Economic Return of Recycling the Agricultural Wastes in Egypt and Spain

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Abstract: Animal wastes and plant wastes are an important resource in Sustainable Agricultural Development and organic crops production for healthy food for life, when it is recycled to produce organic fertilizer (compost). It is clear that through the study of The economic returns to rotate some animal wastes and plant wastes in Egypt and Spain, And to identify. The quantity and value of losses in the content of animal wastes and plant wastes fertilizer elements (N, P, K) And also to identify Economic returns to recycling plant wastes for the production of industrial organic fertilizer (compost). Sustainable waste management means using resources efficiently to cut down on the amount of waste produced and where waste is generated, dealing with it in a way that contributes to the economic, social and environmental goals of sustainable development.

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1. Introduction:

There are many complex economic and policy issues related to nutrient management. Before farmers can be convinced about applying a purchased input such as mineral or organic fertilizer, they need knowledge about such inputs and their effects on crop yield in both agronomic and economic terms. Once convinced of using fertilizers, in principle, they have to make the complex decision on how much and which fertilizer to use. Their decision on whether to use fertilizer on a particular crop is generally based on some form of economic judgment that includes experience from using such inputs, the cash or credit available, and probable produce prices. While the calculation of the economics of applying fertilizers is relatively straightforward, the economics of using nutrient sources such as animal manure, compost, crop residues, green manure crops and urban wastes is more complex. Critical elements in the calculation of the economics of using these products are their variable nutrient composition, their residual effect and the cost and availability of labour to access, process and apply them. These factors are often overlooked when advocating different nutrient management strategies.

For practical use, all agronomic data on crop responses to nutrients should always be subjected to economic analysis in order to account for differences in input and output prices and to address the basic issue of whether and to what extent fertilizer application will be profitable to the farmer. The discussion here uses mineral fertilizers as an example but the issues are also applicable to the other nutrient sources. Information on the factors that affect the returns from nutrient application is equally valuable in decision-making.

2. Material and Methods

Data sources: The study relied on sources of essential and secondary data through.

The annual statistical bulletins, periodicals, and some studies academy previous thesis of the masters and doctoral research.

Research and analytical method:

Study adopted the method of statistical analysis of descriptive and quantitative and averages, percentages, and measures of financial for the economic importance of recycling of some agricultural wastes, animal and plant through the production of organic fertilizer manufacturing in Spain, was also used some conversion factors to find out what rewards or draw the waste from the major fertilizer elements (N, P, K) in order to facilitate the economic valuation of these wastes and converted to the values of physical cash.

Reference review

Organic waste composting techniques (Julia et al., 2009) have been extensively developed in recent decades in response to the increasing concern about the amount and management of waste. Most studies focus on a specific stage or aspect in the life cycle of compost. The aim here is to determine the environmental impacts associated to the use of compost, from the collection of organic municipal solid waste to its application to tomato crops, and to compare these results with mineral fertilizer application, using life cycle assessment. Three systems were considered, depending on the fertilizing treatment applied. The data was obtained experimentally in pilot fields and in an industrial composting facility, both located in the Mediterranean area. Treatments with compost have higher impacts than treatment with mineral fertilizer as a result of the high impact of compost production.

Growing concerns for environmentally friendly goods and services are being expressed together with those related with risks derived from intensive agriculture and broader environmental problems. This was, for example, a major issue at the World Summit on Sustainable Development held in Johannesburg in September 2002. In a recent survey (European Commission, 2005), citizen of the European Union answered that their main priorities in terms of agricultural policy were, listed in order of importance: ensuring stable and adequate incomes for farmers (36%), ensuring that agricultural products are healthy and safe (30%), promoting respect for the environment (28%), favoring and improving life in the countryside (26%) and favoring organic production (20%).

In the study for (Josep. 2006), this paper conducts an empirical study on output, costs and incomes in organic farming with a sample of Spanish firms. Financial accounting data reveals that organic and partly or transitional to organic farming do not get significantly different output than intensive farming. Farms in transition to organic farming bear significantly higher costs and obtain significantly lower income than intensive farming. Costs were recalculated incorporating opportunity costs of family work. Organic and transitional farming displayed significantly higher costs and lower relative income. However, organic farming plays a social role generating more employment than intensive farming and avoiding environmental and health damages. The article recalls for the necessity for accounting to broaden its scope and contents. It should disclose social and environmental data, as well as transactions that are not marketed, registered or valued but yield social profits and costs.

In the study for (salah, 2006) showed that maize wood was of the first rank as organic fertilizer on the total level of Egypt with L.E. 904.98 million annually and expected net return L.E. 687.78 million annually Rice straws came as second rank with total value of organic fertilizer L.E. 2317.29 million annually and total expected net returns L.E. 1761.14 million annually on Egypt's level. As for Fayoum Governorate, corn wood came in the first rank as a value of organic fertilizer L.E. 51.37 million annually and expected net return L.E. 39.04 million annually. Maize wood came in the second rank, the total of Fayoum Governorate of organic fertilizer quantity was L.E. 144.55 million annually and the total of expected net return was L.E. 109.86 million annually with 6.24% of the total Republic. As for Maize wood, it came in the first rank of quantity equivalent to Nitrogen and Rice straw came as second rank. Maize would come as first rank of quantity equivalent to phosphorous and rice straws came as second rank. Rice straws registered the first rank of equivalent quantity of potassium and corn woods were in the second rank. As for the economic retunes of organic fertilizers from agricultural wastes it was of 18% as an average according to 2004 statistics.

(Salvador et. al., 2007) Concern for the environment on a world scale is affecting all economic activities, and agriculture is not an exception. The Common Agricultural Policy (CAP) and the Policy for the Environment of the European Union (EU) have been introducing during the last years different environmental laws through their various legislating offices to facilitate the obtaining of community funding. The fundamental principles on which their measures are based are the following: “those who contaminate will have to pay”, “conservationists will be paid” or “internalization of environmental costs”. At present, the EU is involved in a configuration process reforming the totality of its budget policy for the programming period 2007-2013. Within this process, the community structural funds have been reviewed to conform to the new EU cohesion policy. Within this area, the new European Agricultural Fund for Rural Development (EAFRD) has been created, in which the basic lines regarding to rural development policy for the next few years are being defined. This is one of the pillars of the CAP. In this way, at least 25% of community expenditure is envisaged to be destined to environmental issues. Based on these principles, it is necessary to integrate agriculture environmentally by practicing the kind of agricultural management that respects and benefits from the opportunities offered by the environment.

3. Results and Discussion:

First: The economic returns to rotate some animal wastes in Egypt and Spain.

Can be identified on the efficiency or economic returns that accrue when to rotate some of the animal wastes and by using some conversion factors can be illustrated through the following points.

The quantity and value of losses in the content of animal waste fertilizer elements (N, P, K).

Loss occurs in the content of animal waste fertilizer elements (nitrogen, phosphorus and potassium) when these wastes are used in the production of non-conventional energy by burning them directly without the benefit with the pollution of the environment, and can even explain it should first clarify the average content of animal waste fertilizer of these elements, which illustrated in tables (1,2) where shows the average percentage of the content of each waste of animal wastes into the study based on dry weight of the waste.

To determine the value of the content of animal waste from these elements must know the average price in euros per ton of the three fertilizer elements (nitrogen, phosphorus and potassium), and through the prices of mineral fertilizers for these items on the market (at February 2009). It can be explained prices as the price of nitrogen around (345) euros/ton, the price of some phosphorus (510) euros/ton and the price of some potassium (840) euros/ton. (www.coag.org).

Table No. (1): characteristics of the residues produced from animals

Category	*Average Weight (Kg)	*The amount of waste Dry (Kg / day)	**The number of animals in Egypt 2007	***The number of animals in Spain 2007
cattle	400	4	8974466	5740557
Horses	350	5	65714	276987
Sheep	200	0.48	5467469	18758512
Goat	50	0.24	4210714	2475710

Source:
*Samir Ahmed El-Shimi, (Dr.), "biogas", Agricultural Research Center, Department of Culture agricultural, technical publication No. 7, Egypt, 2000.
**Ministry of Agriculture, Economic Affairs Sector, Central Department of Agricultural Economics, Bulletin of Agricultural Statistics, Egypt, 2007.
***ANUARIO DE ESTADISTICA MINISTERIO DE MEDIO AMBIENTE Y MEDIO RURAL Y MARINO Madrid, 2009.

Table No. (2): average percentage of the content of animal waste dry fertilizer elements.

serial	The waste of animals	Average percentage of the content of the waste dry fertilizer elements%		
		Nitrogen (N)	Phosphorus (P)	Potassium (K)
1	**Livestock (Cows)**	1.9	0.56	1.4
2	**Sheep and goats**	1.87	0.79	0.92
3	**Horses**	1.1	0.7	0.8

Source: Parr, J.F. and colacicco, D., Organic materials as alternative nutrient sources C.F. Nutrition and pest control, Elsevier Sci. Pub. Amst. Netherlands, 1987.

It is clear from the table number (3) to the overall total of the quantity equation of nitrogen corresponding to the total animal wastes into the study at the level of both Egypt and Spain on respectively amounted to about (753.647, 631.004) thousand tons/day and reached the overall total of the corresponding value of about (260, 218) million euros/day.

Table (3): The total quantity and value of losses in the content of animal waste dry from element (nitrogen) in Egypt and Spain (2008).

Animal Type		The total amount of waste is dry tons / day	* Quantity equivalent of a nitrogen (nitrogen) per thousand tons/day	Value in million euros/day	In descending order of importance
Egypt	**Cattle**	35897864	682.059	235	**1**
	Horses	328570	3.614	1	**4**
	Sheep	2624385	49.076	17	**2**
	Goat	1010571	18.898	7	**3**
	Total	**39861390**	**753.647**	**260**	
Spain	**Cattle**	22962228	436.282	151	**1**
	Horses	1384935	15.234	5	**3**
	Sheep	9004086	168.376	58	**2**
	Goat	594170.4	11.111	4	**4**
	Total	**33945419**	**631.004**	**218**	

Source: * Calculated according to the conversion factor used.

It is clear from the table number (4) to the overall total of the amount of phosphorus equation corresponding to the total animal waste at the level of both Egypt and Spain on respectively amounted to about (232.044, 214.109) thousand tons/day and reached the overall total of the corresponding value of about (118 , 109) million euros/day.

Table (4): The total quantity and value of losses in the content of animal waste dry from element (phosphorus) in Egypt and Spain (2008).

Animal Type		The total amount of waste is dry tons / day	* Quantity equation of the element (phosphorus) in thousand tons/day	Value in million euros/day	In descending order of importance
Egypt	**Cattle**	35897864	201.028	103	**1**
	Horses	328570	2.300	1	**4**
	Sheep	2624385	20.733	11	**2**
	Goat	1010571	7.984	4	**3**
	Total	**39861390**	**232.044**	**118**	
Spain	**Cattle**	22962228	128.588	66	**1**
	Horses	1384935	9.695	5	**3**
	Sheep	9004086	71.132	36	**2**
	Goat	594170.4	4.694	2	**4**
	Total	**33945419**	**214.109**	**109**	

Source: * Calculated according to the conversion factor used.

It is clear from the table number (5) to the overall total of the quantity equation of potassium corresponding to the total animal waste at the level of both Egypt and Spain on respectively amounted to about (538.640 , 420.855) thousand tons/day and reached the overall total of the corresponding value of about (452 , 354) million euros/day.

Table (5): The total quantity and value of losses in the content of animal waste dry from element (potassium) in Egypt and Spain (2008).

Animal Type		The total amount of waste is dry tons / day	* Quantity equation of the element (potassium) in thousand tons / day	Value in million euros/day	In descending order of importance
Egypt	**Cattle**	35897864	502.570	422	**1**
	Horses	328570	2.629	2	**4**
	Sheep	2624385	24.144	20	**2**
	Goat	1010571	9.297	8	**3**
	Total	**39861390**	**538.640**	**452**	
Spain	**Cattle**	22962228	321.471	270	**1**
	Horses	1384935	11.079	9	**3**
	Sheep	9004086	82.838	70	**2**
	Goat	594170.4	5.466	5	**4**
	Total	**33945419**	**420.855**	**354**	

Source: * Calculated according to the conversion factor used.

Second: The economic returns to rotate some plant wastes in Spain

Can be identified on the efficiency or economic returns that accrue when to rotate some of the plant wastes and by using some conversion factors can be illustrated through the following points.

The quantity and value of losses in the content of plant waste fertilizer elements (N, P, K).

Loss occurs in the content of plant wastes fertilizer elements (nitrogen, phosphorus and potassium) when these wastes are used in the production of non-conventional energy by burning them directly without the benefit with the pollution of the environment, and can even explain it should first clarify the average content of plant waste fertilizer of these elements, which illustrated in tables (6,7) where shows the average percentage of the content of each waste of plant wastes into the study based on dry weight of the waste.

To determine the value of the content of plant waste from these elements must know the average price in euros per ton of the three fertilizer elements (nitrogen, phosphorus and potassium), and through the prices of mineral fertilizers for these items on the market (at February 2009). It can be explained prices as the price of nitrogen around (345) euros/ton, the price of some phosphorus (510) euros/ton and the price of some potassium (840) euros/ton. (www.coag.org)

Table No. (6): characteristics of the waste produced from crops and various plants in Egypt and Spain (2008)..

Type of crop	*Area in thousand hectares In Egypt (2008)	**Area in thousand hectares In Spain(2008)	*** Average production per hectare in tons of waste is dry
Rice	745.1	96.1	4.3
Cotton	131.3	52.6	3.8
Maize	821.8	362.4	4.3
Sorghum	154.1	6.4	4.5
Sugar beet	108.2	52.3	8.1
tomato	240.2	57.1	7.6

Source:
*Ministry of Agriculture, Economic Affairs Sector, Central Department of Agricultural Economics, Bulletin of Agricultural Statistics, Egypt, 2008.
** ANUARIO DE ESTADISTICA MINISTERIO DE MEDIO AMBIENTE Y MEDIO RURAL Y MARINO Madrid, 2009.
***Samir Ahmed El-Shimi, (Dr.), **"biogas",** Agricultural Research Center, Department of Culture agricultural, technical publication No. 7, Egypt, 2000.

Table No. (7): average percentage of the content of dry plant waste fertilizer elements.

serial	Type of waste	Average percentage of the content of the waste dry fertilizer elements%		
		Nitrogen (N)	Phosphorus (P)	Potassium (K)
1	**Rice straw**	0.58	0.1	1.38
2	**Cotton Stalks**	0.88	0.15	1.45
3	**Maize Stalks**	0.55	0.31	1.11
4	**Sorghum Stalks**	0.55	0.31	1.11
5	**Sugar beet Thrones**	2.1	0.3	0.15
6	**tomato Thrones**	2.1	0.3	0.15

Source: Parr, J.F. and colacicco, D., Organic materials as alternative nutrient sources C.F. Nutrition and pest control, Elsevier Sci. Pub. Amst. Netherlands, 1987.

Seen from the table number (8) to Tomato Thrones came first in the equation in terms of quantity of nitrogen, which amounted to about (38.33) thousand tons per year, which are estimated at (13.22) million euros a year at the level of Egypt, and Maize Stalks comes in second place, with an overall total equation of the quantity of nitrogen at the level of Egypt about (**102.96**) thousand tons per year, with a total value of the corresponding year of around (**35.52**) million euros per year.

While Tomato Thrones came first in the equation in terms of quantity of nitrogen, which amounted to about (**9.11**) thousand tons per year, which are estimated at (**3.14**) million euros a year at the level of Spain, and Sugar beet Thrones comes in second place, with an overall total equation of the quantity of nitrogen at the level of Spain about (**30.89**) thousand tons per year, with a total value of the corresponding year of around (**10.66**) million euros per year.

Table (8): The total quantity and value of losses in the content of dry plant waste element (nitrogen) in Egypt and Spain (2008).

Type of waste		The total amount of waste is dry tones	* Quantity equivalent of the element (nitrogen) thousand tons/year	Value in million euros/year	In descending order of importance
Egypt	Rice straw	3203895	18.58	6.41	3
	Cotton Stalks	499082	4.39	1.52	5
	Maize Stalks	3533537	19.43	6.70	2
	Sorghum Stalks	693462	3.81	1.32	6
	Sugar beet Thrones	876583	18.41	6.35	4
	Tomato Thrones	1825326	38.33	13.22	1
	Total	**10631884**	**102.96**	**35.52**	
Spain	Rice straw	413230	2.40	0.83	4
	Cotton Stalks	199880	1.76	0.61	5
	Maize Stalks	1558320	8.57	2.96	3
	Sorghum Stalks	28800	0.16	0.05	6
	Sugar beet Thrones	423630	8.90	3.07	2
	Tomato Thrones	433960	9.11	3.14	1
	Total	**3057820**	**30.89**	**10.66**	

Source: * Calculated according to the conversion factor used.

Seen from the table number (9) to Maize Stalks is ranked first in terms of the quantity equation of phosphorus, which amounted to about (**10.95**) thousand tons per year, and the corresponding value of about (**5.59**) million euros a year at the level of Egypt, and Tomato Thrones comes in second place, with an overall total equation of the quantity of phosphorus on the level of about Egypt (**25.16**) thousand tons each year, with the overall total for the corresponding value of around (**12.83**) million euros per year.

While Tomato Thrones is ranked first in terms of the quantity equation of phosphorus, which amounted to about (**1.30**) thousand tons per year, and the corresponding value of about (**0.66**) million euros a year at the level of Spain, and Sugar beet Thrones comes in second place, with an overall total equation of the quantity of phosphorus on the level of about Spain (**8.21**) thousand tons each year, with the overall total for the corresponding value of around (**4.19**) million euros per year.

Table (9): quantity and value of losses in the content of dry plant waste element (phosphorus) in Egypt and Spain (2008).

Type of waste		The total amount of waste is dry tones	* Quantity equation of the element (phosphorus) thousand tons/year	Value in million euros/year	In descending order of importance
Egypt	Rice straw	3203895	3.20	1.63	3
	Cotton Stalks	499082	0.75	0.38	6
	Maize Stalks	3533537	10.95	5.59	1
	Sorghum Stalks	693462	2.15	1.10	5
	Sugar beet Thrones	876583	2.63	1.34	4
	Tomato Thrones	1825326	5.48	2.79	2
	Total	**10631884**	**25.16**	**12.83**	
Spain	Rice straw	413230	0.41	0.21	4
	Cotton Stalks	199880	0.30	0.15	5
	Maize Stalks	1558320	4.83	2.46	3
	Sorghum Stalks	28800	0.09	0.05	6
	Sugar beet Thrones	423630	1.27	0.65	2
	Tomato Thrones	433960	1.30	0.66	1
	Total	**3057820**	**8.21**	**4.19**	

Source: * Calculated according to the conversion factor used.

Seen from the table number (10) to Rice straw, which is ranked first in terms of the quantity equation of potassium, which amounted to about (**44.21**) thousand tons per year, and the value corresponding to (**37.14**) million euros a year at the level of Egypt, Maize Stalks comes in second place, with an overall total of the quantity equation of potassium at the level of about Egypt (**102.42**) thousand tons each year, with the overall total for the corresponding value of around (**86.04**) million euros per year.

While Maize Stalks, which is ranked first in terms of the quantity equation of potassium, which amounted to about (**17.30**) thousand tons per year, and the value corresponding to (**14.53**) million euros a year at the level of Spain, Rice straw comes in second place, with an overall total of the quantity equation of potassium at the level of about Spain (**27.50**) thousand tons each year, with the overall total for the corresponding value of around (**23.10**) million euros per year.

Table (10): The total quantity and value of losses in the content of dry plant waste element (potassium) in Egypt and Spain (2008).

	Type of waste	The total amount of waste is dry tones	* Quantity equivalent of the element (potassium) thousand tons/year	Value in million euros/year	In descending order of importance
Egypt	Rice straw	3203895	44.21	37.14	1
	Cotton Stalks	499082	7.24	6.08	4
	Maize Stalks	3533537	39.22	32.95	2
	Sorghum Stalks	693462	7.70	6.47	3
	Sugar beet Thrones	876583	1.31	1.10	6
	Tomato Thrones	1825326	2.74	2.30	5
	Total	**10631884**	**102.42**	**86.04**	
Spain	Rice straw	413230	5.70	4.79	2
	Cotton Stalks	199880	2.90	2.43	3
	Maize Stalks	1558320	17.30	14.53	1
	Sorghum Stalks	28800	0.32	0.27	6
	Sugar beet Thrones	423630	0.64	0.53	5
	Tomato Thrones	433960	0.65	0.55	4
	Total	**3057820**	**27.50**	**23.10**	

Source: * Calculated according to the conversion factor used.

Third: Economic returns to recycling plant wastes for the production of industrial organic fertilizer (compost):

There is no doubt that reliance on mineral fertilizers under the regime of intensive agriculture leads to pollution of soil, plants and water and here endorse a need for the presence of organic matter to soils of high level of production, quality and relevance of consumer tastes and conditions of public health, so the quantities of the waste plant were considered a waste of high value-added income national agriculture as a result of the loss of organic matter and fertilizer elements, in addition to being a source of contamination of the environment in the absence of their correct use.

From this perspective, increased attention to the expansion in the production of organic fertilizers and consequently organic agriculture programs can be achieved to maintain soil fertility and improve the physical and chemical properties and biological weapons, which would lead to the production of crops with good specifications to suit the needs and requirements of foreign markets, thus providing opportunities for export of those products.

What is meant by the term organic fertilization of agricultural land is organic fertilizers made from agricultural wastes for recovery of fertilizer elements taken from the soil during various stages of plant growth, so as to maintain the fertility and vitality and restore the ecological balance of the soil, which is achieved with the reduction of environmental pollution resulting from rationalization of consumption of mineral fertilizers pesticides and other chemicals, as well as by not burning waste for disposal and the production of clean safe healthy food for both humans or animals and to obtain a high quality product and reduce the costs of agricultural production and create jobs through non-conventional stages of the production of organic fertilizers and maintain the integrity of the sources of irrigation and drainage and the economy the expenses of the clean canals, banks and reduce the chances of insect and rodent pests and harmful and increase national income through an attractive economic return.

Due attention to organic agriculture to environmental restrictions to protect humans from pollution and the difficulty of disposal of agricultural wastes, leading to increased health and environmental problems, in addition to health conditions to be met through global conventions when exporting agricultural products to world markets. All that was important to provide industrial compost (manure compost), an organic fertilizer resulting from aerobic fermentation of mixtures of plant and animal waste.

And to identify the quantity and value of industrial organic fertilizer (compost) and economic returns that can be achieved when the plant waste recycling for the production of agricultural fertilizer industrial organic (compost) for each waste of agricultural waste under study in Egypt and Spain. Can rely on the following data in the table (11,12) to determine the conversion factor which can be used is as follows:

Table No. (11): characteristics of the waste produced from crops and various plants in Egypt and Spain (2008). .

Type of waste		Area in thousand hectares	***Average production per Ha Wet tons	The total amount of waste is wet a thousand tones/year
*Egypt	Rice straw	745.1	4.8	3576.44
	Cotton Stalks	131.3	4.3	564.75
	Maize Stalks	821.8	4.8	3944.41
	Sorghum Stalks	154.1	5.0	770.51
	Sugar beet Thrones	108.2	9.5	1028.09
	tomato Thrones	240.2	10.0	2401.74
**Spain	Rice straw	96.1	4.8	461.28
	Cotton Stalks	52.6	4.3	226.18
	Maize Stalks	362.4	4.8	1739.52
	Sorghum Stalks	6.4	5.0	32
	Sugar beet Thrones	52.3	9.5	496.85
	tomato Thrones	57.1	10.0	571

Source:
*Ministry of Agriculture, Economic Affairs Sector, Central Department of Agricultural Economics, Bulletin of Agricultural Statistics, Egypt, 2008.
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Given a ton of waste plant about 2.5 cubic meters of industrial organic fertilizer, which is equivalent to one ton (compost). As the table shows the number (12) that the estimated cost per ton of compost, equal to about (**50**) EUR/ton, on the grounds that the price per ton of it working at the equivalent of about (**150**) EUR/ton, a value representing the arithmetic average price per ton.

Table No. (12): Shows the average (cost, price) and net revenue in euros per ton of compost in Egypt and Spain (2008).

Type	Average cost euros per ton	The average price euros per ton	Net revenue euros per ton
compost	50	150	100

Source: www.alicanteasaja.com

Table (13) to Maize Stalks is ranked first in terms of quantity the equivalent of compost, which amounted to about (**9.86**) million cubic meters annually, an estimated cost of about (**197.2**) Euro/year and is ranked second, Rice straw, while the total amount of the equivalent of compost on Egypt's level of about (**8.94**) cubic meters annually, at a total cost amounted to about (**614.3**) euros a year on the level of Egypt.

While Maize Stalks is ranked first in terms of quantity the equivalent of compost, which amounted to about (**4.35**) million cubic meters annually, an estimated cost of about (**87.0**) Euro/year and is ranked second, Tomato Thrones, while the total amount of the equivalent of compost on Spain's level of about (**8.82**) cubic meters annually, at a total cost amounted to about (**176.3**) euros a year on the level of Spain.

Table (13) the total quantity and cost estimates in millions of euros for the production of industrial organic fertilizer (compost) from the wet waste plant in Egypt and Spain (2008).

Type of waste		The total amount of waste is wet a thousand tones/year	* Quantity equation of compost million cubic meters/year	The estimated cost in millions of euros necessary to convert the total amount of waste to compost/year	In descending order of importance
*Egypt	Rice straw	3576.44	8.94	178.8	2
	Cotton Stalks	564.75	1.41	28.2	6
	Maize Stalks	3944.41	9.86	197.2	1
	Sorghum Stalks	770.51	1.93	38.5	5
	Sugar beet Thrones	1028.09	2.57	51.4	4
	Tomato Thrones	2401.74	6.00	120.1	3
	Total	**12285.95**	**30.71**	**614.3**	
**Spain	Rice straw	461.28	1.15	23.1	4
	Cotton Stalks	226.18	0.57	11.3	5
	Maize Stalks	1739.52	4.35	87.0	1
	Sorghum Stalks	32	0.08	1.6	6
	Sugar beet Thrones	496.85	1.24	24.8	3
	Tomato Thrones	571	1.43	28.6	2
	Total	**3526.83**	**8.82**	**176.3**	

Source: * Calculated according to the conversion factor used.

As is clear from the data table (14) to Maize Stalks comes in ranked first in Egypt in terms of manure, which amounted to about (**591.7)** million euros per year and net revenue is expected around (**394.4**) millions euros a year, comes in second place, Rice straw, while the overall total of the value of manure around (**1842.9**) millions euros annually, and the overall total of net revenue is expected around (**1228.6**) millions euros a year on the level of Egypt.

While Maize Stalks comes in ranked first in Spain in terms of manure, which amounted to about (**260.9)** million euros per year and net revenue is expected around (**174.0)** millions euros a year, comes in second place, Tomato Thrones, while the overall total of the value of manure around (**529.0**) millions euros annually, and the overall total of net revenue is expected around (**352.7**) millions euros a year on the level of Spain.

Table (14): The total value and net revenue in millions of euros expected in the production of organic fertilizer (compost) from the wet waste plant in Egypt and Spain (2008).

Type of waste		The total amount of waste is wet a thousand tones/year	* The value of industrial organic fertilizer (compost) in million euros/year	(N.R) Net revenue resulting in the production of compost in millions of euros/year	In descending order of importance
Egypt	Rice straw	3576.44	536.5	357.6	2
	Cotton Stalks	564.75	84.7	56.5	6
	Maize Stalks	3944.41	591.7	394.4	1
	Sorghum Stalks	770.51	115.6	77.1	5
	Sugar beet Thrones	1028.09	154.2	102.8	4
	Tomato Thrones	2401.74	360.3	240.2	3
	Total	**12285.95**	**1842.9**	**1228.6**	
Spain	Rice straw	461.28	69.2	46.1	4
	Cotton Stalks	226.18	33.9	22.6	5
	Maize Stalks	1739.52	260.9	174.0	1

	Sorghum Stalks	32	4.8	3.2	**6**
	Sugar beet Thrones	496.85	74.5	49.7	**3**
	Tomato Thrones	571	85.7	57.1	**2**
	Total	**3526.83**	**529.0**	**352.7**	

Source: * Calculated according to the conversion factor used.

4. Conclusion:

Sustai:nable waste management means using resources efficiently to cut down on the amount of waste produced and where waste is generated, dealing with it in a way that contributes to the economic, social and environmental goals of sustainable development.

The following table No. (15) shows the most important economic returns that can be obtained from the recycling of agricultural wastes in Egypt and Spain.

Country	**Egypt**			**Spain**		
Waste type	**Animal wastes**					
Type	**Q(Quantity) thousand tons/day**	**V(value) million euros/day**		**Q thousand tons/day**	**V Million euros/day**	
N	**753.647**	**260**		**631.004**	**218**	
P	**232.044**	**118**		**214.109**	**109**	
K	**538.640**	**452**		**420.855**	**354**	
Total		**830**			**681**	
Country	**Egypt**			**Spain**		
Waste type	**Plant wastes**					
Type	**Q thousand tons/year**	**V million euros/year**		**Q thousand tons/year**	**V million euros/year**	
N	**102.96**	**35.52**		**30.89**	**10.66**	
P	**25.16**	**12.83**		**8.21**	**4.19**	
K	**102.42**	**86.04**		**27.50**	**23.10**	
Total		**134.39**			**37.95**	
Waste type	**Economic returns to recycling plant wastes for the production of industrial organic fertilizer (compost)**					
Country	**Egypt**			**Spain**		
Type	**Q thousand tones/year**	**V million euros/year**	**N.R Net revenue million euros/year**	**Q thousand tones/year**	**V million euros/year**	**N.R Net revenue million euros/year**
Compost	**12285.95**	**1842.9**	**1228.6**	**3526.83**	**529.0**	**352.7**
Main opportunity	**animal wastes (Cattle, Horses, Sheep, Goat)**			**animal wastes (Cows, Sheep, Horses, Goat)**		
	plant wastes (Maize Stalks, Rice straw, Tomato Thrones, Sugar beet Thrones, Sorghum Stalks, Cotton Stalks)			**plant wastes (Maize Stalks, Tomato Thrones, Sugar beet Thrones, Rice straw, Cotton Stalks, Sorghum Stalks)**		
Main limitation	**1-lack of funding for the construction of projects in this country. 2-Lack of equipment and equipment necessary. 3-Lack of awareness of environmental issues.**			**1- lack of information centers or periodic bulletins or accurate statistics on agricultural waste. 2- Lack of manpower and high wages.**		

Source: tables from (1 to 14)

5. Recommendations:

1) Promoting cooperation between research bodies and industrial enterprises in order to facilitate the identification of problems and sources of bottlenecks and constraints that limit the optimum utilization of agricultural wastes and thus lead to the scientific and practical solutions to these problems.
2) provide the necessary support for the issuance of an annual statistical bulletin of the two countries on the types and quantities of agricultural waste.
3) Provision of machinery and equipment necessary for the establishment of small projects in the field of recycling of agricultural waste.
4) Training and employment for the construction of these projects.
5) Work to raise awareness of environmental and health among the citizens through seminars and conferences to discuss important economic, social, environmental and health resulting from the recycling of agricultural waste.

Encourage the use of organic fertilizers (compost) as alternatives to economic and safe for the production of healthy food and safe compared to chemical fertilizers are detrimental to health and environmentally.

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