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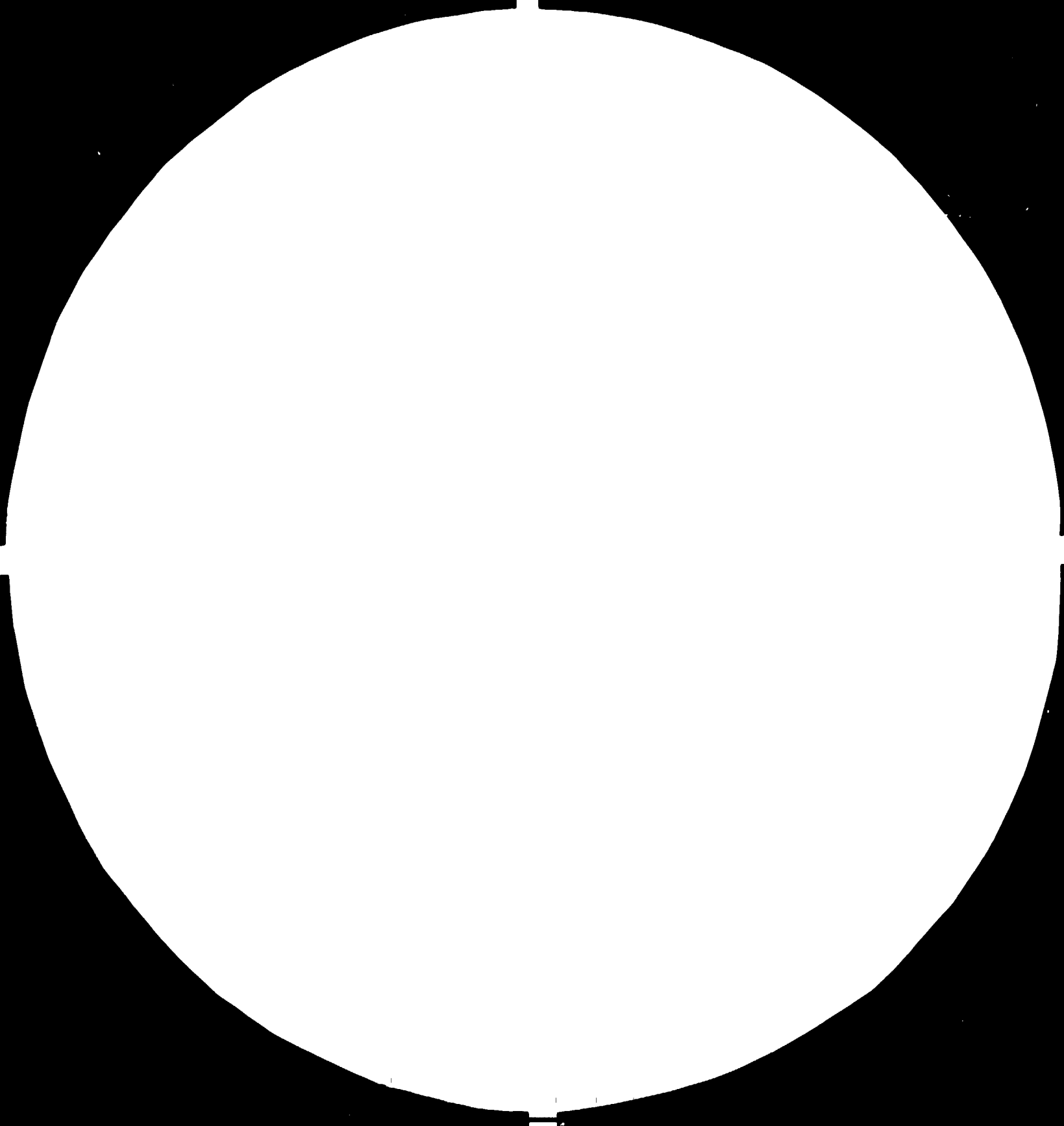

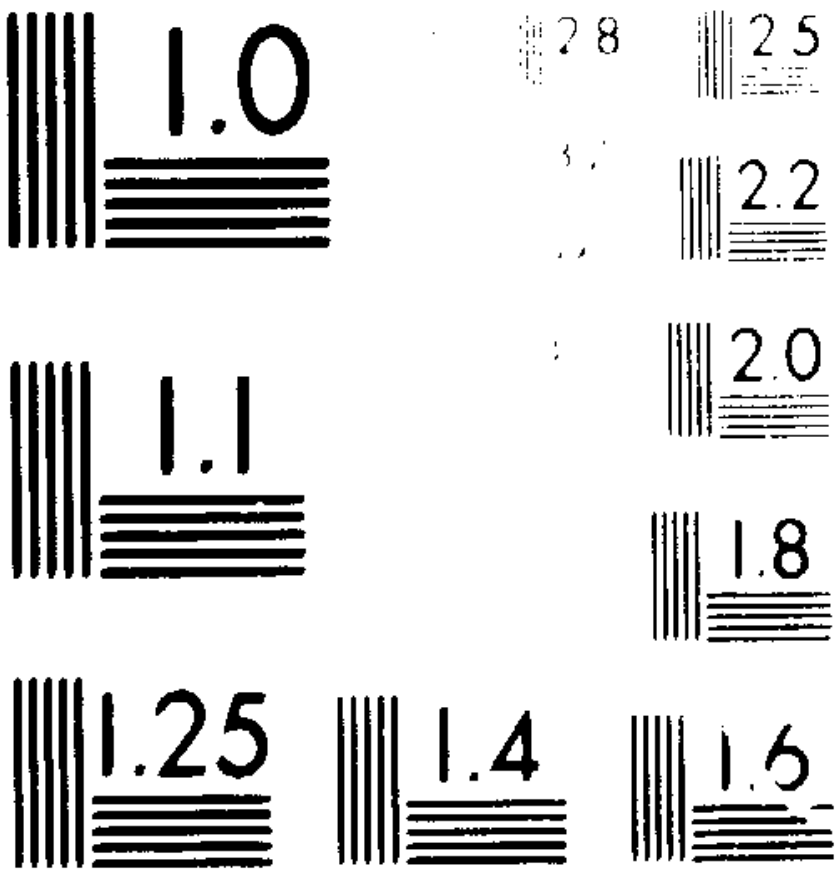
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A STATISTICAL REVIEW OF THE AGRICULTURAL MACHINERY SECTOR IN THE SOCIALIST COUNTRIES OF EASTERN EUROPE

/ 1970-1980/

by

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INTRODUCTION

After 1945 Eastern Europe had not been a homogenous region. Some of the countries had started their way towards industrialization from the position of traditional, agricultural economies. Eradication of illiteracy coupled with land reforms had created prerequisits for more advanced rural development based on increased application pf implements and agricultural machinery.

In spite of significant progress in agricultural machinery production the domestic markets ofothe countries have not been fully "saturated" neither with tractors nor with other types of agricultural machinery.

The situation has been illustrated by Table A and Table B.

Table A

Annual production pf tractors per 10,000 inhabitants

	1970	1975	1977	1978
Bulgaria	4.1	5.9	7.1	8.7
Czechoslovakia	12.9	20.0	23.3	23.3
Hungary	1.9	0.5	0.6	0.4
Poland	12.6	16.9	17.o	17.0
Romania	14.5	23.5	27.4	30.1
USRR	18.2	20.8	21.1	21.2

Table B

/a/ Cultivated land per 1 tractor /in hectars/

	1970	1975	1977
Bulgaria	112	92	96
Czechoslovakia	52	49	50
German Dem.Rep.	42	45	46
Hungary	100	109	113
Romania	140	125	108
USSR	276	235	225
Poland	85	47	40

/b/ Crop area per 1 complete harvester /harvester thresher/ in hectars.

	1970	1975	1977
Bulgaria	232	219	213
Czechoslovakia	160	137	141
GDR	128	228	368
Hungary	254	215	204
Poland	562	344	277
Romania	130	164	144
USSR	183	180	181

Bearing in mind a large spectrum of agricultural machinery and implements the socialist countries of Eastern Europe took advantage of institutional machanisms existing within the Council for Mutual Economic Assistance /CMEA/for international division of labour.

According to the general economic strategy of the CMEA, remakable efforts have been made to accelerate the growth of machinery production and application in less advanced countries at a higher rate than that of the more advanced ones. This pattern has been exemplified in tables A and B.

Problems of agriculture, concerning machinery and implements have been identified to large extend by the Standing Comission on Agriculture. The ways and means to solve them have been discussed and agreed upon by the Standing Comission on Engineering Industry and other standing sectoral commissions. In this context it seems desirable to recall that "the CMEA Standing Sectoral Commissions are established by the Session of the Council for the purpose of promoting closer ties at the sectoral level among the CMEA countries and organizing multilateral economic, scientific and technological co-operation in various branches of the national economy. The Standing Commissions are composed of delegations appointed by the member countries of the Council. They are empowered to make recommendations and decisions within their terms of reference. They may also submit proposals for consideration by the Executive Committee, by the Session and by the other organs of the Council."/x/

Specific needs of gardening and cultivation of vegetables and grapes, have created demand for a specialized machinery.

The outside of the CMEA emerged a new international society /organization/ aiming at solving at least some problems in this field.

The international society "Agromash" had been set up in December 1965 in Budapest by the Governments of Bulgaria and of Hungary. In 1969 the Soviet Union had joined in, GDR-in 1973, Poland-in 1976. Within the scope of activities of "Agromash" have been included problems concerning development, production and trade in agricultural machinery for fruit, vegetable and grape cultivation. In practical terms the "Agromash" performs

intermediatery functions and works out, for competent bodies of the participating countries, recommendations on problems of co-ordination pf plans for design activities, the development of production of agricultural machinery, the introduction of advanced technologies of growing, harvesting, and post-harvest processing of agricultural crops, the specialization and co-operation in the production of machinery, and so on.

Thus the scope of activitees of "Agromash" can be subdivided into the three following fields:

-co-ordination pf R and D programmes,

-international division of labour, catalytic action towards the arrangements on specialization in production and mutual delivery,

-arrangements for testing of new types of machinery in member countries under different conditions.

Data on production of basic agricultural machinery-tractors, tractor-opreated ploughs, tractor-operated seeders, harvest combines and ensilage combines are given ~~in~~ inthe Part I.

Data on specific types of machinery-sometimes unique ones- are given for each socialist country of Eastern Europe in Part III.

National programmes supported by bilateral and multilateral international co-operation have materialized in large spectrum of products of the agricultural machinery sector.

/x/Institutional Mechanisms for Economic and Industrial Co-operation among Member Countries of the Council for Mutual Economic Assistance UNIDO/ICIS.58/Rev.1 p.8

I. Production of agricultural machinery in the socialist countries of Eastern Europe /basic types of machinery/.

Table 1

Tractors

/number of units/

	1970	1975	1976	1977	1978	1979	1980
Bulgaria	4405	5112	5919	6258	7675	5644	6767
Czechoslovakia	18480	29585	31458	35040	33317	35370	33359
Hungary	1930	551	513	658	400	142	108
Poland	40998	57553	58805	59078	59509	54231	57445
Romania	29287	50003	53911	59306	65715	62494	70873
U S S R	458525	550432	562175	569145	576113	557415	554916

Table 2

Ploughs, tractor - operated

/number of units/

	1970	1975	1976	1977	1978	1979	1980
Bulgaria	3871	3221	3624	771	1166	1650	2145
Czechoslovakia	3238	3235	1876	1365	1001	1100	1212
German Dem. Rep.	4916	2552	2343	2567	3432	2695	2616
Hungary	2096	3073	4616	2583	1590	707	301
Poland	28099	41434	38180	33349	33052	34653	30024
Romania	11414	19883	23250	15677	14756	9597	12818
U S S R	211657	205391	202321	184940	216117	210851	202246

Table 3

Seeders, tractor - operated

/number of units/

	1970	1975	1976	1977	1978	1979	1980
Bulgaria x	22427	21863	23201	23948	22045	21125	19446
Czechoslovakia	5173	4955	5090	5325	3547	2492	4178
German Dem.Rep.	3320	3140	2902	2556	2262	2334	3022
Hungary	1456	1055	2526	1344	989	1202	960
Poland	3221	1030	3538	6897	10721	13400	13434
Romania	11721	25448	18620	27054	23204	22436	19351
U S S R xx	163453	180015	191051	196891	198781	202008	201181

x Seeders and potato transplanters together

Harvest combines

Table 4

/number of units/

	1970	1975	1976	1977	1978	1979	1980
Poland	2155	3591	3956	4003	4301	4268	4593
Romania	1179	5659	5198	5365	3887	3016	4890
U S S R	99247	97503	101700	105510	113002	14759	117365

Table 5

Ensilage combines

/number of units/

	1970	1975	1976	1977	1978	1979	1980
Bulgaria	20330	30000	28482	31968	33770	35978	35503
Czechoslovakia	920	1097	...	...	...	...	...
German Dem. Rep.	4670	5772	4011	4502	4425	4500	4810
Hungary	1004	1073	520	204	-	-	-
Poland	6000	1501	-	-	-	610	1663
Romania	-	45	...	...	...	...	...
U S S R	34335	70895	56039	56645	47985	45585	46689

II. Trade in agricultural machinery

Table 6

Bulgaria

/in current US $/

	1970	1975	1976	1977	1978	1979	1980
Tractors and related machinery							
Export /Mln./	81.5	169.7	154.6	178.0	166.4	237.1	270.6
Import /Mil./	49.2	164.2	162.8	193.2	201.5	209.9	241.7
Agricultural machinery and equipment							
Export /Mln./	70.5	142.1	116.3	146.3	172.3	194.8	229.5
Import /Mln./	19.0	98.4	94.0	106.9	116.8	147.1	135.6

Table 7

Czechoslovakia

/ in current US $/

	1970	1975	1976	1977	1978	1979	1980
Tractors and related machinery							
Export /Mln./	66.7	172.5	249.8	280.1	337.3	370.0	341.5
Import /Mln./	110.4	276.0	324.3	367.1	340.2	318.6	337.4
Agricultural machinery and equipment							
Export /Mln./	21.0	73.0	102.0	111.2	156.2	166.1	174.8
Import /Mln./	71.0	202.9	222.2	234.6	224.8	225.0	228.0

Table 8

G D R

/ in current US $/

	1970	1975	1976	1977	1978	1979	1980
Tractors and related machinery							
Export /Mln./	164.3	411.2	514.7	612.7	678.9	770.1	810.1
Import /Mln./	57.8	161.5	187.7	262.2	261.3	296.0	340.5
Agricultural machinery and equipment							
Export /Mln./	97.9	394.7	494.0	587.9	660.0	749.0	776.7
Import /Mln./	17.0	72.5	75.8	139.4	124.1	138.3	172.0

Table 9

Hungary

/ in current US $/

	1970	1975	1976	1977	1978	1979	1980
Tractors and related machinery							
Export /Mln./	25.7	115.6	160.1	205.6	222.0	289.9	342.0
Import /Mln./	67.3	208.4	274.6	324.3	419.0	409.2	346.6
Agricultural machinery and equipment							
Export /Mln./	17.5	105.2	136.3	190.4	214.6	268.8	314.6
Import /Mln./	40.3	155.9	191.8	216.7	277.4	285.4	238.6

Table 10

Poland

/in current US $/

	1970	1975	1976	1977	1978	1979	1980
Tractors and related machinery							
Export /Mln./	40.0	165.6	194.6	207.0	243.8	255.2	261.4
Import /Mln./	77.1	263.6	349.1	409.9	492.0	496.8	498.6
Agricultural machinery and equipment							
Export /Mln./	26.0	98.4	122.3	131.4	162.1	170.6	193.0
Import /Mln./	32.2	161.5	157.3	189.1	197.1	265.8	255.4

Table 11

U S S R

/in current US'S/

	1970	1975	1976	1977	1978	1979	1980
Tractors and related machinery Export /mln./	93.5	183.5	253.9	338.1	385.4	410.7	398.2

III. Specific agricultural machines and equipment produced in socialist countries of Eastern Europe.

Bulgaria

Table 12

Production data by physical units

t-d=tractor-drawn

	1970	1975	1976	1977	1978	1979	1980
Cultivators, t-d	3204	2810	1560	1286	354	116	120
Fertilizer distributors, t-d	2223	2531	2636	2590	1940	1094	313
Crushers/pre-cutters/ of the feeding for animals	18059	23250	24777	25997	9542	2263	2434
Water distributors	2106	900	1000	533	440	618	597

Czechoslovakia

Table 13

Production data by physical units

t-d=tractor -drawn

	1970	1975	1976	1977	1978	1979	1980
beet harvesters/t-d/	915	989	900	770	633	721	685
cultivators	50	75	90	10	-	100	-
potato planters	-	4820	4830	5275	3447	2392	4128
seeders		135	260	50	100	100	50
milking machines	2055	1340	1322	1439	1587	1734	1942
pesticide distributors	1023	200	1050				

German Democratic Republic — Table 14

Production data by physical units

	1970	1975	1976	1977	1978
Potato harvester	3222	5327	5000	3845	2230
Hay and straw-press	5743	11630	9352	10200	9743

Hungary — Table 15

Additional information on the production and import of tractors/in physical units/.

~~Productionx~~	1970	1975	1980	1981
Production	1930	551	108	
Imports	4855	6373	4460	3120

Hungary

Table 16

Production data by physical units

	1970	1975	1979	1980
Disc tillers	3309	3649	1620	1025
Machine pulled and suspended tractor cultivators	700	4488	9115	12307
Harrows	5737	9884	10417	6550
Mechanized irrigators and pulverizers	1984	4046	3362	3043
Seed-dressing machines	2484	1064	2050	1384
Self-propelled chaff-cutter machines	1004	1073	-	2
Mechanized shellers	1862	3	504	-
Mechanized crushing mills	887	29006	39868	37629

Poland

Table 17

Production data by physical units /1,000 units/

	1970	1975	1978	1980	1981
Ploughs, x/ animal-drawn	50.2	40.4	9.1	15.8	19.1
Cultivators:					
tractor-drawn	6.8	14.7	14.2	11.3	12.6
animal-drawn	8.5	5.0	1.4	--	--
Seeders X/, animal-drawn	29.0	42.0	6.0	7.0	11.2
Mowers:					
tractor-drawn	8.0	14.0	9.8	11.0	14.6
animal-drawn	50.7	41.9	18.3	16.1	10.8
Harvesters	7.2	6.0	6.4	6.8	9.7
Threshing machines	9.7	14.1	11.5	12.1	11.4
Complete harvesters	2.2	3.6	4.3	4.6	4.3
Potato harvesters:					
tractor drawn	11.6	17.8	11.7	18.8	16.9
animal-drawn	48.0	20.0	7.3	7.5	11.6

x/ Ploughs, tractor-drawn-see table2.

X/ Seeders, tractor drawn-see table 3.

Romania

table 18

Production data by physical units

	1970	1975	1976	1977	1978	1979	1980
Cultivators, tractor-drawn	2992	700	3509	4033	2603	3728	3073

U S S R

Table 19

Production data by physical units /in I,000/
t - d = tractor - drawn

	I970	I975	I976	I977	I978	I979	i980
Paring ploughs, t - d	38.3	32.6	30.5	33.3	3I.8	25.4	27.0
Disc harrows, t - d	22.8	32.I	32.I	33.3	29.6	3I.9	35.0
Potato planters, t-d	I8.0	9.I	I0.5	II.0	II.5	I3.i	I3.4
Cultivators, t - d	2I9	I88	I90	I87	I93	204	2I8
Pesticide distributors	3I.2	33.I	37.I	37.4	4I.7	45.6	45.9
Harvesters	47.7	92.I	93.6	92.7	95.9	98.I	99.7
Complete harvesters	99.2	97.5	I02	I06	II3	II7	I06
Potato harvesters	7.0	9.4	9.9	9.9	9.9	I0.0	I0.2
Beet harvesters	9.I	I7.I	I4.4	I4.6	I4.9	9.5	9.3
Corn harvesters	5.I	I0.3	II.2	II.3	I0.0	0.7	I.2
Cotton harvesters	5.9	7.6	8.0	8.7	8.8	9.I	9.6
Drenchers	I2.3	27.I	28.4	27.5	26.0	I8.0	I7.I
Mowers, t - d	I44	83.9	89.4	97.2	I09	86.2	84.2
Rakes, t - d	6I.7	46.I	42.5	46.7	48.3	53.I	48.9
Pick-up presses	I5.8	28.I	30.2	28.7	28.7	3I.0	32.0
Ensilage harvesters	34.3	70.9	56.0	56.7	48.0	46.7	40.8
Multi purpose loaders	78.2	90.I	94.7	96.2	93.2	95.5	95.8
Crushers /pre-cutters/ of the feeding for animals	I4.2	33.2	35.i	36.6	32.2	27.I	26.7
Self-acting equipment for watering of animals	5305	5I69	4960	4869	4880	5233	4943
Milking machines	39.2	53.3	53.I	54.9	53.4	56.7	62.6

IV. Some data on direction of flows of trade in agricultural machinery.

Table 20

U S S R

Tractors	Buyer	1975[x]	1979	1980	1981
Export / th. US $/			410900	398786	371452
	Bulgaria	6009	37875	30031	33530
	Hungary	5093	55905	55872	34658
	Vietnam	300	3958	4423	5963
	G D R	4804	88725	49692	39316
	Greece	670	3727	3537	3948
	Denmark	174	744	375	148
	Italy	468	696	660	
	Canada		4587	5948	2782
	Cuba	4494	44679	55766	56445
	Mongolia	490	4403	4803	8092
	Holland	65	624	67	181
	Pakistan		23115	22066	11313
	Poland	3141	86176	115125	115669
	Tailand	301	850	1259	384
	Finland	480	824	1830	1788
	France	1404	1705	1632	1173
	Czechoslovakia	1017	8852	10452	16036
	Ethiopia	62		176	21
	Yugoslavia	2438	14611	11528	5981
	Afganistan				290

x physical units

Table 12

U S S R

		1975[X]	1979	1980	1981
Agricultural machinery and equipment	Buyer				
Export /th. US $/			269047	306098	322435
	Bulgaria	45647	75894	87905	97096
	Hungary	28305	21474	11912	20511
	Vietnam	991	1356	2975	3541
	G D R	6155	20083	22057	21617
	Iraq	7542	5366	2459	143
	Iran	141	115	2739	1399
	China	316	547	252	90
	Cuba	17976	37105	45222	45224
	Mongolia	10256	13021	12422	17485
	Poland	20948	55634	79271	54597
	Czechoslov.	33813	26054	22794	42608
	Romania			8346	9617
	Angola			1707	2465
Spare parts					
Export /th. US $/			127137	162539	145393
	Bulgaria		31212	40552	46333
	Hungary		11931	8400	8368
	G D R		7455	10509	14494
	Iraq		2615	2438	111
	China		234	252	90
	Mongolia		8448	6326	7210
	Poland		21581	29085	27835
	Czechoslovakia		10425	12432	20859

X physical units

Table . 22

U S S R

Agricultural machinery and equipment	Supplier	1975[x]	1979	1980	1981
Import / th. US $/			1004917	1165659	1152210
	Bulgaria	77703	179017	215823	203517
	Hungary	20331	94562	118075	102427
	G D R	30055	418647	473223	514517
	Denmark		3114	8799	9559
	Italy	897	2914	3049	3420
	Poland	27609	115738	134693	99189
	Romania	13954	59917	45152	39703
	U S A	3502	8622	13758	10035
	F R G		9457	11709	11880
	Finland		2996	6424	9827
	Czechoslovakia	36525	99142	121481	99382
	Sweden		1279	1455	1553

[x] physical units

Table 23

Poland

		1971[x]	1975[x]	1980	1981
Tractors	Buyer				
Export /th. US $/					
	Yugoslavia	1592	6959	2956	9245
	Denmark	23	729	448	
	Finland			3842	3347
	Spain	73	123	2528	624
	Greece	288	519	2506	1246
	Holland	64	211	616	391
	F R G			712	442
	Portugal			1277	1026
	Sweden	14	521	645	521
	Italy		292	593	382
	U S A		419	913	
	Malesia			638	591
	Pakistan			792	
	Angola			1589	
	Great Britain	10	181		491
	India	11500	4443		
	Brasil		619		
	Nepal		496		
	France	391			
	Supplier				
Import// th. US $/				101903	115607
	U S S R	949	78142	93321	106607
	Czechoslovakia	530		7309	8021
	Hungary	98	2739		
	F R G	2			
	Yugoslavia			776	981

[x] physical units

Table 24

Poland

		1971[x]	1975[x]	1980	1981
Spare parts for tractors	Buyer				
Export /th. US $/		26409	66679	36941	36517
	Czechoslovakia	23005	45189	28137	29248
	G D R	518	9258	3891	4438
	Yugoslavia	201	3776	2042	1262
	F R G		651	379	
	Great Britain			1080	415
	India	1414	2239		
	France	235			
	Greece	167			
Import /th. US $/	Supplier	100172	202363	127036	130881
	U S S R	31182	84202	57261	68598
	Czechoslovakia	60148	99586	56181	59460
	G D R	4351	11466	1061	
	Hungary	3346	2739		
	Denmark	161	1095		
	F R G	225	1913	10934	1332
	Great Britain	169			
	Sweden	55			

[x] physical units

Czechoslovakia

Table 25
/ physical units/

	1970	1971	1975	1979	1980
Tractors					
Export	18253	14909	19608	27107	25580
Buyer					
Iraq	910		2717	5749	8228
Yougoslavia	1693	1989	2165	4193	2084
Egypt				700	2039
China				3823	1477
Greece	409	544	578	931	1452
Urugway	90			406	1452
France	1777	2050	3203	1121	1113
Finland	240		510	583	742
Norway	183			555	642
Spain	373		388	423	607
Australia	209		554	553	603
India	5161		2900	500	500
Great Britain	647	589	1561	2331	410
New Zeland	151			244	336
F R G	499		1326	820	329
Bolivia	47			10	288
Ireland	606		1259	702	269
Angola				375	264
Cuba				20	255
Columbia	121	215	210	274	205
Ireland	60			346	196
Italy	148			219	184
Hungary	1593	1645		88	181
Sweden	184		1013	217	121
Denmark	357		533	512	91

Table 26

Czechoslovakia

	1970	1971	1975	1979	1980
Tractors for gardening					
Export / physical units/	955	973	3807	1935	4980
Buyer					
Hungary	115	10	1425	390	1830
U S S R	763	121		746	1680
G D R			330	402	665
Poland		610	1449	394	664
Agricultural machinery					
Export /Mln.kor.Cz./	152	213	423	879	923
Poland	52	69	161	215	279
U S S R	40	66	94	303	254
G D R	41	48	96	225	241
Vietnam				13	25
Hungary	4	8	43	86	4
France	2			10	3
Great Britain				3	3
Cuba	4			2	2
Combines					
Import / physical units/	2816	1972	5071	2111	1226
Supplier					
G D R	1187	1708	1537	1648	1109
U S S R	896	200	3528	208	117

V. The past and present situation of the agricultural machinery sector in the socialist countries of Eastern Europe.
The outlook in the sector.

On the basis of the data the following observations and comments should be made:

1. After a quantitative jump in the manufacture of tractors during the period 1970-75 which for Czechoslovakia meant an increase by 60 per cent, for Poland-by 40 per cent, for USSR-by 20 per cent, the growth of production in 1976-80 had been less dynamic one.

2. Significant jump in tractors' manufacture was made by Romania both during the period 1970-75 /by 70 per cent/and during the period 1976-80/by 31 per cent/.

3. Bulgaria /Tab.1/had demonstrated a steady growth during the decade-annual average-5.3 per cent.

4. Gradual decline of the production of tractors in Hungary/Table 1/ had been related to saturation of the domestic market and restructuring of the division of labour within the framework of CMEA.

5. In Czechoslovakia, GDR and Hungary decline inthe production of tractor-operated ploughs/Table 2/ had been caused by saturation of domestic markets.

In Poland the decline during the period 1976-80 from the level of 1975 had been a result of a wrong industrial policy. It had caused a shortage on the domestic market.

6. A fairly stabilized level of production of harvest combines in Poland, Romania and the USSR/Tab.4/had been determined basically by the domestic demand. For Poland and Romania the first half of the decade had been a period of increase of manufacturing capacities by 66 per cent and 379 per cent respectively.

7. For ensilage combines' manufacture /Table 5/ the changes during 1976-80 had been related to the restructuring of the division of labour within CMEA in which the role of suppliers had been undertaken by Bulgaria, GDR and the USSR.

8. In some countries of the region particularly in Bulgaria, Czechoslovakia and Hungary there seems to be a saturation or declining demand for basic types of agricultural machinery. On the other hand one can point out the growth of production of milking machines/Czechoslovakia, the USSR/, hay and straw-presses/GDR/, mechanized crushing mills/Hungary/and other more advanced, labour-saving machinery.

9. For GDR and Bulgaria the decade 1970-80 had been the period of the growth of export prevailing the high growth of import /Table 6 and 8/.

10. The Hungarian trade in agricultural machinery during the decade had been characterized by very dynamic growth both of import and of export. This is true particularly for the second half of the decade. But export/import ratio had been more favorable at the end of the decade /1.122/ than at its beginning/0.404/. At the end of the decade the volume of trade had been increased more then 8 times.

11. During the decade the Soviet export of tractors and related machinery had increased by 325 per cent. The export had been directed to the other socialist countries, to a number of developing countries as well as some of the developed market economies.

Similar, universal pattern of trade flows have been observed in the Czechoslovakian export of tractors.

12, In general the flows of trade in other agricultural machinery have been directed to the socialist countries and to some of the developing countries.

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As it might be seen from the analysis of statistical data the cooperation within the framework of CMEA had been a vital factor.

In accordance with the stipulations of the "Comprehensive Programme for the Further Extension of Co-operation and the Development of Socialist Economic Integration by the CMEA Member-Countries" x/ in 1972-73 the member-countries had worked out proposals on extending and expanding specialisation and co-operation in the production of tractors, basic farm machinery, complete technological lines and equipment, on the basis of the advanced international machine system for agricultural enterprises employing industrial methods of production. The proposals, subsequently had been adopted as guidelines for the next years of the decade.

In 1971-75 had been designed some new and improved types of tractors, farm machinery and machine systems on the basis of the concerted efforts of the research and design organisations in CMEA member countries.

At the beginning of 1970-ies, in 1971-72 had taken place co-ordination of research and experimental design work, envisaging joint elaboration of technological and ecenomic specifications for farm machinery, and join designing, by agreement between interested countries, of new machine systems and machinery forming part of these systems, of power installations and complete lines, complying with the requirements advanced by modern scientific and technological progress.

The innovative approach towards joint international problem-solving could be exemplified by the activities of "Agromash" /see the Introduction/.

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x/ CMEA Secretariat, Moscow, 1971

During the decade Bulgaria has became specialized in 20 types of machinery. Significant progress has been made in design and production of machinery for soil cultivation in mountain areas. Versatile tractor "Murgash-45" has been used to operate 14 different kinds of machinery for land cultivation, harvesting and other applications.

In Czechoslovakia the production of tractor by well-known "Zetor" company belongs to the most developed subsectors of the industry. About 70% of the production has been exported to the developing and developed market-economy countries. In thactor manufacture Czechoslovakia has co-operated with Poland and Romania on the basis of bilateral agreements.

The sector in GDR has been plgying vital role in joint research and design with the other CMEA member-countries.

Hungarian industry has been able to solve many problems through co-operation with both its CMEA partners and East-West co-operationeg. utilization of complementary capacities by the Hungarian Compahy "Komplex" and FRG Company "Claas" in production of Combines, harvesters and other types of machinery.

The sector in Poland has manufactured a large spectrum of machines and implements from very simple to technologically sofisticated ones. It has been caused by diversity of farms-big units/cooperatives and state-owned/ and numerous, frequently small private ones.

During last decade the Polish industry co-operated both with CMEA countries as well as with Western partners eg. International Harvester and Massey-Ferguson.

During 1982-83 should take place significant increase of production of machinery and implements for small farms.

Romanian machinery industry has been specialized in manufacture and export of tractors. About 300 000 Romanian tractors have been purchased by 86 countries.

Agricultural machinery sector in the USSR has been the larger mabufacturere in the region. The sector is going to be expanded and modernized. For 1981-85 new investments has been envisaged at the rang of magnitude about 8.8 billion US $.
The investments should lead i.a. towards large scale mabufacture of combines "Kolos" and "Niva".