

Organic Farming On Grasslands

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Abstract:

Sustainable agriculture has currently been considerably supported by the EU which positively affects development of organic farming in EU member states. Along with expansion of organic farming itself, importance of its production and non-production function rises as well. Both these functions are expected to be mutually balanced so as the organic farms were not focused on one-sided production. To reach such balance the grant programmes should be suitably set so that the farms were motivated to farm on arable land and permanent grasslands on one side and fulfil non-production function of agriculture on the other side as well. The balance of grant programmes can be estimated according to the way how organic farming is carried on. This article is focused on assessment of condition of organic farming in the Czech Republic and taking advantage of agroenvironmental programmes.

Key words:

Organic farming, grasslands, agroenvironmental programmes

Introduction

Agriculture is actually the most important form of the landscape management. Šarapatka, Niggli (2008) mentions the need to see a farmer as a landscape manager. For preservation of sustainable farming in a landscape the Agroenvironmental programmes (AEP) play the main role. These programmes include organic farming, permanent grasslands management and a programme of landscape preservation with several subprogrammes, such as grassing of arable land, use of intercrops etc. These measures have been part of the Common agricultural policy of the European Union since year 1992 and member states have to enable these measures to farming subjects (Fišer, 2004). It concerns support for environmentally friendly farming methods which are beyond the scope of legislation. AEO programmes are aimed to support ecological stability of a landscape, prevent quick water runoff, reduce soil erosion a preserve and rise biodiversity on agricultural land. Farmers are compensated for reduction of activities that negatively affect the nature and landscape, and conversely they are motivated to carry out activities with positive effect (Jongepierová a kol., 2004). This motivation is necessary because actual economic system one-sidedly prefers such behaviour that farmers aim to realize a profit before all, even though such activity could lead to losses for the society when long-term prospects are considered (Šarapatka, Dlouhý, 1998).

In the Czech Republic management of permanent grasslands and grassing of arable land are the most commonly realized agroenvironmental programmes. From the point of view of multifunctional agriculture permanent grasslands represent a very important cultivation on agricultural land that preserves biodiversity, this predominantly applies for submontane and mountain regions (Pozdíšek et. al., 2004). At the same time permanent grasslands represent a very important component of landscape enhancement as well (Penk, 2001). Actual share of permanent grasslands makes about 24%, whereas for the soil erosion protection on arable land to be sufficient, this number should rise at least to 35%, which would be similar to share of grasslands in other EU member states (Kvapilík, 2005). However permanent grasslands increase has to be equal in conventional and in organic farming as well, unfortunately this has not happen recently in the Czech Republic. While within conventional farming the rice in acreage of permanent grasslands has been continuing very slowly, within organic farming this has already reached extreme number so organic farming fulfils rather non-production role, also thanks to the way of permanent grasslands exploitation.

Within Czech organic farming also thanks to subsidies the production function is just repressed which in lower (production) elevations is not desirable (Moudrý, jr., Friebelová, 2006). The share of arable land within organic farming is low, whereas structure of crop rotations and plant species diversity is not optimal. This fact conforms to Kvapilík (1999), Šimon (1996), Moudrý, Stražil (1999) conclusions who state that predominantly in submontane regions the diversity of used plants should be varied by traditional and non-traditional species.

Although the overall share of grasslands in the Czech Republic has not reached sufficient number yet, within organic farming the situation is contrary. There is advised to motivate farmers to fulfil better the production function of farming on arable land which together can help to reduce potential economic risk related to expected changes of subsidy programmes taking effect in year 2013.

Method and material

Data used for calculation was drawn from the analysis of selective group of 85 organic farms all over the Czech Republic, registered in the Pro-Bio database. Data collection was provided by means of questionnaire survey and additionally by direct interviews in site or phone survey. As monitored factors were chosen variables concerning agricultural land exploitation (farming on arable land and permanent grasslands management), plant production as far as the structure and acreage of grown plants is concerned, livestock production as far as the number of kept animals and their species is concerned. Furthermore information about certain subsidy programmes used, total farm acreage, number of employees and other additional data were collected. Further factors were added using combination of found basic data (stocking rates).

Calculations were focused on evaluation of relations between level of grassing and stocking rates, evaluation of relations between stocking rates and farming on arable land and on permanent grasslands, or farming on permanent grasslands only under the agroenvironmental programmes.

Data was processed by means of descriptive statistics tools and contingency tables. Furthermore methods of linear regression and correlation were used. The evaluations

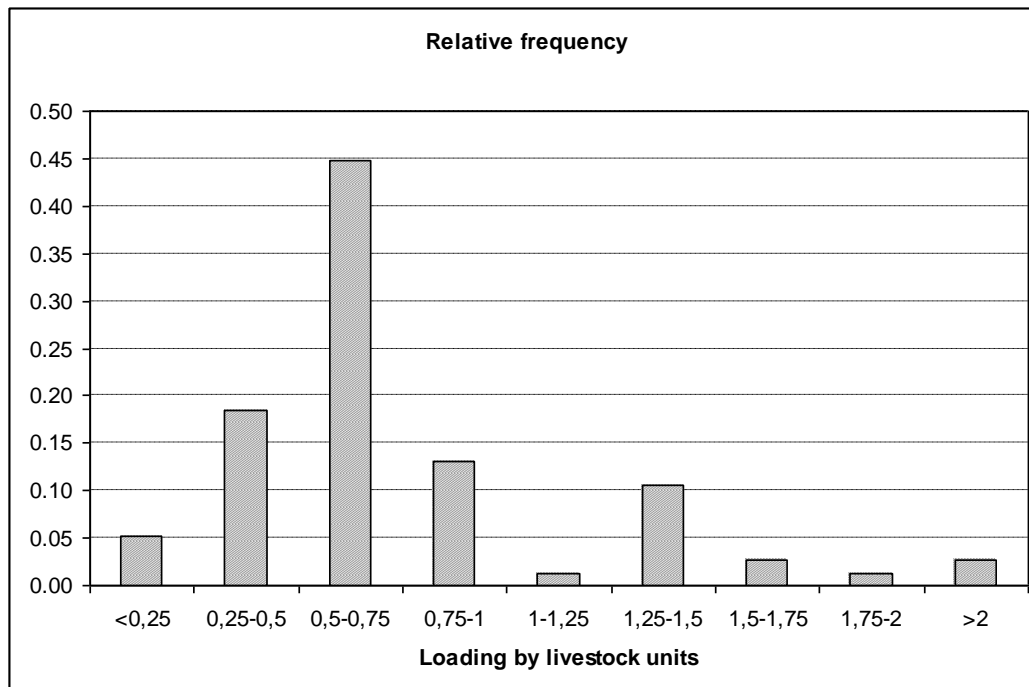
itself was carried out using DBMS (data base management system) MS Access and spreadsheet program MS Excel.

Results and discussion

In the Czech Republic current organic farming is represented by farming on permanent grasslands only. The share of permanent grasslands within organic farms makes 90,8%. Such considerable share of grasslands practically leads to repression of production function of farming on arable land, moreover grassed areas resp. produced biomass are complicated to be efficiently utilized. Grazing and mowing for livestock feeding purposes are the most common ways of permanent grasslands biomass utilization. An alternative utilization of biomass for energy purposes has not shown much positive effect.

High shares of permanent grasslands with followed-up livestock production define the main line of Czech bioproduction, which mainly represents non-milk beef raising and reduced scale goat and sheep raising. To utilize grazed grasslands properly, there is necessary to maintain right stocking rates of a pasture (expressed by livestock units - LU). This number should reach about 0,5 LU/ha, which in most cases corresponds. There are also many farms where this number does not reach 0,5 LU/ha (Figure 1), which cannot be considered to be suitable from the environmental and even economic point of view. Excessive livestock rates of pastures over 2 LU/ha are within the monitored farms very rare.

Figure 1: Total stocking rates histogram by livestock units (LU)



The influence of agricultural production trends on stocking rates (LU)

Within the monitored file of farms was found that higher stocking rates of pastures are rather reached by farms with production activities on arable land and grasslands than by farms managing permanent grasslands only. An average load makes 1,06 LU/ha compared to 0,65 LU/ha by farms managing grasslands only.

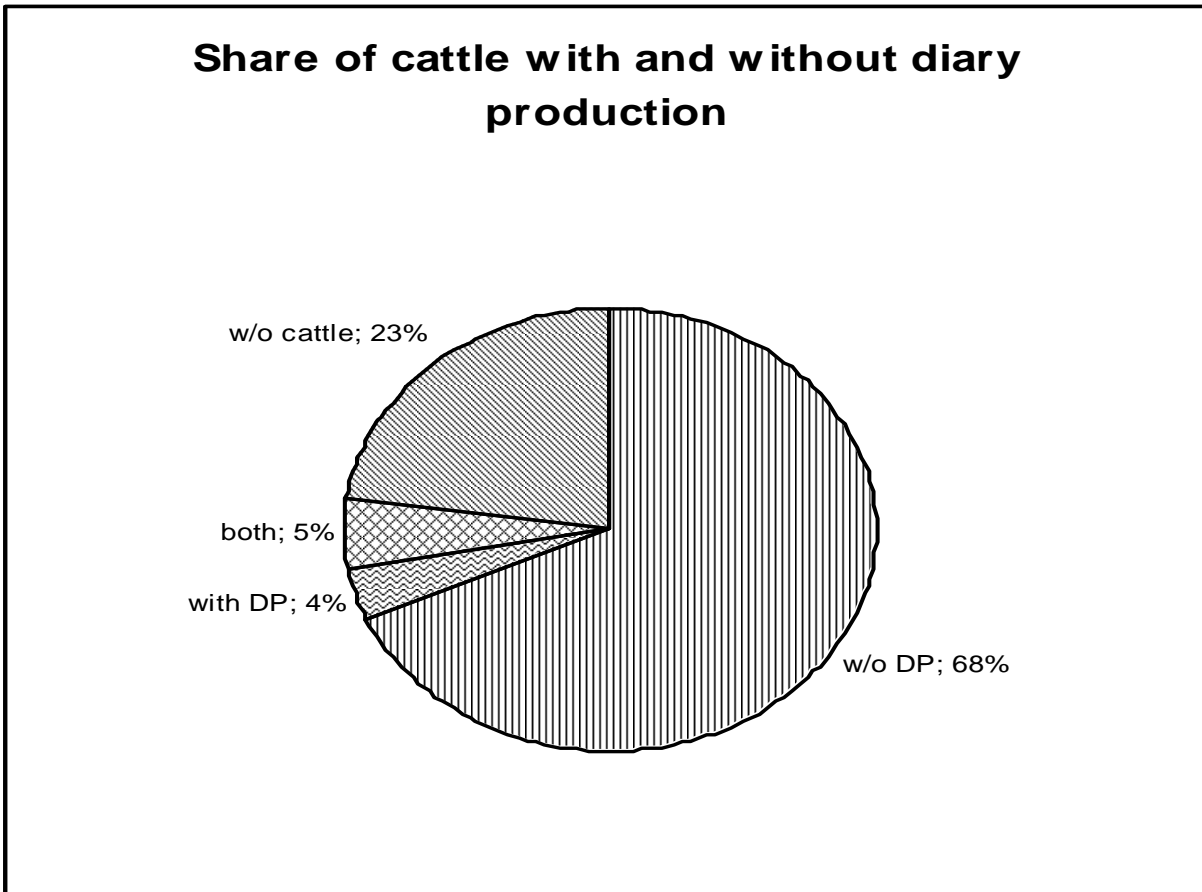
Trends of livestock production

Within the monitored file of farms beef raising without milk production (WMP) represents 65,88% of all cases (56 farms), beef raising with milk production (MP) represents 8,24% of all cases (7 farms) and beef raising with both WMP and MP represents 4,71% (4 farms). Number of farms corresponding to 21,17% of all cases (18 farms) have no beef production at all and focus on other kind of livestock (sheep, goats, horses...). Evident differences in livestock rates are found in cases applying WMP beef raising (0,77 LU/ha), whereas in cases applying MP beef raising it makes 1,19 LU/ha.

Tab. 1 - Structure of livestock production within the file of monitored farms

	Number of animals	Number of farms
Cattle without dairy production	8517	58
Cattle with dairy production	1060	7
Goats	2043	26
Sheeps	4227	16
Horses	334	29
Poultry	5315	7

Figure 2 – WMP and MP beef raising within the file of monitored farms



Taking advantage of agroenvironmental programmes

91% of all organic farms take advantage of subsidy support for organic farming and support for permanent grasslands maintenance as well. In fact, both these subsidy programmes provide together an economic stability for all of organic farms, even for those, who are located out of LFA regions. In many cases this results in such situation that farmers generate their sufficient earnings based on the subsidy support and consequently reduce their own production. This state also prove results of measured stocking rates by farms with or without production on arable land and stocking rates by farms with or without milk beef raising, where farms applying a more intensive farming system (plant production on arable land or beef raising with milk production) reach higher stocking rates compared to those who produce an extensive farming system based on beef raising without milk production. For the more intensively farming companies the beef raising constitutes part of the farm cycle, provides barnyard manure production for example (farm with production on arable land) or in some case it may be the primary resource of earnings (MP beef raising). Lower stocking rates reached by extensively farming companies with WMP beef raising prove the fact, that here beef raising is realized on minimal or slightly higher than minimal stocking rates so that the subsidy programme qualification criterion was reached

Tab. 2 - Stocking rates in relation to the way of farming

Type of farm	Farms with arable land	MP beef raising	Farms without arable land	WMP beef raising
Stocking rate LU/ha	1,06	1,19	0,65	0,77

Remaining agroenvironmental measures are used by the farms minimally only. The reason consist in low share of arable land that the measures are prepared for but also there is probably lack of knowledge of the other agroenvironmental programmes.

Conclusion

In the Czech Republic organic farming is predominantly realised by farming on permanent grasslands. Within the monitored file there the share of arable land is represented by 9,2 % only. ŠARAPATKA, URBAN (2006) mentions even lower values - 8,1 %. In most cases permanent grasslands are used for beef raising without milk production or for raising other livestock species eventually. An optimal stocking rate (expressed in LU/ha) is not always satisfactorily followed. For example ŠARAPATKA, NIGGLI (2008) o mention an optimal stocking rate between 0,5 - 1 LU/ha, for extensive growths slightly less (0,4-0,8 LU/ha). Within the monitored file of farms these values correspond, however there is group of farms where the stocking rates reach bellow 0,5 LU/ha. We can say that in the Czech Republic organic farming fulfils its environmental function above all. This function is very important (Hampicke, Liptersky, Wichtmann, 2005) but it is not supposed to markedly repress production function of organic farming, which also thanks to actual conditions set by subsidy programmes has not happen.

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References:

- [1] FIŠER, B.: Agroenvironmentální programy na orné půdě, ZO ČSOP Bílé Karpaty, 2004, 22 s
- [2] HAMPICKE, U., LIPTERSKY, B., WICHTMANN, W.: Ackerlandschaften – Nachhaltigkeit und Naturschutz auf ertragsschwachen Standorten, Springer-Verlag, Berlin Heidelberg, 2005, 311 s.
- [3] JONGEPIEROVÁ, I. a kol.: Agroenvironmentální programy na květnatých podhorských loukách. Vzdělávací a informační středisko Bílé Karpaty, o.p.s. Veselí nad Moravou, 2004, 22 s

- [4] KVAPILÍK, J.: Chov krav bez tržní produkce mléka z hlediska vstupu České republiky do EU, in.: *Sbor. ref. mezin. konf. Agroregion*, JU v Českých Budějovicích 1999, s. 242-244.
- [5] KVAPILÍK, J.: Vývoj početních stavů přežvýkavců ve vztahu k trvalým travním porostům. – in.: *Náš chov* č. 9. Profi Press, s.r.o. Praha, 2005. s. 14 – 17.
- [6] MOUDRÝ, J., STRAŠIL, Z.: Pěstování alternativních plodin, Jihočeská univerzita v Českých Budějovicích, Zemědělská fakulta, 1999, 165 s.
- [7] MOUDRÝ, J., jr., FRIEBELOVÁ, J.: Analysis of farming in marginal areas and prediction of expected progress. *Lucrari Stiintifice* vol. 49, Seria Agronomie, Universitatea De Stiinte Agricole Si Medicina Veterinara "Ion Ionescu De La Brad", Iasi, 2006, p. 91-98.
- [8] PENK, J.: Mimoprodukční funkce zemědělství a ochrana krajiny. Institut výchovy a vzdělávání Mze, Praha, 2001, 64 s.
- [9] POZDÍŠEK, J., a kol.: Využití trvalých travních porostů chovem skotu bez tržní produkce mléka. *Zemědělské informace*, ÚZPI, Praha, 2, 2004, 103 s.
- [10] ŠARAPATKA, B., DLOUHÝ, J.: Je cena potravin odrazem skutečných nákladů na jejich produkci? *Zemědělská ekonomika*, 44, 1998 (11), s. 507 – 510
- [11] ŠARAPATKA, B., NIGGLI, U., a kol.: *Zemědělství a krajina – cesty k vzájemnému souladu*, Univerzita Palackého v Olomouci, Olomouc, 2008, 271 s.
- [12] ŠARAPATKA, B., URBAN, J., a kol.: *Ekologické zemědělství v praxi*, PRO-BIO, Šumperk, 2006, 502 s.
- [13] ŠIMON, J.: Střídání plodin – nejlevnější agrotechnické opatření. *Úroda*, 1996, č. 12, s. 10-11.