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SCENARIOS OF INCREASING AGRICULTURAL PRODUCTION OF ANIMAL ORIGIN TO COVER THE GAPS BETWEEN PRODUCTION AND DOMESTIC AVAILABILITIES OF CONSUMPTION, IN ROMANIA

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Abstract

The purpose of this study is to identify solutions for increasing agricultural production of animal origin, with the aim of decreasing the share of imports in total supply of the market and ensuring, accordingly, a high level of food self-sufficiency. The overarching research question is: Which is the agricultural area needed to be cultivated in order to increase production to the upper limit of domestic consumption? Usually, the gap between domestic production and consumer availability is covered by imports of agricultural products and foodstuffs. Because of its negative effect upon trade balance, imports should reduce as total value and as share in total supply. This is the reason why, we suggest covering the gaps between domestic production and demand by growing the level of agricultural output, as result of increasing the area cultivated with different crops. Statistical data about structural components of food supply and demand are analysed and the area needed to obtain a higher level of production of animal origin is projected, considering the vegetable products equivalent to a physical unit of animal product. Results show that, to cover the gap between domestic consumption and production of food products of animal origin, an area of 514,339 ha of barley, oats and corn should be cultivated.

Key words: domestic availabilities of consumption, agricultural production, animal origin, imports, trade balance

INTRODUCTION

The present study proposes solutions for restructuring the agro-food system in Romania, considering the demand for food, with the aim of ensuring food self-sufficiency. We try to answer the questions: Does the level of domestic production cover the market demand for food? Which is the agricultural area (and its structure) needed to be cultivated in order to increase production to the upper limit of domestic consumption and which are the revenues and expenses?

In pursuing these questions, statistical data from the Statistical Yearbook of Romania, other publications of the National Institute of Statistic and results of previous studies have been analysed. The methodology of research consists in data analysis, critical analysis, and literature review in various fields of agro-food economy.

The objectives of the research consist in elaborating scenarios of restructuring the Romanian agro-food system, considering food demand, so that the share of domestic production in total supply to increase and the share of imports in total supply to decrease.

In the first part of the study, gaps between domestic production and internal availabilities for consumption are identified for the main agro-food products of animal origin: milk and milk products, eggs, pork meat and poultry meat. In the second part of the paper, the area needed to be cultivated in order to increase the production level is estimated.

The outcomes of the research are relevant for macroeconomical policies' orientation in direction of increasing production of agro-food products and decreasing the share of imports in total supply.

In Romania, the agricultural area is 14,685,000 ha, of which the agricultural area utilized is 13,753,000 ha [10]. It results a difference of 932,000 ha that can be drawn in culture in order to obtain high agricultural outputs. If domestic production satisfies the main part of the demand, the imports would decrease.

Typically, reducing the gap between domestic production and consumer availability is achieved by importing agricultural products and foodstuffs. The deficit of food trade in 2011 was 376 mill. Euro, dropping 48.5% compared to 2010 [11]. The shrinking trade deficit was possible

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due to strong growth in exports of agricultural products. In 2011, the food exports were 3,912.2 mill. Euro, with 851.8 mill. Euro more than in 2010. Maize accounted for the main share in total food export (14.8%), followed by sunflower seeds, with 13%, and tobacco with 11.6%. The exports of wheat reduced in 2011 with 36.7% compared to the previous year. In 2011, the foodstuffs imports value 4288.2 mill. Euro, the main products imported being sugar, pork meat and food preparation.

In this context, reducing the negative gap between domestic consumption and availability should be done by increasing the level of production and not on account of imports; situation that results in trade imbalance. Domestic production can grow in two ways: extensive and intensive. Extensive path involves increasing the cultivated area. For this, uncultivated agricultural areas can be attracted in culture. Intensive way means to increase yields, considering the same farmland cultivation; if yields increase, the total production grows. In this paper, In order to cover the gaps between production and consumption, we suggest to increase the level of total production extensively, by growing the area cultivated with different crops.

MATERIALS AND METHODS

The projection of the area needed to increase the production of animal origin is made starting from vegetable products equivalent to a physical unit of animal product. In Table 1, recommended consumption of food and animal products and equivalent in products of plant origin are given.

Table1: Recommended consumption of animal origin food and its equivalent in products of plant origin [3]

Product	Recommended consumption	Equivalent in products of plant origin
Meat*	62.1	155.25 kg corn (2.5 x 62.1)
Milk** and dairy	219	109.5 kg barley (0.5 x 219)
Eggs***	204	63.24 kg corn (0.31 x 204)
* Pork meat (3.5 kg NC/kg gain in weight; 69% corn/100 kg NC => 2.5 kg corn/kg gain in weight) [12]		
** Cow milk (5 kg barley + 4 kg bran/30 l milk of 4% fat) [13]		
*** Eggs (150-180 g NC/ hen/day => 310 g corn/egg) [14]		

Source: Bran Mariana, 2012

According to previous research, to obtain one kilogram of meat, 2.5 kg of corn are required and for a kilogram of milk 0.5 kg barley are needed. To obtain one egg, 0.31 kg of corn is required [1].

RESULTS AND DISCUSSIONS

In Table 2, the negative differences between production and domestic availability of consumption and specific consumption are presented. Levels of plant origin production, yields and, ultimately, agricultural area needed to generate animal production are estimated.

The difference between domestic production and consumer availability is -344,100 tons of milk and milk products. To make one litter of milk, 0.5 kg of barley is consumed, which means that to cover the gap referred to 688,200 tons of barley production is required. To obtain this amount, an area of 275,280 ha of barley must be cultivated, to a yield of 2.5 t / ha.

Egg consumption exceeds domestic production by 188 million pieces. To get 100 pieces of eggs, 31 kg of corn must be consumed, which means that the difference between consumption and production are covered by obtaining a production of 58,280 tons of corn. To obtain this quantity, assuming a maize yield of 3.5 t / ha, an area of 16,651 ha should be cultivated.

Table 2: Designing the area required to obtain agricultural production of animal origin needed to cover the gaps between production and domestic availability of consumption

Product	Gaps between production and domestic availability of consumption (tones)	Specific consumption			The needed production of vegetal origin (tones)	Yield (t/ha)	Agricultural area (ha)
		Product	MU	Value			
Milk and dairy	344,100	Barley	kg barley / 1 kg milk	0.5	688,200	2.5	275,280
Eggs*	188,000,000	Corn	kg corn / 1 egg	0.31	58,280	3.5	16,651
Pork meat and pork meat products	231,378	Corn	kg corn / 1 kg pork meat	2.5	578,445	3.5	165,270
Poultry meat and poultry meat products	34,283	Oats	kg oats / 1 kg poultry meat	2.5	85,707.5	1.5	57,138

*pieces

In pork, the difference between consumption and production is 231,378 t. To obtain a kilogram of pork, 2.5 kg of corn are consumed, which means that to cover the gap referred to, a production of 578,445 t corn is required. To obtain this quantity, an area of 165,270 ha must be cultivated with corn, assuming a yield of 3.5 t / ha.

Poultry consumption exceeded domestic production by 34,283 t. To obtain one kilogram of chicken meat, 2.5 kg of oats are consumed, and to satisfy the recall is necessary, therefore, a production of 85,707.5 tons of oats. At a yield of 1.5 t / ha, it means that, to get that quantity, an area of 57,138 ha with oats should be cultivated.

In total, to cover the gap between domestic consumption and food production of animal origin, an area of 514,339 ha of barley, oats and corn should be cultivated.

As mentioned before, in Romania, 932,000 hectares may be drawn into the culture to achieve higher agricultural production and to meet so domestic consumption. In our estimation, agricultural surface needed to cover the difference between agricultural production of animal origin and domestic availability of consumption is 514,339 ha.

Further, the estimated revenues and expenses related to areas designed are estimated in table 3. They have been calculated by multiplying the income and expenditure per hectare, for each crop separately, with the areas projected.

Table 3: Estimating economic efficiency*

Crop	Agricultural area (ha)	Revenues per hectare (lei/ha)	Expenses per hectare (lei/ha)	Total revenues (lei)	Total expenses (lei)	Profit (lei)	Profit rate (%)
Barley	275280	3031	2597	834373680	714902160	119471520	16.7
Corn	181921	3254	2630	591970934	478452230	113518704	23.7
Oats	57138	2600	2350	148558800	134274300	14284500	10.6
Total	514339	-	-	1574903414	1327628690	247274724	-

* obtained as a result of projected area

Source: own calculations after Dobre, Iuliana, 2012

The results show a high profitability for corn, and lower efficiency recorded for oats.

CONCLUSIONS

This study examined the current status of supply and demand for food products of animal origin in Romania, reflecting imbalances between their components. Domestic production is supplemented by imports in order to meet consumers' needs.

But imports lead to disequilibrium in foreign trade with agro-food products. We suggested increasing the level of production in order to cover the gaps between production and internal availabilities for consumption.

Designing the cultivated area to cover the gap between production and consumption has been achieved taking into account the average yields per hectare and food consumption of cereals required to obtain a unit of production of animal origin.

Results show that, to cover the gap between domestic consumption and production of food products of animal origin, an area of 514,339 ha of barley, oats and corn should be cultivated.

To exploit the surface projected, the estimated revenues are 1,574,903,414 lei; the estimated expenses are 1,327,628,690 lei, obtaining a profit of 247,274,724 lei.

At least two limits of the research can be taken into account. The first relates to production. Even if it grows, this does not mean that all is delivered to market, because the main problem of the food system in Romania, for many branches, is collecting the agricultural outputs from producers. An important role would play the marketing of food products with its specific operations of collecting, sorting, packing, storage, transport, in order to achieve continuous flow of food supply.

The second limit is the fact that in many cases, the prices of imported food are lower than their counterparts in Romania, which means that the market will continue to absorb food imports until, at a certain level of economic efficiency of domestic production; Romanian products will have lower prices than imported ones.

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