

POSSIBILITIES TO IMPROVE THE FORRAGE BASE IN THE SUBURBAN AREA OF IASI USING UNCULTIVATED SOILS IN ORDER TO INSURE THE OPTIMAL MILK AND DAIRY PRODUCTS

Florina DODOLOI¹

E-mail: dodoloiflorina@uaiasi.ro

Abstract

Cow's milk is not just a good food but an universal food, with exceptional nutritional value and a source of bioactive substances beneficial to the consumer.

This paper analyzes issues concerning the situation of the forage crops in some villages from the near-city area of Iași, how it ensures the required food for the cattle livestock as so as to ensure optimum consumption of milk and dairy products for the local population.

It has also been analyzed aspects concerning the situation of cultivated land area studied and how they affect the forage yields. Following this analysis, we made a series of recommendations on how to use the land in order to ensure optimum consumption of milk and dairy products.

During 2007-2010, the uncultivated land surfaces in the studied villages had a variable trend, the largest increases occurring in villages Aroneanu and Comarna. In the same period, the largest uncultivated areas were found in villages Lețcani and Miroslava.

Key words: milk, optimal consumption, forage base, uncultivated lands

Statistics shows that almost 3 milion hectares are uncultivated in Romania. The intercession of this situation will bring a positive effect in compensate the ballance of payments by reducing imports or extending exports, although because it is known that we sell outside very cheap and we buy costly, the first variant would be preferable.

Romania is the only country in Europe which doesn't cultivated its arable surfaces and the harvest was poor last year comparing to the consumption needs (Ionel, A. and colabs., 2002)

There is a relatively new concept between alimentation and human organism relations: functional aliments, defined as food supply and its components which improve the consumers natural state of health, avoids the morbidity risk and ameliorates the recovery capacity after different diseases (Costin, M.G., 2001).

No other product category can compare to milk and dairy products under the effects of these functional food supply. Various research certainly established that the milk is naturally endowed with exceptional qualities which allows it to be transformed in countless products with an important added value.

A half of litter per day insures the neccessary calcium for the human organism in order to slow down the decalcification bones process which begins over 30. 500 ml of milk

covers 75 % of daily demand of 800 mg of calcium and it also presents a very good bioavailability beeing very easily absorbed into the gut, in proportion of 45 % (Costin G. M., și colab., 2007).

Segal, R. (2001) apreciates that milk and dairy products are the most important source of calcium easily assimilable, because the rate calcium / phosphorus 1.5:1 is favorable to a good digestive use of calcium as to the presence of lactose and citric acid which helps calcium to form easily assimilable soluble salts.

The analized area is mainly characterized by small milk productions which can nor ensure an optimal consumption for the local population. Thereafter nor the market will be provided in order to sell or to process. So, there is neccessary to adopt some measure to increase the milk production by livestock development where there is enough forage base or where the unclutivated land could be productive or raising rhe average milk production per head (Popovici Florina and colabs., 2006).

MATERIAL AND METHOD

The study was conducted in 15 villages which forms the suburban area of Iasi: Aroneanu, Bîrnova, Bosia, Ciurea, Comarna, Costuleni,

¹ University of Agricultural Sciences and Veterinary Medicine of Iași

Golăiești, Holboca, Lețcani, Miroslava, Popricani, Prisecani, Rediu, Tomești and Victoria (fig.1).



Figure 1 The suburban area of Iași

RESULTS AND DISCUSSIONS

The largest uncultivated surfaces can be found in villages Lețcani și Miroslava which owns 26 % and 25 % from the total uncultivated soils from the studied area (tab.1).

The fodder crops yields that could be obtained from these uncultivated soils is 45404 tones green mass at the level of the entire area, area that could sustain a number of 2492 cattle for milk. The highest number of cattle could be developed in Miroslava village. Taking into account the average milk productions obtained in the area, we can say that the total milk production could grow up to 86000 hl after the developing of the uncultivated soils, with a maximum in Miroslava village of 35 % of the total (tab.1).

Table 1

Uncultivated soils, fodder crops and milk yields in 2008

Villages	Average fodder crops production (to/ha)	Uncultivated soils (ha)	Fodder crop obtained (to g.m.)	No. fedded cattles	Average milk yield/head (l/head)	Qt** (hl)
	2	3	4	5	6	7
Aroneanu	10,8	350	3780	207	3450	7141
Bîrnova	15,1	15	226	12	3420	410
Bosia	12,3	49	603	33	3480	1148
Ciurea	33,9	80	2712	149	3500	5215
Comarna	6,9	15	103	6	3380	203
Costuleni	11,1	352	3907	215	3370	7245
Golăiești	11,1	50	555	30	3500	1050
Holboca	10,7	135	1444	79	3520	2781
Lețcani	9,3	810	7533	414	3500	14490
Miroslava	20,4	781	15932	875	3420	29925
Popricani	26,4	200	5280	290	3470	10063
Prisecani	4,8	150	720	39	3400	1326
Rediu	20,0	75	1500	82	3420	2804
Tomești	1,1	31	34	2	3450	69
Victoria	21,5	50	1075	59	3460	2041
TOTAL	-	3143	45404	2492	-	85911

Source: DA Iași, adapted data

* Average yearly consumption per cattle is 50 kg fooder x 365 days = 18,2 to.

No. Fedded cattle = (4): 18,2 to

** Milk quantity that could be obtained if uncultivated soils would be capitalized (5) x (6)

At the entire area level, the cattle livestock is 7255. The largest livestock can be found in villages as Lețcani, Popricani, Victoria, Bosia and Ciurea, who owns almost 48 % of the total. The highest milk production is registered in Lețcani village, closely followed by Popricani village. After analized data we can say that in the suburban area of Iasi, after the development of uncultivated soils, the total milk production could reach almost 340000 hl, with a top of production in Miroslava village, followed by Lețcani and Popricani villages (tab. 2).

1) The milk quantity that could be obtained afted adding the yields obtained from capitalized uncultivated lands to the actual milk yields.

In 2008, the suburban population was around 89000 inhabitants. Holboca and Ciurea villages have the highest number of inhabitants. In the specialized literature it is mentioned that in order to have a healthy population it is reccomender for each one to consume 300 l/inhabitant/year (after WHO). For all 15 villages the neccessary for optimal milk consumption would be 268422 hl (tab.3).

Table 2
Cattle livestock and milk productions to obtain
after uncultivated soils capitalization in 2008

Villages	Cattle livestock (heads)	Average yield (l/head)	Total area yield (hl)	Milk quantity to obtain (hl) ¹⁾
	1	2	3	4
Aroneanu	295	3450	10177	17318
Bîrnova	280	3420	9576	9986
Bosia	612	3480	21297	22445
Ciurea	602	3500	21070	26285
Comarna	288	3380	9734	9937
Costuleni	301	3370	10144	17389
Golăiești	518	3500	18130	19180
Holboca	465	3520	16275	19056
Lețcani	841	3500	31789	46279
Miroslava	549	3420	18776	48701
Popricani	724	3470	25123	35186
Prisecani	513	3400	17442	18768
Rediu	323	3420	11047	13851
Tomești	323	3450	11143	11212
Victoria	621	3460	21487	23528
TOTAL	7255	-	253210	339121

Source: DA Iași, adapted data

Table 3
Necessary for optimal milk and dairy products
consumption in 2008

Village	Populat ion (inh.)	Optimal requir (hl) ¹⁾	Total yield (hl) ²⁾	Differen ce (hl)
Aroneanu	3012	9036	17318	8282
Bîrnova	4405	13215	9986	-3229
Bosia	1889	5667	22445	16778
Ciurea	10769	32307	26285	-6022
Comarna	4678	14034	9937	-4097
Costuleni	4871	14613	17389	2776
Golăiești	3987	11961	19180	7219
Holboca	12538	37614	19056	-18558
Lețcani	6805	20415	46279	25864
Miroslava	8243	24729	48701	23972
Popricani	7566	22698	35186	12488
Prisecani	3505	10515	18768	8253
Rediu	3921	11763	13851	2088
Tomești	4399	13197	11212	-1985
Victoria	8886	26658	23528	-3130
TOTAL	89474	268422	339121	70699

Source: CJ Iași, adapted data

1) In the specialized literature it is mentioned 300 l/inhabitant/year as an optimal milk and dairy products consumption.

2) Is the sum of the actual milk production and the one obtained after the uncultivated soils capitalization.

If the 3143 ha of uncultivated soils would be productive, the total milk production would be

339121 hl. After insuring the optimal milk and dairy consumption, in the suburban area of Iași, we can notice a surplus of 71000 hl that could be capitalized.

From analized data (tab. 3), we can observe that in Bîrnova, Ciurea, Comarna, Holboca, Tomești and Victora villages, even if the uncultivated soils would be capitalized, in order to raise the livestock, the optimal milk and dairy consumption could not be reached. That is why a series of other measures could be imposed in order to raise the milk yields, such as raising the average milk production through genetic amelioration of the existant livestock, the rationa use of grassing.

In 2009 the largest uncultivated areas can be found in Lețcani, Aroneanu and Miroslava villages who owns almost 58 % from the total uncultivated soils from the studied area.

The fodder crops yields that could be obtained from these uncultivated soils is 53650 tones green mass at the level of the entire area, area that could sustain a number of 2949 cattle for milk.

The highest number of cattle could be developed in Miroslava village, 776 heads, followed by Aroneanu village with a potential of 636 heads. Taking into account the average milk productions obtained in the area, we can say that the total milk production could grow up with 103000 hl after the developing of the uncultivated soils, with a maximum in Miroslava village of 26 % of the total (tab 4).

At the entire area level, the cattle livestock is 5543. The largest livestock can be found in villages as Lețcani, Ciurea, Victoria.

The highest milk production can be found in Lețcani village, followed by Ciurea, Victoria and Popricani villages. After analized data we can say that in the suburban area of Iași, after the development of uncultivated soils, the total milk production could reach almost 296000 hl, with a top of production in Miroslava village, followed by Lețcani village (tab. 5).

1) The milk quantity that could be obtained afted adding the yields obtained from capitalized uncultivated lands to the actual milk yields.

In 2009, the suburban population was around 89000 inhabitants. Holboca and Ciurea villages have the highest number of inhabitants. For all 15 villages the neccessary for optimal milk consumption would be 267552 hl (tab. 6).

Table 4

Uncultivated soils, fodder crops and milk yields in 2009

Villages	Average fodder crops production (to/ha)	Uncultivated soils (ha)	Fodder crop obtained (to g.m.)	No. fedded cattles	Average milk yield/head (l/head)	Qt** (hl)
Aroneanu	14,7	787	11569	636	3470	22069
Bîrnova	1,1	76	84	5	3430	171
Bosia	7,3	58	423	23	3490	803
Ciurea	35,8	90	3222	177	3480	6159
Comarna	4,6	500	2300	126	3390	4271
Costuleni	20,9	415	8673	477	3380	16123
Golăiești	13,7	50	685	38	3520	1338
Holboca	9,4	39	367	20	3500	700
Lețcani	8,9	885	7876	433	3730	16151
Miroslava	21,1	669	14116	776	3490	27082
Popricani	16,9	126	2129	117	3480	4072
Prisecani	3,5	126	441	24	3390	814
Rediu	5,0	75	375	21	3460	727
Tomești	1,1	49	54	3	3410	102
Victoria	16,7	80	1336	73	3440	2511
TOTAL	-	4025	53650	2949	-	103093

Source: DA Iași, adapted data

* Average yearly consumption per cattle is 50 kg fodder x 365 days = 18,2 to.

No. Fedded cattle = (4): 18,2 to

** Milk quantity that could be obtained if uncultivated soils would be capitalized (5) x (6)

Table 5
Cattle livestock and milk productions to obtain after uncultivated soils capitalization in 2009

Villages	Cattle livestock (heads)	Average yield (l/head)	Total area yield (hl)	Milk quantity to obtain (hl) ¹⁾
Aroneanu	231	3470	8016	30085
Bîrnova	253	3430	8678	8849
Bosia	440	3490	15356	16159
Ciurea	525	3480	18270	24429
Comarna	231	3390	7831	12102
Costuleni	235	3380	7943	24066
Golăiești	447	3520	15734	17072
Holboca	314	3500	10990	11690
Lețcani	648	3730	24170	40321
Miroslava	417	3490	14553	41635
Popricani	456	3480	15869	19941
Prisecani	364	3390	12339	13153
Rediu	250	3460	8650	9377
Tomești	243	3410	8286	8388
Victoria	489	3440	16822	19333
TOTAL	5543	-	193507	296600

Source: DA Iași, adapted data

Table 6
Necessary for optimal milk and dairy products consumption in 2009

Village	Population (inh.)	Optimal required (hl) ¹⁾	Total yield (hl) ²⁾	Difference (hl)
Aroneanu	3028	9084	30085	21001
Bîrnova	4220	12660	8849	-3811
Bosia	1965	5895	16159	10264
Ciurea	10510	31530	24429	-7101
Comarna	4590	13770	12102	-1668
Costuleni	4883	14649	24066	9417
Golăiești	3990	11970	17072	5102

Holboca	12520	37560	11690	-25870
Lețcani	6200	18600	40321	21721
Miroslava	8437	25311	41635	16324
Popricani	7589	22767	19941	-2826
Prisecani	3530	10590	13153	2563
Rediu	3988	11964	9377	-2587
Tomești	4362	13086	8388	-4698
Victoria	9372	28116	19333	-8783
TOTAL	89184	267552	296600	29048

Source: CJ Iași, adapted data

1) In the specialized literature it is mentioned 300 l/inhabitant/year as an optimal milk and dairy products consumption.

2) Is the sum of the actual milk production and the one obtained after the uncultivated soils capitalization.

If the 4025 ha of uncultivated soils would be productive, the total milk production would be 296600 hl. After insuring the optimal milk and dairy consumption, in the suburban area of Iasi, we can notice a surplus of 29000 hl that could be capitalized.

At the same time, in Bîrnova, Ciurea, Comarna, Holboca, Popricani, Rediu, Tomești and Victoria villages, not even this capitalization can lead to insuring the optimal milk and dairy products consumption. In this case it is important to find solutions in order to raise the average milk yields per cattle

In **2010** the largest uncultivated areas can be found in Lețcani, Aroneanu and Miroslava villages who owns almost 58 % from the total uncultivated soils from the studied area.

The fodder crops yields that could be obtained from these uncultivated soils is 35618

tones green mass at the level of the entire area, area that could sustain a number of 1956 cattle for milk. The highest number of cattle could be developed in Aroneanu village, 530 heads, followed by Miroslava village, with a potential of 476 heads. Taking into account the average milk productions obtained in the area, we can say that the total milk production could grow up with 68000 hl after the developing of the uncultivated soils, with a maximum in Aroneanu village of 27 % of the total (tab. 7).

At the entire area level, the cattle livestock is 5283. The largest livestock can be found in villages as Lețcani, Victoria, Ciurea and Bosia.

The highest milk production can be found in Lețcani village, closely followed by Victoria village. After analyzed data we can say that in the suburban area of Iasi, after the development of uncultivated soils, the total milk production could reach almost 253000 hl, with a top of production in Lețcani village, followed by Miroslava village (tab. 8).

Table 7

Uncultivated soils, fodder crops and milk yields in 2010

Villages	Average fodder crops production (to/ha)	Uncultivated soils (ha)	Fodder crop obtained (to g.m.)	No. fedded cattles*	Average milk yield/head (l/head)	Qt** (hl)
Aroneanu	15,3	630	9639	530	3450	18285
Bîrnova	1,1	43	47	3	3460	104
Bosia	7,3	65	474	26	3510	913
Ciurea	26	110	2860	157	3490	5479
Comarna	4,6	174	800	44	3370	1483
Costuleni	19,3	141	2721	149	3390	5051
Golăiești	13,2	70	924	51	3510	1790
Holboca	9,4	134	1259	69	3520	2429
Lețcani	8,6	400	3440	189	3740	7069
Miroslava	19,1	454	8671	476	3500	16660
Popricani	16,4	126	2066	113	3490	3944
Prisecani	4,4	126	554	30	3380	1014
Rediu	7,8	75	585	32	3440	1101
Tomești	1	48	48	3	3390	102
Victoria	15,3	100	1530	84	3450	2898
TOTAL	-	2696	35618	1956	-	68322

Source: DA Iași, adapted data

* Average yearly consumption per cattle is 50 kg fodder x 365 days = 18,2 to.

No. Fedded cattle = (4): 18,2 to

** Milk quantity that could be obtained if uncultivated soils would be capitalized (5) x (6).

Table 8

Cattle livestock and milk productions to obtain after uncultivated soils capitalization in 2010

Villages	Cattle livestock (heads)	Average yield (l/head)	Total area yield (hl)	Milk quantity to obtain (hl) ¹⁾
Aroneanu	237	3450	8176	26461
Bîrnova	248	3460	8581	8685
Bosia	474	3510	16637	17550
Ciurea	485	3490	16926	22405
Comarna	241	3370	8122	9605
Costuleni	219	3390	7424	12475
Golăiești	412	3510	14461	16251
Holboca	261	3520	9187	11616
Lețcani	612	3740	22889	29958
Miroslava	369	3500	12915	29575
Popricani	438	3490	15286	19230
Prisecani	354	3380	11965	12979
Rediu	209	3440	7189	8290
Tomești	224	3390	7594	7696
Victoria	500	3450	17250	20148
TOTAL	5283	-	184602	252924

Source: DA Iași, adapted data

1) The milk quantity that could be obtained after adding the yields obtained from capitalized uncultivated lands to the actual milk yields.

In 2010, the suburban population was around 96 mii inhabitants. Holboca and Ciurea villages have the highest number of inhabitants. For all 15 villages the necessary for optimal milk consumption would be 289698 hl. If the 2696 ha of uncultivated soils would be productive, the total milk production would be 252924 hl (tab. 9).

1) In the specialized literature it is mentioned 300 l/inhabitant/year as an optimal milk and dairy products consumption.

2) Is the sum of the actual milk production and the one obtained after the uncultivated soils capitalization.

In the suburban area of Iasi, the optimal milk consumption can be ensured only in Aroneanu, Bosia, Golăiești, Lețcani, Miroslava and Prisecani villages. In these villages an excess of 40641 hl could be obtained if the uncultivated soils would be capitalized. At the whole area level, in 2010, we

can notice that the optimal milk and dairy products consumption can not be reached even if the uncultivated soils would be capitalized.

Table 9
Necessary for optimal milk and dairy products consumption in 2010

Village	Population (inh.)	Optimal required (hl) ¹⁾	Total yield (hl) ²⁾	Difference (hl)
Aroneanu	3044	9132	26461	17329
Bîrnova	4540	13620	8685	-4935
Bosia	4285	12855	17550	4695
Ciurea	10954	32862	22405	-10457
Comarna	4630	13890	9605	-4285
Costuleni	4732	14196	12475	-1721
Golăiești	3960	11880	16251	4371
Holboca	12701	38103	11616	-26487
Lețcani	6866	20598	29958	9360
Miroslava	8936	26808	29575	2767
Popricani	7677	23031	19230	-3801
Prisecani	3620	10860	12979	2119
Rediu	4064	12192	8290	-3902
Tomești	4427	13281	7696	-5585
Victoria	12130	36390	20148	-16242
TOTAL	96566	289698	252924	-36774

Source: CJ Iași, adapted data

CONCLUSIONS

In 2008, after the capitalization of uncultivated soils, the total milk production could reach almost 340000 hl, with a top of production in Miroslava village, followed by Lețcani and Popricani villages. After ensuring the optimal milk and dairy products consumption we can notice a surplus of almost 71000 hl that could be capitalized, except Bîrnova, Ciurea, Comarna, Holboca, Tomești and Victoria villages who registers deficit.

In 2009 the largest uncultivated areas can be found in Lețcani, Aroneanu and Miroslava villages who owns almost 58 % from the total uncultivated soils from the studied area.

The total milk production could grow up with 103000 hl after the developing of the uncultivated soils, with a maximum in Miroslava village of 26 % of the total. After ensuring the optimal milk and dairy products consumption we can notice a surplus of almost 29000 hl that could be capitalized. Bîrnova, Ciurea, Comarna, Holboca, Popricani, Rediu, Tomești and Victoria villages registers deficit in asigurarea ensuring the optimal milk and dairy products consumption.

In 2010 the largest uncultivated areas can be found in Lețcani, Aroneanu and Miroslava villages who owns almost 58 % from the total uncultivated soils from the studied area.

The average milk productions obtained in the area, we can say that the total milk production could grow up with 68000 hl after the developing of the uncultivated soils, with a maximum in Aroneanu village of 27 % of the total.

In the suburban area of Iasi, the optimal milk consumption can be ensured only in Aroneanu, Bosia, Golăiești, Lețcani, Miroslava and Prisecani villages. In these villages an excedent of 40641 hl could be obtain if the uncultivated soils would be capitalized. At the whole area level, in 2010, we can notice that the optimal milk and dairy products consumption can not be reached even if the uncultivated soils would be capitalized.

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