grade pesticides in the country. The Government of India has recently liberalized its licensing policy and broad banding has been done.

The trend of consumption of pesticides has shown a phenomenal rise over the last two decades. The consumption of herbicides has picked up sharply, but insecticides are still the most widely used group. More than 40% of pesticide consumption is for cotton followed by paddy where it is nearly 35% of total use. Cotton, paddy and vegetables account for about 80% of the total consumption of pesticides in India. Pesticide consumption in agriculture is about 400-500 gms/hectare. The consumption of pesticides for health purposes depends primarily on the budgetary provisions of the Government.

India imports pesticides on a global basis. Although almost self sufficient to meet demand, it imports some of the newer and more sophisticated pesticides. During the calendar year, 1985, 25 different types of pesticides totalling 2256 mt were imported. For health purposes about 3000 mt of 75% DDT was also imported.

It is interesting to note that the country has not only made a production base but it has also embarked on exporting pesticides formulations. Among the important items exported are nicotine sulphate and alkaolids, HCH (BHC), malathion, aluminium phosphide, endosulfan, quinalophos. They are exported to Africa, South East Asia, the Middle East and West Asian countries. During 1984 and 1985 pesticides valued at Rs. 117 and Rs. 400 million were exported.

No data bank exists for pesticides production, import, consumption, demand, marketing and control. However, for the preparation of the Seventh Five Year Plan (1985-90) the "Working Group on Pesticide Industry" under the Ministry of Chemicals and Fertilizers (at present the Ministry of Industry, Dept. of Chemicals & Petrochemicals) was set up in 1984. This group, on the basis of trend analysis and end use analysis, forecasted the demand for pesticides upto the year 1990. Computerization is in progress in most industries and Government of India and it is hoped that in future years the data for import, export, production, demand, marketing etc. will be available.

The pesticide industry in India falls into two categories: i) the multinational and large scale units called the organised sector: ii) the small scale formulators. The organized sector comes under the purview of the central governments, whereas the latter is controlled by the state governments. The small scale sector accounts for about 70% of the total production of formulated pesticides in the country.

Although India is almost self sufficient in pesticides, new formulations are yet to be introduced.

Thailand

Thailand has been importing pesticides for a long time and formulating technical materials locally. Paraquat is the only technical material manufactured in the country. Presently there are 22 formulators and emulsifiable concentrates

and granular materials are very popular. For local formulation purposes in 1986, 3,612 mt of technical materials of 55 different types were imported and the total production of formulated materials was 16,848 mt which was 13% less than in1985. Imported pesticides were also lower by 8% compared to 1985, primarily due to lower usage of herbicides. In Thailand, there has been a very remarkable increase in the number of formulation units from 10 in 1981 to 22 in 1985. In 1986, 29,289 mt of formulated pesticides were consumed, of which 95% were used in agriculture, 42% of which were insecticides, 39% herbicides and 13% fungicides. The major crops on which insecticides were used are rice, vegetables and fruit while the herbicide usage was in rice, sugarcane, pineapple and rubber. Fungicide usage was primarily on vegetables and fruit trees. The factors which have affected pesticide usage are trade restrictions and competition in the world market which has resulted in a price war in the international market for rice, tapioca, sugarcane and pineapple. This has reduced usage of insecticide and herbicide in Thailand by 12 to 30% in 1986 compared with 1985. Also the outbreak of pest and disease was not severe in 1986 and there has been a decrease in area of cultivation of important field crops like cotton, rice and tapioca resulting in reduction of usage of pesticides. The Director of the Agricultural Regulatory Division centrally collects the pesticide data for reporting purposes.

Pakistan

With the liberalization of pesticide supply and the distribution and the introduction of the private sector in the pesticide trade in Pakistan, there had been an average growth rate of 40% per annum in pesticide consumption, consumption having increased from 915 mt in 1981 to 3809 mt in 1986. The Federal Pesticide Committee and the Agricultural Pesticides Technical Advisory Committee regulate the usage of pesticides and recommend specifications and standardization. As of 1986, 211 pesticides were registered in Pakistan. There is no basic manufacture of pesticide but in the private sector 14 units undertake formulation. The active ingredients primarily imported are carbamates, organochlorines, organophosphates and synthetic pyrethroids. There is no price control and the private trade operates through a well knit network of 1500 retailers. Two years national data on the RENPAF format were presented which were collected by the Federal Pesticide Laboratory of the Pakistan Agricultural Research Council which obtained data from the provincial agricultural departments, the Investment Promotion and Supply Department and from the Pakistan Agricultural Pesticide Association. The main crops on which pesticides are used in Pakistan are cotton, paddy and sugarcane, the percentage of each crop treated being 60%, 22% and 30% respectively.

Sri Lanka

There has been steady growth in pesticide consumption in Sri Lanka with the increase in the area under the high yielding varieties of crops. In the major paddy producing districts, 70-100% of the farm area under irrigation uses pesticide. There are no basic pesticide manufacturers in Sri Lanka. One state unit and several private sector firms have formulation facilities. Active ingredients are imported in bulk for formulation purposes, around 100 conventional formulations based on technical grade materials are made in the country. The import of technical grade materials in Sri Lanka has gone up from 200 mt in 1982 to 296 mt in 1984 and the formulated product import has gone up from 1,697 mt in 1982 to 2,408 mt in 1984. The major insecticides imported are BPMC and carbofuran while the major herbicides imported are MCPA and 3-4 DPA (propanil).

There is no well-organized system of data collection and records of imports are also not available. It was felt that steps are necessary for the national data collaborators to impress upon the government for making necessary arrangements to aid collection of pesticide data as per the RENPAF format.

THE RENPAF REGION

It is clear from the trend that in most of the RENPAF countries insecticides occupied the major share followed by herbicides and fungicides. Use of herbicides is growing in the areas where labour costs are high or there are special weed problems. The region saw a significant increase in the usage of butachlor in paddy weed control and isoproturon for wheat. The use of organochlorine pesticides is decreasing and these are being replaced by less persistent and more effective organophosphorus compounds. This is being accentuated by increasing awareness of environmental pollution in these countries. Use of pesticides in public health seems to be controlled more by budgetary considerations than anything else. For control of malaria, usage of DDT and HCH is continuing in some countries. The use of household pesticides is limited in the RENPAF countries.

In most countries there is an excess formulation capacity, causing increases in the cost of production. DP and EC formulations are being gradually replaced by relatively safer formulations like SC and WP.

The data collection systems are satisfactory in the Republic of Korea, Thailand, India and Pakistan. Improvement in the systems is called for in Indonesia and Sri Lanka.

IX. CRITICAL REVIEW OF DATA AND CONCEPTS PRESENTED

It was suggested that, because of the great complexity of pesticide use, the subject must be studied in terms of its component parts. On the basis that demand should lead supply and that supply is of limited value as is indicator of demand, it was encouraging that several countries have supplied consumption data. Because of wide variations in product strength, quantity data needs to be expressed, both as product weight and its equivalent in terms of a consistent definition of 100% active ingredient. The agreed definitions of active ingredient of each chemical could usefully be provided centrally.

Factual or, at least, qualitative assessment of carry over stock would help to relate supply and demand data. The supplementary of retail price data with information on the working of the pricing system would keep to explain anomalies and differences between countries.

X. PRESENTATION OF THE 1987 ARSAP/CIRAD PESTICIDE INDEX: DEMONSTRATION OF THE COMPUTERIZED PESTICIDE INDEX DATABASE AND THE IPHYTROP PLANT PROTECTION SYSTEM

The structure and use of the pesticide index, currently storing data on the pesticides used in the Philippines and Thailand was explained and demonstrated.

The index stores each active ingredient under an index code by its name and activity (fungicides, herbicides etc.). It provides basic chemical information and, for each commercial product, gives a registration number (in the case of Thailand), the trade name, distributors, the concentration of active ingredient and formulation type. A beginning has been made on storing product recommendations for pest control on rice in Thailand.

XI. THE EXTENSION OF THE PESTICIDE INDEX AND IPHYTROP TO OTHER RENPAF MEMBERS

ARSAP is willing to incorporate data from other members of RENPAF in the index, but limitations of manpower and finance mean that information will have to be supplied to an ARSAP format so as to economise in the utilization of the organization's limited resources.

XII. GREATER EFFICIENCY IN DATA COLLECTION AND INTERPRETATION

The central theme of the paper was that long term forecasting of pesticide demand, including a close examination of supply, is essential for planning and decision making purposes. The over riding problems facing the researcher in this area are the lack of firm data on the usage side and the complexity and ever changing nature of the subject.

Forecasting calls for the consideration of a wide range of factors both of the technology and practice of pest control and of the natural environment in which agriculture operates and of economic, agronomic and social matters, all of which can affect the future but to a varying degree. The researcher responsible for this work needs to be wide ranging in his activities and must meet and discuss the problem with many different experts, be appropriately selective and healthily critical of the data presented to him and courageous and determined in his judgement.

For each segment of the market, forecasting essentially consists of:

a) determining the present situation
b) defining the upper limits of what ought to be done
c) assessing where new technology may substantially affect the situation
d) deciding the importance of those factors which will
   - speed up expansion
   - slow it down

and finally
e) form a judgement

It is advisable that specific issues of key importance be more thoroughly researched than is possible in an opinion survey. By this means and by a process of cross checking, updating of data and continuing analysis a more reliable view of the future can be derived.

XIII. INTERNATIONAL SUPPORT FOR NATIONAL PESTICIDE DATA COLLECTION SYSTEMS

Dr. H.W. Pack described UNIDO activities, paying particular attention to the operations of INTIB (Industrial and Technological Information Bank) in relation to national pesticide data collection and utilization. He suggested that computerized data collection systems could introduce useful new concepts and approaches, including electronic mailing systems for RENPAF. DACOM of Korea has offered, as a trial operation free of charge for one year an industrial on-line inquiry service. This could provide information on active ingredients for the formulation of pesticides, raw materials for the manufacture of active ingredients, process know how, process patents, and environmental implications, investment requirements, marketability, etc. In addition, data base could be built for RENPAF on the manufacture of pesticide active

ingredients, formulators of pesticides, agrochemical research and development institutes a pesticide expert roster, pesticide patent information and the standardization of common names of pesticides etc.

He concluded that the computerized network of RENPAF, with the addition of some hardware and software, could be guaranted compatability and the facilitation of the exchange of software and databases, training and the updating and utilization of data. In the long run, the on-line enquiries services on pesticide matters would be of low cost and stimulate interest in collecting further information.

XIV. ACKNOWLEDGEMENT TO THE GOVERNMENT OF THE KINGDOM OF THAILAND

The Meeting was greatly honoured by and grateful to the Government of the Kingdom of Thailand for hosting the Expert Group Meeting on Pesticide Data Collection System, the detailed arrangements made and for the very kind hospitality received.

Annexure I

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Annexure II

7 May 1987

Expert Group Meeting on Pesticide Data Collection
Merlin Hotel, Pattaya, Thailand, 18-22 May 1987

Programme

Monday, 18 May, 1987

08.00 - 09.00	Registration	
09.00 - 09.30	Opening	DOA, ESCAP, RENPAF
09.30 - 10.00	Break	
10.00 - 12.00	Presentation of country statements	RENPAF members
12.00 - 13.30	Lunch	
13.30 - 15.00	Presentation of country statements	RENPAF Members
15.00 - 15.30	Break	
15.30 - 16.30	Presentation of country statements	RENPAF members
19.00 - 21.00	Reception	DOA

Tuesday, 19 May 1987

09.00 - 10.00	Presentation of structure and operation of national data collection systems	RENPAF Members
10.00 - 10.30	Break	
10.30 - 12.00	Discussion: Difficulties in data collection and evaluation	RENPAF Coordinating Unit and members
12.00 - 13.30	Lunch	
13.30 - 15.00	Summary of country data and presentation of regional data	RENPAF Coordinating Unit
15.00 - 15.30	Break	
15.30 - 16.30	Critical review of data and concepts presented	UNIDO consultant

Wednesday, 20 May 1987

09.00 - 10.00	Presentation of the 1987 ARSAP/CIRAD Pesticide Index; demonstration of the computerized pesticide index data base and the IPHYTROP plant protection information system	ARSAP/CIRAD
10.00 - 10.30	Break	
10.30 - 12.00	Discussion : Extension of the Pesticide Index and IPHYTROP to other RENPAF members	ARSAP/CIRAD, RENPAF members
12.00 - 13.30	Lunch	
13.30 - 15.00	Greater efficiency in data collection and interpretation	Mr. Godbold UNIDO Consultant
15.00 - 15.30	Break	
15.30 - 16.30	International support for national pesticide data collection systems	Mr. Pack UNIDO/INTIB

Thursday, 21 May 1987

09.00 - 16.30	Field trip: Field Crops Research Station, Rayong Orchards and plantations	DOA

Friday, 22 May 1987

09.00 - 10.00	Discussion: Future direction and format of pesticide data collection - the national capacity	RENPAF members
10.00 - 10.30	Break	
10.30 - 12.00	Discussion: Future data collection, analysis and dissemination function of RENPAF	RENPAF members, ARSAP/CIRAD
12.00 - 13.30	Lunch	
13.30 - 15.00	Conclusions, recommendations Adoption of report	RENPAF Coordinating Unit, DOA, ARSAP