

ABSTRACT

Meadows or that land occupied with herbal vegetation and used as pasture or meadow occupies a considerable area of our country, over 4.9 million hectares. About two thirds of this area is used by pasture animals and the rest, one third, is used by mower to get hay.

Share meadows to the country's total area is 20.4% and from agricultural area Romania is 32.9%.

In recent years, in tradition with European Union countries, an indicator of multi-functionality, circumscribing the concept of sustainable development expresses the Pastoral Fund value.

This new concept of multi-functionality of permanent meadows encompass both agronomic function (production) of them and other, equally important, such as the use and specific flora and fauna bio-diversity, soil protection, increasing of environmental quality (landscape quality), development of ecological agro-tourism. By this new way of using resources provided by the carpet of permanent meadows, man must respect and harmonize the interests by respecting the laws of nature, because the uncontrolled application of technology and abuse of resources drives to the irreversible disturbance in soil – meadow's plant carpet – animals relation.

In terms of production and quality, the meadows in our country are characterized by a great diversity. If in some areas there are valuable meadows, with high production and good quality, on larger areas there are degraded meadows, with low productivity and a symbolic role in the forage base.

Over 42% of the permanent meadows in Romania is found in the hilly region, where moreover pedo-climatic conditions correspond largely to herbaceous species requirements. Here, the meadows are the most

valuable source of feed and most economical livestock sector, sector that has developed high, compared to other areas.

In Gorj County, permanent meadows area is 129,035 ha, of which 98,146 ha are pastures and 30,889 ha, meadows (Statistical Yearbook 2007). Meadow area exceeds 5.7% of arable land (122,062 hectares), making Gorj to fall within counties with large areas of meadow, with Alba, Bistrita-Nasaud, Brasov, Hunedoara, Sibiu, etc.

At higher altitudes, 400-500 m, near the mountains, on flat land or on slopes with lower degree of tilt are present productive meadows, from which are obtained 20-25 t / ha green mass with a floristic composition valuable and hence with highly consumability, such as meadow between localities Dr goie ti-Crasna-Polovragi.

In the Oltenia's sub-Carpathians, there are also permanent degraded meadows which can be improved by the surface work and primarily through organic or chemical fertilization, as there are important meadow areas in advanced stages of decay, which no longer respond adequately to surface measures, requiring radical restoration, means grubbing and establish temporary lawns. They have all the conditions for success because the pluviometric system exceeds 700 mm per year and average monthly temperatures are moderate.

The most important objectives pursued in this paper are: improving production of permanent meadows of *Agrostis capillaris* with chemical and organic fertilizers; knowledge of over-seeding and fertilization effect on productivity of permanent meadows degraded; the opportunity of permanent degraded meadows transformation in temporary meadow and fertilization system establishment; determining economic efficiency of surface measures (fertilization, over-seeding) and the radical (temporary meadow) applied to meadows of *Agrostis capillaris* and comparisons in terms of economical efficiency between improvement measures implemented.

The first chapter is concerned general aspects of profit, profitability and economic efficiency in agriculture, with reference to the farmers' income, profitability and economic efficiency in agriculture, and economic problems of forage.

The second chapter presents the experimental results obtained on increasing productivity and economic efficiency of pastures, being highlighted: the production of dry matter, floristic composition, chemical composition of plants, soil characteristics and economic results obtained on various types of meadow.

Chapter three presents the natural environment in which was experienced, with information on: the geographical location, terrain, climate, soil, natural vegetation and climatic conditions encountered during the actual 2007 to 2009.

In Chapter four are presented the objectives that were desired to be pursued in the present work and the research method used to refer to works that were performed in field and in the laboratory phase.

Chapter five outlines the research done on improving the permanent meadows of *Agrostis capillaris* from sub-Carpathian area of Oltenia by surface methods and radical, using natural meadow, over-seeded meadow and temporary meadow, fertilized equally with 6 treatments: 100N, 100N 50P₂O₅, 100N 50P₂O₅ 50K₂O, 40t/ha manure applied at 3 years, 20t/ha manure applied at 2 years and 20t/ha manure + 50N 50P₂O₅, which were compared with a control variant, untreated.

On the 3 years average, for the natural meadow, the 6 treatments, with chemical or organic fertilizers have substantially increased the amount of dry matter level of which varied between 2,12 t/ha (for the variant with 20 t/ha manure managed in 2 years) and 4.02 t/ha (for the variant with 20 t/ha manure annually + 50 kg / ha P₂O₅).

In case of *Agrostis capillaris* with *Trifolium pratense* and *Lotus corniculatus* over-seeded meadow, 3 years average results show that this

improving method is effective only in the conditions of using organic fertilizers, remarking in this regard the annual treatments, with medium dose (20 t / ha) accompanied by low doses of chemical fertilizer (50N 50P₂O₅).

After 3 years of experimentation, in case of the temporary meadow notes that in terms of quantity, complete mineral fertilization with 100 kg/ha N, 50 kg/ha P₂O₅ and 50 kg/ha K₂O or mixed organomineral fertilization with 20 t/ha manure together with 50 kg/ha N, 50 kg/ha P₂O₅ was the most adequate, average yields obtained being 6.82 t/ha dry matter, for the first variant and 6.15 t/ha for variant with mixed fertilization.

In chapter six are analyzed some economic indicators which are compared in terms of economic efficiency between methods used to improve meadow. Among indicators there are used the average yield per hectare (Lei/ha), costs per unit production (Lei/ha), production cost (Lei/t), gross profit per hectare (lei/ha) and the profit rate (%).

In case of natural meadow, average period 2007 - 2009 has a yield of 481.15 Lei/ha, production costs were 158.45 Lei/t, the profit per unit productive 45.45 Lei/ha and the rate of profit 10,43%. The most profitable option from profit rate point of view, during the 3 years of experimentation was the control variant, with values of 41.55% in 2007, 40.0% in 2008 and 35.61% in 2009, and version with the lowest rate of profit was 100N 50P₂O₅ 50K₂O, which had negative values of -5.55% in 2007, -3.48% to -3.94% in 2008 and 2009. The over-seeded meadow of *Agrostis capillaris* recorded in the period 2007 - 2009 average yield of 1162.55 lei/ha, an average production costs of 226.35 lei/t, a profit of 329.65 lei/ha and a profit rate of 39,58%.

Similar with natural meadows, highest profit was achieved by variant control, which in 2007 had a level of 44.33% in 2008 and 57.75% in 2009, 51.32%, and the lowest rate was recorded at 100N 50P₂O₅ 50K₂O version, with values of 17.34% in 2007, 28.05% to 23.02% in 2008 and 2009.

Results from the temporary meadow, shows an average yield of 1784.65 lei/ha, a production cost of 270.0 lei/t, a profit of 440.10 lei/ha and a profit rate of 32.73%. Due to high cost of fertilizers, the lowest rate of profit was recorded also for the variant fertilized with 100N 50P₂O₅ 50K₂O, values were below 25% (16.84% in 2007, 22.37% in 2008 and 18,79% in 2009).

The highest production was obtained temporary meadow, 1784.65 lei / ha, a figure which is higher than that obtained from natural meadow of 3.71 times.

Over-seeded meadow had obtain the highest rate of return (39.58% against 32.73% as it was for temporary meadow), although production was lower, 1162.55 lei/ha, which is explained by the higher the cost.

The last chapter, the seventh, has a number of conclusions on how to improve the used methods and economic indicators, including the following: for high financial and technical opportunities, the radical restoration by establishing temporary meadows, can provide on average of 4 to 6 t/ha high quality dry matter, in terms of chemical fertilization with NP or NPK or mixed organo-mineral treatment. Regarding the comparative economic aspect the three methods for improving degraded meadows highlight the most convenient situation for over-seeded meadow - versus natural and temporary meadow, and in terms of the level of fertilization, we particularly consider as positive variants the use of natural fertilizers and their combination with doses of 50N and 50P₂O₅.