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The Food Security Statistics of Iran

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ABSTRACT

Food balance sheets as comprehensive food and agricultural statistics play an important role to provide information on patterns, levels and trends of national diets in a country and it measures the food supply of the population. In this paper, tried to prepare the Food balance sheets of Iran for two years (2013-2014) .Firstly, built the Supply Utilization Accounts to enable comparison of food availability with food use and secondly prepared other measures and outputs including: Import dependency ratio (IDR), Self-Sufficiency ratio (SSR), and after standardization of commodities food balance sheets for analysis of the pattern of per caput food supply.

Keywords: Food balance sheets, Import dependency ratio (IDR), Self-Sufficiency ratio (SSR), Per Caput food supply.

PAPER

1. Introduction

The interest in food balance sheets in Ministry of Jahad agriculture increased considerably after focusing duties and authorities of commercial and industrial of agricultural sector to Ministry of Jahad agriculture in 2013, then access to Information of the food and agricultural situation like: production, utilization, stocks & trade were the major source of data to increase food market transparency and reduce volatility of the food prices and forecasting for raising standards of living and providing the policy analysis and decision-making needed to ensure food security.

National Food balance sheets were prepared by Agricultural Planning, Economic & Rural Development Research Institute in Iran from 1989 to 2012 and the latest two Food balance sheets were prepared by Information Technology and Communication Center. In constructing the Food balance sheets, both official and unofficial data available in ITC Center and missing data have been estimated on basis of surveys and other information as well as technical expertise. The purpose of this study is to provide comprehensive information on patterns, levels and trends of national diets.

The paper discusses about nature of food balance sheets, data sources, commodity coverage, supply and utilization elements, preparing and standardization of food balance sheets, analysis of the pattern of per caput food supply and Import dependency ratio (IDR), Self-Sufficiency ratio (SSR).

2. NATURE OF FOOD BALANCE SHEETS

Food balance sheets present a comprehensive picture of the pattern of country's sources of supply and utilization for each food item during a year. The total quantity of foodstuffs produced in country added to the total quantity imported and adjusted to any change in stocks that occurred since the beginning of the year, gives the supply side of the food balance equation. On the utilization side a distinction is made between the quantities of exported, fed to livestock, used for seed, processed for food use and non-food uses and lost.

The per *caput supply* of each food item available for human consumption is obtained by dividing the respective quantity by the population partaking of it. Data on per caput supply are expressed in terms of quantity and energy, protein and fat. They are an important element for projecting food demand, together with such other elements as income elasticity coefficients, private consumption expenditure and population. A comparison of the quantities of food available for human consumption with those imported will indicate the extent to which a country depends upon imports (Import dependency ratio (IDR)) to feed itself (Self-Sufficiency ratio (SSR)).

1.1. DATA SOURCES

Food balance sheets are assembled form a variety of sources. Production data are based on annual surveys, trade data are register based, information on stock changes and industrial uses is available from marketing authorities, feed rates are obtained from government agencies, seeding rates are obtained from cost of production surveys, lost rates and composition factors are obtained from FAO documents and the total population is register based.

1.2. COMMODITY COVERAGE

All potentially edible commodities were taken into account in preparing food balance sheets. Generally, food balance sheets are constructed for primary crops, livestock and fish commodities up to the first stage of processing in the case of crops and to the second stage of processing in the case of livestock and fish products. The major food groups were: Cereals, Roots and products, Sugars and Syrups, Pulses, trees nuts, Oil crops, vegetables and products, Fruits and products, Meat, Fish and products, Milk and Cheese, oil and Fats.

3. SUPPLY AND UTILIZATION ELEMENTS

Production - For primary crops, production is related to the total domestic production at the farm level and livestock items in terms of live weight for primary fish items. Production of processed commodities relates to the total output of the commodity at the manufacture level (it comprises output from domestic and imported raw materials of originating products).

Changes in stocks - This comprises changes in government stocks. Increases in stocks of a commodity reduce the availability for domestic utilization. They are indicated by the (–) sign and decreases in stocks by the (+) sign since they increase the available supply.

Imports - It includes commercial trade of all movements of the commodity in question into the country during the year.

Exports - It includes commercial trade of all movements of the commodity in question out of the country during the year.

Supply - The elements involved are production, imports, exports and changes in stocks then the definition for supply was:

Production+ imports- exports + changes in stocks = supply for domestic utilization

Feed - This comprises amounts of the commodity that are fed to livestock during the year, whether domestically produced or imported.

Seed - This comprises all amounts of the commodity used during the year for reproductive purposes such as seed whether domestically produced or imported.

Food Manufacture - The amounts of the commodity used during the year for manufacture of processed commodities.

Waste – This comprises amounts of the commodity lost at all stages between the level at which production is recorded and the household.

Food – This comprises the amounts of the commodity that are available for human consumption during the year.

Per caput food supply – These estimates are provided of per caput food supplies available for human consumption during the year in terms of quantity, caloric value, protein and fat content. The caloric value, the protein and fat content were calculated in base on FAO's food composition factors for Islamic republic of Iran.

4. PREPARATION AND STANDARDIZATION

The utilization of all the information which was assembled for construction of a food balance sheet often ends up in a rather long list of food commodities and standardization can be achieved by showing only primary commodities and processed commodities (except for sugar , oil and fats) are converted into their originating primary commodity equivalent. This procedure facilitates the analysis of food balance sheets with no loss of pertinent information.

5. IMPORT- DEPENDENCY RATIO (IDR)

An important aspect in assessing the food situation within a country – including food security –is the extent to which supply is dependent on external imports. The Import Dependency Ratio (IDR) measures precisely the percentage of a country's supply that is derived from imports, defined as:

*IDR = Imports / (Production + Imports – Exports) * 100*

The value of 100 indicates 100% of the country's supply for a given commodity is dependent on imports; value of 40 indicates 40% of a country's supply for a given commodity is dependent on imports or conversely, 60% of the country's supply for the commodity is produced within the country. The IDR can be calculated for individual commodities, groups of commodities of similar nutritional values, or even the aggregate of all commodities.

5. SELF- SUFFICIENCY RATIO (SSR)

The Self-Sufficiency Ratio (SSR) expresses the magnitude of production in relation to domestic utilization, defined as:

SSR = Production / (Production + Imports – Exports) * 100

The value of 100 indicates 100% of the country's supply originates from the country's own production; the value of 30 indicates 30% of the country's supply originates from the country's own production. In the context of food security, the SSR is often taken to indicate the extent to which a country relies on its own production and higher ratio, the greater the self-sufficiency.

Table1- Food Balance Sheet Year: 2013

Country: Islamic republic of Iran *Thousands metric tons* *Population 76942 Thousands*

Products	Supply					Utilization					Total Utilization	Food supply Per caput				
	Production	Imports	Changes in stocks	Exports	Available Supply	Feed	Seed	Waste	Food Manufacture	Food		Kg/ year	Grams/ day	Calorie /day	Protein /day	Fat/day
Vegetable	6428495.9	1421676.5	1008000	3286155.79	7622716.62	16045795.9	1961004.7	6277918.4	1736821.31	56949416.5	79047453	740.16	2027.8	3649.5	83.09	56.33
Animal	16882946.6	145473.02	-80000	228901.89	16845180.84	0.00	59911.04	329888.67	6396706.35	10092881.8	16845180.8	192.31	362.5	358.03	25.13	22.53
Grand total	81171442.5	14362249.5	928000	3515057.68	93072297.46	16045795.9	2020915.7	6607807	8133527.66	67042268.3	95839926.1	872.47	2390.3	4007.5	108.22	78.86

Table2-Food Balance Sheet Year: 2014

Country: Islamic republic of Iran *Thousands metric tons* *Population 77856 Thousands*

Products	Supply					Utilization					Total Utilization	Food supply Per caput				
	Production	Imports	Changes in stocks	Exports	Available Supply	Feed	Seed	Waste	Food Manufactur e	Food		Kg/ year	Grams/ day	Calorie/ day	Protein/ day	Fat/day
Vegetable	6198497.8	2047069.1	-607000	4452540.2	7421977.77	15079396.6	1882202.6	5811236.03	1964449.99	49094724.75	7274984.99	633.37	1735.3	3507.91	80.83	52.26
Animal	30049192.6	189028.2	-71000	6388303.6	17663321	0	59801.9	209737.7	7238403.8	10171346.24	17663321	132.19	362.2	363.28	24	22.68
Grand total	92234190.5	20659722.4	-607800	5090843.7	91875288.77	15079396.6	1942004.5	5720973.7	9202853.8	5926070.99	90413165.99	765.57	2097.5	3871.18	104.83	74.94

The total food balance sheet tables in detail is available with the Supply Utilization Accounts to enable comparison of food availability with food use and prepared other measures and outputs including: Import dependency ratio (IDR), Self-Sufficiency ratio (SSR), and after standardization of commodities food balance sheets for analysis of the pattern of per caput food supply. We have compared the results for 1991-2012 as fallow:

Table3- Daily Calories Per caput supply(Kcal) in 1991-2014

Year	Contribution of Calories			Percent Contribution of Calories	
	Total	Vegetable	Animal	Vegetable	Animal
1991	3052	2732.00	320.00	89.52	11.71
1992	3373	3029.00	344.00	89.80	11.36
1993	3306	2952.00	354.00	89.29	11.99
1994	3136	2789.00	346.00	88.93	12.41
1995	3519	3170.00	350.00	90.08	11.04
1996	3596	3234.00	363.00	89.93	11.22
1997	3520	3163.00	357.00	89.86	11.29
1998	3822	3454.00	367.00	90.37	10.63
1999	3631	3267.00	363.00	89.98	11.11
2000	3322	2946.00	376.00	88.68	12.76
2001	3535	3168.00	366.00	89.62	11.55
2002	3625.09	3254.85	370.25	89.79	11.38
2003	3516.65	3105.22	411.42	88.30	13.25
2004	3476.38	3062.19	414.20	88.09	13.53
2005	3602.13	3172.08	430.05	88.06	13.56
2006	3559.08	3107.47	451.61	87.31	14.53
2007	3883	3415.00	468.00	87.95	13.70
2008	3250	2831.00	419.00	87.11	14.80
2009	3399	2973.00	426.00	87.47	14.33
2010	3445	2994.00	451.00	86.91	15.06
2011	3111	2671.00	440.00	85.86	16.47
2012	3584	3120.00	464.00	87.05	14.87
2013	4007.49	3649.47	358.03	91.07	9.81
2014	3871.19	3507.91	363.28	90.62	10.36

Figure1- Daily Calories Per caput supply in 1991-2014

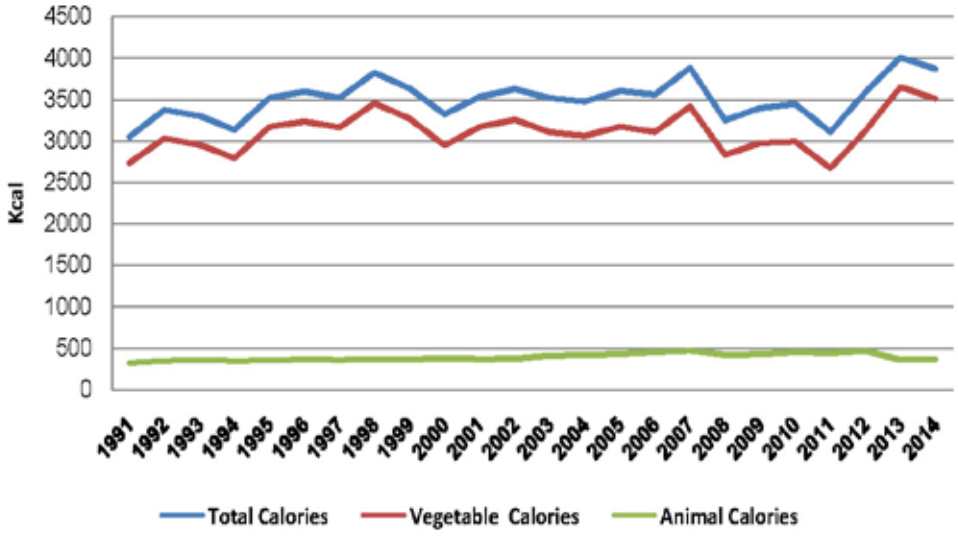
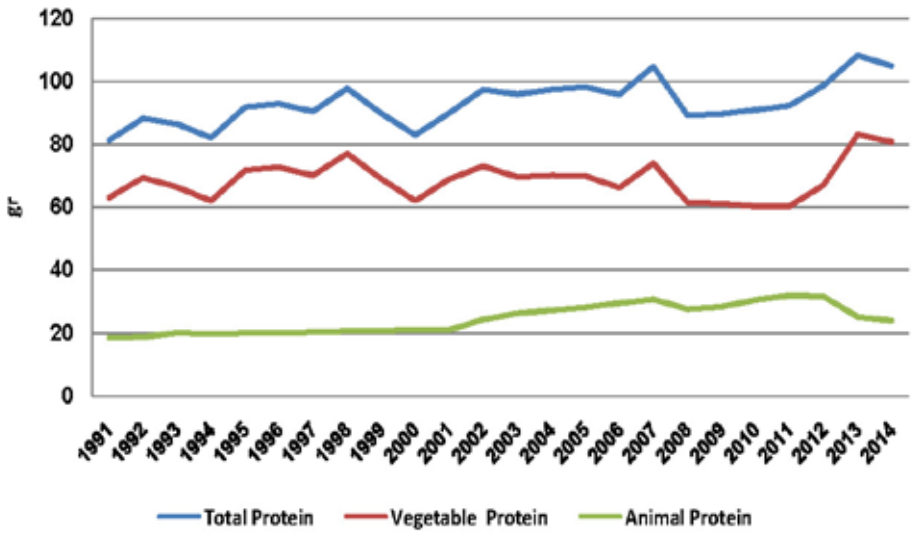


Table 4- Daily Protein Per caput supply (gr) in 1991-2014

Year	Contribution of Protein			Percent Contribution of Protein	
	Total	Vegetable	Animal	Vegetable	Animal
1991	81.20	63.00	18.50	77.59	29.37
1992	88.10	69.40	18.70	78.77	26.95
1993	86.40	66.40	20.10	76.85	30.27
1994	82.00	62.00	19.80	75.61	31.94
1995	91.80	71.79	20.01	78.20	27.87
1996	92.80	72.69	20.08	78.33	27.62
1997	90.40	70.10	20.30	77.54	28.96
1998	97.70	77.10	20.60	78.92	26.72
1999	89.80	69.00	20.80	76.84	30.14
2000	82.90	62.00	20.90	74.79	33.71
2001	89.90	68.90	21.00	76.64	30.48
2002	97.34	73.03	24.31	75.03	33.29
2003	95.86	69.57	26.30	72.57	37.80
2004	97.34	70.04	27.30	71.95	38.98
2005	98.10	69.96	28.14	71.31	40.22
2006	95.77	66.20	29.56	69.12	44.65
2007	104.68	73.93	30.75	70.62	41.59
2008	89.13	61.45	27.67	68.94	45.03
2009	89.60	61.20	28.40	68.30	46.41
2010	90.87	60.36	30.51	66.42	50.55
2011	92.28	60.36	31.92	65.41	52.88
2012	98.62	67.01	31.61	67.95	47.17
2013	108.22	83.09	25.13	76.78	30.25
2014	104.83	80.83	24.00	77.11	29.69

Figure2- Daily Protein Per caput supply in 1991-2014



Conclusions

The study of food security by food availability index during the period 1991-2014 in Iran shows that the average of total energy supply is 3506 kcal and it is more than the population average per capita requirement of 2870 kcal in the general case in the world and the average total calories supply is 93 grams and it is more than the population average per capita requirement of 80 grams in the general case. The average percent of vegetable products energy supply during the period 1991-2014, is 89% and the average percent of animal products energy supply is 13%. The average percent of vegetable products protein supply is 74% and the average percent of animal products protein supply is 36%. Increase of

the annual growth rate of energy supply per capita of vegetable products (1.09 percent) from animal products (0.55 percent) and accordingly, Increase of the annual growth rate of protein supply per capita of animal products (1.14 percent) from vegetable products (1.09 percent) . In 2013, the main sources of calories are cereals 48%, fruits 13% and oils 7%. The main sources of proteins are cereals 47%, vegetable 15% and meats 13%. The main sources of fats are oils 41%, nuts 16% and meats 14%. In 2014, the main sources of calories are cereals 50%, fruits 14% and oils 8%. The main sources of proteins are cereals 51%, vegetable 12% and milks 6%. The main sources of fats are oils 45%, milks 11% and nuts 10%.

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