

Perennial grasslands and agroenvironmental programme effects

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Abstract:

Farming on grasslands is an important part of organic farming. There is a perceptible trend of increasing acreages of grasslands in organic farming in the Czech republic too. Adjustment of subventions has an inconsiderable influence on this trend. Subventions should be balanced in a sufficient measure for supporting of organic farming in all directions, nevertheless in current situation the increasing of acreage of grasslands is too strong and share of grasslands in organic farming is too high. It provokes a degradation of production function of organic farming and insufficient utilization of arable land. This article is focused on the analysis of farming of selective file of farms with accent on farming on grasslands and use of the agroenvironmental programmes.

Key Words:

Grasslands, agroenvironmental programmes, organic farming, subventions

Introduction

Support of the sustainable farming leads to the development of economical and sustainable farming systems (organic farming, among others). Organic farming system is in a difficult position in comparison with the conventional farming system (there are a lot of restrictions set up by law). Therefore, there is an effort to seek other possibilities of use and ways to the prosperity, beside the classical arable land production. Nowadays, grassland farming has been developing in the Czech republic, among others by the reason of subvention system.

Meadows and pastures have a significant effect on the countryside character, they are inherent esthetical parts of the countryside in higher altitude, in valleys, fluvial meadows (they provide enough retaining area in the floods case) (Šarapatka, 2002). They are considered as an important culture from the multifunctional farming point of view; they enable to use farming land and protect the biodiversity, especially in montane and submontane areas (Pozdíšek et. al., 2004). The environmental non-productive function is fulfilled well, thanks to use of the perennial grasslands (Moudrý, jr. & Konvalina, 2007). Střeleček (2002) also confirms this fact, he claims the conversion to the extensive farming leads to better quality of the production, especially in marginal areas. Therefore, the conversion of a part of arable fields to extensive pastures is suitable from the environmental point of view. On the other hand, economical aspects of the conversion seem to be quite problematic question Hampicke et. al. (2005). Therefore, financial subventions of the farmers who execute a sustainable and friendly farming system are crucial there (Pražan & Leibl, 2005).

Methods of use of the perennial grasslands and division into meadows and pastures should also be monitored, among others. Maintenance of the grasslands without any cattle breeding, just by sowing or mulching, is not profitable, it provokes problems with the decomposition of the biomass, damage of ground water (nitrates), unfavourable changes of the crop stand structure, etc. (Pozdíšek et. al., 2004). On the other hand, reasonable grazing may contribute to the extension of unoriginal species, succession or overgrowth of herbs, which is usually typical for abandoned parcels. Grazing or sowing may be executed at the same time; early sowing of the first grass and subsequent grazing used to be very frequent in practice (Urban & Šarapatka, 2003).

On the other hand, cattle breeding without any market milk production is less profitable (lower loading of the pasture by cattle) and it provides less working places. This farming method needs to be subventioned in the Czech republic and in other EU countries, where the intensity of breeding is much higher (Kvapilík et. al., 2002). Suitable adjustment of the subvention system is the

crucial factor, influencing the balanced fulfilment of both functions (environmental and productive ones) of organic farming, among others.

Materials and methods

Selective file of 85 Czech organic farms, registered in the Pro-Bio database, was used for this analysis. Data were gathered via questionnaire study and telephone calls and personal meetings at the individual farms. Complex of factors was studied and monitored, focused on crop and animal production and subvention benefits. Concerning the crop production, acreage and yield of the individual crops, acreage of the individual grassland areas and ways of grassland use were studied. Concerning the animal production, species, categories and numbers of he breded animals were monitored. Furthermore, subvention benefits were monitored and compared to the total acreage of the individual farms, number of employees and other additional items and figures. Other factors were added by the combining of the basic data identified (e.g. loading of the individual farms by livestock units).

The calculations were focused on the evaluation of relations between grass rate, share of meadows and pastures and loading by livestock units, evaluation of the influence of the individual farm's size on the grass rate and evaluation of use of the agroenvironmental programmes in practice.

The data were evaluated via descriptive statistics programs and contingency tables. Furthermore, methods of the linear regression and correlation were used there. The evaluation of the data was executed in MS Access (database management program) and MS Excel (table processor).

Results and discussion

Czech organic farming is executed especially via grassland farming. Arable land represents 9.2 % in the studied file. However, Šarpatka & Urban (2006) quote lower value – 8.1 %. When the grassland share is becoming more and more significant in the Czech organic farming system, the question of a suitable and sufficient use of the grasslands and produced biomass is emerging too. Grasslands are usually used as pastures or meadows (sowing) and they provide the biomass which is used in the animal production, as the energetic use of the biomass, originating on the extensive grasslands, is supposed not be efficient and economical. Cattle breeding has become the dominating sector of the Czech organic production. Goat and sheep breeding are represented in a limited extend. When using the grasslands for the animal grazing, we have to respect certain limited values of the livestock unit loading. E.g. Šarpatka & Niggli (2008) consider 0.5-1 livestock unit/ha (0.4-0.8 of a livestock unit/ha on the extensive grasslands) to be optimal. Loading of the most the studied grasslands comply with these values, nevertheless there are a lot of farms that do nit reach the minimum level of loading (0.5 of a livestock unit/ha, see Figure 1). The exceeding loading (over 2 livestock units/ha) is very rare in the studied file of farms.

Implementation of the agroenvironmental programmes

Analysis of the subvention benefits and the implementation of the benefits shows the most of the studied subjects use and apply some of the subvention benefits (83.53 %). The agroenvironmental programmes, SAPS and LFA subventions are the most frequent types of the subvention benefits. Concerning the agroenvironmental programmes, 68.35 % of the farms using any subention benefits apply them. „Organic farming“ and „Perennial grassland protection and treatment“ are the most frequent programmes which are usually combined and applied together. Other programmes, e.g. bird territories) are applied in a limited extend.

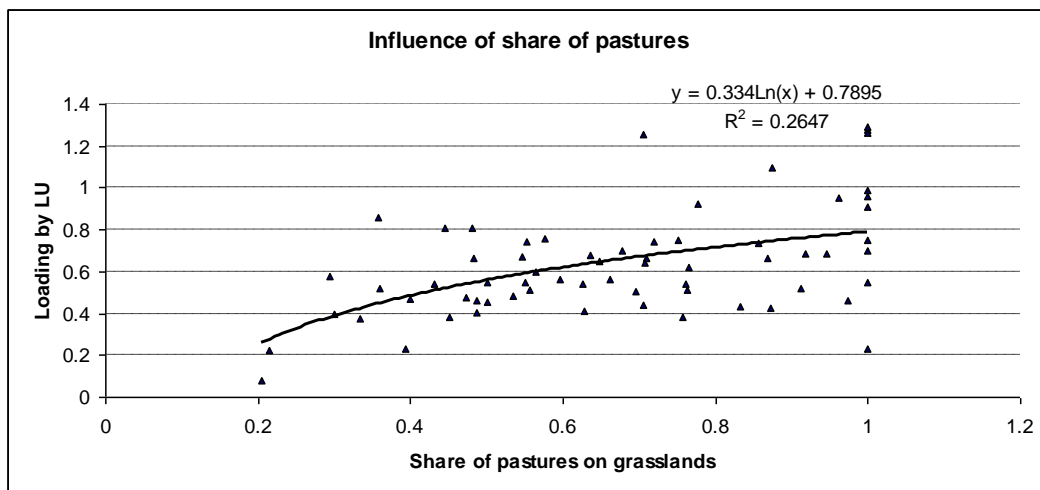
When comparing the frequent application of the agroenvironmental programmes concerning the perennial grasslands and low livestock unit loading of the grasslands, the programmes seem to be the significant motivating element of the perennial grassland farming and they generate to farmers a sufficient profit; the farmers are able to carry out their own extensive production. The fact that just 24 % of organic farmers sell more than one half of the products as organic ones and, on the other hand, 46 % of the farmers are not able to sell any products as organic ones, is an obvious demonstration.

Organic farms are primarily focused on the cattle breeding on the perennial grasslands, without market milk production (Moudrý et. al., 2007).

Influence of share of pastures on the loading by livestock units

Influence of share of pastures on the total loading of the grasslands by livestock units is shown in Figure 1. The logarithmic regression shows it may have a certain effect (determination index = 0.2647, regression curve equation: $y = 0.334\ln(x) + 0.7895$); increasing loading of the grassland by livestock units causes the increase of the grassland and pasture share. Results of the regression have a significant effect on the farms, represented by a high share of pastures and negligible share of meadows.

Figure 1: Influence of share of pastures on the loading by livestock units (LU) of total grassland

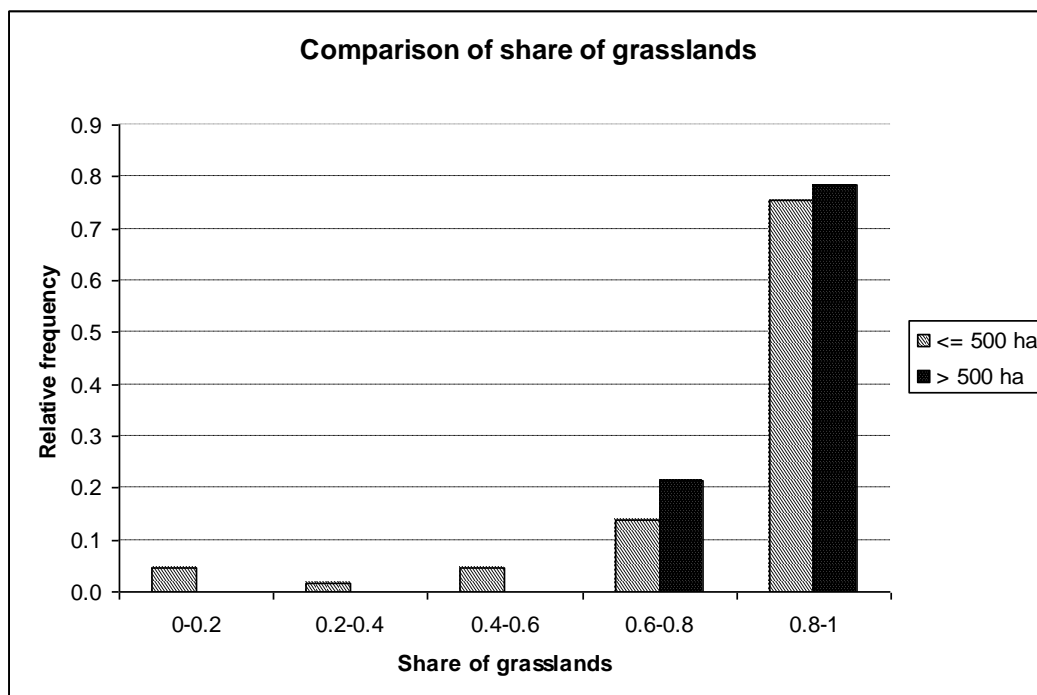


Influence of the farm acreage on the perennial grassland share

The average perennial grassland share on the total acreage of arable land reaches 87.2 % at the farms operating of the acreage up to 500 ha and 92 % at the farms operating of the acreage over 500 ha. The perennial grassland share is demonstrated in Figure 2. Size of a farm does not have substantial effect on the perennial grassland share. The figure shows there are some farms, represented by very low perennial grassland share, in the file of small farms.

Some of these farms are focused on very specific activities, which do not allow and perennial grassland farming or it restricts it to a large degree (e.g. orchards, vineyards). Concerning another farms, small farms do not carry out the animal production or they may execute in a very limited extend, therefore, there is a limited acreage of pastures and meadows. It is less important for the maintenance of the economic stability of a farm.

Figure 2: Share of grasslands in different size categories of farms



Conclusions

Perennial grassland farming is an essential and inherent part of the organic farming system. If the grasslands are used in a suitable way, this farming method may provoke many positive environmental effects, it also allows the agricultural activities in less favourable areas (very low or negligible arable land share). System of subventions and financial benefits, motivating the farmers to operate of the perennial grasslands, it essential there, as this farming system is less efficient and less economical, in comparison with the arable land farming. The subventions need to be balanced and reasonable to force the farmers to develop another activities too, so as the farmers are not dependent on the subventions and financial benefits. The subvention system, dedicated to the perennial grassland farming, is not optimally balanced in the Czech republic. It provokes the excessive grassland shre on the organic fields. It is connected by a significant limitation of the production and non-productive activities. The subventions are about to be the motivating element of the increase of the perennial grassland share in the future too. They are about to define the methods of use of the perennial grasslands in a considerable extend. Therefore, a restructuring of the farms is necessary; the farms have to execute more balanced structure of activities. It will increase the proper production of farms and incomes from the sale of the proper production.

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References

- [1] Hampicke, U., Liptersky, B., Wichtmann, W. (2005): *Ackerlandschaften – Nachhaltigkeit und Naturschutz auf ertragsschwachen Standorten*, Springer-Verlag, Berlin Heidelberg, 311 pp. (in German)
- [2] Kvapilík, J., Vaněk, D., Nová, V.(2002): Trvalé travní porosty a chov přežvýkavců v ČR v kandidátských zemích a v EU. In: *Chov polygastrů v méně příznivých oblastech a možnosti naplňování zásad evropského modelu multifunkčního zemědělství*. Rapotín, **1**, p. 48-61. (in Czech)

- [3] Moudrý, J., jr., Konvalina, P. (2007): Differences between organic and conventional farming systems in Czech Republic. *Lucrari Stiintifice* **50**, Seria Agronomie, "Ion Ionescu de la Brad" University Press, p. 282-289.
- [4] Moudrý, J., jr., Konvalina, P., Kolářová, P. (2007): Bioproduction in Czech Republic. *Lucrari Stiintifice* **50**, Seria Agronomie, "Ion Ionescu de la Brad" University Press, p. 277-281.
- [5] Pozdíšek, J., a kol. (2004): Využití trvalých travních porostů chovem skotu bez tržní produkce mléka. *Zemědělské informace*, ÚZPI, Praha, 2, 103 pp. (In Czech)
- [6] Pražan, J., Leibl, M. (2005): Možnosti využití ekologického zemědělství v chráněných krajinných oblastech (CHKO), <http://www.agris.cz/vyzkum/detail.php>, (date of browsing: 15. 9. 2005) (In Czech)
- [7] Sřeleček, F. (2002): Srovnávací analýza ekonomických výsledků zemědělských podniků v produkčních a horských oblastech. In: *Sborník z mezinárodního vědeckého semináře. Představní strategie českého zemědělství na cestě do EU*, **9**, Praha, Praha - Průhonice, p. 115-123. (in Czech)
- [8] Šarapatka, B. (2002): Ekologické zemědělství a biodiverzita, *Farmář* **12**, p. 6-9. (in Czech)
- [9] Šarapatka, B., Niggli, U., et. al. (2008) : *Zemědělství a krajina – cesty k vzájemnému souladu*, Univerzita Palackého v Olomouci, Olomouc, 271 pp. (in Czech)
- [10] Šarapatka, B., Urban, J., et al. (2006): *Ekologické zemědělství v praxi*, PRO-BIO, Šumperk, 502 pp. (in Czech)
- [11] Urban, J., Šarapatka, B., et al. (2003): *Ekologické zemědělství*. 1. díl, MŽP Praha, 280 pp. (in Czech)