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Role of agriculture residues and its economics importance in decreasing fodder gab in Egypt

Nayera.Y.Solieman[1]*, SabbourM.M.[2] Hashem seham,A.A.[3]

[1]Department of Agricultural Economics, Agricultural, Biological Research Division, National Research Centre, EL-Tahrir St.-Dokki. Cairo, Egypt
[2]Department Pests&Plant Protection, Agricultural, Biological Research Division, National Research Centre . EL-Tahrir St.-Dokki. Cairo, Egypt,
[3]Department of Environmental Agricultural Science, Institute of Environmental Studies & Research, Ain Shams University, Cairo, Egypt

Abstract : The most important findings of our study are feeding of cows and buffaloes on the nonconventional ration which leads to decrease ton cost production of milk and meat and increase the tons amount outcomes per Egyptian pounds during the two successive seasons of productions. Also, it leads to decrease of the amount and quality of Egyptian corn by 33.5%. Our study clarified that feeding of animals on some nonconventional ration contributes in increasing of their total milk and meat production at the Republic level by a rate ranging between (10-15%) for milk and red meat by about (30-45%) which leads to increase of milk self-sufficiency rate by almost 125-131%) and red meat by (91-100%). Our study indicates that the biological treatment of the two crops (rice and corn) play an important role in increasing of the average productivity of rice and corn feddan and subsequently increase of the produced amount of the secondary product. This leads to reduction of deficit in ration balance at the republic level. Therefore, the most important recommendations of our study are to depend on the agricultural residues in producing the nonconventional ration because of its several positive effects on the farmer, product and our country. Also , beside these reasons, they decrease the negative effects of these residues on the environment, human health and the livestock. Beside, decrease of the rice straw burning which leads to the environment pollutions. So, it must to give a good aware to farmers about the economic importance outcomes of the recycling of rice and corn residues in producing nonconventional ration. This awareness can be spread among the farmers by agricultural guides in different villages of the country.
Keywords: agricultural residues, nonconventional ration, red meat-milk production, economic effects.

Introduction

Residues is the results from waste or output from a particular activity. All kinds of rubbish and garbage are wastes. There are different definitions for the agricultural wastes; they are defined as the secondary product during the process of field crops production whether during the harvest or the preparation processes for marketing or manufacturing of those crops. In addition, the field plant wastes are defined as the remaining parts after the harvest of the main crops. Residues also include animals and poultry wastes before or after the slaughtering process. The benefit from all types of residues can be maximized through their transformation into organic fertilizers, ration, food for man, clean energy or manufacturing to realize the clean horizontal

agriculture, protection of environment from pollution, improvement of agricultural products, providing employment jobs at the agricultural sector. This can, therefore, lead to the improvement of the economic and environmental situation, elevating the health and social levels in the Egyptian countryside and villages.

Types of agricultural residues:

1.Field residues:

They include all residues resulting from at the field level. They are divided into plant-originally or animal-originally residues. The plant-originally residues is poor in protein and its food value when used in its raw form for feeding animals. The most important of this type are rice straw, wheat straw, barley, beans, lentil, trefoil, chickpeas, Stover, corn, thrones of horticultural crop plants and vegetables. In addition, the animal-originally field residues are distinguished with its high raw protein content roughly estimated 20%. Half of the elements exist in the residues are non-protein materials. This curbs its use as poultry ration. They can be used as ruminant ration[1].

2. Agricultural manufacturing residues

It includes the secondary products which resulted during the manufacturing or conservation of agricultural products for different purposes, whether they are plant or animal crops. Also, it includes all residues of animal and agricultural manufacturing [2].

3. Accidental residues

It includes the residues of wholesale markets, kitchens, restaurants. It consists of different food garbage and differs of its value which is not stable and subjects to various many factors. The agricultural residues is generally used in various field production and including non-conventional ration production, bio-gas production field and field fertilizers production [3]. Our study mainly focuses on the possibility in decreasing the non-conventional ration production gap extracted from rice straw, firewood corn because of their important effects in developing the Egyptian animal production sector.

Problem statement:

Shortage of the ration materials is one of the main obstacles for the development of Egyptian animal production. It is found that the ration budget, in Egypt suffers from a deficit estimated during the average period (2010-2014) about 7.2 million tons [4]. Consequently, the farm animals will not obtain their adequate food needs in order to realize their real productive efficiency. Thus, their productivity will decline and a food gap which will occur between production and consumption as the self-consumption rate reached almost 7.1%. Our country tends to meet this gap through importing whose size reached about 314 thousand tons and valued $ US 1.1 dollars in 2014. This increases the burden of the state concerning the possibility of providing foreign currency, the deficit increase in the meat-food balance[6].

Aim of the study is to decrease the ration gap in Egypt by using the agricultural residues from two crops (corn and rice) in particular in producing the non-conventional ration for feeding the farm animals and subsequently increase the residues economic value.

Methods and data sources:

Our study has depended on the descriptive analytical method in order to realize its aim; it also depended on the questionnaire data filled by the breeders of farm animals in the governorates of Daqahlia and Sharqia governorates in Egypt. They depended on conventional and non-conventional ration in feeding the farm animals. These two governorates considered among the top of the rice and corn cultivated production areas which estimated as 409 and 248 thousand feddan, respectively and representing 30.1% and 24.0% of the total weight. Lower Egypt estimated about 1.4 million rice crop feddan and almost one million corn crop feddan. They represent, meanwhile, 29.9% and 11.0% of Egypt total area estimated as 1.4 million rice crop acres and about 2.2 million corn crop feddan [4]. Our study has relied as well on the published data and some electronic websites.

The total ration needs of farm animals and the total available ration at the Republic level.

Table 1 indicate that the total agricultural residues of the two crops of rice and corn estimated about 7.9 million tons during the average period of the study (2010-2014). It also show that, there is a surplus in the green ration balance and the hay fodder balance estimated about 1.9 million tons. This indicates that, there is a

deficit in the intensive ration in the fodder balance and estimated about 7.1 million tons during the average period of our study (2010-2014).

Table (1): Balance of ration and the requirements of farm animals needs from food at the different levels during the period (2010-2014) in Egypt.

Statement	period average (2010- 2014)
Total agricultural residues(corn& rice) in thousand tons	7994
Total numbers of animals, cows and buffalo in thousand head	7006
Total numbers of cows in thousand head	3830
Total numbers of buffaloes in thousand head	3176
Needs of green feed in thousand tons	38067
Needs of Switchgrass in thousand tons	9145
Needs of concentrated feed in thousand tons	15204
The availability of green fodder in thousand tons	56677
The availability of Switchgrass in thousand tons	11140
The availability of concentrated feed in thousand tons	8031
Balance of fodder from green feed in thousand tons	18738
Balance of Switchgrass in thousand tons	1995
Balance of fodder from concentrated feed in thousand tons	(7172)

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central administration of Agricultural Economy, Newsletters of agricultural statistics, different editions& Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central administration of Agricultural Economy, Newsletters of animal wealth, different editions (2010- 2014).

Non-conventional ration and their role in decreasing the ration gap size:

Our study of conventional ration role in meeting the fodder gap require the calculation of the total of firewood corn and rice straw residues during the period of (2010-2014), then the comparison of animal feeding cost of conventional and non-conventional bush at different levels in Egypt.

Total republic garbage of rice and corn crops:

Data in Table 2 show the total size average of rice and corn crops residues in the Egypt which estimated about 9.4 million tons where corn residues represents about 62.7% while rice residues represents almost 37.3% during the average period of (2010-2014). Also data obtained in Table 2 indicate that, the increase of the total of corn and rice ration by 1.1% in Egypt. The rice residues increased by 16.3% while the corn residues increased by about 7.7% in 2014 compared to 2010 (Table 2).

Table (2): Total agricultural residues from rice and corn crop in thousand tons in all Egyptians governorates during the period (2010-2014)

Year	The Republic total agricultural residues	Corn	Rice
2010	9251	5848	3403
2011	9350	5956	3394
2012	9447	6063	3384
2013	9545	6171	3374
2014	9355	5399	3956
Average	9389	5887	3502

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central administration of Agricultural Economy, Newsletters of agricultural statistics, different editions (2010- 2014).

Costs of farm animals feeds which feed on conventional and non-conventional ration:

Data in Table 3 indicate that, the rice feeding cost per animal head of producing milk during two successive production seasons as the cost rice rate in the case of conventional fodder feeding estimated almost 68.3% as compared to the feeding cost of non-conventional ration. The cost rate of trefoil, corn, and bran has the largest portion of this cost with the total of 85.1% and 71.4% for conventional and non-conventional bush respectively. It also show that, the increase of the total milk production amount in the winter and summer production seasons in the feeding case of conventional bush where estimated about 14.3% and almost 17.6% as compared to feeding of non-conventional bush.

Table (3): Comparison the costs of head milk farm animal feeding on conventional and non-conventional ration in both seasonal winter and summer production

Season	**Feed components**	**Conventional diets**		**Feed components**	**Unconventional diets**	
		% **Quantity**	% **Values**		% **Quantity**	% **Values**
Winter	Trefoil	74.2	39.2	Trefoil	67.8	42.3
	Wheat hay	9.3	5.9	Wheat hay	3.9	2.9
	Soybean hay	2.4	3.9	Residues the Treatment ammonia	7.8	10.0
	Corn	7.9	26.3	Residues the rice straw	5.6	5.1
	earn	0.7	3.1	Residues the Treatment urea	6.1	8.0
	bran	4.6	19.6	Corn stover	1.8	0.7
	Other	0.9	2.0	Corn	4.4	18.9
				earn	0.1	0.4
				bran	2.1	10.2
				Other	0.4	1.5
	Total	5176	3060	Total	3428	1647
Summer	Breaking the Corn	72.8	31.7	Breaking the Corn	66.8	33.9
	Trefoil Drees	8.9	21.6	Trefoil Drees	2.7	9.1
	Soybean hay	2.4	2.9	Soybean hay	0.4	1.2
	Silage	1.9	1.5	Residues the Treatment ammonia	14.8	16.4
	Corn	6.9	20.2	Residues the rice straw	2.4	2.4
	earn	1.1	4.1	Silage	1.4	1.3
	bran	5.5	16.6	Corn stover	1.4	1.8
	Other	0.5	1.4	Corn	5.2	18.8
				earn	0.1	0.5
				bran	2.3	7.9
				Other	2.5	6.7
	Total	3271	2218	Total	2248	1318
Winter	Total quantity of production kg		1440	Total quantity of production kg		1260
	Total revenue		7200	Total revenue		6300
Summer	Total quantity of production kg		800	Total quantity of production kg		680
	Total revenue		4000	Total revenue		3400

Source: calculated and collected from questionnaires in 2014-2015

Data in Table 4 indicate that, the high cost per head of the meat-producing animals in the feeding case of conventional ration in the two production seasons. The rice rate estimated almost 22.4% and 16.8% as compared to feeding of non-conventional ration. The cost rate of trefoil, corn, and bran has the largest portion of this cost with the total of almost 81.1% while the cost of Aldrawah, corn and bran about 74.2% out of the total costs of conventional fodder production during the winter and summer seasons respectively. As to the non-conventional ration, the most important terms of production costs were restricted to ammonia-treated residues, corn, and bran with the total of about 74.2% and almost 65.8% out of the total production cost in the two winter and summer production seasons successively. It also shows an increase in the meat production in the winter and summer seasons in the feeding case of conventional ration by almost 12.5% and about 9.5% as compared to non-conventional ration feeding as shown in Table 4.

Table (4): Comparison the costs of head meat farm animal feeding on conventional and non-conventional ration in both seasonal winter and summer production

Season	**Feed components**	**Conventional diets**		**Feed components**	**Unconventional diets**	
		%**Quantity**	% **Values**		% **Quantity**	% **Values**
Winter	Trefoil	66.1	30.8	Trefoil	65.3	28.9
	Wheat hay	11.8	10.3	Wheat hay	0.4	0.3
	Soybean hay	4.7	5.1	Residues the Treatment ammonia	13.3	12.6
	Corn	9.5	27.4	Residues the rice straw	0.6	0.4
	Bran	7.6	22.9	Residues the Treatment urea	4.8	4.2
	Other	0.3	3.5	Corn	8.5	29.2
				earn	0.3	1.7
				bran	6.2	21.0
				Other	0.6	1.7
	Total	7618	3060	Total	6342	4295
summer	Breaking the Corn	59.6	19.4	Breaking the Corn	41.8	18.8
	Soybean hay	10.9	12.9	Trefoil Drees	3.1	6.8
	Corn	15.6	32.2	Soybean hay	1.2	1.3
	earn	4.0	12.9	Residues the Treatment ammonia	15.6	15.1
	bran	9.9	22.6	Silage	7.2	3.9
				Corn stover	9.9	2.6
				Corn	12.5	28.2
				earn	0.7	3.0
				bran	7.5	18.8
				Other	0.5	1.5
	Total	5436	5580	Total	5766	4779
Winter	Total quantity of production kg		450	Total quantity of production kg		420
	Weight in the beginning of the session kg		180	Weight in the beginning of the session kg		180
	The increase in weight kg		270	The increase in weight kg		240
	Total revenue		14850	Total revenue		13860
summer	Total quantity of production kg		410	Total quantity of production kg		390
	The increase in weight kg		180	The increase in weight kg		180
	The increase in weight kg		230	The increase in weight kg		210
	Total revenue		13530	Total revenue		12870

Source: Calculated and collected from questionnaires in 2014-2015

Economic efficiency of non-conventional ration: Judging the efficiency of non-conventional ration requires the computation of some indicators economic efficiency represented in ton production cost, ton net return, and return per pound for conventional and non-conventional ration during the two production seasons and their comparison as shown in Table 5. Also, it indicates that feeding of dairy animals on non-conventional ration leads to reduction of milk-production ton cost in the two seasons by a relative rate of reached to 38.5% and about 30.1%. It also, leads to high net return ton by almost 28.5% and 37.4%; high return of invested pound by about 62.6% and 43.1% as compared to feeding animals on conventional ration during the winter and summer production seasons successively. It leads as well to reduction of meat-production ton cost by almost 12.4% and about 10%; the rise of ton net return by almost 6.8%, and 7%, high return of invested pound by almost 14.2% and about 11.1% compared to feeding animals on conventional ration during the winter and summer production seasons respectively as shown in Table 5.

Table (5): The most important indicators of economic efficiency

The production	**Season**	**Indicator**	**Feed**		
			Conventional	**Unconventional**	% **decrease or increase**
Milk	Winter	Production costs of ton	2125	1307	(38.5)
		Revenue of ton	5000	5000	-
		Net return of ton	2875	3693	28.5
		Return / Pound invested	2.353	3.826	62.6
	summer	Production costs of ton	2773	1938	(30.1)
		Revenue of ton	5000	5000	-
		Net return of ton	2228	3062	37.4
		Return / Pound invested	1.803	2.580	43.1
Meat	Winter	Production costs of ton	11680	10226	(12.4)
		Revenue of ton	33000	33000	-
		Net return of ton	21320	22774	6.8
		Return / Pound invested	2.825	3.227	14.2
	summer	Production costs of ton	13610	12254	(10.0)
		Revenue of ton	33000	33000	-
		Net return of ton	19390	20746	7.0
		Return / Pound invested	2.425	2.693	11.1

Source: calculated and collected from the tables[3,4]

The expected economic effects of feeding milk and meat production animals on nonconventional ration on farmer, product and state:

First: economic effects at the farmer level:

Table 6 shows the most important subsequent economic effects of feeding farm animals on nonconventional ration include the increase of net return of rice and corn acre by reached to L.E. 857 pounds and L.E. 786 pounds by an estimated increase of by 16.8% per rice feddan, and 14.7% per corn feddan due to high ton price of the secondary product reached to L.E. 400 pounds/rice straw ton, and L.E. 300 pounds/firewood corn because of its preparation and selling for the purpose of use as ration, as compared to

secondary product selling in the natural situation estimated about L.E. 136 pounds/ton of the secondary product for the two crops of rice and corn [4].

Table (6): The impact of diet on the net return feddan of rice and corn crop

Statement		**Rice**		**Corn**	
		Feed		**Feed**	
		Conventional	**Unconventional**	**Conventional**	**Unconventional**
The Republic area in million feddan		1.4	1.4	2.2	2.2
Feddan productivity	Main/ ton	4.008	4.008	3.5445	3.5445
	Secondary / ton	2.143	2.143	2.620	2.620
The value of the crop in pounds	Main	8537	8537	7491	7491
	Secondary	292	857	357	786
Revenue of feddan		8829	9394	7848	8277
Net return on feddan		3364	3929	2921	3350
% Increase in net return feddan		16.8		14.7	
Total residues in million Tons		3.0		5.5	
% deficits in the balance of fodder		41.7		76.4	

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Central administration of Agricultural Economy, Newsletters of agricultural statistics, 2014

Second: economic effects at the product level:

The economic effects resulting from feeding farm animals on nonconventional ration on the product can be restricted to reduction of production per head cost during the production cycle in the two production seasons by a reduction rate which exceeds the reduction rates of production and revenues by about 33.7% and almost 25.6% for milk production and about 7.7% and almost 9.5% for meat production in the two winter and summer production seasons successively compared to the feeding case on conventional ration as shown in Table 7.

Table (7): comparison of the total production , the costs and revenues of the head in the session

The production	**Season**	**Statement**	**Conventional**	**Unconventional**	**Decrease%**
Milk	Winter	Total production kg	1440	1260	12.5
		Production costs	3060	1647	46.2
		Total revenue	7200	6300	12.5
	Summer	Total production kg	800	680	15.0
		Production costs	2218	1318	40.6
		Total revenue	4000	3400	15.0
Meet	Winter	Total production kg	450	420	6.7
		Production costs	5256	4295	14.4
		Total revenue	14850	13860	6.7
	Summer	Total production kg	410	390	4.9
		Production costs	5580	4779	14.4
		Total revenue	13530	12870	4.9

Source: Calculated and collected from the tables [3,4]

Third: the economic effects at the state level:

Cultivation of about 1.4 million feddan of rice and almost 2.2 million feddan of corn leads to high production of residues reached to 8.5% represented in rice residues and about 35.3% contributing to meet relatively 41.7% of the fodder gap. Meanwhile, the corn residues represents about 64.7% contributing to meet relatively 76.4% of the fodder gap as shown in Table 6. Table 8 indicates that feeding cows and buffaloes on nonconventional ration subsequently leads to reduction of corn amounts provided to meat-milk animals' ration by almost 1.478 million tons. It contributes to the reduction of Egypt's imports of corn by relatively $ US 0.921 million . That is, reduction of amount and value of corn imports by 33.5%.

Table (8): the percentage decreasing in the quantity and value of Egyptian imports of corn

Production	**The number of cows and buffaloes in thousand head**	**The amount of corn in the diet in Thousand tons**		**The value of imports in million dollars**		% **Decreasing in the volume and value of corn**
		Conventional	**Unconventional**	**Conventional**	**Unconventional**	
Milk	2479	1574	664	987	416	57.9
Meet	3582	2815	2257	1765	1415	19.8
Total	6061	4399	2921	2752	1831	33.5

Source : Calculated and collected from the website of the Arab Organization for Agricultural Development Vol.34 and the Tables[3.4]

Our study clarified [2] as well that feeding meat-milk-producing animals on nonconventional ration contribute to the increase of total milk and meat production in the Republic of Egypt level. The total milk production increases by a rate ranging between (10-15%) and reached (6.1-6.4 million tons) as compared to the current production of about 5.6 million tons. This contributes to milk self-sufficiency increase of (125-131%), in addition to the potential increase of the country exports from milk products. This cause total increase of red-meat production at the republic of Egypt level by a rate ranging between (30-45%). Also, total production of the red-meat reached relatively 0.870-0.970 million tons as compared to current product of about 0.813 million tons. This will subsequently lead to the increase of red-meat self-sufficiency rate by about 91-100%. Subsequently, this leads to deficit reduction of milk and red meat food balance as shown in Table 9.

Table (9): The contribution of unconventional Diet in increasing of milk and meat production

Increasing of milk production by (10-15 %)				**Increasing of meat production by (30-45 %)**		
Diet(1)	%	Diet(2)	%		Diet(1)	Diet(2)
Corn	25	Bran	31	Rice straw	25	20
earn	30	Earn	15	Earn Cotton	10	15
Rice straw	16	Mazia	15	Apostasy	20	15
Alfalfa hay	15	Rice husk	10	yellow corn	20	25
Molasses	10	Breaking mazia	8	Corn stover	7	7
Limestones	3	Breaking wheat	6	Molasses	6	6
Salt	1	Breaking rice	6	Limestones	5	5
		Molasses	5	Urea	4	4
		Limestones	3	Salt	3	3
		Salt	1			
Total	100		100		100	100

Source: Reference[2]

One of the studies [7,8,9] clarifies as well that the biological treatment of the two crops of rice and corn contributes to the average productivity of rice and corn feddan and subsequently increase of the produced amount of the secondary product. This leads to reduction of deficit in ration balance at the Republic of Egypt level as shown in Table 10.

Table 10 indicate that the biological treatment of the rice crop by using *B. thuringiensis* ، *B. bassiana* ، *M. anisopliae* ، silica gel will lead to the increase of the feddan average productivity by almost 7% ، %10 ، % 7 ، %22% [10,11]. This will increase the productivity, the republic production of the secondary product to reach almost 2.293 million tons, almost 2.357 ton/ feddan, 2.614 ton/ feddan with total production reached almost 3.2 million tons, 3.3 million tons, 3.2 million tons and 3.7 million tons respectively. Table 10 also indicates that the biological treatment of the corn crop by using *Beauveria bassian* ، *Beauveria brongniartii* ، *P. farinosuss* ، *nano* fungi increase the feddan average productivity by almost 2%، %50 ، %31 ، %55% [12,13], the republic production of the secondary product reach to 2.672, 3.930, 3.432 and 4.061 tons/ feddan with total production of almost 5.9 million tons, 8.6 million tons, 7.6 million tons, 8.9 million tons successively. This leads to the increase amount production of total residues of the two crops (rice and corn) reach about 9.1 million tons, 11.9 million tons, 10.8 million tons and 12.6 million tons contributing to surplus of Egyptian ration balance with a surplus amount of almost 1.9 million tons, 4.7 million tons, 3.6 million tons and 5.4 million tons respectively as shown in Table 10. This abundance of residues increases the produced amount of nonconventional ration as alternatives to the conventional ration. This ensures that the animal will obtain its required food needs without relying on importing the largest portion of animal food from abroad and thus save the imports bill of ration requirements, improve the deficit rate in the payment balance.

Table(10): The contribution of Bioremediation in reducing the deficit in the balance of ration.

The crop	**Bioremediation**	**%Increase in productivity per Feddan**	**Main Fadden/ton**	**The Republic million Feddan**	**Secondary Feddan/ton**
Rice	*B. thuringiensis*	7	2.293	1.4	3.2
	B. bassiana	10	2.357	1.4	3.3
	M. anisopliae	7	2.293	1.4	3.2
	silica gel	22	2.614	1.4	3.7
Corn	*Beauveria bassian*	2	2.672	2.2	5.9
	Beauveria brongniartii	50	3.930	2.2	8.6
	P. farinosuss	31	3.432	2.2	7.6
	nano fungi	55	4.061	2.2	8.9

Source: Calculated and collected from references [2,8,9,10,11,12,13]

The above-mentioned findings, consider the most important findings of the study which are the necessity for our country for relying on the agricultural residues in producing the nonconventional ration because of their several positive effects on the farmer, product and the country. In order to reduce the negative effects which reflected by these residues of environment pollution when burning rice straw by farmers in the fields and its harmful effects on the environment and man's health. It is also necessary to make farmers and producers aware of the importance of recycling of the rice and corn residues in producing nonconventional ration through clarifying the economic outcomes of their recycling on their product and on our country. This awareness can be spread among the farmers by agricultural guides in different villages of Egypt.

Summary:

Residues are the resulted in waste or output from a particular activity. They include all kinds of agricultural residues including those resulting from the fields, agricultural manufacturing residues, all residues resulting from conservation and manufacturing of the agricultural crops. Generally, the problem statement is restricted to Egypt suffers a deficit estimated during the average period (2010-2014) about 7.2 million tons. This affects the development of animal production in Egypt. The study aims to decrease the deficit in fodder balance in Egypt by relying on feeding meat-milk-producing animals (cows-buffalos) on the fields' residues in

producing nonconventional ration particularly the crops of rice and corn. This study has relied in its data collection on the published data besides questionnaire prepared for that purpose. Achieving its aim entails the study of animals' needs of ration, total republic residues of the two crops of rice and corn. It also has studied the role of agricultural residues in decreasing the ration gap size through studying the costs of feeding farm animals on the nonconventional ration, economic efficiency of nonconventional ration, expected economic effects of feeding meat-milk producing animals on nonconventional ration. The most important findings of the study are feeding of cows and buffalos on the nonconventional ration lead to reduction of the cost of milk and meat ton production, rise of ton net return and return per the invested pound in the two seasons of production. Reduction of cost production per head of meat-milk animals compared to feeding on conventional ration. It also shows reduction of the amount and value of Egyptian corn imports by 33.5%. The study clarified that feeding of milk and meat animals on some nonconventional ration contributes to increase of total milk and meat production at the republic level with a rate ranging between (10-15%) for milk and red meat by about (30-45%). This contributes to the increase of milk self-sufficiency rate b almost 125-131%) and red meat by (91-100%). The study also indicates that the biological treatment of the two crops of rice and corn contributes to the average productivity of rice and corn feddan and subsequently increase of the produced amount of the secondary product. Therefore, the most important recommendations of the study are restricted in the necessity of the state to tend to rely on the residues agricultural in producing nonconventional ration which have several positive effects on the farmer, product and the state. In addition, they lessen the negative effects of these residues on the environment particularly on farmers by burning rice straw in the fields and its subsequent harmful effects of environment and man's health. it is necessary to make farmers and producers aware of the importance of recycling the rice and corn residues in producing nonconventional ration through clarifying the economic return of their recycling on the farmer, product and the state. This awareness can be spread among the farmers by agricultural guides in different villages of the republic. The same results obtained by [16, 17, 18,19, 20 21].

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