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PRESENT STATUS AND CONTEMPLATED DEVELOPMENT OF PESTICIDES PRODUCTION IN THE HUNGARIAN PEOPLE'S REPUBLIC 1/

by

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The Hungarian chemical industry started the production of organic synthetic pesticides in 1947. The development in the production of active materials and pesticide formulations was significant during the last two decades, but it could not follow the quick increase in the pesticide demand of agriculture.

Big changes took place in all agricultural techniques in Hungary during this period, and these changes were quite essential in upgrading plant protection.

We give the information of the volume, the value and the number of the used pesticides in table 1 and 2.

These facts speak for themselves: in 1960 agriculture used 50 sorts of pesticides, and total land treated on one occasion was 3.000.000 ha area. Today 300 sorts of pesticides are used for 7.000.000 ha in Hungary.

The rate of the increase accelerated in the last years. New herbicides, soil disinfectants, plant growth regulators, fruit setting and ripening regulators and new fungicides were tested.

The mechanized harvesting can be realized only by using new herbicides. For the mechanized plant cultivating technology it is necessary, that tobacco, tomato, cucumber, fruit berries ripen within a short interval so that their harvesting should be easy, and increased yields compensate for repeated hand harvesting used earlier.

The plant protection transgressed the limits of the protection against the pests and diseases, and even affected the physiology

of plants by regularly using pesticides. Chemisation became a new method in the hands of agricultural producers. Its efficiency depends on the level of production and by not making use of chemisation the whole crop yield may be endangered.

Examining the use pattern of pesticides according to their types we find an interesting picture.

We can establish that, the volume of the used pesticides doubled, its value quadrupled.

The reason for this change was partly the prohibition of the use of the inexpensive organic chlorine compounds. The use of more expensive and more active fungicides and herbicides constantly increases.

We can establish that the use of insecticides increased from 2.100 tons/yr. to 2.890 tons/yr. during the period 1960-1972 (table 3).

The use of fungicides was 14.000 tons in 1960, 20.000 tons in 1967, and 12.350 tons in 1971, a reduction due to the introduction of new and more effective types of fungicides and of special weather conditions.

The use of herbicides increased the most rapidly during this period. The demand was 462 tons in 1960, and 6.360 tons in 1971, an increase equivalent to 1.400 % during the last 12 years.
We give the information on the distribution of the demand of pesticides according to types in table 3.

If the variety of pesticides which were introduced during the last 12 years are examined, the development can be divided into two periods.

The first period, should be placed between 1960 and 1967. Characterized by a uniform and continuous increase in the use of organic chlorine compounds DDT, HCH, Lindane, and the sudden increase in the use of aldrin. Besides the slow quantitative increase of organic phosphorus compounds such as insecticides, there was a gradual increase in their diversity as well.

In the same period the choice in fungicides slowly moved from inorganic metal compounds towards organic synthetic preparations of high efficiency, such as Zineb, Captan and diverse systemic fungicides.

In the line of inorganic fungicides the variety of specially formulated semicolloid sulphur and copperoxychlorides preparations as well as their application has also grown.

The choice of herbicides has widened by the introduction of triazine - type herbicides and their combinations. The use of bipyridil herbicides surged substantially ahead. Due to the resistence developed against phenoxy - preparations and later on against triazines, a great number of other new herbicides were recently tested on a large scale.

The second period is between 1967 and 1970. As is well-known, the use of DDT and HCH was prohibited in Hungary in 1967. As a result, the participation of the domestic industry in the

total trade of pesticides fell from 70% below 50%. Parallel with this the imports from Western Europe have been significantly increased. In 1967 such imports accounted for 22% and at present approach 40%.

We show the distribution of pesticides consumption in reference to sources of production in table 4.

Of course, on a long range basis it is not practical and desirable to let that the Hungarian plant protection decisively depend on imports, therefore increased efforts have been made for developing the domestic production of a large number of new and important products.

As a first step we addressed ourselves to leading manufacturing companies of Europe with the request for licence purchases but the answers concerning the up-to-date products were uniformly negative.

In this situation there were two possibilities left: domestic formulation of active ingredients from abroad and the development of the independent production of active ingredients. Undoubtedly it seemed to be an easier and more rapid solution to import the active ingredient from abroad - this way, however, the foreign exchange savings would not have been significant and the strong dependence on foreign industries would have invariably continued. Thus from the point of view of the national economy, undertaking the production of the active ingredients was considered more attractive and advantageous.

Besides the chlorophenoxy-derivatives, chloramino-triazines, mercaptotriazines, DCPA, trichlorphon, DDVP and DNOC traditionally manufactured in Hungary for years, and in addition to the formulation of about 15 active ingredients from abroad, the Hungarian industry, in a relatively short time developed the required technologies to effectuate the production of paraquat-di/methyl-sulphate/, trifluralin, propachlor, pyrazon, prolate, chlorphen-vinphos/Mocap/,dioxacarb, benomyl, a mercury-free seed dresser and a number of other compounds.

In table 5, we give information including the common name, chemical name and biological properties of those pesticides of which we presently can export. We should be ready to place at the disposal of developing countries the appropriate technologies within the framework of a mutually beneficial agreement.

Current efforts are centered on the development of an industry of intermediates and raw materials serving the above productions and expanding the appropriate industrial toxicological experimental stations meeting the needs of the industry.

As a result of developments we consider that the use of pesticides will double by 1980 as compared to that of the present as shown in table 6. The proportion of imports will gradually decrease to one half or possibly to one third of the expected total consumption.

Naturally, those foreign companies which themselves support the development of the Hungarian industry within the framework of

co-operations of different types, will be able to hold the ground on the Hungarian market. Such co-operations have already come into being and in other cases talks have reached an advanced stage. Efforts must be made to assure that the industrial companies of developed countries should transfer to developing countries not only those products which are considered to be out-dated in their own countries, but also be ready to assist and co-operate in the transfer of the most modern technologies within the framework of licence agreements.

The partners should establish an efficient co-operation in the field of both the formulation and the production of active ingredients, and moreover in the field of the production of intermediates.

Since the safe and controlled agricultural use of pesticides is in the interest of the industry as well, the industry and industrial organizations of the developed countries should also support the establishment of a network of experimental pesticide testing farms, provide training and specialists as well as the necessary instruments, for such organizations.

At this moment, Hungary would look for support and assistance in the adaptation of up-to-date granular and micro-granular formulation technologies and in exchange, she would undertake or participate in the training of agricultural extension service specialists having responsibility for the safe and effective use of pesticides.

TABLE 1

Use of pesticides in the Hungarian People's Republic

Year	Pesticides tons	Value in millions $
1960	30.921	7,7
1961	35.120	9,3
1962	37.200	10,4
1963	45.619	13,1
1964	59.438	14,6
1965	62.143	16,2
1966	67.300	17,2
1967	67.346	20,4
1968	50.477	16,4
1969	56.479	18,1
1970	60.707	22,4
1971	63.424	29,2
1972	66.233	36,9

TABLE 2

The number of the registered pesticides in the Hungarian People's Republic

Year	Fungicides	Insecticides	Herbicides	Others	All
1960	18	22	7	3	50
1969	76	82	45	19	222
1970	86	95	51	19	251
1971	93	100	55	18	266
1972	99	110	72	19	300

TABLE 3

Distribution of pesticides according to type

Year	Fungicides tons	Insecticides tons	Herbicides tons	Others tons	All tons
1960	13.697	2.116	462		16.475
1961	14.891	2.223	795	-	17.909
1962	13.379	2.330	1.443	-	17.152
1963	12.717	2.983	1.593	-	17.293
1964	13.937	3.742	2.242	-	19.921
1965	17.195	3.313	2.027	-	22.535
1966	20.354	3.519	2.428	749	27.050
1967	20.008	3.725	3.425	1062	28.220
1968	9.931	2.804	3.546	928	17.209
1969	9.172	3.187	4.021	466	16.946
1970	10.447	2.772	4.684	421	18.321
1971	12.350	2.890	6.360	605	22.205

TABLE 4

Distribution of pesticides according to production source

(in millions of US$)

Year	Made in socialist countries	Made in capitalist countries	Made in Hungary	All
1960	1,25	0,79	7,33	9,38
1961	1,50	2,50	10,48	14,48
1962	2,44	2,46	10,2[illegible]	15,20
1963	2,03	2,64	11,68	16,36
1964	2,38	2,79	11,50	16,68
1965	1,96	4,63	13,87	20,46
1966	2,44	7,68	14,16	24,29
1967	2,88	11,35	13,59	27,83
1968	2,92	9,46	10,87	23,25
1969	3,55	11,00	12,85	27,40
1970	3,61	12,53	17,35	33,49
1971	3,64	23,01	18,07	44,74
1972	5,18	25,18	34,07	64,44

TABLE 5a

Exportable Fungicides

Alternative names:	Chemical name:
Benomyl Fundazol	1-butyl-carbamcyl-2-benzimidazole carbamic acid methylester
BMC	2-benzimidazole carbamic acid methylester.

TABLE 5b

Exportable herbicides

Alternative names:	Chemical name:
Atrazine, Aktinit PK, Hungazin PK, Aktikon PK, Nikezin PK	2-chloro-4-ethylamino-6-isopropylamino-s-triazine
Simazine, Hungazin DT, Aktinit DT, Nikezin DT	2-chloro-4,6-bis-ethyl-amino-s-triazine
Propazine	2-chloro-4-6-bis-isopropylamino-s-triazine
Merkazin, Sazin, Prometrin	2-methylmercapto-4,6-bis-isopropyl-amino-s-triazine
Satrin, Ametrin	2-ethylamino-4-methylmercapto-6-isopropylamino-s-triazine
Olitref, Trifluralin	α,α,α,-trifluoro-2,6-dinitro-N,N-dipropyl-p.-toluidine.

Alternative names:	Chemical name:
Satecid, Propachlor	N-isopropyl-2-chloro-acetanilide
Dikonirt D	2,4-dichloro-phenoxy-acetic-acid sodium salt
Gomex	1,1'dimethyl-4,4'-bipyridilium-sulphate
Krezonit E.	2-methyl-4,6-dinitro-phenol-ammonium
Sympran N. Propanil	3,4 dichloro-propionanilide
Trifenoxin 100 2,4,5 T	2,4,5 - trichloro-phenoxi-acetic-acid i.-amylester

TABLE 5c

Exportable insecticides

Alternative names:	Chemical name:
Prolate Safidon	0,0-dimethyl-S-methyl-phtalimido-dithiophos-phate
Prophos Rovokil	C-ethyl-S-S-dipropyl-phosphoro-dithioate
Trichlorphos	0,0-dimethyl/1-hydroxy-2,2,2-trichloroethyl/-phosphonate
Dichlorvos DDVP	Dimethyl-2,2-dichloro-vinyl phosphonate
Novenda, DNOC	2-methyl-4,6-dinitro-phenol.

TABLE 6

Projected use of pesticides according to type of active materials

Year	Fungicides tons	Insecticides tons	Herbicides tons	Others tons	All tons
1973	12.400	2.920	8.490	2.635	26.445
1974	13.100	3.360	9.360	3.385	29.205
1975	13.820	3.690	10.820	4.280	32.610
1980	16.500	5.500	16.300	6.200	44.500

[redacted]

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