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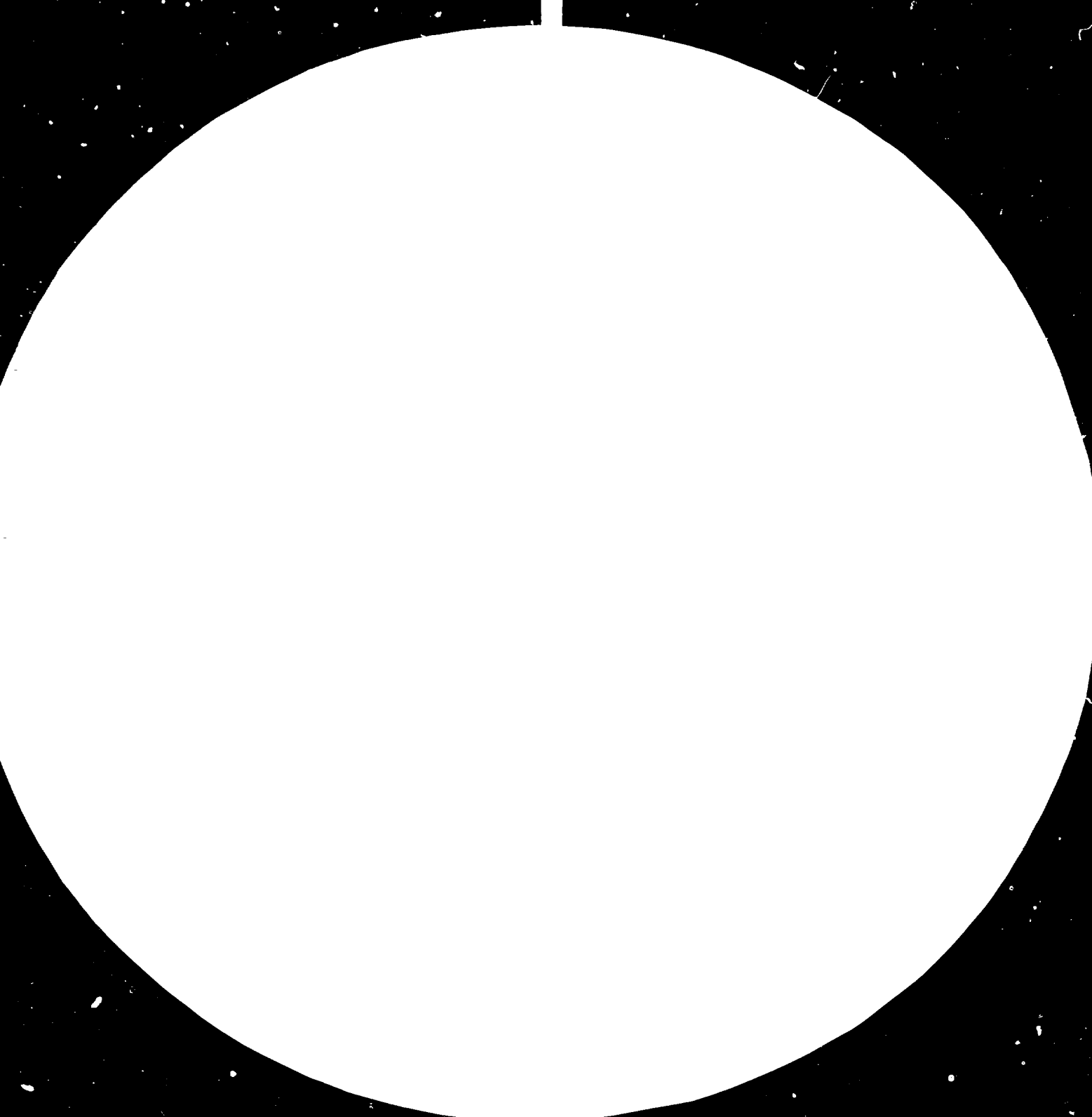
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Resolution test targets are used to measure the resolving power of an imaging system. The targets consist of patterns of lines that become increasingly difficult to resolve as the spatial frequency increases. The numbers 1.0, 1.1, 1.25, 1.4, 1.6, 2.0, 2.2, 2.5, 2.8, and 3.2 represent the spatial frequency in cycles per millimeter (cycles/mm) of the target.



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

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→ COUNTRY SUMMARY - TUNISIA*

by

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* The views and opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the UNIDO Secretariat. This document has been translated from an unedited original.

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I. REQUIREMENTS AND DEMAND FOR AGRICULTURAL MACHINES AND IMPLEMENTS

The figures given below were arrived at on the basis of personal studies and estimates. In no case are they to be regarded as official data.

For the year 1980, the total import volume for miscellaneous agricultural equipment and implements amounted to about 2 million Tunisian dinars or some 5 million United States dollars.

On the local market the greater part of production concerned such items as hand tools, pumps, and pumping units, trailers, and dump trucks.

In 1980, the turnover for these domestically produced products amounted to about 2.8 million dinars or the equivalent of 7 million dollars.

In the light of these facts, it is possible to predict that, overall, Tunisian requirements in this area over the next five years will total nearly 32.5 million dinars or 78 million dollars.

The breakdown of annual Tunisian requirements by categories is as follows:

<u>Category I:</u>	Implements: hand tools, etc.	
Turnover:	350,000 Tunisian dinars	\$US 875,000
<u>Category II:</u>	Intermediate machines	
Turnover:	1 million Tunisian dinars	\$US 2,500,000
<u>Category III:</u>	Motorized machines	
Turnover:	500,000 Tunisian dinars	\$US 1,250,000
<u>Category IV:</u>	Specialized equipment	
Turnover:	1 million Tunisian dinars	\$US 2,500,000
Volume:	Specifically 2,700 tractors and 250 combine harvesters	
<u>Category V:</u>	Trailers, dump trucks, and tanks for agricultural use	
Turnover:	2 million Tunisian dinars	\$US 5,000,000
Volume:	Approximately 2,000 units.	

II. ESTIMATED DEMAND AND CURRENT USE

With regard to tools, which are for the most part manufactured domestically, there are a limited number of makes and these are performing satisfactorily.

In other respects, the Tunisian market is characterized by a diversity of makes, despite the limited size of the machine pool available to meet the country's requirements, particularly in terms of agricultural equipment (tractors, pumps, combines, crop-treatment equipment, etc.). It should be noted, however, that since most of this equipment is imported the procedure of soliciting bids is general. Technical and commercial considerations are key factors in determining the equipment to be selected, the result being that only those models which have already demonstrated their effectiveness abroad are purchased.

III. MANUFACTURING AND IMPORTS

At the present time, in the agricultural equipment area, only the tools, pumps, trailers and dump trucks are domestically manufactured. Everything else - namely, the farm machines, the major equipment items, and the crop-treatment implements - is imported.

A certain degree of market standardization has been achieved with respect to the tools and pumps, but as for the remaining equipment a very wide range of makes is in use.

There are plans to undertake the domestic manufacture of agricultural equipment on the basis of extensive integration. Specifically, the intention is to build in Tunisia an engineering complex for manufacturing diesel engines as well as tractors and other agricultural machines. The result will be that, beginning in 1983, these diverse equipment items will be domestically manufactured using Tunisian-produced motors.

By 1986, the complex in question should have attained its designed production capacity and be turning out annually 2,200 tractors, 100 combines, and 700 other agricultural machines.

Through this programme it will be possible to standardize the country's farm machinery pool.

The assistance desirable in this connection would be particularly in the area of know-how, so as to ensure the normal start-up and operation of the agricultural machinery branch, which it is hoped to establish through the setting up of this engineering complex.

The country will continue to import certain equipment types, specifically those of the second and third categories, along with a number of motorized machines for which the national market is still not large enough to justify the undertaking of domestic manufacturing projects. In addition, Tunisia will also continue to import the raw materials and certain special steels needed for the production of those tools and equipment items already manufactured domestically.

Basic facilities and related industries

It is important to note that whereas Tunisia does have such basic facilities as forging plants, foundries, and engineering enterprises, these must be further developed if they are to be able to support the planned programme for the production of equipment, including agricultural machinery.

In fact, the expansion of these facilities has been provided for as part of the building of the engineering complex mentioned above.

IV. DESIGN, DEVELOPMENT, ADAPTATION, TESTING, AND EVALUATION

Tunisia has virtually no facilities of this kind.

V. TECHNICAL STUDIES AND MANUFACTURING TECHNIQUES

In this area also, Tunisia still lacks the necessary institutions, and it will be necessary to await the take-off of the planned engineering industry before substantial progress in this field can be expected.

In this connection, it is worth-while pointing out that the engineering industry sector ranks third among the major priorities of the next five-year plant (1982-1987).

VI. REPAIRS, MAINTENANCE, AND SPARE PARTS

For the most part, spare parts for agricultural equipment are imported in adequate quantities and are thus available on the local market. The import duties applying to spare parts of this kind are very moderate.

The companies representing the international manufacturers provide after-sales service and make every effort, as part of their service policy, to handle even on-the-spot repairs - that is. the repairing of agricultural equipment where it is actually being used in the countryside. More specifically, there is a national mechanized-farming company which operates permanent repair shops of its own in certain of the country's agricultural regions.

These facilities, however, are not always well equipped or competently staffed. In certain regions there are no repair centres at all.

Accordingly, it is intended to request UNDP to provide assistance in this area in the form both of the equipment and of the training of the personnel required for the proper maintenance of the country's agricultural machine pool, particularly in view of its current substantial expansion.

VII. POLICIES, PLANNING, STRATEGIES, AND CO-ORDINATION

A special commission meets frequently to ascertain the requirements for agricultural equipment and implements, plan the ways of meeting these requirements, and provide follow-up on the actions already taken.

In addition to the representatives of the departments concerned (the Ministry of Agriculture, with responsibility for formulating policy in the area of industrialization and supply), this commission also includes members from national organizations (the Farmers' Union (UNA) and the Tunisian Union for Industry, Commerce and Crafts (UTICA)) and the banking institutions.

It should further be noted that a number of banks and development study centres with an interest in this sector have established direct ties and are preparing feasibility studies on the possible implementation of related projects in Tunisia.

VIII. INTERNATIONAL CO-OPERATION

Although it is itself just beginning the establishment of its own agricultural machinery industry, Tunisia is in a position to offer assistance in this area to other developing countries.

Training programmes at Tunisian enterprises manufacturing agricultural implements could be arranged for participants from certain developing countries which do not yet have an industry of this kind or which are about to undertake projects in this area.

Other developing countries could provide Tunisia with help in the form of basic and advanced training, particularly in the production of agricultural machinery and equipment.

Another possible form of assistance might be the exchange of information with countries which have already gained experience in the manufacture of motorized machines and the production of heavy agricultural equipment.

IX. THE ROLE OF UNIDO

UNIDO can assist Tunisia in the following areas:

- Repair and maintenance of agricultural equipment;
- Know-how for the building, start-up and operation of an agricultural machinery plant.

The relevant requests have not yet been submitted to UNIDO, but they will be without delay.

Discussions have already started regarding repair-related activities.

