

## VII. CROP PRODUCTION AND THE STATUS OF POST-HARVEST INDUSTRY OF ISLAMIC REPUBLIC OF IRAN

*Ali Asghar Shivaei<sup>1</sup>*

### A. The country in brief

The Islamic Republic of Iran has 1,648,195 KM<sup>2</sup> of land, and is located between 25 degrees 3 second latitude and 39 degrees 47 second longitude.

Approximately 90% of the country, mostly 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 census conducted in 2000 revealed that Iran's population stood at 63.9 million, of which 23.1 million live in rural areas. The total labor force is estimated at 15.7 million out of which agricultural labor force is approximately 3.4 million.

### B. Cultivated area of agricultural and orchard crops

Among the total of 164.8 million ha of land of Iran more than 13 million ha or 7.82% of the total land was allocated to annual and perennial crops during 2001-2002; 11.02 million ha of land were under the cultivation of annual crops. From the latter 50.12% was allocated to irrigated lands and the rest to dry farming. From 2.18 million ha available for perennial agricultural products, about 95% is allocated to cultivation of fruits and the rest to industrial trees.

Out of the total of 46.7 million tons of annual products, about 41 million tons were produced from irrigated lands and 5.48 million tons from dry farming. In addition, the total of 2.18 million ha of cultivated land, Pistachio occupied 388,000 ha of the annual crop cultivating land. Grapes, Citrous, Dates were cultivated under 302,000, 248,000, and 218,000 ha's, respectively. The total orchard products during 2001-2002 amounted to 12.58 million tons.

**Table 7.1. Size of land holding**

Hectare (ha)	Percent
1 ha and less	26.7
1-2	14.9
2-5	24.4
5-10	17.1
10-50	15.7
50-100	0.8
100 and more	0.3

<sup>1</sup> Machinery Expert, Agricultural Machinery Testing Centre, Karaj, Islamic Republic of Iran.

It is worth noting that the agricultural production in Iran is seriously affected by ecological conditions and the amount of seasonal precipitations and water available for irrigated lands. Table 7.2 shows the area, amount of production, production per unit area (yield) of the major agricultural crops either in irrigated lands or by dry farming. Table 7.3 provides the same information for some of major orchard crops produced in Iran.

**Table 7.2. Cultivated crops in 2002**

Crops	Area (1,000 ha)		Production (1,000 ton)		Yield (kg)	
	Irrigated land	Dryland	Irrigated land	Dryland	Irrigated land	Dryland
Wheat	2,178	3,375.0	6,652	2,807	3,054.20	831.66
Paddy	514	-	1,990	-	3,866.08	-
Cotton	186	12.0	399	12	2,139.12	1,012.40
Corn	172	-	1,064	-	6,161.32	-
Cheap pea	25	726.0	21	248	842.27	340.79
Bean	87	3.5	140	4	1,591.74	1,110.40
Other cereals	40	359.0	43	101	1,075.00	281.00
Potato	171	3.6	3,450	35	20,140.06	9,584.30
Tomato	109	1.4	2,992	17	27,483.00	12,667.22
Onion	45	2.0	1,396	23	30,865.14	11,702.92
Other vegetables	93	20.0	21,587	297	23,258.62	14,670.34
Sugar beet	172	-	4,649	-	27,083.02	-
Oil seed	130	66.0	168	79	1,296.68	1,190.70
Forage	619	90.0	6,498	907	10,486.30	10,096.29

Source: The Ministry of Jihad-E-Agriculture, 2002.

**Table 7.3. Orchard crops in 2002**

Crops	Area (1000 ha)		Production (1000ton)		Yield (kg)	
	Irrigated land	Dryland	Irrigated land	Dryland	Irrigated land	Dryland
Pistachio	387.0	-	112.0	-	460.82	-
Grape	221.0	80.0	2,286.0	230.0	11,260.43	3,468.63
Date	194.7	23.3	835.0	40.2	5,204.00	1,758.60
Apple	174.0	0.352	2,352.0	1.5	15,853.32	4,718.39
Pomegranate	57.0	1.6	555.0	14.2	10,997.00	11,494.73
Fig	6.7	40.6	31.0	40.0	5,812.32	1,077.87
Orange	124.0	7.2	1,783.0	96.0	16,031.00	14,127.60
Tea	7.2	24.8	58.0	170.0	8,259.40	6,974.00
Apricot	36.0	0.048	282.0	0.172	9,246.78	3,780.22
Walnut	105.0	4.0	164.0	4.3	2,724.00	2,569.50
Tangerine	45.0	0.67	702.0	7.4	16,715.00	1,209,432.00
Olive	48.5	2.6	37.8	0.248	3,231.80	564.50

Source: The Ministry of Jihad-E-Agriculture, 2002.

### **C. Food security and minimizing post-harvest losses**

Food security is an important issue in the age of rising population of the world. In this connection, development of agriculture and food processing technology are of the highest priority in economic planning of most developing countries.

Iran has paid attention to reducing losses from the stage of crop production to food consumption, and to making linkages and coordination between food processing industries and agricultural production, given that post-harvest losses are estimated around 30% of total production.

The rate of increase in urban population and the increase of rural population migration have contributed to the decline of rural population of Iran from 68.59% in 1956 to 38.5% in 1996. This trend has created socio-economic problems in cities as well as ineffective usages of water and soil resources in rural areas, which led the Government decision makers to pay special attention on rural development and creation of employment opportunities based on strengthening small industries in rural areas.

### **D. Main objectives**

The main objectives of the agricultural sector are categorized into qualitative and quantitative aspects.

#### 1. Qualitative aspects:

- Development of appropriate agricultural mechanization policy and implementation.
- Sustainable rural development by promoting investment in rural industries.
- Generating employment opportunities in rural areas and improving farmers' income level.
- Increasing the productivity of the agricultural sector.
- Upgrading farmers' skills and technical know-how.

#### 2. Quantitative aspects:

For quantitative aspects of the main objective of the agricultural sector, the capacities of post-harvest industries of major orchard and cultivated crops have been estimated. These estimations are given in Table 7.4 and 7.5, respectively.

**Table 7.4. Estimation of orchard post – harvest (thousand tons)**

Orchard crops	Status of production		Capacity of material absorption		Fresh consumption	Excess supply	Minimum capacity for establishing industries in the Third Programme	Minimum capacity of material absorption for establishing an industry unit
	Current	End of prog.	Current	End of prog.				
Apple	1,944.0	4,629	455.00	685.0	1,829	2,345	230	4
Citrus	3,483.5	5,675	150.00	300.0	2,945	2,580	150	4
Pomegranate	621.0	1,221	53.00	106.0	500	668	53	4
Pistachio	314.0	684	36.00	263.0	103	416	208	3
Consetantre	2,315.0	3,240	335.00	505.0	1,335	1,090	170	4
Grape								
Raisin	-	-	480.00	960.00	-	-	480	3
Date	918.1	1,472	14.00	214.0	548	910	200	2
Molusse	-	-	3.00	89.0	-	-	86	2
Preserved	25.8	254	0.68	1.7	-	68	1	-
Olive								
Oil pressing	-	-	-	-	-	-	-	2
Kompote	1,034.0	1,198	57.00	89.0	1,041	64	32	-
Peach								
Dried peach	-	-	480.00	68.0	-	-	2	3
Primary	11,610.0	19,807	-	9,903.0	-	-	9,903	-
Sorting								
Industry	-	-	-	1,981.0	-	-	1,981	4

Source: The Ministry of Jihad-E-Agriculture, Third Development Programme, 2000.

**Table 7. 5. Estimation of crop production by post-harvest industries (thousand tons)**

Orchard crops	Status of production		Capacity of material absorption		Fresh consumption	Excess supply	Minimum capacity for establishing industries in the Third Programme	Minimum capacity of material absorption for establishing an industry unit
	Current	End of prog.	Current	End of prog.				
Potato	3,430	5,780	162.8	558	2,497	1,655.0	395.0	4
Sugar beet	4,978	7,600	6,000.0	7,600	-	1,600.0	500.0 1,100.0 (with mechanization)	100
Cereal	577	756	29.0	76	47	680.0	47.0	2
Tomato	3,204	4,060	1,500.0	2,700	1,360	1,200.0	1,000.0	5
Corn	941	1,750	1,200.0	1,750	-	550.0	550.0	10
Oil seed	329	799	552.5	699	100	146.5	146.5	15

Source: The Ministry of Jihad-E-Agriculture, Third Programme Development, 2000.

## E. Policies and strategies

The main policies to achieve the aims of the Third Development Programme for rural areas can be summarized as follows:

- Mobilize private and public investments in rural areas by providing appropriate facilities with a view to generating employment.
- Identify the relative advantages and conduct feasibility of establishing rural post-harvest industries with a view to generating women and youth employment.
- Promote mechanization of the established rural industrial regions.
- Rationalize legal and regulatory framework and competition policy.
- Promote investment in manufacturing of agricultural machinery.
- Encourage research on optimization of the use of energy in agricultural mechanization.
- Facilitate imports of the required machinery through lowering import tariffs and liberating trade policy.
- Encourage the private sector to take part in joint activities related to grading, food processing and post-harvest industries.
- Promote study and research in the field of post-harvest technology of the major cultivated and orchard crops.

## F. Summary of food and post-harvest industries status

Food and post-harvest industries in Iran may be classified as: industrial and rural types. The industrial types are under the management of the Ministry of Industry and Resources. Table 7.6 shows the forecasted and actual investment and employment figures.

**Table 7.6. Investment and employment of food and beverage industries, 1997-2001**

	1997	1998	1999	2000	2001
Forecasted investment (billion rial)	5,577	9,272	5,813	7,618	1,735
Actual investment (billion rial)	1,454	1,867	1,361	1,214	2,040
Forecasted employment figure	47,462	44,331	43,361	47,242	85,605
Actual employment figure	12,343	13,530	12,934	13,816	14,245

The recent status of the processing industries of food and agricultural produces is shown in Table 7.7.

**Table 7.7. Improvement and employment status of food and agricultural produce processing industries by types, 2001**

Type of licence	Number	Investment (billion rial)	Employment (figure)
Establishment type	185	125	15,208
Exploitation type	6,712	12,106	179,371
Industrial certificate type	75	62	902

The sector of rural industries and post-harvest of agricultural products are under the management of industries and rural development deputy of the Ministry of Jihad-E-Agriculture. The deputy, through a plan of establishing rural industrial regions, has taken steps to develop and foster rural industries, as shown in Table 7.8.

**Table 7.8. Number, employment, and credits of the rural industrial region, 2001**

	No. of region	No. of rural industry established or to be established	Area (ha)	Employment figure	Credits (billion rial)	
					Absorbed	Required
Established	103	4,043	1,481	5,650	73.9	37.2
Being established	67	2,372	942	90,000	31.8	78.8
Total	170	6,415	2,423	95,650	105.7	116.0

Source: The Ministry of Jihad-E-Agriculture, 2002.

## **References**

The Ministry of Jihad-E-Agriculture, 2000. Third Development Programme.

The Ministry of Jihad-E-Agriculture, 2002.