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Pesticide Markets and Related Situations in Thailand

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ABSTRACT

The analysis is based on secondary data during 1985-2000, using descriptive method. The paper shows pesticide imports, classified by types and major supplier countries. Crop protection policy and related situations are then shown. The amount of pesticide imports reached a peak at 45,701 tons in 1996 and then declined to 41,074 tons in 2000. However, pesticide import values were 4,922 million bahts in 1996 and it was 7,226 million baths in 1998. This was because of the currency impact. Three major types of pesticide import were insecticide, fungicide and herbicide. In 1994, the pesticide statistics listed 71 pesticide importers originating from 33 countries. In 1998 (January-June), Israel was the major supplier followed by China, Germany, Malaysia and Indonesia. Pesticide for agricultural uses have been exempted from import duty, business and municipal taxes since 1991. Impacts of pesticides for example health hazards and residues were concerned. So alternatives of integrated pest management, bio-technical pest control, and sustainable agriculture are recommended.

Key words: pesticide imports, major suppliers, health hazards and residues

INTRODUCTION

Thailand as an agricultural country and as a major exporter has applied pesticides for several decades. Pesticides create a reputation for securing sufficient agricultural production and increasing yields, especially in mono-crop system. This study states the current existing market, crop protection policy and related situations. The analysis is based on secondary data of various sources. The paper starts from agricultural sector in Thailand. Pesticide market and uses in Thailand are then shown. Crop protection policy and related situations are classified. Policy recommendations are finally stated.

METHOD

The analysis is based on secondary data during 1985-2000, using descriptive method. The paper shows shares of agricultural GDP and non-agricultural GDP during 1985to 1999. Then the paper compares pesticide import quantities and values. Top ten names of pesticide import are listed. Major pesticide suppliers and exporting countries are

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stated. Finally, policy recommendations are shown.

RESULTS

1. Role of agricultural sector in the Thai economy

Agricultural sector always plays an important role in the Thai economy. The agricultural sector remains important in terms of capital accumulation, food self-sufficient, employment and export earnings. To date, Thailand is still one of the world's leading rice and rubber exporters.

Table 1 shows development of the agricultural shares of the Thai GDP. In 1985, the agricultural sector's share of total gross domestic product (GDP) was 19%. The agricultural sector share's of GDP declined steadily to about 7% in 1999. This was due to policies having moved away from agricultural sector to others.

2. Pesticide market and uses in Thailand

2.1 Pesticide Import

Table 2 shows pesticide import and agricultural export products during 1985-1999, comparing to the value of some major exporting crops. It shows that the amount and value of import reached the peak in 1990 and then declined during 1991-1993. Then the

Table 1 Development of the agricultural share of total Gross Domestic Product (GDP).

Year	Agriculture		Non-agriculture	
	(million baht)	percent	(million baht)	percent
1985	227	19	963	81
1986	228	18	1,028	82
1987	228	17	1148	83
1988	252	16	1,307	84
1989	276	16	1,473	84
1990	263	14	1,682	86
1991	281	13	1,829	87
1992	298	11	2,530	89
1993	292	12	2,178	88
1994	308	12	2,378	88
1995	464	11	3,724	89
1996	507	11	4,090	89
1997	463	9	4,276	91
1998	520	11	4,006	89
1999	324	7	4,167	93

Source: Office of Agricultural Economics, various issues.

imports had increased to the amount of 56,153 tons in 1999.

The increase of pesticide imports is the same proportion of the increase of export value of rice, food crops, garden crop and products, and fruit and products. These major exported crops are regarded as major pesticide uses.

Table 3 shows type, quantity and value of pesticide imports in 1997,1999 and 2000. There were three types of major import: insecticide, fungicide, and herbicide. The import quantity and value of the herbicide was the highest, 29,714 tons and 3,841 million baht, respectively in 2000.

Table 4 shows the top ten names of pesticide import in 2000.

2.2 Pesticide market

The variety of pesticide products results in a large amount of product names. Apart from numerous traders the most significant specialty of the Thai pesticide market is a large amount of trade names. Trade names do not necessarily relate to either the effectiveness of the product, active ingredient or recommended field of usage. For example, monocrotophos, methyl parathion, and paraquat were being sold under 274, 296 and 55 different trade names respectively(CIRAD,1990).

Table 2 Pesticide import and agricultural export products.

Year	Pesticide quantity (ton)	Pesticide value (million baht)	Export value (million baht)			
			Rice	Food crops	Garden crop and products	Fruit and products
1985	19,236	1,751	22,524	11,891	953	5097
1986	17,837	1,778	20,314	12,178	1,262	5,402
1987	23,964	2,170	22,703	6,569	2,320	6,113
1988	25,770	2,444	34,676	6,658	2,622	8,092
1989	28,248	2,856	45,462	6,607	3,613	8,507
1990	30,971	3,335	27,769	7,150	4,137	11,198
1991	25,482	2,810	30,515	7,117	5,777	14,836
1992	26,189	3,286	36,213	3,486	5,864	16,058
1993	25,165	3,052	32,946	3,835	7,092	14,299
1994	30,048	3,214	39,187	4,545	6,613	16,031
1995	32,334	3,626	48,626	4,380	7,721	17,075
1996	45,701	4,922	50,734	4,655	9,096	20,806
1997	42,167	4,991	65,088	5,629	10,519	21,807
1998	n.a.	n.a.	86,805	6,890	12,150	20,002
1999	56,153	11,041	73,810	6,725	11,674	28,777

Source: Regulatory Division, Department of Agriculture, Ministry of Agriculture, various issues

Table 3 Type, quantity and value of pesticide imports in1997, 1999 and 2000.

Type	2000		1999		1997	
	Quantity (tons)	Value (million baht)	Quantity (tons)	Value (million baht)	Quantity (tons)	Value (million baht)
Insecticide	12,532	2,000	19,525	6,589	12,545	1,645
Fungicide	7,392	1,119	7,204	914	5,820	626
Herbicide	29,714	3,841	27,639	3,260	22,447	2,172
Acaricide	274	71	157	33	237	42
Rodenticide	141	13	216	20	191	16
Fumigant	569	62	876	132	219	30
PGR	1,162	114	150	25	538	96
Molluscide	226	32	285	40	72	20
Nemathicide	21	1	22	5	24	3
Bio-pesticide	44	13	43	13	72	36
Total	41,074	7,266	56,153	11,041	42,167	4,991

Source: Regulatory Division, Department of Agriculture, Ministry of Agriculture and Cooperatives, *Agricultural Chemical Import in 1998, 2000 - 2001.*

Table 4 Top ten names of the pesticide import in 2000.

Order	Common name	Quantity (ton)	Value (million baht)	Active ingredient (ton)
1.	glyphosate	15,536	1,059	7,787
2.	2,4 – D	2,356	157	1,965
3.	Methamidophos	2,778	149	1,941
4.	Atrazine	1,568	192	1,227
5.	Mancozeb	1,540	146	1,225
6.	parathion methyl	1,257	100	1,041
7.	Endosulfan	1,066	277	994
8.	paraquat	2,160	593	982
9.	Sulfur	1,121	35	8
10.	copper oxychloride	848	52	25

Source: Regulatory Division, Department of Agriculture, Ministry of Agriculture and Cooperatives, 2001.

Considering major exporting countries, table 5 shows market shares of major suppliers as well as major exporting countries in 1994 and 1996 and 1998(January - June). In 1994, the pesticide statistics listed 71 pesticide importers originating from 33 countries. The USA. was the leading supplier followed by Germany, China, and Taiwan. In 1996, the pesticide statistics listed 71 pesticide importers originating from 38 countries. In terms of market share, the USA. was the leading supplier followed by China, Indonesia, Malaysia and Germany. In 1998(January - June), Israel was the leading supplier followed by China, Germany, Malaysia and Indonesia.

In Thailand, distribution of agrochemical products is normally a two-stage process. Products are sold from producers or formulators to dealers and then to sub-dealers or retailers and sale personnel for the wholesale as well as for retail at the farm level.

3. Pesticide legislation and related policies

3.1 Pesticide legislation

The Hazardous Substances Act (1992)

The act includes ten categories of hazardous chemicals. Chemicals for agricultural use are only one category. One of the new aspects enclosed in the Hazardous Substances Act is the responsibility given to all persons being in possession of a hazardous chemical for damages to persons, animals, crops and environment.

All types of pesticides are controlled by the Act. The regulatory process involves three steps: first, registration license; second, import, manufacturer and/or retailer license, and finally market inspection. Each pesticide has to be tested in Thailand for ingredient and impacts on human and the environment.

Table 5 Comparison of major pesticide suppliers and exporting countries during 1994 and 1998 by percentage of values.

Supplier	1998 (Jan - June)	1996	1994	Country	1998 (Jan-June)	1996	1994
Dopont	11.2	6.8	7.2	Israel	16.5	6.5	4.7
Monsanto	11.0	16.03	15.0	China	11.3	7.2	8.0
Rhone – Poulene	8.8	5.1	3.9	Germany	10.1	8.7	8.9
Novartis	7.9	-	-	Malaysia	9.2	6.7	3.9
Agrevo	6.9	-	-	Indonesia	6.3	11.0	-
Cyanamid	6.7	5.5	6.1	France	6.0	5.4	-
Bayer	5.3	5.6	5.2	Taiwan	5.5	4.8	7.7
Erawan	3.5	2.0	-	India	4.7	3.9	-
Other	38.7	59.0	62.6	USA	2.2	14.5	26.1
				Other	28.2	31.7	40.7

Source: Regulatory Division, Department of Agriculture, Ministry of Agriculture and Cooperatives, 1995 1997 and 1999

Registration license has to be issued for every formulation and the licenses are issued only on a yearly basis.

3.2 Tax policy

In general, total import taxes consist of import duty, business tax and municipal tax and are based on c.i.f. price values. Based on the Act pesticides for agricultural uses have been exempted from import duty, business and municipal taxes since 1991(Customs Department, 1995). Since 1995, import duty for fertilizer is favored with a reduction of import duty to 10% as well. This tax exemption can be regarded as subsidy for hazardous products when imported to Thailand.

3.3 Import, trade and use regulations.

Currently, all pesticides require registration prior to import, manufacturing, and distribution. At present, there are 298 active ingredients registered in Thailand, which become 2,258 product names and the trend is still rising. Grandstaff (1992) stated that the illegal repackers who never applied for permission also existed.

4. External related effects of pesticide use.

4.1 Health hazards

In Thailand, the Division of Epidemology of the Ministry of Public Health has the primary responsibility of collecting poisoning data. Yet, the data were based on reported cases to public hospitals and some private clinics. Thus, poison cases are assumed to be understated (Sinhaseni, 1990). The Ministry of Public Health reported that within the first seven months of 1996, 1760 persons have been hospitalized and 16 persons died because of poisoning. About 47% of all poisoning cases were resulted from organophosphate use, followed by 22% of herbicides cases and 11% of carbamet group (Division of Epidemiology, 1996). Studies reviewed by Grandstaff (1992) concluded that farmers generally do not care or are awared of the pesticide toxic, since pay for spraying pesticides can be twice as high as that paid for farm works. Khuankaew (1995) found in his survey that eighty percent of the questioned women stated that they were poisoned. They felt dizzy, muscular pain, and headache, and had difficulty in breathing.

4.2 Residues in food and environment

During 1982 and 1985, the Food and Drug Administration and the Department of Medical Science monitored pesticide residues in food (Sinhaseni,1990). With 663 samples, 52% were contained pesticides. 39% had DDT and 15% had dieldrin.

Tungnipon (1996) did a survey for eight months in 1994 on the accumulation of pesticide in soil and water in Vineyard at Ratchaburi Province. They found captain, copper oxychloride, dimethoate, methamidophos, monocrotophos and mevinophos residues in water. Captain, copper oxychloride and dimethoate were found in soil. Dimethoate in water was found to exceed standard maximum allowable to maximum concentration standard. Copper ion was in the soil but it did not reach the hazard level.

Yentongchai *et al.* (1995) examined the organophosphorus insecticides in Chinese Kale. At market place of 30 Chinese Kale samples were contaminated by methamidophos, diazinon, monocrotophos, and profenofos which were exceeded the Codex MRL or reached the hazard level.

5. Summary and Conclusion

Pesticide market, and policies in Thailand have been discussed in the paper. Farmers tend to use cheaper pesticides from some Asian exporters. Pesticide hazard continue to be concerned. Alternatives of integrated pest management, bio-technical pest control, and sustainable agriculture are recommended. Within the next ten years, pesticides will still play an important role in crop protection in Thailand.

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