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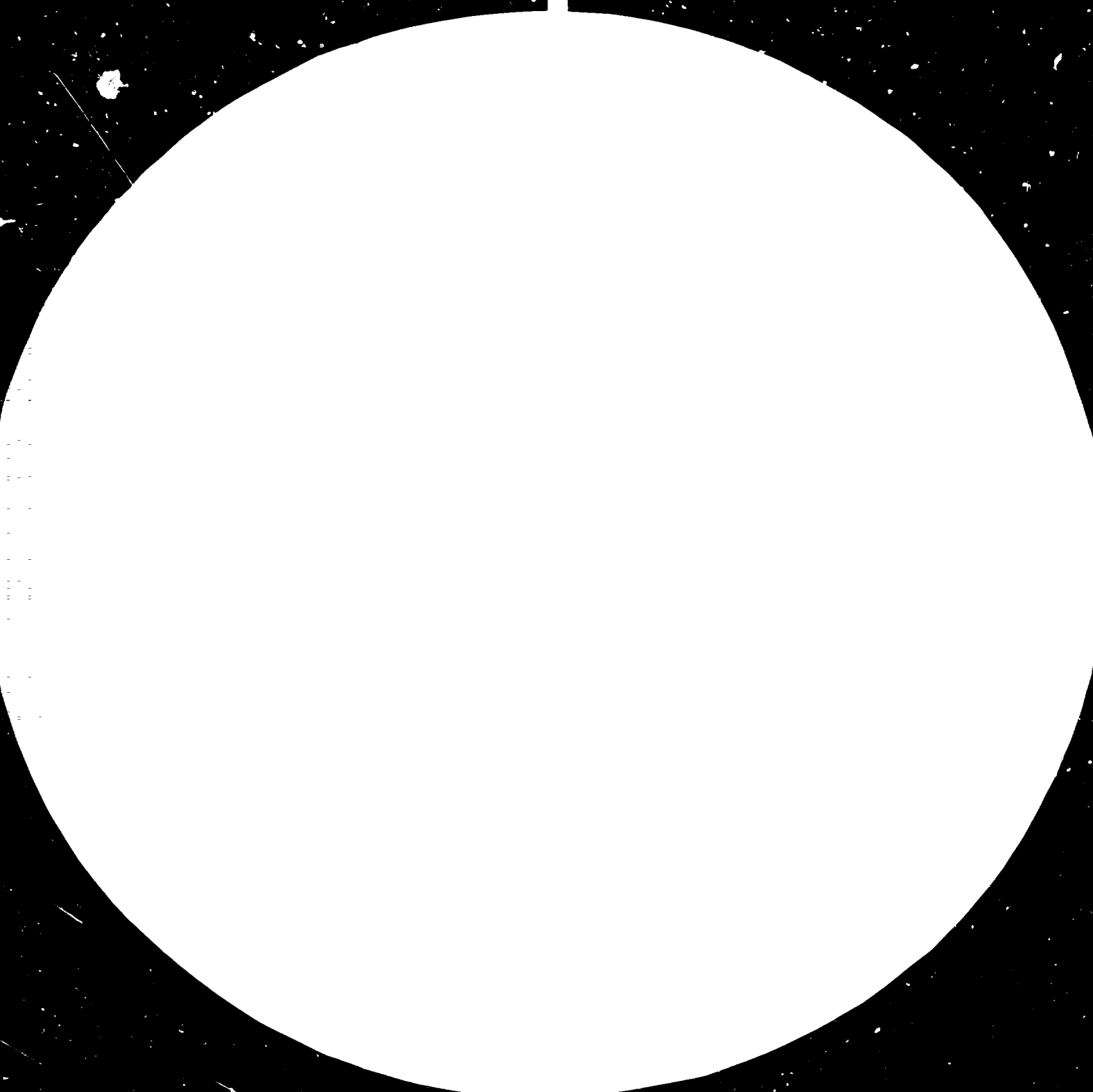
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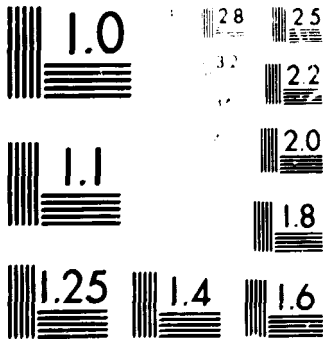
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MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS-1963-A

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CONFERENCES ON THE AGRICULTURAL MACHINERY INDUSTRIES

Report to Mexico

INTRODUCTION

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Mexico has at present 27.5 millions hectares of farmland. Of these 21.2 millions are dedicated to cultivated crops, 19 millions to plantations and the rest to grasslands. Around 4 million hectares of the cultivated farmland are irrigated and 17.2 millions are non-irrigated. There are projects in execution and in the phase of studies and planning that will incorporate a great amount of land to agriculture of irrigation, which will be under intensive cultivation with an expected high productivity. Besides the constant increase in the demand of food products due to the population growth of more than 3% per year, the fact that Mexico is a country which is neighbour of the United States creates a demand for export to the fabulous market of that country. At present a lot of vegetables and fruits are exported to the USA from Mexico. It is also a very important fact the considerable amount of the population that lives and works in the rural areas. More than 30% of the total population depends directly on the agriculture. As it happens in all the developing countries a great portion of these people have a low income. There are, of course, farmers that have a good income. Because of the agrarian land reform, that can be legally owned by one person is approximately 100 hectares, there are no properties of big size as in other countries. However, because of the productivity the farmers owning farms of 20 to 100 hectares have a rather good income and are able to use tractors of their own and work with an appropriate technology. On the other hand, the land expropriations and redistributions have resulted in a large number of very small farms, many of them of 10 hectares or less. There are also the "ejidos", which are a special kind of collective properties that have faced very types of problems that have made them a subject of great controversy. It has been very difficult to make these "ejidos" successful from the standpoint of the economic results of its operations. There are also extremely small farmers owning just parcels of less than 1 hectare to 2 hectares, which are many and practice a subsistence type of farming. In the last cases it is not possible to think of powered mechanization and it is difficult to introduce technology because it can be hardly paid or not paid at all. There have been voices of government officers

lately indicating that there are plans to collective small farms to make them eligible for credit or other forms of support.

Another point that is very important to consider is the great prospects of the future oil production of Mexico. It is the intention of the government to use a significant portion of the wealth that will be created to the development of the agricultural production.

The potential market for the development of agricultural machinery industries is great. There is a production of locally assembled tractors of 4 well-known multinational companies which is rather small yet, but that can be increased each year. Besides that, the conventional basic implements are also produced locally. However, the short distance for provisions of the USA and the intensive trade existing between the two countries are a handicap for the industries in comparison with the simple import in many cases.

In general, there are serious limitations in the lack of well trained operators in the quantities that are required for an increased powered mechanization. There are also other problems, like the lack of agricultural engineers for design, research and evaluation of farm machinery.

It can be said that as far as the present situation of farm mechanization is concerned Mexico in Latin America comes third after Brazil and Argentina. There will be good opportunities for industrial development in the sector of agricultural machinery, but there is a lot to be done and the task belongs to a great extent to the government, because research has to be started as well as training of engineers in design and development of regional required farm machinery. Again the condition of neighbourhood of the USA is an advantage and also a disadvantage. The search of a balance of such a situation is a constant challenge and that effort will require good sense and imagination.

#### The present situation of the agricultural machinery industries

The manufacture of farm machinery started quite some times ago, but the peculiar characteristics of the Mexican agriculture have prevented the efforts of the industries from getting a faster development.

As it has been mentioned before there is a considerable difference among the various types of land tenure systems and the efforts of the organised industries, most of which have manufactured tractors and machines for tractor draft or power operation, have been devoted to the market of the medium and small size farms going from as much as 100 hectares to as little as 20 to 30 hectares with a capacity to own one or more tractors according to the intensity of the production system, the types of crops and the level of mechanization.

Machines of the category IV are not being made in Mexico. The selfpropelled machines are being imported. Grain combines, sugar cane harvesters and cotton pickers have been sold in different quantities, being the first ones quite used in wheat harvesting. A top executive of a well known manufacture mentioned that the market is not big enough for the manufacture of grain combines and the total sales are of around 600 units per year considering all the makes. The co-director of the capital goods programme of UNIDO mentioned that an initial study was made to build a manufacture plant on a basis of a market of 2000 units, but this figure was considered far from being reached by the executive mentioned before and this was confirmed by an officer of the Ministry of Agriculture.

#### Situation in Category III

Tractors of five makes are being assembled in Mexico, namely Massey Ferguson, Ford, John Deere, International Harvester and the Sidvra T-25 of Rucica. In 1978 the total production was of nearly 13,000 units. The integration with local production parts is from 20% to 25%. The sales are expected to increase by 15 % per year. The wheel tractors that are being used are all assembled in Mexico. Most of the tractor implements are also being made in Mexico by the tractor manufacturers with their trade marks and there are also several independent manufacturers that make ploughs, harrows, planters, cultivators, etc.

All the production is for the consumption of the country. There is no export of tractors and very limited of implements and other farm machines.

The situation in the categories I and II

The manufacture of animal draft implements, most of the hand tools and basic not powered machines and implements is being done in Mexico. There are some manufacturers that sell their products in different parts of the country and there are also small and medium size workshops and plants that make implements and small machines of local demand. The production of mounted and pulled ploughs is of around 5,000 to 6,000 units per year. The production of harvesters of different types is approximately the same and about 1/2 or 1/3 is the production of cultivators, seeders and planters.

INSTITUTIONAL ASPECTS

It does not exist an agricultural mechanization policy in Mexico. The decisions of the industrial sector concerning the agricultural machinery manufacture are taken by the "Secretaria de Patrimonio y Fomento Industrial" - SEPAPI. The Department of the Automotive Industry covers the tractor manufacture and has to deal with contracts and policy. There is a very limited action concerning the rest of the industries.

In general terms they are interested in the development of the agricultural machinery industries if their products can be made at rather competitive prices with the imported products of similar specifications. They mentioned a limit of 15 % of difference with prices in the countries of origin.

There is a general acceptance to the idea that all the tools and implements in categories I and II should be manufactured in the country. There is a considerable number of workshops throughout the country that make small implements and supply accessories, attachments and parts, giving also service for different types of machines. In Mexico there is a well developed iron and steel industry. The workshops are able to do forging, welding and other basic operations. There seems to be a great need for improvement in the workshop installations and techniques. There is no statistical data available at present of the number, distribution in the country, characteristics, labour employed, etc.

It is recognized that the demand of farm machinery has not been evaluated and that the needs of the very small farmers have not been studied with the purpose of satisfying specific needs.

The Secretariat of Agriculture and Hydraulic resources and the Secretariat of the Agrarian Reform are in charge of the agricultural production as well as of the organization, welfare and other problems of the farmers. The importance of the farm mechanization is recognized by the officers of these institutions. In general their attitude is to increase production and productivity but trying not to sacrifice employment. In spite of its general development and good future possibilities because of the oil discoveries, Mexico has a rather high percentage of lack of employment and sub-employment. The figures go as high as 30 % of the total population and they have a population growth of more than 3 % per year. Therefore, in Mexico the increase of the production is not the only objective because also the agriculture is important as a source of occupation.

The manufacturers and the traders in farm machinery are grouped in the "Camara Mexicana de Fabricantes, Comerciantes de Maquinaria Agricola".

#### Research and Development

The Secretariat of Agriculture has an Institute for Agricultural Research. This Institute has a Department for testing and design of farm machinery, which is in the process of being organized. They hope to get assistance from the NIAE of the UK and conversations have been initiated already. The universities are not doing research in the field of farm mechanization. The development of new machines or special designs is very limited.



### Education and Training

There are no agricultural engineers in Mexico. They are considering to set up a Faculty in the North of the country at Saltillo. It is a dry area and they need engineering for the work in the irrigation and drainage field. They wish to cover also the farm mechanization field. Up to this moment the existing industries have employed mechanical engineers in their plants and as they have really only produced types and models of the countries of origin of the multinational or national companies no special need has been felt for the research. As in other countries, it is necessary to improve the services for training tractor and combine operators.

### Extension

It is an activity of the Secretario of Agriculture and of the Secretario of the Agrarian Reform. The last one has a Department devoted to organize training programmes for the farmers and specially for the very small farmers and the "ejido" farms. In the specific field of farm mechanization the extension work is limited for the lack of a suitable number of instructors. The extension is in the hands of agronomists and they have few who know the field of farm machinery.

There is a very good project between the FAO and the Secretariat of Education for the preparation of manuals for extensionists and farmers covering a great number of subjects in agriculture, animal husbandry, forestry and agricultural engineering subjects like: farm tractors, combines, ploughs, etc. They have made so far 53 manuals that have been printed with the economical assistance of the Swiss and the Netherlands Government. These manuals are excellent and will probably be very valuable for the extension work.

### Maintenance and Repair

The service of maintenance and repair is rather good in Mexico. The tractor and machinery companies have parts available and have well trained mechanics and service installations. A good point in fact is the short time in which it is possible to get the supply of parts from the USA.

Financing and investment

As it happens in other countries it is rather easy for the farmers that can buy a tractor and other fairly big machines to request and obtain credit to pay for their purchase in a term of 4 to 5 years. In Mexico there are lines of credit for this purpose. However, it is more difficult for small farmers to get credits for the purchase of small machinery. One of the problems is the lack of titles of property that is frequent in the case of small farmers. Another problem is due to the difficulties for the administration of the loans. From the banking administration standpoint it is expensive and troublesome to have a great number of loans to small farmers.

The Financing of the agricultural machinery industries for their operation is well covered in the case of the industries that make big machines and have considerable volume of sales. In the case of industries of small size it is more difficult but there is a reasonable amount of credit in the case of the well managed plants.

List of Persons visited in Mexico

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