



An Economic Study of the Possibility of Increasing the Production of Maize in Egypt

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Abstract: The local production of maize reached about 51% of the total consumption. Besides, the exports' amount reached about 3.1 million tons by a value that reached about 1932 million dollars during 2013. This represents a huge burden on the payments' scale. Therefore, this study aims at increasing the local production of the harvest under study.

Moreover, in an attempt to achieve its objective, this study surveyed the cultivated areas of rice and maize in different governorates. Additionally, this attempts to scrutinize the possibility of replacing parts of rice areas in these governorates by maize along with replacing the current sorts of the two harvests by other highly productive ones. Besides, the study suggests various scenarios to fulfill its objective. This study suggests three scenarios to achieve its goal; through reducing the cultivated area of rice by about 5%, 10% and 15% and its influence on the possibility of increasing the production of maize to reduce both the food gap of maize and its imports' amount along with guaranteeing the keeping of the rice's self-sufficiency rate. Also, it saves the amount of water used in rice irrigation (especially with the possibility of declining Egypt's share of water due to the building of the Renaissance Dam).

In conclusion, this study finds out that through replacing the varieties that have low productivity by their counterpart that have high productivity with yellow and white maize harvest in each governorate, an increase of the total production of the two crops will be achieved. This increase valued by about 28.9 % in comparison to 2013. As for the watery regulations of the two crops under study, it became clear that through reducing the rice area by about 10% and cultivating it with maize, this will save about 448 million m³ of water irrigation (it is important to mention that cultivating this area with rice needs about 993.5 million m³ of water, while cultivating it with maize needs about 545 million m³ of water irrigation only). However, if the two current planted varieties of the total rice area all over the Republic are replaced by these two improved ones; 3.9 million m³ of water irrigation will be saved. This is highly important, especially on the current time, because Egypt suffers from a shortage in water irrigation in addition to what Egypt will face due to the reduction of its River Nile share after completing the building of the Renaissance Dam.

Key Words: Maize – Rice - Water Irrigation –New varieties.

Introduction:

Maize is considered one of the most important agricultural crops in the world. It comes at the top of the energy resources for both human and animal nourishment. Besides, it plays an essential role in a lot of industries and has a lot of uses since it composes many diets. Also, it is used in making baked goods. So, it is

considered one of the most important crops in the world and it occupies the second position after wheat and rice of the world cereal production.

The domestic production of maize in Egypt reached about 51% from the total consumption. In 2013, it reached about 3.32 million tons and the imports' amount reached about 3.08 million tons at the same year by imports' value that amounted about 1931 million dollar.

Moreover, the global amount of maize's production reached about 600 million metric tons yearly. The American United States is considered the most country that produces and exports maize in the world since it produces about 40% of the world's production in the Middle West region that is best known by the maize's belt. It exports about a quarter of its maize production to make silage. This amount is equivalent to a half of the total amount of exports to the whole world.

Among other main countries that produce maize are Brazil, China, Mexico, Romania, France, Indonesia, India and Argentina. China is the second largest producer for maize since its production is equivalent to 20% of the global production, approximately. Besides, Japan is considered the biggest country that imports maize. Among other major importing countries are Mexico, South Korea and Spain.

The Problem of the Study:

The problem of this study is embodied in the shortage of the domestic production of maize that reached about 51% of the total consumption. Besides, the amount of imports reached about 3.1 million tons by a value that reached about 1932 million dollar during 2013 which represents a huge burden on the payments' budget.

Objective of the Study:

This study aims at increasing the domestic production of maize. In an attempt to achieve the goal of this study, the cultivated areas in the governorates that cultivate maize and rice are surveyed. Additionally, this study aims at studying the possibilities of replacing part of rice areas by maize in these certain governorates and replacing the current varieties of these two crops by other types that have higher productivity.

Method and Data Sources

This study uses the descriptive method to describe and display its problem and to extract its results. Moreover, this study supposes different scenarios and hypotheses to reach the objective of the study. Besides, this study depends on all of the published and non-published data gained from The Ministry of Agriculture and Reclamation of Land, , Web Sites of the Arab Organization for Agricultural Development, The Organization of Agriculture and Foods, the (FAO) and some other specialized web sites in addition to some references and studies relevant to the topic of the study.

Study Results:

Through displaying the data coming further on table number (1), it will be shown that the maize area in Egypt fluctuates between increasing and decreasing, reaching its lowest rate in 2002 by about 1.833 and its maximum in 2010 by about 2.343 million feddan. Besides, the domestic production reached about 5.178 million tons as a minimum rate and about 7.205 million tons as a maximum rate during 1995/2012, respectively. Moreover, the imports' amount, during these two years, reached about 2.4, 5.2 million tons by a value that reached about 349, 1986 million dollars, respectively. The food gap of maize recorded about 2.558, 6.870 million tons during the same two years.

Table no. (1) Area, Production, Productivity, Available for Consumption, Gap of Maize During the period of (1995-2013)

Years	Area Million/feddan	Production Million/Ton	Productivity Ton/feddan	Farm Price Pound/Ton	Net Return Pound/feddan	Available for Consumption Million/Ton	Gap Size Million/Ton	Imports	
								Amount (QTY) Million/ton	Value Million/Dollar
1995	2.079	5.178	2.49	514.30	1280.58	8.259	2.558	2.4	349
1996	2.086	5.825	2.79	537.10	1498.22	7.651	2.298	2.5	435
1997	1.938	5.806	3.00	550.14	1463.37	8.460	2.635	3.1	385
1998	2.022	6.149	3.04	579.14	1847.46	9.129	3.035	3.0	379
1999	1.845	5.878	3.18	605.00	1718.20	11.066	4.729	3.6	644
2000	1.948	6.257	3.21	607.86	1793.19	11.085	4.941	4.7	542
2001	1.987	6.557	3.30	612.86	1807.94	11.259	4.784	4.8	553
2002	1.833	5.980	3.26	629.39	1856.41	11.526	4.684	4.7	592
2003	1.877	6.235	3.30	692.86	2085.51	10.457	4.026	4.8	529
2004	2.877	6.236	2.32	1035.71	3117.49	8.907	3.377	4.8	365
2005	2.067	7.085	3.43	1035.71	3666.46	11.862	5.134	6.4	696
2006	1.822	6.374	3.52	1078.57	3882.85	11.482	3.784	5.2	545
2007	2.096	6.243	3.02	2292.00	3051.00	11.392	4.483	4.5	940
2008	1.860	6.306	3.39	1414.00	1753.00	12.000	4.134	4.0	1037
2009	1.978	6.645	3.36	1379.00	1611.00	11.967	4.478	4.2	1105
2010	2.343	7.183	2.885	1871.43	2430.00	12.509	3.698	4.8	1223
2011	2.115	6.876	3.063	1928.57	2500.00	12.645	5.454	6.8	2105
2012	2.157	7.205	3.340	2164.29	3220	14.074	6.870	5.2	1986
2013	2.139	7.102	3.320	2242.86	3038	13.928	6.826	3.08	1931

Resource:

- The Ministry of Agriculture and Reclamation of Land-The Sector of Economic Affairs, Annual Bulletin of Food Scale, Egypt, various editions.
- The Web Site of the International Organization of Food and agriculture of United Nations (FAO).
- Arab Organization of Agricultural Development-Annual Book of Agricultural Statistics-volume no (34)-2014.

Table number (2) shows that the cultivated area of rice was fluctuated between increasing and decreasing since it reached its lowest rate in 2010 by about 1.093 million feddan while it reached its maximum increase in 2008 by about 1.770 million feddan, then it returned back by about 1.42 million feddan in 2013 by a total amount of production that reached about 4.327, 7.240, 5.717 million tons. Besides, its productivity reached about 3.958, 4.091, 4.028 ton/feddan during the same years, respectively.

(Table no. 2) Area, Production, Productivity, Available for Consumption, Gap of Rice in Egypt During the period of (1995-2013)

Year	Area Million/ feddan	Production Million/ Ton	Productivity Ton/ feddan	Farm Price Pound/Ton	Net Return Pound/ feddan	Available for Consumption Million /Ton	Surplus Size Million/ Ton	Imports	
								Amount (QTY) Million /ton	Value Million /Dollar
1995	1.400	4.788	3.420	656.1	1064.4	2970	224	156.76	56.727
1996	1.406	4.895	3.484	702.2	1226.9	3034	231	325.62	116.187
1997	1.550	5.480	3.536	717.9	1210.0	3052	603	201.31	71.265
1998	1.225	4.450	3.633	723.8	1023.6	2785	199	421.73	134.39
1999	1.559	5.817	3.73	730.9	1073.56	3150	730	306.87	87.55
2000	1.569	6.000	3.825	582.6	615.3	3231	771	360.03	103.544
2001	1.340	5.227	3.900	592.2	709.0	3177	309	650.31	132.91
2002	1.547	6.105	3.945	671.5	983.0	3631	441	452.45	103.35
2003	1.508	6.176	4.095	992.0	2113.0	3574	546	572.27	148.02
2004	1.537	6.352	4.133	1024	1969.0	3489	748	803.55	222.50
2005	1.459	6.124	4.199	1069	2149.0	3220	866	1017.37	294.31
2006	1.593	6.744	4.234	1077	2029	3486	1020	917.24	287.26
2007	1.673	6.868	4.11	1590	2410	3607	980	1123.49	397.31
2008	1.770	7.240	4.091	1456	2260	4501	2078	324.04	163.11
2009	1.369	5.518	4.03	1495	2458	4842	675.18	573.40	397.02
2010	1.093	4.327	3.958	1837	3430	4750	532.14	546	343.18
2011	1.409	5.665	4.020	1952	3525	5726	(61.6)	42.77	17.30
2012	1.472	5.869	4.005	2067	3620	6018	(149)	153.90	91.2
2013	1.419	5.724	4.028	2110	3581	5376	347.5	363.80	209.7

Resource:

- The Ministry of Agriculture and Reclamation of Land-The Sector of Economic Affairs, Annual Bulletin of Food Scale, Egypt, various editions.
- The Web Site of the International Organization of Food and agriculture of United Nations (FAO).
- Arab Organization of Agricultural Development-Annual Book of Agricultural Statistics-volume no (34)-2014.

Note: numbers between brackets are minus.

This increasing of feddan’s productivity, along with the increasing of the farm price, led to an increase of the rice net return which reached about 3581 pound/tons in 2013. This urged the farmers to cultivate this crop more than other summery crops, especially maize. The effects of extracting other new types that characterized by its high productivity, in comparison to the old sorts, was reflected on self-sufficiency of rice that reached about 124% in 2000 and about 105.5% in 2013. Then, the state developed some restrictions to oblige farmers to limit the cultivated area in 2011. This had fulfilled through stopping exporting the harvest abroad. Therefore, the amount of exports reduced to about 42.77 thousand tons during the same year, and then it increased to about 363.8 thousand tons after cancelling this decision.

Table no. (3) Governorates that Produce Maize in 2013 Area/feddan-Production by Ton

Governorates	Area	Productivity	Total Production
Alexandria	33964	3.351	113797
Beheira	185690	3.762	698644
Gharbia	62550	3.482	217795
Kafr Al-Sheikh	70433	3.657	257557
Dakahlia	32391	4.079	132122
Domietta	3322	3.614	12006
Sharqia	255640	3.529	902195
Ismailia	36480	3.368	122870
Port Said	8611	2.503	21552
Suez	2862	2.921	8360
Monufia	214841	3.682	791143
Qalyubia	73736	3.197	235734
Cairo	63	3.095	195
Totally of Lower Egypt	980583	3.584	3513970
Giza	50370	3.725	187650
Beni Soef	192050	2.890	555115
Fayoum	125985	2.752	346740
Minya	291741	3.186	929489
Totally of Middle Egypt	660146	3.058	2018994
Asyut	186688	3.252	607143
Sohag	150184	3.258	489313
Qena	46845	2.176	101933
Luxor	19389	2.138	41458
Aswan	12727	2.241	28524
Totally of Upper Egypt	415833	3.050	1268371
Totally inside the Valley	2056562	3.307	6801335
New Valley	986	1.921	1894
Matruh	1340	2.394	3208
North Sinai	216	0.699	151
South Sinai	10	0.600	6
Noubria	80082	3.687	295268
Totally outside the Valley	82634	3.637	300527
Total	2139196	3.320	7101862

Resource:

- The Ministry of Agriculture and Reclamation of Land-The Sector of Economic Affairs, Annual Bulletin of Food Scale, Egypt, 2013.

Table number (3) shows that Minya governorate occupies the second rank concerning the rice cultivated area by 291.741 thousand feddan, then comes Al-Sharqia, Monufia, Beni Soef, Asyut, Al-Beheira and Fayoum by areas that reached about 67.9% of the total cultivated maize area all over the Republic of Egypt.

Hypothesis and the Study’s Scenarios for Increasing the Production of Maize:

This study supposes three scenarios to achieve its objective in an attempt to reduce the rice cultivated land by about 5%, 10% and 15%. Also, it highlights its return on the possibility of increasing the production of maize to reduce the food gap of maize. Besides, it focuses on the reduction of its imports’ amount along with guarantying the keeping of rice’s self-sufficiency rate. Also, it saves the amount of water used in the irrigating of rice (especially with the possibility of declining Egypt’s share of water due to the building of Renaissance Dam).

It became clear, from table number (4), that through reducing the rice cultivated area in 2013 by 5%, the total reducing area will reach about 70.957 thousand tons. Supposing that this area will be planted by feddan, the increasing amount of feddan production will reach about 6.5% of the actual total production of these

governorates. Therefore, the supposed total feddan production will be about 7.366 million tons all over the Republic by an increasing rate valued by about 3.7%. Through applying this scenario, the amount of gap size of maize harvest will reach about 6.56 million tons by a decline that valued by about 3.9% from its rate of the same year.

Table no. (4) Supposed Scenarios to Reduce the Cultivated Areas of Rice and the Expected Increase of the Maize Total Production

Governorates	Reduced Area of Rice			Maize Productivity Ton feddan	Expected Increase of Maize in the Reduced Areas			The Expected Total Production of Maize after Reducing the area by 10%
	5%	%10	%15		5%	10%	%15	
Alexandria	0.027	0.074	0.111	3.351	0.090	0.248	0.373	114.045
Beheira	9.441	18.088	28.323	3.762	35.517	68.047	106.551	137.911
Gharbia	7.675	15.350	23.025	3.482	26.724	53.449	80.174	271.244
Kafrel-Sheikh	14.594	29.1	43.781	3.657	53.370	106.419	160.107	363.976
Dakahlia	21.136	42.272	63.409	4.079	86.214	172.427	258.644	304.549
Domietta	3.353	6.707	10.060	3.614	12.118	24.239	36.356	36.245
Sharqia	12.340	24.680	37.020	3.529	43.548	87.096	130.642	989.291
Ismailia	0.254	0.509	0.763	3.368	0.855	1.714	2.570	124.584
Port Said	1.135	2.271	3.406	2.503	2.841	5.684	8.526	27.236
Monufia	0.069	0.139	0.209	3.682	0.254	0.512	0.768	791.655
Qulyubia	0.641	1.281	1.923	3.197	2.049	4.095	6.147	239.829
Beni Soef	0.069	0.138	0.207	2.890	0.199	0.399	0.599	555.514
Fayoum	0.073	0.145	0.218	2.752	0.201	0.399	0.600	347.139
New Valley	0.138	0.276	0.414	1.921	0.265	0.530	0.795	2.424
Nobarria	0.012	0.025	0.037	3.687	0.044	0.092	0.138	295.36
Total	70.957	141.936	212.905	----	264.289	525.35	792.990	4601.056

Resource:

This data is counted and collected from the Central Administration of Agricultural Economy-The Ministry of Agriculture and Reclamation of Land.

It became clear, from the second scenario, that through reducing rice cultivated area by 10% and replacing it by feddan, then the total declined area will reach about 41.936 thousand feddan and produce about 525.35 thousand tons of maize. This increasing represents about 12.9% of maize production all over the governorates. Therefore, the total expected maize production will reach about 7.627 million tons all over the Republic by an increasing amount valued by 7.4%. Finally, through applying this scenario, the gap size of maize harvest will reach about 6.3 million tons by a decline valued by about 7.3% comparing to its rate of the same year.

As for the third scenario, supposing that the rice area will be reduced by about 15%; i.e., 212.905 thousand feddan and replaced by maize, the expected production will reach about 792.990 thousand tons representing about 19.456% of the maize's actual production in these governorates. Thus, the total expected production will reach about 7.895 million tons all over the Republic by an increasing rate that valued about 11.166%. Through applying this scenario, the gap size of maize will reach about 6.03 million tons by a decline valued by about 11.7% comparing to its rate of the same year.

From the previous table, it became clear that most of rice areas are centralized in the following governorates; Dakahlia, Kafrel-Sheikh, Sharqia, Beheira and Gharbia. The total area reached about 92% of the rice total area all over the Republic. Therefore, we must focus on these governorates through cultivating sorts of maize with high productivity to gain the biggest possible increase of maize production. Also, cultivation of rice can be enlarged in new lands; such as, Port Said, New Valley and Nobarria governorates. Through applying these previous scenarios, the rice total production will reach about 5.404, 5.712 and 4.866 million tons by a decline valued by about (5.6%, 9.9%, 14.9%) in 2013 as it was during the same year, respectively. Besides, it

achieves an increase in maize production of these decreasing areas valued by about (6.55, 12.9%, 19.5%) and with a fluctuation in the maize total production reached about (3.75, 7.4%, 11.2%) for each of them, respectively. Therefore, the second scenario that reduces rice area by about 10% becomes the best proposed scenarios because it keeps the production of rice sufficient for domestic consumption and achieving an increase in maize production by about 525.35 thousand tons at the same time. Thus, the maize imports' amount, that reached about 3.1 million tons in 2013, can be declined along with declining the shortage of payment scale by about 329.367 thousand dollar equivalent to the prices of 2013.

Table no. (5) The Expected Production of Cultivating Sorts of White Summary Maize with High Productivity

Governorate	Old Lands				New Lands			
	varieties	Area	Productivity	Production	varieties	Area	Productivity	Production
Alexandria	2031S/H	2031S/H	28.90	367.93	-10 S/H	13.578	24.25	329.27
Beheira	30K/ 8/ SH	30K/ 8/ SH	27.02	3612.36	T/H-321	3.900	25.78	100.54
Garbia	-2031S/H	-2031S/H	26.45	1589.17	-	-	-	-
Kafr elSheikh	10S/H	10S/H	25.26	1364.75	10S/H	0.098	24.80	2.43
Dakahlia	128S/H	128S/H	30.33	406.27	10S/H	3.351	29.41	98.55
Domietta	T/H 310	T/H 310	25.92	69.70	-	-	-	-
Sharqia	10S/H	10S/H	25.60	5183.54	10S/H	18.856	24.91	469.70
Ismailia	128S/H	128S/H	26.46	452.81	2031	4.491	30.00	134.73
Port Said	-	-	-	-	Local	8.611	17.18	147.94
Suez	1	1	23.,20	28.10	1S/H	0.324	23.00	7.45
Monufia	2030S/H	2030S/H	26.40	4737.34	-	-	-	-
Qalyubia	2031S/H	2031S/H	23.63	1493.25	-	-	-	-
Cairo	30/Kilo/8	30/Kilo/8	23.00	1.45	-	-	-	-
Totality of Lower Egypt	-	-	-	-	-	53.209	-	-
Giza	T/H 310	45.550	27.48	1251.71	10S/H	3.310	24.82	82.15
Bebi Soef	2031S/H	171.709	23.00	3949.31	110S/H	13.920	20.00	278.40
Fayoum	10S/H	120.122	21.26	2553.79				
Minya	110S/H	225.204	24.34	5481.49	2031S/H	3.363	20.38	68.54
Totality of Middle Egypt	-	562.585	-	-	-	20.593	-	-
Asyut	10 S/H	124.458	25.11	3125.14	10S/H	5.514	19.82	109.29
Sohag	2031 S/H	139.932	25.42	3557.07	T/H 310	4.598	20.76	95.45
Qena	10S/H	19.628	19.69	386.48	30 S/H/ 8K	1.399	16.90	23.64
Luxor	10S/H	0.006	24.50	0.15	-	-	-	-
Aswan	10 S/H	0.566	17.70	10.02	-			-
Totality of Upper Egypt	-	284.590	-	-		11.511	-	-
The Totality inside the valley	-	1587.299	-	-	-	85.313	-	-
New Valley	-	-	-	-	10S/H	0.963	14.00	13.48
Matruh	-	-	-	-	Local	1.340	17.10	22.91
Nourth Sinia	-	-	-	-	Local	0.216	5.00	1.08
South Sinai	-	-	-	-	Local	0.005	4.30	0.02
Noubaria	-	-	--	-	S/H 10	48. 814	28.33	1382.90
The totality outside the Valley	-	-	-	-	-	51.338	-	-
Total	-	1587.299	-	39621.81	-	136.651	24.25	3368.49

Note: S/H= Single Hybrid and T/H=Tribal Hybrid Sort

Resource: this data is counted and collected from the Central Administration of Agricultural Economy/The Ministry of Agriculture and Reclamation of Land.

Table no. (6) The Expected Production of Cultivating Sorts of Yellow Summary Maize with High Productivity

Governorate	Old Lands				New Lands			
	varieties	Area	Productivity	Production	varieties	Area	Productivit	Production
Alexandria	152 S/H	2478	30.11	74.61	3062 S/H	5177	25.16	130.25
Behera	162 S/H	45498	27.36	1244.83	3062 S/H	2600	26.32	68.43
Garbya	3062 S/H	2468	25.56	63.08	-	-	-	-
Kafr elSheikh	3062 S/H	16307	25.88	422.03	-	-	-	-
Daqahlia	3062 S/H	15645	29.21	456.99	-	-	-	-
Domietta	Golden Yellow	633	25.71	16.27	-	-	-	-
Sharqia	2055 S/H	30502	26.08	795.49	T/H 352	3800	25.13	95.49
Ismailia	S/H Sun	10491	30.53	320.29	3062 S/H	4385	27.97	122.65
Suez	Golden Yellow	982	24.69	24.25	Golden Yellow	345	17.42	6.01
Monufia	2055 S/H	35396	27.81	984.36	-	-	-	-
Qalyubia	2066 S/H	10543	23.95	252.51	-	-	-	-
The Totality of the Lower Egypt	-	170943	-	-	-	16307	-	-
Giza	3062 S/H	1510	25.49	38.49	-	-	-	-
Beni Soef	352T/H	5821	22.00	128.06	Golden Yellow	600	20.00	12.00
Fayoum	352T/H	5863	18.20	106.71	-	-	-	-
Minya	3084 S/H	61922	21.08	1305.32	2055 S/H	1252	20.17	25.25
Totality of Middle Egypt	-	75116	-	-	-	1852	-	-
Asyut	Golden Yellow	54178	23.35	1265.06	166 S/H	2538	19.00	48.22
Sohag	3062 S/H	5654	23.58	133.32	-	-	-	-
Qina	3084 S/H	23666	23.3	552.3	3062 S/H	2152	24.16	51.99
Luxor	3062 S/H	17115	20.45	350.00	Local	2268	14.99	33.99
Aswan	352 T/H	4376	19.19	83.98	Local	7785	14.21	110.63
Totality of Upper Egypt	-	104989	-	-	-	14743	-	--
Totality inside the Valley	-	351048	-	-	-	32902	-	-
New Valley	352 T/H	10	14.50	0.16	352T/H	13	14.60	0.19
South Sinai	-	-	-	-	Local	5	4.00	0.02
Nobarya	-	-	-	-	162 S/H	31268	26.49	828.29
Totality outside the valley	-	10	-	-	-	31286	-	-
Totality	-	351058	-	8617.91	-	64188	-	1533.43

Note: S/H= Single Hybrid and T/H=Tribal Hybrid Sort

Resource: this data is counted and collected from the Central Administration of Agricultural Economy/The Ministry of Agriculture and Reclamation of Land.

Increasing the Production of Maize through planting varieties with High Productivity:

This study concludes that through replacing varieties of yellow maize that have low productivity with their counterpart that have high productivity in each governorate, this will achieve an increase in the total production of the two harvests as it is shown in the two tables (5-6).

It became clear that the total production of both yellow and summery white maize in new and old lands will reach about 307.202 and 72.510 thousand tons for each of them, respectively. Therefore, the total production of summery maize in Egypt will reach about 379.712 thousand tons by an increase that valued by about 28.9% comparing to 2013. This is typical to the recommendation of The Ministry of Agriculture and Reclamation of Land. Hence, the ministry recommends the cultivation of new varieties of hybrid, single and tribal corn that characterized by its high productivity over other previous kinds. Some of them are the new, single, yellow hybrid sort (173); it is a summary harvest that produces about 32(300kilo)/feddan and it remains on the soil about 90 days only. This saves about 20 days of the harvest's planting period on the soil. Therefore, the counted number of irrigation needed to the harvest is reduced to about 5 times only as it is shown in table no. (7). (the summary maize feddan needs about 33383 m³ of irrigation water). Through using the yellow hybrid single type 173, the amount of water needed for each feddan will be declined to about 2480 m³ since it uses about 563.83 m³ of water in every irrigation time. The new and old cultivated lands of summary yellow maize reached about 382.326 thousand feddan. If the yellow hybrid type 173 was planted all over the Republic, the saved amount of water will reach about 1077.85 thousand m³. This water can be used on cultivating other new harvests.

Table no. (7): A Comparison between Current Cultivated Sorts and the New Single Yellow Sort 173

Statement	Current Sorts	Sort 173	Saving by %
Daily Cultivating Period	110	90	18.2
Number of Irrigations	6	5	16.7
Watery Irrigation Amount/ Summary feddan M ³	3383	2819.2	16.7

Resource: this data is counted and collected from the Central Administration of Agricultural Economy/The Ministry of Agriculture and Reclamation of Land.

Water Irrigation of Rice and Maize:

Each feddan of rice, with its well-known kinds, needs about 7000 m³ of watery irrigation to be planted, but the Ministry of Agricultural succeeds to devise newly improved varieties in which ever feddan doesn't need except about 4000 m³ of water; theses are varieties such as , *Orabi 1* and *Orabi 2*. Also, its counterpart of maize needs about 3000.383 m³ of water irrigation. Thus, if rice area is reduced by about 10% and replaced by maize harvest, this will save about 448 million m³ of water irrigation (it is important to mention that cultivating this area by rice needs about 993.5 million m³ of water, while planting it with maize needs only about 545 million m³ of water irrigation). However, if the current cultivating varieties are replaced by these two improving varieties of the totality of the rice area all over the Republic, then it will save about 3.9 million m³ of water irrigation. This is highly important, especially on the current time, because Egypt suffers from a shortage in water irrigation in addition to what Egypt will face due to the reduction of its River Nile share after completing the building of the Renaissance Dam.

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