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By:

Mohammad Reza – Sarrafian

Ministry of Jihad –E- Agriculture

Agricultural Mechanization Development Center

Islamic Republic of Iran

In the Name of God

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1. Preface

Food security is a global problem need immediate attention from every nation, I.R. Iran is trying to address this problem by increasing food production through farm mechanization, wheat being the staple food of the country is the main focus of mechanization and the country reached to self sufficiently after forty years, beside the wheat the ministry has programme for other products such as rice, oil seed, sugar beet etc.

The goal is to increase the quality and quantity of agricultural products and agricultural mechanization can play in important rule.

Agricultural mechanization development programme implemented different programme and the involvement of the Iran is towards the promotion of technical cooperation among developing countries for the advancement of agricultural mechanization in Asia and the pacific.

2. General

The I.R. of Iran comprised of 1648195 KM² is located between 25 degrees 3 second latitude and 39 degree 47 seconds longitude. Approximately 90% of the country generally classified as a mountainous and semi-arid area, is situated on the Iranian plateau more than half of

the country is covered with mountains and highlands, about one fourth with deserts and the rest with arable land.

The latest conducted in 2005 revealed that Iran population was 68 million of which 22.8 million lived in rural area.

The amount of rain fall is between the 50 to 2000 millimeter and the mean high of the country is 1200 meter over the sea level.

Crop production system are entirely dependent on topography, seasonal rainfall and assured supply of water in irrigated area.

2-1- Policy – Making, Planning and Supervision

1- To make policies and strategies relate to agriculture sector, development and construction of rural and tribal regions and to prepare and implement agricultural development plans within the framework of policies of sustainable development.

2- To carry out reviews and take necessary measures in order to plan production and supply of state needs to agricultural and livestock products and to promote export by observing relative advantages within the scope of state commercial policies.

3- To prepare, compile, implement and update rural and agricultural information systems and establish statistical systems.

4- To prepare necessary standards and regulations and planning in the field of installations and infrastructure required either in production or by producers of agriculture sector.

5- To monitor and evaluate performance and activities of institutes and companies affiliated to ministries and establish necessary planning and operational coordination.

6- To monitor and evaluate programs, plans, activities and action within the scope of duties of Ministry of Jihad – e- Agriculture in order to assess efficiency thereof.

3. Cultivated Area

During the year 2004-2005 among the total of 15.65 millions hectares of land of I.R. of Iran about more than 13.05 millions hectares was allocated to annual and perennial crops from which 2.6 millions hectares were under the cultivation of orchard.

It is necessary to note that the agricultural production in I.R. of Iran is seriously affected by ecological conditions and the amount of seasonal precipitations and the amount of irrigation water in irrigated lands. Table 2 shows the area, the amount of production, production per unit area (yeild) of some major crops either in irrigated lands or dry framing. Also table 3 indicated the same information for some of major orchard product in I.R. of Iran.

Table 1

2005

Size of Land Holding	
Hectares	Number of enjoyment
1 ha and less	1205032
1-5	1319962
5-20	786336
20-50	135649
50 and more	33750

3-1- Status of agricultural Production:

Now a day supplying food for people is one of the most important problem in human. Regarding the increasing of population in the world including our country and limitation of production possibilities, development in agriculture and food processing technology is of the highest priority in plannings in most of the countries.

From the Years far ago in I.R. of Iran there has begun wide activities in the above mentioned matter but as food technology is a new measure, attention has been paid to reducing from the stage of production to consumption and also making coordination between food processing industries and agricultural productions. Having a glance to the amount of losses in some of the agricultural produce even without preharvest losses is high. Because of this problem planners of the fourth development programme of the country have taken appropriate orientation in selecting the objective and necessary actions through strategies suitable to the general conditions of the country.

In addition, looking at the statistics of the year 2005 and the rate of increase in urban population and also the increase of villagers

immigration to cities which caused the change of the rural population of the country from 68.59% in the year 1956 to 33.3% in 2005 and consequently appearing socio economical problems in cities and also ineffective usage of the water and soil resources in rural areas and led the programme managers to pay special attention to rural development and creation of employment opportunities based to the programmes and establishment of small industries in rural areas.

Table: 2 Cultivated Crop Production year 2004

Crop	Area (1000 ha)		Production (1000 ton)		Yield (kg)			
	Irrigated	Dryland	Total	Irrigated	Dryland	Total	Irrigated	Dryland
Wheat	2547	4057	6605	9750	4818	14568	3827.2	1187.42
Barly	597	1002	1600	1935	1005	2940	3238.5	1002.54
Paddy	611	-	611	2542	-	2542	4158	-
Corn	273	-	247	1924	-	1926	7024.8	-
Pea	15	557	572	17	269	286	1176	482
Bean	104	0.5	110	217	0.8	225	2080	1447
Lentil	14	200	215	17	92	110	1245.7	462
Other Cereals	25	5	31	36	5	42	1420	894
Cotton	158	8	166	407	13	420	2569	1592
Tabaco	7	3	10	9	3	12	1322	827
Sugar beet	156	-	156	4916	-	4916	31502	-
Suger cane	60	0.18	60	5910	0.83	5910	97144	45745
Oil seed	124	102	227	231	170	402	1854	1666
Potato	181	2.7	183	4435	18	4453	24477	6874
Onion	47	0.81	48	1620	6.8	1626	34031	8392
Tomato	121	1.0	122	4011	11	4022	33139	11071
Other vegetable	99	16	115	2212	203	2416	22324	12724
Water melon	86	22	108	2361	164	2526	27441	7416
Melon	77	2.5	79	1198	22	1221	15485	8870
Cucamber	77	0.47	78	1710	4.7	1715	2200	10169
Forages	760	104	864	10354	637	10991	13613	6121

Table: 3 Orchard Crop Production for year 2004

Crop	Area (1000 ha)		Production (1000 ton)			Yield (kg)		
	Irrigated	Dryland	Total	Irrigated	Dryland	Total	Irrigated	Dryland
Apple	155.9	0.512	156.4	2174	4	2178	13945	7833
Date	172	22	194	953	36	989	5530	1614
Grape	216	74	291	253	264	2795	11691	3529
Pomegranates	53	1.1	55	682	9.4	69	12685	8071
Figs	5.3	37.7	43	37	43	80	6957	1153
Olive	19	0.74	20	37.9	0.4	38.3	1910	557
Orange	23	31.9	125	1610	518	2129	17222	16226
Tea	5	25.9	31	16	117	134	30357	4529
Apricot	38	0.59	39	166	0.3	166.3	4353	5164
Walnut	84	4	88	159	8	167	1883	2098
Almond	65	55	120	48	21	69	748	385
Hazel	10	3	13	11.9	3	15	1139	1.47
Pistachios	326	0.009	326	184	0.003	184	566	333
Plum	3	1	4	38	0.58	38.6	9716	5251

4. Ministries, Institutes, Organizations related to Agr. Machinery

1- Ministry of Industries and mines

This ministry is in charge of issuance of establishment permits production license as well as determining the production capacity of the industrial units.

2- Ministry of Jihad-e- Agricultural

This ministry plays a very important and significant role in the agricultural machinery and mechanization aspects. Different institution are under this ministry and their duties are as follows:

A) Agricultural mechanization Development Center

Agricultural mechanization as a vital factor in promoting quality and quantity of agricultural production, has a very important share in nutritional health, such that it has always been considered in macro programme of agricultural sector by planners of sub-sectors like agronomy, horticulture, forest and pasture, livestock affairs, aquatics and researches.

Considering importance and role of agricultural mechanization, ministry of Jihad-e- agricultural organ has indicated a central authority

that could be active in mechanization development. Agricultural mechanization development center is under the ministry of Jihad-e-agriculture and some duties of this center are as follows:

- Study, survey and determining appropriate technology in all phases of production of the agronomic, horticulture, husbandry suitable with the climatic condition of different part of the country.

- Decisions and necessary policies for better utilization of farming machines and equipments in the mechnization programmes.

- Support the artisans to make the prototypes of machines and equipments and incase performing the applied test on them with recommendation for removing the possible defect or modification.

- Support and guidance of private sector toward transfer of suitable technology, design and fabrication of agricultural machines and equipment.

- follow up and continues supervision on the execution and implementation of the scheduled plans for development of mechanization together with appropriate utilization of the technology.

- To manage information system in agricultural mechanization development and using IT.

- Testing and evaluation of agricultural machinery and equipments.

Agricultural machinery testing group with a background of more than forty years and enjoying from experienced expert has very effective role in the testing evaluating and controlling the quality and performance of import and locally product with national and international standards.

- To compile regulations and standards related to equipment and machinery required in agricultural sector. Agricultural mechanization development center cooperation with the institute of standard and industrial research for exchange of technical information for compiling the agricultural machinery and equipment standards codes on the testing of agricultural machinery. Test and evaluation index and standards published national wide for the guidance not only manufacturer but also for farmers and concerns agencies.

At present about 140 subject matters of agricultural machinery and equipment have compiled national standard in the field of tractor, land preparation, sowing and planting, Irrigation, harvesting and pumps.

Project : fabrication of primary samples (Prototypes) of agricultural machinery

This project aims to fabricate primary samples of suitable agricultural machinery compatible with state climate, social and technological conditions for the purpose of supporting domestic fabrication and localization. Agricultural mechanization development center moves forward by directing financially and technology supporting craftsman and innovators to make primary samples.

Projects : supporting and supervision of mechanization service units

Aiming to promote productivity of agricultural machinery and equipment existing in the country and considering the great numbers of users and shortage of agricultural machinery. This project is of prime importance. In fact establishment of mechanization service units to offer mechanized services to farmers without machinery is one of the main solution for mechanization development on state level, since it is possible only in this way to provide a complete set of agricultural machinery and equipment in the suitable region and more beyond those professional who

have one or two machines. AMDC is seeking to facilitate affairs related to them to increase number of service units and machines.

Projects : development and supporting of Agricultural machinery and equipment.

The main aim of the project is to introduce suitable modern technology of agricultural machinery and equipment as a sample and operate in pilot projects through different parts of the country. In case of the machine or equipment be successful will be extended by extension agencies.

The following are the list of numbers of machine which allocated and some of them has been provided through agricultural mechanization development center two years ago .

portable fogger	-onion harvester
pickup carried type fogger	- serial harvester
potato combine	- date harvester
sensorial rotivator	- shakers
vegetable transplanter	- grafter

vegetable harvester - walnut sheel (green) husker

blower machine - aquatic equipment (oxygen dis.)

stone picker - sheep sharing equ.

The projects related to promoting ecological and sustainable agricultural development are :

Project : Management in rain- fed grains tillage operations

One of the most important process in rain- fed production especially the rain- fed grains in our country is tillage activity . According to extent of rain- fed farms, presenting methods and appropriate tools for tillage operation is very important. In this regard , by preseting new technology , protective tillage methods , and developing them, we can reach following targents:

- desreasing water and wind erosion of soil and protecting plant residues on the surface;
- Reserving wetness and decreasing surface evaporation;
- Controlling of weed;
- Decreasing of harshness of tillage tools and deceasing of soil density;

- Improving the soil structures;

-Decreasing of energy consumption, and increasing of speed and width of machine function;

Easing of manufacturing and utilizing tools.

Project: Mechanization in forest , range- lands and watershed Management

Natural resources protection especially in field of forest and rangelands are considered by every one . Friendly use of nature should be considered , so enjoying the technology and methods in mentioned fields is noticeable.

Rangelands renovation, forest improvement , proper use of forest, forest and rangeland protection, watershed plans implementation , have especial priority . we can enjoy the pioneer countries' experiences in mentioned fields and conduct joint projects to reach sustainable targets in a long – time.

Project: orchard Mechanization

One of the most important difficulties of mechanization in our country is the orchards mechanization which is handled in traditional manner and mostly by hand . Using various machines in traditional orchards is impossible but in new- build orchards, process of tillage, cultivation , maintenance and harvest could be followed up seriously In this regard we can mention to orchard tractors and accessories, rotivators, various pneumatic pruning harvesting orchard sprayers, shakers, and harvesting machines , which using all of them results in more economization of production, decreasing of manpower costs , on – time implementation of operation and improving of production qualification . It seems performing projects in orchards, especially new-build ones ,and also rebuilding traditional orchards are the considerable issues in our country.

Project : Precision farming

According to the widespread researches in the industrial and developed countries in the field of precision farming and vast investment on industries related to the agriculture and importance of issues such as population increase, resource limit, management of input consumption and accurate monitoring on production and farm operations, it needs to have provisions in the country by making it tangible even in the minor and patterned levels .

Precision farming is management system and a new technical method in agriculture Production .

B) Institute of agricultural engineering and technical research

This institute research on agricultural machinery projects and also some of the subject related to agriculture sector including irrigation and horticulture etc.

3- Agricultural Bank

Agricultural Bank is a financial source, it supplies loan to purchaser of agricultural machinery, to support purchasers of agricultural machinery, agricultural mechanization development center has taken action to supply and allocate subsidy aids and provide technical and credit aids and facilities to applicants of agricultural machinery. It should mentioned that part of these facilities is granted as share of industry to support producers of agricultural machinery in coordination and under supervision of this center. Therefore in this respect; since the center puts so much stress on promotion and improvement of quality of production, applicants of banking facilities are selected after receiving test certification by application's manufacturers.

4- Scientific and Industrial research Institute of Iran

This institute absorbs the experts of different field and also encourages and supports the innovations and inventions.

5- Ministry of Commerce

This ministry had a very important and significant role in the field of important and export of agricultural machinery.

6- Universities

State universities have developed their own capability in specialized agricultural engineering R & D in the field of agricultural machinery and equipments they are operating with function such as instruction, research, design and fabrication. The following table shows numbers of research dissertation matters and also design and fabrication. As the table indicate 52% of dissertation are related to design and fabrication and 48% are pertaining to research matters.

Table: 4

No	Subject	Design and fabrication		Research		Total
		dissertation		dissertation		
		Number	Percent	Number	Percent	
1	Land preparation	33	42%	47	58%	80
2	Sowing	31	51%	26	49%	60
3	Crop care	23	65%	12	35%	35
4	Harvesting	57	62%	35	38%	92
5	Power source	55	65%	30	35%	85
6	Equipment	63	65%	33	35%	96
7	Mechanization	-	-	60	100%	60
8	Total	262	52%	246	48%	508

5. Extension of Agr. Machinery

Short term training for farmers has been done through the department of extension and farming system of ministry of Jihad-e-agricultural. The following table shows the number of trainees and

courses which held during year 2005 in different provinces through demonstration and practice.

Table: 5

No	Subject	Trainees	Courses
1	Tractors, Repair and maintenance	1681	79
2	Pumps, Repair and maintenance	405	19
3	Pressurized irrigation	2287	105
4	Agr. Equipment	1238	60

6. The Outline of Food and Post-Harvest Industrial Status

Food and Post harvest industries in Iran is divided in two sections, Industrial and Rural. The activities concerned to the industrial section are under the management of the ministry of industries and mines and the sector of rural industries and small scale of post-harvest of agricultural product are under the management of industries and Infra-Structure affairs deputy of the ministry of Jihad-e- agricultural. The deputy through

a plan of establishing and completing of rural industrial regions has taken steps to develop and concentrate the rural industries.

Table: 6 **2005**

No	Type of activity	Producer	Production capacity (1000 ton)
1	Dairy products	346	1078980
2	Slaughter house	23	162067
3	Meats packing	25	56265
4	Meats processing	52	81836
5	Date packing	50	80324
6	Vinegar	8	121551
7	Nuts packing	134	163354
8	Corn packing	67	552520
9	Olive packing	13	41155
10	Potato processing	8	9105
11	vegetables	18	17322
12	Tomato Sauce	73	175785

7. Local manufacture

There has been many small and medium sized of workshop spread all over the country. These workshops are doing design, reverse engineering and manufacturing equipment and spare parts of all kind of agricultural machinery. Beside these workshops are some large manufacturer which produce power sources.

Policy of open market and privatization is done regarding import, marketing and utilization of agricultural machinery and equipment in the country. Major products which fabrication locally are:

i Power Source

- Tractor
- Power tiller
- Combine harvester

ii Land Preparation

- Mould board plow
- Chisel plow
- Cultivator
- Rotivator
- Harrow
- Ridger
- Ditcher
- Leveller
- Loader
- Furrower

iii Seeding and Planting

- planter
- seed drill
- Transplanter
- Deep seed drill

iv Fodder and Tuber harvesting

- mower
- hay rake
- potato digger
- Suger beet topper
- chopper
- baler
- Suger beet

v Plant Protection

- Knapsack sprayer
- Mist blower
- Sprayer pump
- Boom sprayer
- Lance

vi Animal Production

- Milking machine
- Chillers
- Poultry feeding

vii Irrigation

- pump
- pipe
- center pivot
- sprinkler
- driper
- wheel move

viii Post harvesting and others

- cleaner
- Rice whitening
- Dryer
- Milling
- Thresher
- Trailer
- Oil expeller

Table: 7 Type and quantities of power sources- 2005

No	Machine name/ Model	Quantity
1	Tractors up to 45 HP	16529
2	Tractors 45-80 HP	233302
3	Tractors 80-110 HP	16667
4	Tractors 110 and More HP	2457
5	Total Tractors	268955
6	Combine harvesters	10098
7	Reapers	24835
8	Power tiller s 4.5 HP	19878
9	Power tillers 7.5 HP	79070
10	Power tillers 9 HP	6378
11	Power tillers 13 HP	10223
12	Total power tillers	129306

Table: 8 Type and quantities of Irrigation pumps

No	Machine name/ Model	Quantity
1	Eng. Pump up to 20 HP	13555
2	Eng. Pump 20-40 HP	1573
3	Eng. Pump 40-100 HP	1405
4	Eng. Pump 100 and more HP	232
5	Total	16765
6	Ele. Pump up to 20 HP	2552
7	Ele. Pump 20-40 HP	911
8	Ele. Pump 40-100 HP	1382
9	Ele. Pump 100 and more HP	265
10	Total	5110

Type and quantities of equipment- 2005

No	Machine name/ Model	Quantity
1	Mold board plow	263232
2	Chisel plow	34801
3	Disk plow	5639
4	Rotivator	9844
5	Puddler	518
6	Disk harrow	114600
7	Rotary tiller (harrow)	1340
8	Sub-Soiler	976
9	Land leveler	19830
10	Ditcher	43749
11	Ridger	40268
12	Cultivator	30840
13	Furrower	28148
14	Land preparation	1188
15	Augar (post hole digger)	1053
16	Chipper	326
17	Rotary cultivator (Combination)	406
18	Fertilizer dis	42200
19	Row Fertilizer dis	1337
20	Animal fertilizer dis	457

Type and quantities of equipment- 2005

No	Machine name/ Model	Quantity
21	Seed. drill cum fertilizer	1185
22	Seed drill	6734
23	Deep seed drill	9164
24	Row crop planter (Mechanical)	3776
25	Row crop planter (Pneumatic)	1662
26	Semi-automatic potato planter	2590
27	Automatic potato planter	2920
28	Rice trans planter	1200
29	Tea prune	2193
30	Tractor Mounted sprayer (boom)	20591
31	Tractor mounted sprayer (Lance)	15603
32	Turbine sprayer	2987
33	Power sprayer	95279
34	Wheel barrow sprayer	29717
35	Rake	2685
36	Baler	3924
37	Chopper	1085
38	Potato digger	3372
39	Sugar beet digger	3218
40	Trailer	159175

Type and quantities of equipment- 2005

No	Machine name/ Model	Quantity
41	Corn head	1154
42	Sun-flower head	183
43	Tea harvester	613
44	Thresher-cum-cleaner	23744
45	Thresher	40618
46	Sugar beet (combine)	85
47	Cleaner	1625
48	Rice husker	4195
49	Thresher (Rice)	43416
50	Whitening (Rice)	5198
51	Dryer	7938

8- Information dissemination of agricultural mechanization

The main objective of this activity is to extend information about agricultural mechanization and related matters by AMDC through the web site , ministry of Jihad-e- Agriculture is also has different activities for information dissemination through the production of print and audio / video web site / materials Several magazines and Newsletter published through the private sectors in the field of agricultural mechanization and related technology.

International and local Exhibition 2007 Table 8

No	Subject	Location	Date
1	Agricultural machinery	Fars province	Feb 2008
2	Agricultural machinery, Live stock ,	Isfahan province	Jan 2008
3	Agricultural machinery	Markazi Province	Nov.2007
4	Agricultural Machinery	Mazandaran Province	Nov.2007
5	Live stock , aquatic, agricultural Machinery	Kermanshah Province	Dec.2007
6	Food processing , Agricultural	Tehran Province	Oct. 2007
7	Agricultural machinery and irrigation equipments	Mashhad	Feb. 2008
8	Agricultural machinery , Aquatic and live stock equ	Fars province	Oct. 2007

