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STATISTICAL, ECONOMIC AND SOCIAL RESEARCH  
AND TRAINING CENTRE FOR ISLAMIC COUNTRIES



# OIC OUTLOOK

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## AGRICULTURAL PRODUCTIVITY IN OIC MEMBER COUNTRIES

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# OIC OUTLOOK

## AGRICULTURAL PRODUCTIVITY

### IN OIC MEMBER COUNTRIES

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#### INTRODUCTION

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The performance of agricultural activities in OIC member countries is of great importance for two reasons: First, 41 % of the total population of the OIC Countries is agricultural population<sup>1</sup> who directly or indirectly depends for their livelihood on agriculture. This percentage reaches 90 % in some countries like Niger and Mali. Economic growth in such countries is based primarily on agriculture and non-farm rural activities which is essential to improve their incomes. Second, steady growth of agricultural production is needed for meeting the growing demand due to the increase in population. If OIC member countries cannot achieve sustainable growth of the agricultural production, they will be increasingly dependent on world markets to meet their needs and will be more vulnerable to price fluctuations and the achievement of food security becomes, if not impossible, a difficult goal to attain. These reasons urge the need for more/higher agricultural productivity levels.

This brief report presents an overview of the performance and productivity of agricultural activities in OIC member countries. It examines the cross-country differences in agricultural productivity and evaluates the components of agricultural productivity in OIC member countries. The report ends up with some concluding remarks and recommendations.

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#### CROSS-COUNTRY DIFFERENCES IN AGRICULTURAL PRODUCTIVITY

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Value added is the most important indicator to measure the performance of a sector. Agricultural value added refers to the contribution of all inputs of agricultural production; land, labour, capital and use of fertilizers to raising the value of the agricultural product.

#### SHARE OF AGRICULTURAL VALUE ADDED IN GDP

In OIC member countries as a group average, agricultural sector has a relatively low performance compared to the developed countries. Even though the share of agricultural value added in GDP is over the world average, the share in the World Agricultural GDP is quite low. With \$322.8 billion of agricultural value added, the 57 member countries contributed to the world agricultural GDP only by 18.6 % in 2007. However, 41 members of the developed countries<sup>2</sup> contributed by 40.3 %. Still, with the improvement in mainly OIC Fuel Exporting Countries (OIC-FECs), and slightly in OIC Least Developed Countries (OIC-LDCs), the share of OIC group in the World Agricultural GDP has gradually increased from 1990 onwards. (*See Figure 1*)

At the OIC sub-group level, in 2007 OIC Medium Developed Countries (OIC-MDCs) produced the highest value of agricultural product; \$162.5 billion, followed by OIC-FECs with \$120.4 billion. The lowest level of agricultural production was performed by OIC-LDCs with \$39.8

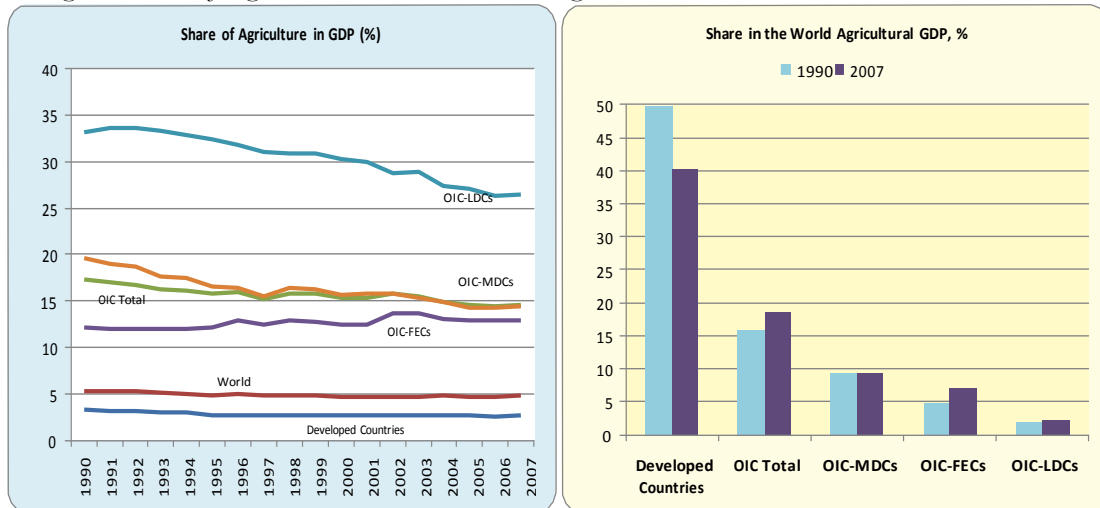
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<sup>1</sup> Agricultural population is defined as all persons depending for their livelihood on agriculture, hunting, fishing and forestry. It comprises all persons economically active in agriculture as well as their non-working dependents.

<sup>2</sup> For classification of the country groups, see Appendix

billion. Consequently, the shares of these income groups in the world agricultural market have been 9.4 %, 6.9 %, 2.3 %, respectively.

Figure 1: Share of Agriculture in GDP and World Agricultural GDP



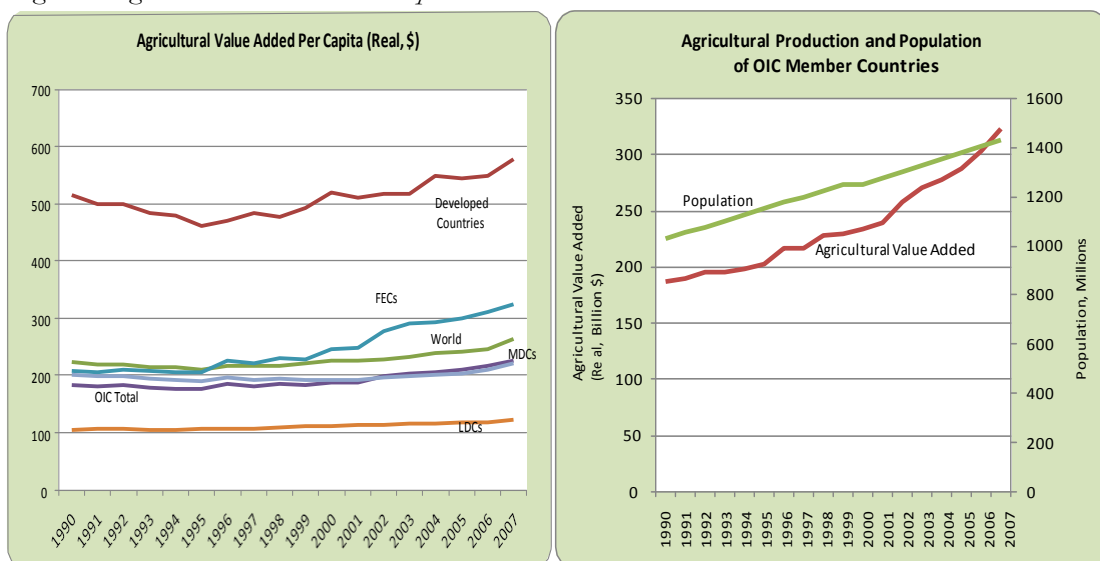
Source: BASEIND, SESRIC; UN, National Accounts Main Aggregates Database

At the country level, producing over \$30 billion; Indonesia, Turkey, Nigeria and Iran have the highest agricultural outputs whereas Djibouti and Maldives have the lowest level by less than \$50 million.

### AGRICULTURAL PRODUCTION PER CAPITA

The pace of agricultural production in OIC member countries is higher than the increase of OIC population. Although this is an improvement for the agricultural self-sufficiency of the OIC member countries, compared with the developed countries, agricultural production per capita is still quite low (See Figure 2). \$226 worth of agricultural output is available for each inhabitant in OIC whereas it is \$578 worth in developed countries; more than double of that of the OIC member countries. Having \$226 of agricultural production per capita, OIC member countries are slightly below the world average of \$263.

Figure 2: Agricultural Production Per Capita



Source: BASEIND, SESRIC; UN, National Accounts Main Aggregates Database

Among the OIC sub-groups, the highest performance belongs to OIC-FECs with \$325 of agricultural production per capita which is above the world average. Agricultural output per capita is below the world average in both OIC-MDCs and OIC-LDCs.

Among the member countries, Libya, UAE and Guyana have the highest level of agricultural production per capita. Other OIC-FECs; Sudan, Algeria, Iran, Saudi Arabia, Syria and Gabon are also among the highest per capita producers. On the contrary, Djibouti, Somalia and Jordan are the lowest per capita producers.

#### MEMBER COUNTRIES WITH FOOD EMERGENCY NEEDS

As stated above, even though agricultural production per capita follows an increasing trend, some member countries continue to experience low or stagnant agricultural production. Among them, 12 are in the “*Countries with Food Emergency*” list of Food and Agriculture Organization of the United Nations (FAO). These member countries are Senegal, Niger, Burkina Faso, Somalia, Djibouti, Uganda, Sudan, Syria, Iraq, Jordan, Afghanistan and Tajikistan.

In southern parts of *Somalia*, aggregate harvest levels over the last five years have progressively declined. No substantial crop production is expected in these areas until April-June 2009 rainy season. This situation is of particular concern of an estimated 3.25 million people.

In *Djibouti*, four consecutive poor rainy seasons, high staple food prices and soaring inflation affected some 340,000 people, representing nearly half of the population.

In *Uganda*, recent reports indicate that the increased incidences of *Peste des Petits Ruminants* (PPR) – a virus that typically affects sheep and goats – in north-eastern Uganda and pastoral areas of Kenya is causing high rates of small live stock mortality, undermining pastoralists’ purchasing power. About 25 % of sheep and goats in Uganda’s Karamoja Region are estimated to have been killed.

In *Syria*, the poor season has seriously threatened the food security of farmers and herders in the affected areas. In response, an Emergency Operation was jointly approved by FAO and WFP in November 2008 for food assistance to forty thousand households (200,000 people), worth USD 5.2 million for a period of six months (15 November 2008 to 15 May 2009).

In *Iraq*, the drought has seriously damaged crops and led to difficulties in the supply of adequate safe drinking water. Outbreaks of cholera spread throughout central and southern areas in late August and UNICEF issued an urgent appeal to the Iraqi government to clean water storage tanks in all institutions as a preventive measure. Only 20 % of families outside Baghdad are estimated to have access to sewage services, and Iraq's sewage treatment plants operate at just 17 % of capacity.

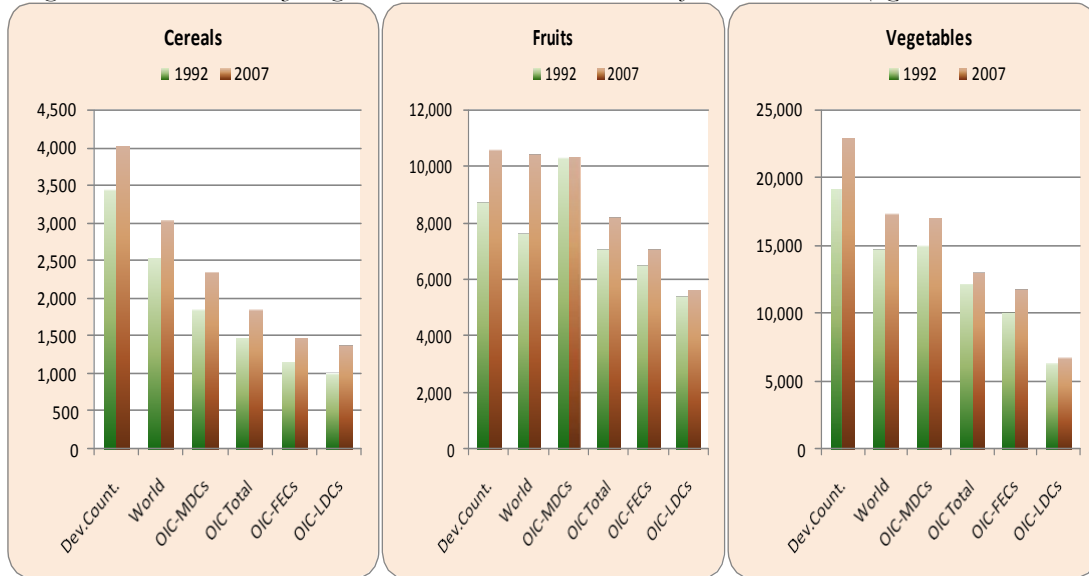
In *Afghanistan*, by a drought-reduced harvest in 2008, the cereal import requirement for 2008/09 is estimated at 2.3 million tonnes, more than double of the previous year's level. With the commercial import capacity estimated at 1.5 million tonnes, this leaves a requirement of 700,000 tonnes to be covered as food assistance.

In *Tajikistan*, widespread poor access to food has been exacerbated by a drought-reduced cereal crop in 2008 for the second year in a row. Reflecting the poor harvest, the cereal import requirement is estimated to be as high as 560,000 tones.

#### AGRICULTURAL LAND PRODUCTIVITY

Land is the main resource in agricultural activities. Given the combination of labour, machinery, fertilizer and irrigation used in the production process, land productivity shows how much output is yielded per hectare of arable land.

Figure 3: Land Productivity, Agricultural Production Per Hectare of Harvested Land (kg)



Source: Calculated from FAOSTAT, FAO

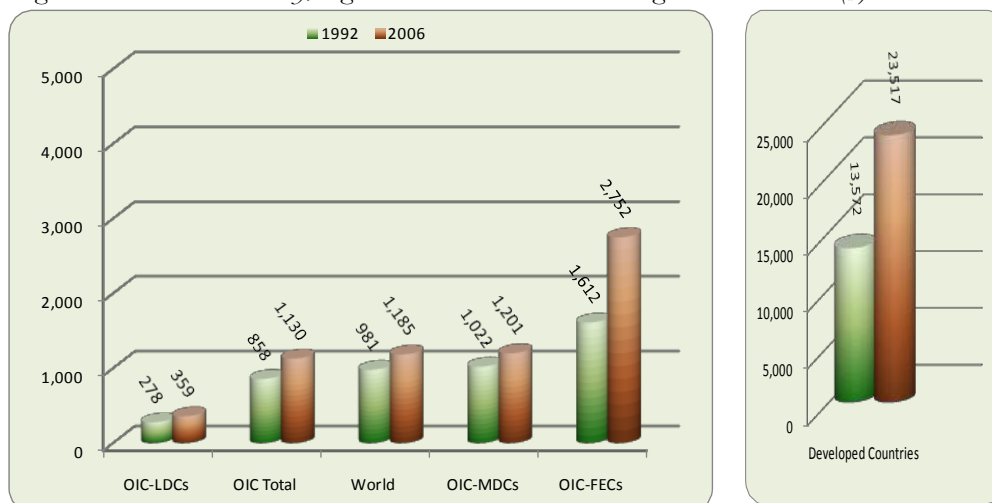
On the average, a hectare of arable land in OIC sub-groups produce less than the world average for cereals, fruits and vegetables (See Figure 3).

The countries in which land for cereals is most productive are Egypt, Saudi Arabia, Uzbekistan, Maldives and Albania. Land for fruits is most productive in Egypt, Maldives, Malaysia, Suriname and Jordan. Lands for vegetables are most productive in Kuwait, United Arab Emirates, Jordan, Palestine and Lebanon. OIC-FECs, Saudi Arabia, Kuwait and United Arab Emirates are among the countries in which land is most productive.

### AGRICULTURAL LABOUR PRODUCTIVITY

Human capital directly influences agricultural productivity by affecting the way in which inputs are used and combined by farmers. Improvements in human capital reflect acquisition, assimilation and implementation of information and technology.

Figure 4: Labour Productivity, Agricultural Value Added Per Agricultural Worker(\$)



Source: Calculated from BASEIND, SESRIC; Aquastat, FAO; UNSD, UN

Agricultural labour is most productive in OIC-FECs with \$2,752 value added per agricultural worker (See Figure 4). Labour productivity is higher than the world average of \$1,185 in both OIC-MDCs and OIC-FECs. Still they are well below the agricultural worker's productivity in the

developed countries which is almost 10 times higher than in the OIC-FECs. Even though labour productivity follows an increasing trend from 1992 onwards, it is quite low in the OIC-LDCs, decreasing OIC average below the world average; in the OIC-LDCs, an agricultural worker produces \$359 value added.

At the country level, the most productive agricultural labours are in Brunei, Libya, UAE and Kuwait, all of which are OIC-FECs. In these countries, agricultural labour produces even more than an average agricultural worker in the developed countries. On the contrary, the least productive agricultural labours are in Djibouti, Somali, Mozambique, and Gambia. All of these countries are OIC-LDCs and an agricultural worker in these countries can only produce about 1/100 of his counterpart in developed countries.

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## COMPONENTS OF AGRICULTURAL PRODUCTIVITY

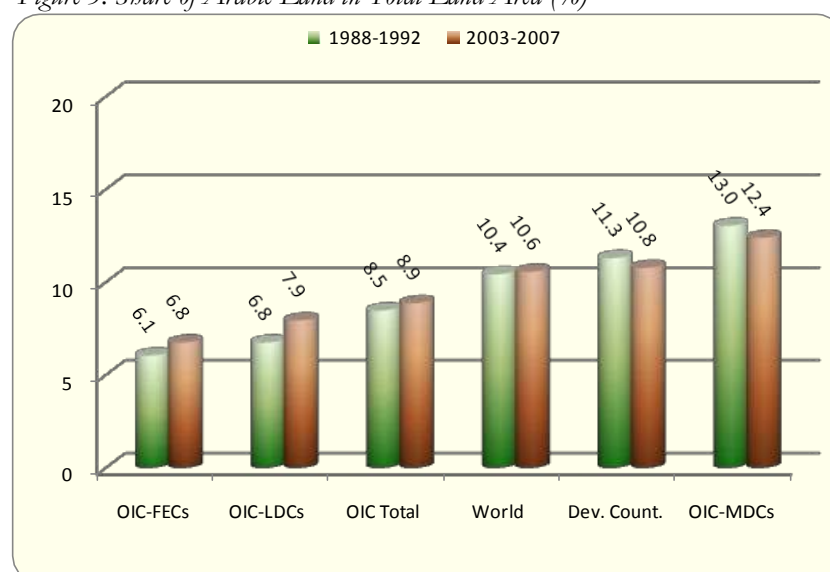
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Given the poor share of OIC member countries in the world agricultural market, this section analyses the resource capacity and management of inputs in OIC member countries.

### SOIL QUALITY and LAND USE

In OIC member countries, 36.9 % of the total land is desert; i.e. arid, semi-arid and infertile land. With area over 9 million square kilometres, the Sahara Desert covers most of Northern Africa. Algeria, Chad, Egypt, Libya, Morocco, Mauritania, Mali, Niger, Sudan and Tunisia are OIC member countries under the influence of Sahara desert. The Arabian Desert occupies most of the Arab Peninsula with an area of 2.33 million square kilometres. The desert is mostly in Saudi Arabia, extending into the surrounding countries like Sinai of Egypt, southern Iraq and southern Jordan. Bordered by the Persian Gulf, there is an extension into Qatar and almost all of Abu Dhabi in the UAE. The Rub'al-Khali crosses over from Saudi Arabia into western Oman and eastern Yemen. In addition, Karakum Desert in Turkmenistan and Kyzyl Kum Desert in Kazakhstan, Turkmenistan and Uzbekistan, jointly affect 0.65 million square kilometres of area.

*Figure 5: Share of Arable Land in Total Land Area (%)*



*Source: Calculated from BASEIND, SESRIC; Aquastat, FAO*

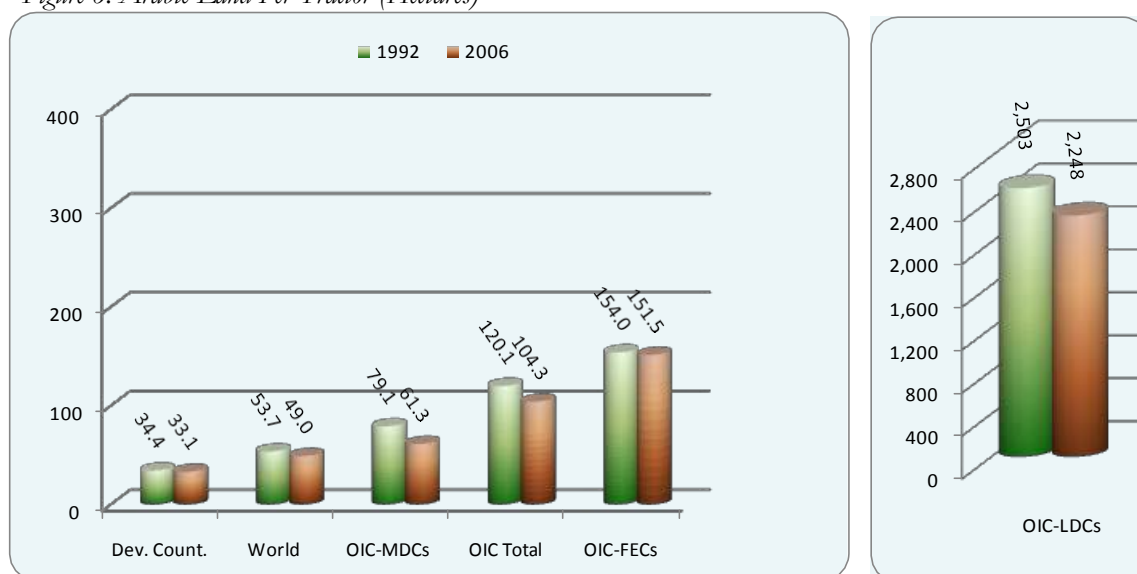
The adverse position of the OIC countries in land use can also be observed in the land distribution. In the OIC group, only 8.9 % of the total land is distributed as arable land with OIC-FECs and OIC-LDCs having a ratio lower than the world average. Worldwide, the arable land takes a 10.6 % stake of the total land area. In the developed countries, the arable land ratio is

10.8 % (See Figure 5). Having 5,430 million square kilometres of arable land area, developed countries utilize almost double of the arable lands in OIC member countries. In OIC member countries, the total arable land area is 2,880 million square kilometres.

### USE of MACHINERY

Use of machinery reflects to what extent agriculture process is mechanized. Tractors do most of work in modern agriculture.

Figure 6: Arable Land Per Tractor (Hectares)



Source: Calculated from BASEIND, SESRIC; FAOSTAT, FAO

OIC member countries are relatively poorly endowed with agricultural machinery with 104.3 hectares of arable land per tractor (See Figure 6). This ratio is more than double of the world average of 49 hectares per tractor and triple of the developed countries' average of 33.1 hectares per tractor. OIC-MDCs have more mechanized agriculture with 61.3 hectare of arable land per tractor than OIC-FECs which have 151.5 hectares of arable land per tractor. When Nigeria and Sudan are excluded from the group, the arable land per tractor in OIC-FECs reduces to 73.1 hectares. This means that among the OIC-FECs, Algeria and Sudan use more labour intensive techniques in agriculture than the other member countries. However, the most labour intensive agriculture is in the OIC-LDCs with 2,248 hectares of arable land per tractor.

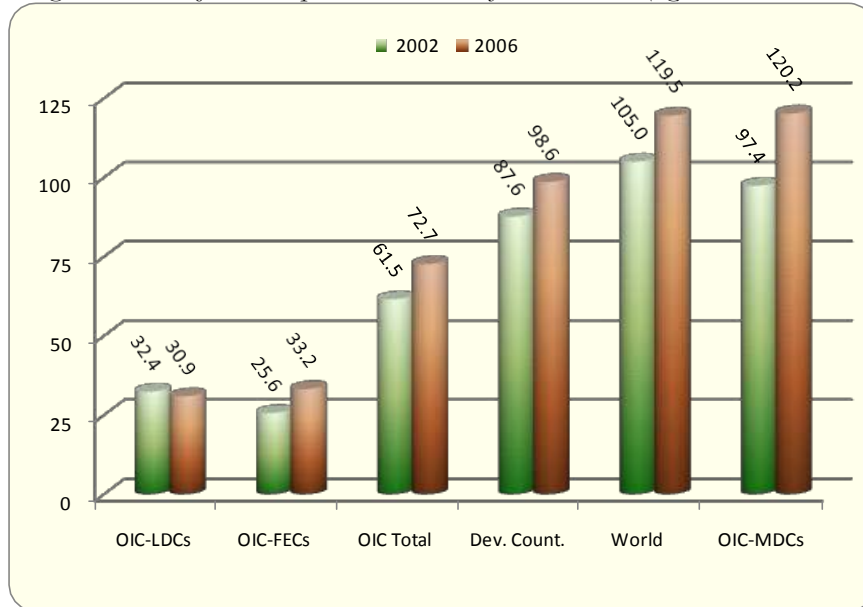
Among the member countries, Palestine, Lebanon, Turkey, Uzbekistan and Egypt are best endowed with agricultural machinery. In these countries, arable land per tractor is even less than the average of the developed countries.

### FERTILIZER USE INTENSITY

When properly applied, fertilizers can improve health and productivity of soil and plants as they provide different essential nutrients intended to improve plant growth.

In OIC-MDCs, fertilizer consumption per hectare of arable land is highest (See Figure 7). With 120.2 kilograms of fertilizers consumption per hectare of arable land, the fertilizer use intensity in these member countries is well above the developed countries. Even though with 33.2 kilograms of consumption per hectare, OIC-FECs seem to consume on the average quite less fertilizers, the distribution among the group is far from being uniform. With more than 700 kilograms consumption per hectare, Bahrain, Kuwait, Brunei and UAE are among the highest fertilizer consumers of OIC member countries. However, with 30.9 kilograms per hectare, OIC-LDCs are the lowest fertilizer consumers.

Figure 7: Fertilizer Consumption Per Hectare of Arable Land (kg)



Source: Calculated from BASEIND, SESRIC; FAOSTAT, FAO

## CONCLUSIONS AND RECOMMENDATIONS

In the light of the above analysis, the conclusions below may be drawn:

1- When agricultural productivity is evaluated, some of the OIC-FECs, Saudi Arabia, Kuwait and United Arab Emirates are quite successful. Even though they are to a great extent constrained with infertile land, these countries obtain a higher production than most of the other OIC member countries from one hectare of harvested land. This surely can be achieved with the optimal use of machinery, fertilizers and irrigation techniques.

2- One of the main reasons for OIC-MDCs' and OIC-FECs' having relatively poor performance in the world agricultural markets is the smaller area of arable land they have. In line with technological changes, of course, agricultural technology is also changing. Every day, new innovations are adding to human capabilities, arid and even infertile lands are brought under cultivation. To increase productivity in agriculture, OIC countries should follow these technologies closely and try to develop more land for agricultural production. Since destroying forests have environmental impacts, the main strategy would be rehabilitating the unused or degraded lands.

3- Since more than one third of the total land area is desert; i.e. arid, semi-arid and infertile land and in spite of its economic importance, land is limited in magnitude, the productivity of the factors of production used in arable lands is especially important for OIC member countries. For this reason, OIC-MDCs and OIC-FECs in infertile regions should not ignore to try to further increase the land productivity.

4- In OIC-LDCs, the low productivity of agriculture is a crucial problem. Low ratio of arable lands, rare use of technology and low consumption of fertilizers all cause low land productivity. Low land productivity together with the high population leads to self-insufficient member states. OIC-LDCs' farmers must quickly switch to more sustainable and productive farming systems to provide the food needed by swelling OIC-LDCs' population. To improve domestic production capacity in these countries, greater investment in education, training and infrastructure development is needed. These countries must mobilise farming community to generate, develop, test and disseminate technologies that improve land productivity. Furthermore, these countries



should enable conditions by promoting policies and institutions that contribute to efficient markets for inputs, financial services and outputs. To this end, banks in these countries can increase credit facility in crop/farm sector for (i) production i.e. financing for purchase of inputs or working capital, and (ii) development purposes i.e. financing for the purchase of equipments or other long term investments at the farm. The major items under working capital are financing for purchase of seeds, fertilizers, pesticides, labour, water, electricity, etc. financing for purchase of fixed assets; machinery, equipment, tractors and vehicles to be used by farmers. It also includes financing for the construction of sheds, farms, hatcheries and other investment on farm land.

5- In Somalia, Djibouti, Syria, Iraq, Afghanistan and Tajikistan where droughts have highly affected the crops, the efficient use of water resources are of a particular importance. These countries must focus on optimal use of irrigation techniques in farmlands.

## Appendix I: Aggregation of Countries

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<b>Developed Countries</b>	According to the definitions of United Nations, Developed Countries are European Countries, North American Countries, Australia, New Zealand and Japan.
<b>Fuel Exporting Countries (OIC-FECs)</b>	Algeria, Azerbaijan, Bahrain, Brunei, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Oman, Qatar, Saudi Arabia, Sudan, Turkmenistan, United Arab Emirates, Yemen.
<b>Least Developed Countries (OIC-LDCs)</b>	Afghanistan, Bangladesh, Benin, Burkina Faso, Chad, Comoros, Djibouti, Gambia, Guinea, Guinea-Bissau, Maldives, Mali, Mauritania, Mozambique, Niger, Senegal, Sierra Leone, Somalia, Togo, Uganda.
<b>Middle-Developed Countries (OIC-MDCs)</b>	Albania, Cameroon, Cote d'Ivoire, Egypt, Guyana, Indonesia, Jordan, Kazakhstan, Kyrgyz Republic, Lebanon, Malaysia, Morocco, Pakistan, Palestine, Suriname, Syria, Tajikistan, Tunisia, Turkey, Uzbekistan.

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**APPENDIX II: DATA**

<b>Agriculture, Hunting, Fishing and Forestry at Constant 1990 Prices in Billion US Dollars</b>					
<b>Country</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2007</b>
Afghanistan	1.29	2.13	1.55	2.51	3.02
Albania	0.88	1.16	1.19	1.37	1.55
Algeria	7.00	8.52	9.92	13.96	15.20
Azerbaijan	1.77	0.75	0.92	1.29	1.36
Bahrain	0.04	0.05	0.05	0.06	0.06
Bangladesh	10.22	10.96	13.90	15.72	17.02
Benin	0.64	0.84	1.09	1.28	1.48
Brunei	0.03	0.04	0.05	0.07	0.07
Burkina Faso	0.87	1.28	1.71	2.28	2.45
Cameroon	2.42	2.50	3.06	3.65	3.88
Chad	0.62	1.02	1.16	1.43	1.49
Comoros	0.10	0.11	0.14	0.16	0.15
Côte d'Ivoire	3.51	3.74	4.27	3.98	4.06
Djibouti	0.01	0.01	0.02	0.02	0.02
Egypt	6.46	7.43	8.84	11.11	12.72
Gabon	0.38	0.49	0.38	0.40	0.42
Gambia	0.07	0.09	0.12	0.13	0.14
Guinea	0.70	0.86	0.96	1.16	1.21
Guinea-Bissau	0.10	0.12	0.13	0.14	0.15
Guyana	0.15	0.27	0.29	0.33	0.39
Indonesia	22.10	25.78	27.58	32.27	36.27
Iran	15.79	19.58	21.51	27.69	30.55
Iraq	3.26	1.62	1.39	1.40	2.02
Jordan	0.28	0.26	0.21	0.33	0.38
Kazakhstan	10.09	5.59	4.99	6.59	7.58
Kuwait	0.16	0.18	0.21	0.35	0.39
Kyrgyzstan	0.37	0.26	0.39	0.44	0.46
Lebanon	0.25	0.66	0.74	0.78	0.79
Libya	2.49	2.95	3.20	3.63	4.43
Malaysia	6.79	6.72	7.32	8.56	9.22
Maldives	0.03	0.03	0.04	0.05	0.04
Mali	1.15	1.22	1.27	1.67	1.84
Mauritania	0.36	0.45	0.35	0.32	0.36
Morocco	5.32	3.52	4.14	5.52	6.91
Mozambique	0.88	0.97	1.15	1.66	1.93
Niger	0.86	1.01	1.22	1.73	1.89
Nigeria	10.49	11.97	14.67	28.80	32.07
Oman	0.30	0.41	0.45	0.44	0.50
Pakistan	12.72	16.53	18.30	21.14	24.15
Palestine	0.25	0.41	0.38	0.31	0.30
Qatar	0.06	0.07	0.06	0.05	0.06
Saudi Arabia	6.70	7.47	8.23	8.77	9.46
Senegal	1.07	1.09	1.34	1.42	1.44
Sierra Leone	0.36	0.28	0.17	0.35	0.39
Somalia	0.70	0.44	0.46	0.53	0.55
Sudan	5.16	6.58	13.41	15.30	18.52
Suriname	0.05	0.05	0.05	0.05	0.06
Syria	3.15	4.38	5.53	6.56	7.21
Tajikistan	0.86	0.40	0.27	0.44	0.51
Togo	0.55	0.60	0.68	0.83	0.84
Tunisia	1.94	1.79	2.60	2.82	3.01
Turkey	26.33	27.19	29.65	31.12	34.54
Turkmenistan	0.99	0.31	0.55	0.66	0.78
Uganda	1.80	2.20	2.72	2.97	3.37
United Arab Emirates	0.55	1.05	2.03	2.33	2.77
Uzbekistan	4.94	4.74	5.36	7.35	8.48
Yemen	0.86	1.00	1.52	1.63	1.77
Developed Countries	585.06	536.04	613.31	655.25	700.68
World	1,176.47	1,194.72	1,371.17	1,559.36	1,738.17

*Source: BASEIND, SESRIC*

**APPENDIX II: DATA (Continued)**

<b>GDP by expenditure at constant 1990 prices in Billion US Dollars</b>					
<b>Country</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2007</b>
Afghanistan	3.62	3.24	2.71	6.79	8.20
Albania	2.18	1.92	2.46	3.28	3.67
Algeria	61.89	62.69	73.13	93.03	99.26
Azerbaijan	6.51	2.73	3.83	7.21	12.13
Bahrain	4.29	5.48	6.69	8.96	10.18
Bangladesh	30.43	37.85	48.79	63.57	72.19
Benin	1.84	2.27	2.87	3.51	3.87
Brunei	3.44	3.73	4.24	4.70	4.96
Burkina Faso	3.12	3.78	5.18	7.08	8.02
Cameroon	12.07	11.02	13.85	16.60	17.72
Chad	1.54	1.90	2.17	4.36	4.51
Comoros	0.24	0.26	0.28	0.32	0.31
Côte d'Ivoire	11.89	12.88	15.16	15.16	15.41
Djibouti	0.46	0.51	0.52	0.59	0.65
Egypt	39.41	49.44	62.80	78.46	89.89
Gabon	5.19	6.04	6.14	6.65	7.10
Gambia	0.33	0.38	0.46	0.56	0.61
Guinea	2.82	3.38	4.20	4.87	5.06
Guinea-Bissau	0.23	0.27	0.26	0.26	0.28
Guyana	0.40	0.56	0.64	0.66	0.73
Indonesia	125.72	183.28	190.07	239.45	268.60
Iran	90.37	108.72	132.59	172.20	191.73
Iraq	17.17	8.58	15.00	12.14	17.42
Jordan	4.02	5.44	6.37	8.59	9.66
Kazakhstan	29.66	18.21	20.59	33.73	40.54
Kuwait	18.47	29.34	29.66	43.35	48.18
Kyrgyzstan	1.11	0.56	0.74	0.89	0.99
Lebanon	2.81	5.00	5.63	6.29	6.54
Libya	28.91	32.70	35.35	45.15	51.44
Malaysia	45.72	71.88	90.83	114.49	128.79
Maldives	0.22	0.30	0.45	0.56	0.75
Mali	2.51	3.01	3.74	5.10	5.50
Mauritania	1.05	1.24	1.41	1.74	1.95
Morocco	28.86	30.23	36.03	44.21	48.80
Mozambique	3.03	3.43	5.00	7.64	8.82
Niger	2.51	2.60	3.00	3.89	4.22
Nigeria	35.03	35.91	42.12	71.00	79.18
Oman	11.69	15.53	18.34	23.04	26.17
Pakistan	57.16	71.25	81.35	108.83	122.72
Palestine	1.94	3.12	4.17	4.40	4.02
Qatar	7.36	8.39	14.48	21.26	26.80
Saudi Arabia	116.62	134.32	152.48	183.62	196.29
Senegal	6.20	6.65	8.39	10.54	11.32
Sierra Leone	0.94	0.73	0.43	0.78	0.90
Somalia	0.99	0.68	0.76	0.87	0.92
Sudan	15.96	20.47	32.13	49.56	59.93
Suriname	0.52	0.50	0.54	0.72	0.80
Syria	11.15	16.48	19.69	24.72	26.99
Tajikistan	2.87	1.09	1.09	1.73	1.97
Togo	1.79	1.77	1.96	2.08	2.18
Tunisia	12.31	14.89	19.57	24.32	27.29
Turkey	150.68	176.47	214.15	264.62	294.98
Turkmenistan	3.07	1.94	2.41	2.97	3.52
Uganda	3.65	5.23	7.15	9.39	10.68
United Arab Emirates	33.78	39.80	54.37	76.67	90.31
Uzbekistan	14.71	11.93	14.47	18.98	21.88
Yemen	3.46	4.61	6.83	8.40	8.93
Developed Countries	18,133.45	19,531.10	22,667.54	25,053.06	26,466.22
World	22,148.90	24,678.95	29,080.80	33,354.84	35,997.41

*Source: BASEIND, SESRIC*

**APPENDIX II: DATA (Continued)**

Country	Population(Millions)					Agricultural Workers (000s)	
	1990	1995	2000	2005	2007	1992	2006
Afghanistan							
Albania	3.29	3.15	3.08	3.15	3.18	831.00	695.00
Algeria	25.28	28.27	30.51	32.85	33.85	1,981.00	2,995.00
Azerbaijan	7.16	7.69	8.05	8.39	8.57	945.00	987.00
Bahrain	0.49	0.58	0.65	0.72	0.75	4.27	2.78
Bangladesh	113.05	126.30	139.43	153.28	158.57	37,595.00	41,238.00
Benin	5.18	6.21	7.23	8.49	9.03	1,573.00	1,958.00
Brunei	0.26	0.29	0.33	0.37	0.39	1.98	0.80
Burkina Faso	8.87	10.27	11.88	13.93	14.78	4,420.00	6,374.00
Cameroon	12.24	14.06	15.86	17.80	18.53	3,525.00	4,013.00
Chad	6.11	7.15	8.47	10.15	10.76	2,480.00	3,335.00
Comoros	0.44	0.49	0.54	0.60	0.63	194.00	277.00
Côte d'Ivoire	12.78	14.99	17.05	18.58	19.27	3,104.00	3,303.00
Djibouti	0.56	0.62	0.73	0.80	0.83	242.00	333.00
Egypt	55.14	60.65	66.53	72.85	75.47	7,713.00	8,539.00
Gabon	0.92	1.06	1.18	1.29	1.33	218.00	193.00
Gambia	0.96	1.16	1.38	1.62	1.71	421.00	642.00
Guinea	6.03	7.32	8.20	9.00	9.38	2,862.00	3,699.00
Guinea-Bissau	1.02	1.19	1.37	1.60	1.69	411.00	568.00
Guyana	0.73	0.74	0.73	0.74	0.74	57.40	52.30
Indonesia	178.23	192.75	206.27	220.56	225.63	45,589.00	51,556.00
Iran	54.40	58.95	63.94	69.09	71.02	5,599.00	6,821.00
Iraq	18.51	21.63				740.00	611.00
Jordan	3.17	4.20	4.80	5.41	5.72	137.00	194.00
Kazakhstan	16.35	15.82	14.88	15.15	15.48	1,656.00	1,190.00
Kuwait	2.13	1.80	2.19	2.54	2.66	10.20	15.80
Kyrgyzstan	4.42	4.59	4.92	5.14	5.24	577.00	549.00
Lebanon	2.97	3.49	3.77	4.01	4.10	64.40	37.70
Libya	4.36	4.83	5.35	5.92	6.16	136.00	90.70
Malaysia	18.10	20.59	23.27	25.65	26.55	1,976.00	1,728.00
Maldives	0.22	0.25	0.27	0.30	0.31	28.80	26.00
Mali	7.67	8.74	10.00	11.61	12.33	3,361.00	4,347.00
Mauritania	1.95	2.23	2.57	2.96	3.12	513.00	730.00
Morocco	24.17	26.43	28.47	30.14	30.86	4,127.00	4,134.00
Mozambique	13.54	15.94	18.19	20.53	21.37	6,104.00	8,640.00
Niger	7.82	9.29	11.12	13.26	14.20	3,613.00	5,590.00
Nigeria	94.45	109.01	124.77	141.36	147.98	16,156.00	16,227.00
Oman	1.84	2.17	2.40	2.51	2.60	280.00	309.00
Pakistan	107.98	122.37	138.08	155.77	162.39	21,333.00	28,626.00
Palestine	1.97	2.40	2.97	3.63	3.87		
Qatar	0.47	0.53	0.62	0.80	0.84	6.36	4.37
Saudi Arabia	16.38	18.51	20.66	23.12	24.20	964.00	599.00
Senegal	7.90	9.05	10.33	11.77	12.41	2,829.00	3,872.00
Sierra Leone	4.09	4.14	4.52	5.59	5.85	1,063.00	1,288.00
Somalia	6.72	6.24	7.06	8.20	8.70	2,223.00	2,620.00
Sudan	25.93	29.49	33.35	36.90	38.56	6,840.00	8,291.00
Suriname	0.40	0.42	0.44	0.45	0.46	29.50	32.20
Syria	12.72	14.61	16.51	18.89	19.89	1,227.00	1,725.00
Tajikistan	5.30	5.77	6.17	6.55	6.74	784.00	813.00
Togo	3.96	4.52	5.40	6.24	6.58	1,113.00	1,544.00
Tunisia	8.15	8.96	9.56	10.03	10.25	836.00	997.00
Turkey	56.15	61.74	67.42	72.07	73.89	13,512.00	15,153.00
Turkmenistan	3.67	4.19	4.50	4.83	4.96	588.00	728.00
Uganda	17.84	21.24	24.69	28.95	30.93	8,093.00	11,161.00
United Arab Emirates	1.77	2.41	3.25	4.10	4.36	76.90	94.20
Uzbekistan	20.51	22.79	24.65	26.17	26.87	2,885.00	2,971.00
Yemen	12.31	15.52	18.18	21.10	22.38	2,363.00	3,174.00
Developed Countries	1,135.74	1,162.21	1,182.01	1,203.84	1,212.50	42,206.88	28,247.20
World	5,260.49	5,676.61	6,075.80	6,461.58	6,612.04	1,211,373.19	1,354,889.15

*Source: BASEIND, SESRIC, AUASTAT, FAO*

**APPENDIX II: DATA (Continued)**

Area Harvested(Hectares) Country	Cereals		Fruits		Vegetables	
	1992	2007	1992	2007	1992	2007
Afghanistan	2,250,000	2,812,000	92,200	78,960	52,900	67,900
Albania	191,338	132,300	26,543	25,260	30,160	29,910
Algeria	3,530,507	2,971,500	299,360	385,805	234,740	270,900
Azerbaijan	627,000	727,423	224,650	54,604	40,700	127,089
Bangladesh	10,860,774	11,667,510	158,759	145,605	232,494	375,600
Benin	667,314	970,550	35,160	9,310	52,740	70,750
Brunei	600	1,000	803	385	5,783	975
Burkina Faso	2,844,000	3,254,000	13,278	1,810	28,260	28,750
Cameroon	950,300	1,171,300	267,424	345,230	173,690	357,780
Chad	1,337,553	2,546,000	26,300	14,300	8,200	9,350
Comoros	15,500	16,000	9,415	11,300	798	580
Côte d'Ivoire	1,451,000	816,000	425,704	442,410	142,400	148,800
Egypt	2,477,121	2,878,700	370,089	382,780	371,022	597,610
Gabon	14,400	20,500	51,600	52,350	5,000	5,557
Gambia	78,303	215,900	850	150	1,600	1,800
Guinea	819,754	1,810,320	223,956	274,700	152,100	171,280
Guinea-Bissau	117,166	137,700	16,325	17,570	4,300	5,500
Guyana	84,117	108,000	8,575	10,813	1,500	5,960
Indonesia	14,732,663	15,616,257	794,650	846,400	806,076	1,022,850
Iran	9,787,365	8,951,000	917,203	1,256,080	616,311	640,800
Iraq	3,919,501	3,747,400	240,220	170,750	260,120	301,530
Jordan	121,065	62,320	25,839	20,340	28,064	36,820
Kazakhstan	22,152,350	15,386,700	92,650	66,740	116,800	143,440
Kuwait	283	1,450	310	1,478	1,086	3,940
Kyrgyzstan	578,000	567,830	39,320	46,497	29,100	50,900
Lebanon	42,097	63,650	82,284	62,550	46,720	24,780
Libya	292,950	328,800	50,995	59,610	53,830	59,470
Malaysia	693,753	686,000	96,004	54,300	24,380	30,900
Maldives	8	96	865	632	1,481	2,188
Mali	2,451,597	3,150,320	32,760	56,070	56,291	61,700
Mauritania	123,615	183,930	5,000	8,200	1,420	1,350
Morocco	5,020,100	4,878,200	260,242	289,655	153,224	197,282
Mozambique	1,376,902	2,306,400	56,350	29,780	20,450	20,930
Niger	7,554,570	9,046,561	9,500	2,300	24,985	52,270
Nigeria	16,836,000	21,235,000	1,317,000	1,530,500	987,000	1,514,300
Oman	2,440	4,625	34,205	36,120	9,350	10,575
Pakistan	11,758,200	12,907,000	459,256	643,930	268,112	418,500
Palestine		33,270		16,228		22,600
Qatar	1,231	2,024	1,897	1,720	2,641	1,720
Saudi Arabia	1,121,897	682,500	102,574	173,500	118,195	97,900
Senegal	1,087,210	1,075,519	17,530	21,400	9,644	38,543
Sierra Leone	432,919	729,200	30,660	24,600	29,800	35,500
Somalia	405,800	470,200	21,260	9,130	6,800	22,850
Sudan	8,258,795	9,287,600	105,100	59,800	131,580	345,200
Suriname	68,835	52,035	5,481	4,618	2,073	1,320
Syria	3,725,286	3,163,601	228,235	203,220	143,868	132,200
Tajikistan	266,000	407,500	84,200	77,210	36,890	50,210
Togo	573,150	690,800	7,765	4,640	27,300	28,900
Tunisia	1,469,900	1,408,400	171,363	189,579	129,714	134,335
Turkey	13,731,104	13,095,515	1,020,848	1,049,080	879,588	995,603
Turkmenistan	331,290	970,300	32,501	58,200	57,731	55,800
Uganda	1,139,000	1,725,000	1,586,225	1,813,190	68,800	93,100
United Arab Emirates	1,373	18	30,534	187,695	12,498	9,990
Uzbekistan	1,225,310	1,575,000	239,070	243,090	267,200	180,000
Yemen	730,007	792,961	61,601	77,240	38,207	61,790
Developed Countries	243,836,739	220,051,156	11,724,237	10,039,428	7,116,827	6,544,250
World	709,259,869	699,813,132	43,761,863	47,143,638	31,942,007	52,444,669

*Source: FAOSTAT, FAO*

**APPENDIX II: DATA (Continued)**

Production (Tonnes) Country	Cereals		Fruits		Vegetables	
	1992	2007	1992	2007	1992	2007
Afghanistan	2,370,100	4,716,683	615,500	514,300	492,400	663,000
Albania	430,161	493,600	84,200	207,400	515,300	723,000
Algeria	3,329,972	4,132,400	1,193,463	2,029,790	2,231,977	3,761,200
Azerbaijan	1,324,500	1,976,384	1,005,100	607,291	605,200	1,632,279
Bangladesh	19,401,717	30,181,967	1,350,989	1,413,000	1,393,695	2,490,500
Benin	606,036	1,194,609	182,000	120,250	246,120	373,000
Brunei	493	800	4,690	2,185	5,894	9,534
Burkina Faso	2,463,048	3,695,271	72,110	10,940	241,700	241,200
Cameroon	1,001,417	1,551,083	2,066,567	2,214,937	599,800	1,349,070
Chad	940,275	2,653,430	112,000	50,800	74,000	98,500
Comoros	14,595	15,339	55,138	65,000	5,380	3,725
Côte d'Ivoire	1,026,011	1,170,259	1,722,805	2,251,550	583,000	642,700
Egypt	13,309,338	19,839,821	5,307,156	7,701,085	9,331,618	16,040,500
Gabon	25,302	33,733	273,160	289,800	31,000	35,420
Gambia	89,916	267,280	4,070	700	7,800	10,000
Guinea	872,840	2,134,482	949,583	1,087,000	449,000	507,450
Guinea-Bissau	127,753	173,112	65,950	62,750	22,000	28,000
Guyana	193,269	320,825	53,320	65,665	9,600	42,260
Indonesia	40,171,544	50,432,948	7,207,485	11,615,000	5,021,508	8,678,400
Iran	15,024,898	21,931,499	8,384,312	12,102,300	9,920,720	15,993,000
Iraq	2,899,271	2,638,305	1,438,740	934,000	2,592,500	2,691,250
Jordan	156,728	80,860	264,594	292,500	884,410	1,300,500
Kazakhstan	29,493,497	20,364,730	231,300	223,560	1,273,500	2,864,700
Kuwait	1,584	3,900	1,198	14,858	53,569	205,025
Kyrgyzstan	1,601,267	1,413,684	148,100	185,101	438,705	908,902
Lebanon	88,401	167,700	1,349,836	752,700	899,005	752,900
Libya	217,750	209,400	289,500	366,100	699,600	905,900
Malaysia	1,378,492	1,571,076	1,127,200	1,012,700	397,800	511,000
Maldives	8	376	10,650	12,702	21,272	28,526
Mali	1,672,816	3,191,501	165,500	369,500	502,300	531,400
Mauritania	89,683	129,609	12,100	22,000	7,798	4,150
Morocco	2,942,290	2,530,590	2,158,610	2,653,195	2,725,448	4,866,610
Mozambique	231,212	2,107,632	280,400	198,500	116,100	116,700
Niger	2,230,969	3,816,491	45,000	7,800	343,700	709,900
Nigeria	18,511,419	29,292,325	7,417,000	8,524,000	5,043,000	9,869,000
Palestine		63,450		162,670		689,200
Oman	5,650	14,480	209,450	299,800	162,600	206,700
Pakistan	20,566,858	32,789,099	4,044,864	6,136,950	3,423,933	5,508,900
Qatar	3,872	7,210	10,499	22,030	40,775	25,415
Saudi Arabia	4,702,572	3,089,000	899,169	1,277,000	1,977,016	2,103,000
Senegal	797,382	812,985	101,807	158,000	228,503	507,579
Sierra Leone	374,869	522,850	160,200	125,000	190,600	235,000
Somalia	203,505	190,642	202,100	74,200	37,500	84,300
Sudan	5,380,800	6,562,010	858,300	754,470	1,403,850	2,138,500
Suriname	174,299	130,135	82,575	75,439	34,638	22,090
Syria	4,360,961	5,453,001	1,488,527	1,824,200	1,821,357	2,852,700
Tajikistan	269,016	875,054	283,300	261,200	679,300	1,082,600
Togo	486,371	795,491	48,500	32,750	158,700	141,800
Tunisia	2,219,000	2,020,100	739,600	1,002,510	1,685,320	2,504,230
Turkey	29,085,655	29,983,838	9,430,820	12,390,029	19,235,020	24,453,827
Turkmenistan	710,761	2,849,070	174,000	274,000	493,061	755,100
Uganda	1,720,156	2,577,054	8,411,200	9,847,600	425,000	556,000
United Arab Emirates	3,179	36	268,805	779,200	482,557	483,200
Uzbekistan	1,998,146	6,315,723	1,143,400	1,539,000	4,380,700	4,068,040
Yemen	810,541	774,446	335,564	826,020	500,760	712,360
Developed Countries	841,230,863	885,576,491	120,754,088	103,321,455	136,024,791	150,007,489
World	1,797,802,499	2,125,396,702	385,010,842	499,711,349	480,983,727	893,432,504

*Source: FAOSTAT, FAO*

**APPENDIX II: DATA (Continued)**

Country	Arable Land (000 hectares)		Fertiliser consumption (000 tonnes)	
	1992	2005	2002	2006
Afghanistan	7.910	7.910	28,82	
Albania	578	578	49,43	34,90
Algeria	7.562	7.450	72,77	86,92
Azerbaijan	1.705	1.843	19,17	24,44
Bahrain	2	2	17,93	11,04
Bangladesh	8.008	7.951	1.556,84	1.522,78
Brunei	3	14	21,17	15,15
Burkina Faso	3.470	4.840	2,01	36,86
Cameroon	5.960	5.960	34,90	53,77
Chad	3.342	4.200		
Comoros	78	80		
Côte d'Ivoire	2.600	3.500	86,86	63,76
Djibouti	1	1		
Egypt	2.519	3.000	1.269,92	1.342,37
Gabon	295	325	1,82	2,75
Gambia	157	350		0,17
Guinea	755	1.200	2,40	2,80
Guinea-Bissau	300	300		
Guyana	480	480	14,90	13,68
Indonesia	18.100	23.000	3.165,11	4.062,24
Iran	16.969	16.533	1.262,12	1.901,43
Iraq	5.300	5.750		
Jordan			310,14	131,76
Kazakhstan	35.055	22.364	123,30	102,15
Kuwait	4	15	21,16	23,00
Kyrgyzstan	1.320	1.284	9,48	28,50
Lebanon	180	186	46,54	40,51
Libya	1.815	1.750	120,32	73,74
Malaysia			1.189,92	1.609,85
Maldives			0,02	0,03
Mali	2.163	4.800		
Mauritania	420	500		
Morocco	8.934	8.480	550,79	451,00
Mozambique	3.520	4.400	26,60	22,75
Niger	13.487	14.482	8,54	
Nigeria	29.922	32.000	166,20	
Oman	35	62	11,87	7,22
Pakistan	20.600	21.275	3.043,04	3.812,14
Palestine	109	107		
Qatar	12	18	0,51	
Saudi Arabia	3.650	3.500	203,33	340,80
Senegal	2.320	2.550	35,97	21,90
Sierra Leone	486	600		
Somalia	1.023	1.350		
Sudan	12.900	19.434	57,36	47,83
Suriname			4,15	8,00
Syria	4.766	4.873	313,95	393,16
Tajikistan	860	930		
Togo	2.100	2.490	12,29	
Tunisia	2.908	2.729	69,87	108,00
Turkey	24.514	23.830	1.691,37	2.611,35
Turkmenistan	1.350	2.300		
Uganda	5.040	5.400	7,47	7,65
United Arab Emirates	38	64	50,42	46,12
Uzbekistan	4.474	4.700		
Yemen	1.378	1.515	11,60	11,57
Developed Countries	568.700	543.204	49.849,86	53.565,19
World	1.387.806	1.420.872	145.682,17	169.783,12

*Source: BASEIND, SESRIC*



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