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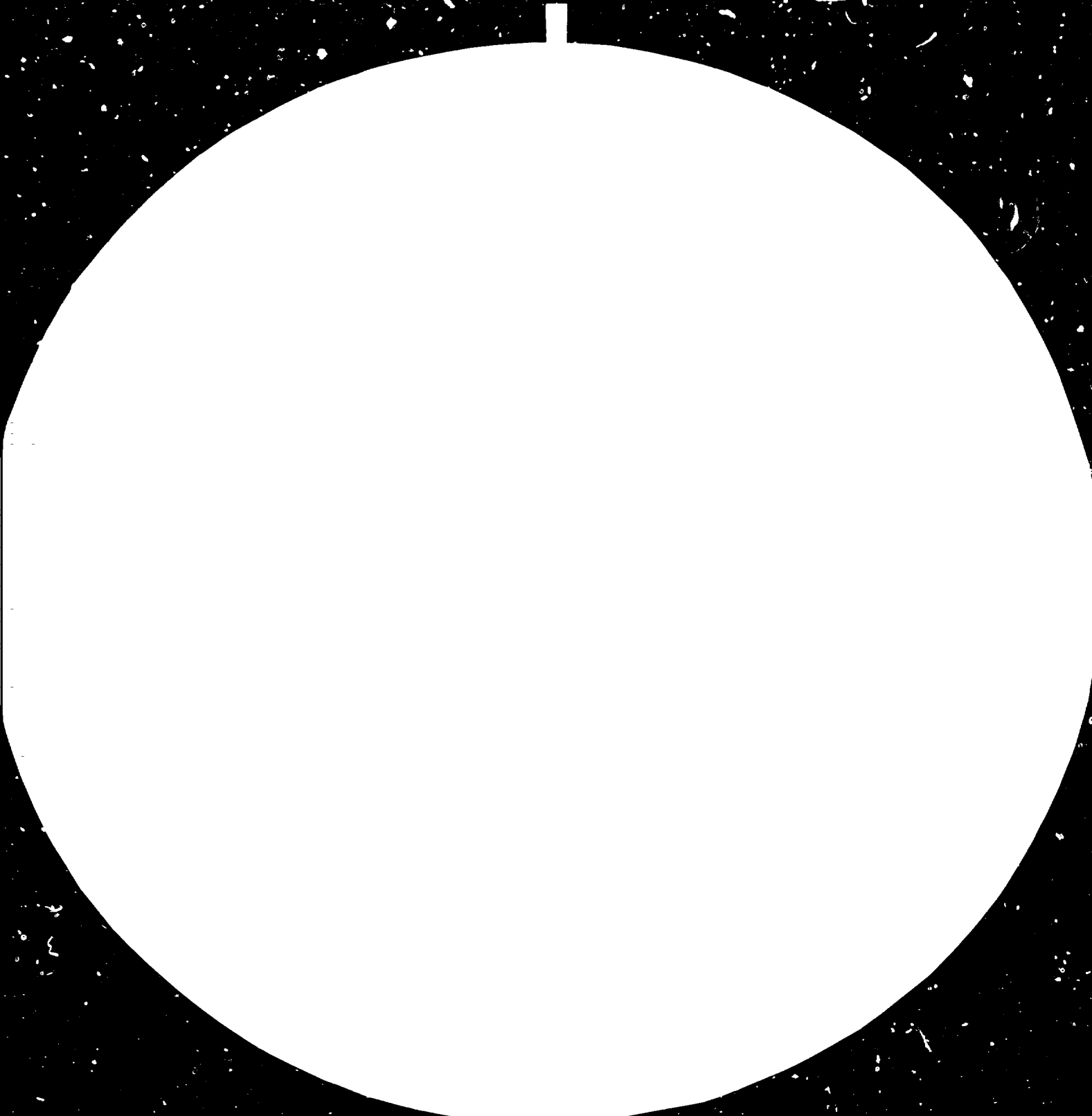
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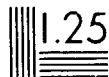
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Meeting on Exchange of Experiences and  
Co-operation among Developing Countries in the  
Development of Agricultural Machinery Industry

Beijing, China, 20 - 27 October 1980

COUNTRY SUMMARY - TURKEY\*

by

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1. Agricultural Machinery and Implements Needs and Demand

Turkish economy is being planned by an institution reporting to the Primer Minister. State Planning Organization, since 1962, prepares five-year development plans and yearly programmes. Plans and programmes are directives to the public sector while they are guiding text for the private sector. Private sector is being encouraged to do certain investments by partial income tax holidays, customs tax rebate and low interest rate loans. At present there are more than one thousand workshops manufacturing mostly seasonally implements and intermediate machinery. Out of these suppliers, approximately one hundred of them are either slightly bigger than workshops or in the state of small plants. There are eight companies manufacturing tractors and one company manufacturing combine harvesters. All these companies are working with a Western licences. There are two simple and low cost tractors manufacturers where designs belong to themselves. The largest company manufacturing agricultural equipment and tractors is Türkiye Ziraat Kurumu, which is a state enterprise. The Fourth Five Year Plan foresees a 10.4% increase in the demand of implements, and intermediate machinery. The plan target is 15% increase in the demand to the powered machinery and specialized equipment. On the average the plan targets are achieved within close tolerances in this field. Thus one may make a projection for the total machinery. Of course there is a clear indication that Turkish agricultural machinery population is shifting towards category III and IV. Therefore implements population is expected to drop sharply. This is due to the high replacement factor of powered machinery.

2. Estimated Demand and Present Usage

It is very difficult to make reasonable sound demand projections for specific implements and intermediate machinery. This is due to replacement and substitution of other types of equipment. An approach towards the value or expenditure expected for the next few years is more meaningful than a population projection.

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Note: Statistical Annexes could be made available, upon specific request.

The Third and Fourth Five Year Development Plans' targets regarding agricultural sector investment are given in Table 1.\*

	III. Plan 1973-1978	IV. Plan (Projection) 1979-1983
Water and Soil Resources Development	1592	2640
Agricultural Machinery	2250	2910
Other Agricultural Investments	413	1190
Forestry	393	788
Fishery	74	136

Agricultural machinery figures including tractors of approximately 300.000 units (with an input value of 1.5 billion dollar) with the existing specific cost of the agricultural machinery (on the average it is 2.5 \$/kg), this investment figure will represent 560 000 tons of equipment within 1979-1983.

### 3. Manufacture and Imports

Manufacturing of agricultural machinery is widely spread all over the country. The present status of agricultural machinery manufacturing according to categories is as follows:

#### Category I

The annual requirement is met by local production. Even from time to time there is some export (though not in significant amounts) to the middle east countries. The level of technology varies and in some small workshops the technology employed yields low quality implements thus relative cost of them increases. For example, a simple plough (for horse drawn)

\* Table 1: Comparative Investment figures in the agricultural sector.  
(in million \$ with 1978 prices).

manufactured in a small workshop will cost 1.0 \$/kg. But due to low quality standards its economic life is short. A plough manufactured in a well established manufacturing unit will cost 1.3-2 \$/kg. Due to this big cost difference these small workshops are still in operation. It is estimated that well over 900 small workshops are manufacturing such equipment.

#### Category 2

More than 80 medium-large firms are in the manufacturing business. There are also five large firms manufacturing intermediate machinery. There are also numerous workshops manufacturing simple types of ploughs and harrows. Occasionally export of such equipment is realized. A tractor drawn plough costs 1.5-1.8\$/kg, while a Weeder's cost is 1.4-1.5\$/kg. Numerous designs for such equipment exist in the country. The State Enterprise Türkiye Ziraat Donatım Kurumu (manufacturing such equipment) has also a research and development center in two locations (Adapazari and Ankara). Six companies have their own design offices and are cooperating with universities or research centers for the test of their products.

If it should be summarized, material quality and manufacturing standards of small enterprises has to be increased so that the overall cost may be lowered.

#### Category 3

Simple and low cost tractors are being manufactured in three establishments. The two of them are completely local designs. Basak tractor is 11 H.P. aircooled diesel tractor, used for general purposes. It is being manufactured by State Enterprise Türkiye Ziraat Donatım Kurumu in Adapazari. The capacity is 10.000 units per year. But it has never attained this full capacity. The reasons are the demand to such tractors is small and it is relatively expensive equipment. Another local design FIDAN Tractor has been manufactured by Agricultural Cooperatives Confederations. The third one is Goldoni manufactured in Istanbul by the firm ILTOR. The nominal capacity is 8000 per year.

Pumps are being manufactured in three plants. These are deep well type. There are many types of local design water pumps used for surface water. These pumps coupled with diesel or petrol engines as well as electric motors. The largest pump manufacturers are Pancar Motor (which is also manufacturing its diesel engines) and Layne Bowler (deep well pumps) operating in the Istanbul region.

Category 4

Medium and large tractors are manufactured under foreign licence, Massey Ferguson, FIAT, B.M.C., International Harvester, FORD, IHI Shibaura and STEYR are the names to be mentioned. John-Deer Combine harvesters are being manufactured by Çukurova Holding. Table 2 gives the list of tractor manufacturers.

Manufacturer	Name of the tractor	Total Manufactured tractor 1966-1978	Nominal Capacity	Maximum Manufact. units
UZEL	Massey Ferguson	87 158	15 000	10 329
TURK TRAKTOR	Fiat	96 489	22 500	15 006
TZDK (State Ent.)	Ford	51 825	10 000	8 500
B.M.C.	Leyland	16 363	5 000	3 876
T.O.E.	Interntional H.	15 657	12 000	3 433
BURTRAK	IHI Shibaura	500	2 000	500

Table 2: Medium and large size tractor manufacturers.

Burtrak manufacturing Japanese tractor has started in 1978. All the other factories are in the business for more than fifteen years. There are four companies more to go into operation in the next three years.

At present FIAT, B.M.C. engines are manufactured and it is expected that FORD engines will also be manufactured during 1982. B.M.C. diesel engine has about 85% local content while FIAT diesel engine has only 50%,



with new investments towards vertical integration the local content will increase to 95% by the end of 1981.

FORD and Japanese IHI engines are assembled. Their local content will increase to 80 percent during 1982. Crankshaft and bearings are the main imported components of these engines. Engines varying from 30-120 BHP are the ones which are mostly used in such powered machinery. To support this industry there are modern foundries (12 of them have modern equipments), three steel forging plants, heat treatment plants and three gear cutting plants (one of them is operating under Eaton licence). Ancillary and supporting industry are well organized and are in the position to supply the automotive industry.

At present there is a recession in the automotive industry and hence cost of parts and equipment increases.

4. Design and Development, Adaptation, Testing and Evaluation

Design of equipment is done both in private and public sectors. Compulsory standards do not exist and hence low quality equipment can find market in the economy. National Standards Institute and laboratories of the universities give services in the material and performance testing. An independent testing and evaluating body where a customer can take the equipment and receive an assistance does not exist.

5. Engineering and Manufacturing Technology

In this field only universities and technical schools can give very limited assistance to the manufacturers. Unless a keen competition is created among agricultural machinery manufacturers, demand for such institution cannot be created. Turkish manufacturing industry has realized the importance to go international. If this is realized this sub-sector will become competitive.

6. Repair, Maintenance and Spare Parts Supply

Agricultural machinery are generally repaired in the privately run repair shops. Only power machinery manufacturers have either their own repair shops or contract it, to reputable privately run repair shops. Since there are more than one hundred models of tractors in the park, spare part supply becomes costly business. Because of low population, spare part

manufacturing for such low amount does not become economical. As time goes on there will be only Turkish made tractors in the market and hence the number of different spare parts stocks will drop.

7. Policy, Planning, Strategy and Coordination

Agricultural policies and strategies are jointly prepared by State Planning Organization and the Ministry of Agriculture. The manufacturing of agricultural equipment is encouraged by Department of Investment and Export Encouragement of State Planning Organization. The coordination is realized jointly by the Ministry of Industry and Agriculture.

8. Interregional Co-operation

Turkey can give assistance to developing countries in various fields of agricultural machinery manufacturing. Excluding tractors more than 70 HP, and self-propelled combine harvesters, know-how has been accumulated for more than 20 years. In the field of tractor manufacturing, more than five firms are able to give assistance with low level of manufacturing quantities (such as 5-10.000 units per shift per year) and high local content. There have been occasions where Turkish manufacturers have prepared complete offers in the field of tractor manufacturing to certain developing countries. In the design and manufacturing stages of implements there are more than twenty firms that can be called in to supply of technical assistance with very small charges. The author of this paper is pleased to give further information upon request to any attendant of this meeting.

Turkey may receive through private sector channels know-how and technical assistance in the field of crop harvesting special machines, such as olives, cotton, tobacco, soya beans harvesting machines. Turkey is facing seasonal labour shortage in the harvesting of such crops. Relative labour cost during such seasons increases and thus competitiveness in the international markets is lost in some sub-sectors. Thus the use of harvesting machines are becoming unavoidable.



