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AN EVALUATION OF THE RELEVANCE OF EU LESS FAVOURED AREAS POLICY FOR DRY REGIONS OF THE CZECH REPUBLIC

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Abstract: The paper analyses production and economic characteristics of the farms, situated in the dry regions, defined according to various methods, in the Czech Republic. To consider the chance for obtaining the support for the less-favoured areas (natural handicapped areas) according to the rules of the EU is its main aim. It was found out that drought can have negative influence on the economic results in case of some farms and thus endanger agricultural cultivation of the land. For obtaining the subsidies in the natural handicapped areas after 2013 it would be necessary to change the rules of these measures in the Czech Republic. In light of recent Commission proposals on the CAP after 2014, analytical results support the requirements for better tailored policies to diverse rural regions of the EU.

Keywords: dry regions, natural handicapped areas, LFA payments, permanent use of the agricultural land

Souhrn: Článek analyzuje výrobní i ekonomické ukazatele podniků hospodařících v suchých oblastech v České republice podle různého vymezení. Jeho cílem je posoudit šanci na získání podpor pro méně příznivé oblasti (oblasti s přírodním znevýhodněním) podle pravidel EU. Bylo zjištěno, že působení sucha může mít nepříznivý dopad na ekonomické výsledky u určité skupiny podniků a ohrozit trvalé zemědělské hospodaření na půdě. Pro získání podpor hospodaření v méně příznivých oblastech po roce 2013 by ale muselo dojít ke změnám pravidel tohoto opatření v ČR. Ve světle posledních návrhů Komise na společnou zemědělskou politiku po roce 2014 výsledky analýz podporují požadavky na politiku EU lépe přizpůsobenou různorodým venkovským regionům EU.

Klíčová slova: suché oblasti, oblasti s přírodním znevýhodněním, platby LFA, trvalé využívání zemědělské půdy

1. Introduction

The Common Agricultural Policy (CAP) justifies the support to agriculture as a reward for the provision of public goods associated with land cultivation and with economic and social activities of agricultural holdings. The rationale for this support, therefore, is based on the fact

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that agriculture is regarded as an effective and arguably the most efficient provider of public goods. The EU Commission underlines that “Reform of the CAP must also continue, to promote greater competitiveness, efficient use of taxpayer resources and effective public policy returns European citizens expect“ (European Commission 2010 A).

Studies of the agriculture and public goods production stress the role of the less-favoured areas (LFA). (Cooper at all, 2006; European Commission 2009) „Well managed agricultural landscapes have not only high eco-system values; with their scenic and recreation feature they are a key asset for other businesses, such as the tourism industry”.

The need to ensure the continuation of agriculture in areas characterized by unfavourable natural conditions emerged as early as the beginning of the Common Agricultural Policy. Council Directive 75/268/EEC on mountain and hill farming and farming in certain less- favoured areas was adopted. Its aim was to support maintenance of agriculture in areas with permanent natural and structural handicaps in order to ensure a minimum level of population and landscape maintenance. This Directive laid down three basic types of less-favoured areas (LFA): mountain areas, other LFAs and areas threatened by depopulation, where it is essential for conservation of the landscape and areas affected by specific handicaps.

CR was defined LFA at time of entry into the EU in accordance with Council Regulation (EC) 1257/2005. In Article 13 of this regulation states: Support for less-favoured areas should contribute to the following objectives:

- to ensure continued agricultural land use and thereby contribute to the maintenance of a viable rural community,
- to maintain countryside,
- to maintain and promote sustainable farming systems which in particular take account of environmental protection requirements.

Currently there is in force Council Regulation (EC) 1698/2005 on support for rural development by European Agricultural Fund for Rural Development (EAFRD).
Support for rural development shall contribute to achieving the following objectives (article 4).

a) improving the competitiveness of agriculture and forestry by supporting restructuring, development and innovation (notably Axis 1);

b) improving the environment and countryside by supporting land management (in particular axis 2);

c) improving the quality of life in rural areas and encouraging diversification of economic activities (in particular axis 3).

Support of LFA was included in the Axis 2 measures targeting the sustainable use of agricultural land. The LFA payments should thus be adjusted so that they compensate part of the profit losses and higher costs, resulting from the farming in the worse climatic and soil conditions in given region. Commission does not regulate the method of calculating the size of this compensation. Methods vary according to EU countries (Štolbová, 2007).

Future multi-annual strategic objectives of II pillar of the Common Agricultural Policy is improving the efficiency of resources with regard to smart growth and the sustainable EU agriculture and inclusive rural development in line with the strategy Europe 2020 (European Commission, 2010 A): Smart, sustainable and inclusive growth. Future objectives of CAP are (European Commission, 2010 B):

- viable food production,
- sustainable management of natural resources and climate action,
- balanced territorial development.

Support for farm farming in less favoured areas has under the Proposal a Regulation for next EU programming period (European Commission, 2011) among the measures which are particularly important for increasing the competitiveness of all types of farming and improving the viability of farms.

In relation to the EU budget for the next programming period Zahrt (2009) reflects on the financing of CAP payments. He emphasizes the social aspects of the payments. He notes that in some countries, farmers receive above-average incomes, own expensive machinery and buildings, and their incomes are rising, which is in the current crisis period very sensitive. On the contrary, poor rural households benefit from the CAP very little. Regional adjustment of support is discussed topic in the regional development and rural development in general (Boháčková, Hrabánková 2009). European Commission (2009) and scientific papers attribute high importance to European mountain regions (Nordregio, 2004; Stucki at al., 2004; Dax, 2005). Dax (2009) pays special attention to mountain farms: " ..multifunctional mountain farming includes objectives to sustain the management of externalities supplying services and values, reflecting a rising social demand. Such attractive landscapes managed by agriculture constitute important comparative advantages for mountain territories, since they are highly specific to their location and cannot be transferred to other places like other assets." A large number of successful rural regions have been able to valorise public goods such as a clean environment, attractive landscapes and cultural heritage (including food).

But also drought is the factor limiting agricultural production. Increased attention to drought is paid especially in relation to climate change. Joint Research Centre (JRC) deals with the impact of climate changes on crop productivity decreasing (Iglesias at al., 2009). Some EU countries include dry or unsuitable water soil conditions among the criteria for defining areas with specific handicaps (for example Spain and Ireland; Štolbová, 2006). Many scientific papers address the problem of different ways and methods of the dry areas delimitation. Schrier at al. (2006) uses the Palmer Drought Severity Index (PDSI). Lloyd-Hughes and Saunders (2002) compare the PDSI and precipitation monthly standardized indexes and their impact on the definition of droughts in Europe. For redefinition of LFA from 2014, the Commission considered applying the criterion of 'soil moisture balance "(Eliasson, Terres, Bamps, 2007; JRC, 2008, 2009). Proposal for a next Regulation (European Commission 2011) suggests aridity index criterion for defining the areas affected by drought.

The purpose of the CAP since 2014 (Copa & Cogeca, 2011) should be to ensure the agricultural production in terms of environmental policies (air, soil, water). The new CAP should encourage "land management", with particular regard to biodiversity and conservation of resources and the environment, all this with regard to the specific regional conditions.

The European Court of Auditors (2003) published a report, which pointed out numerous problems in the LFA delimitation. The wide range of the criteria used for the "Other" LFA, which may be the cause of disparity among the subsidies beneficiaries was criticized. The EU Commission ordered a detailed study of the LFA measures in EU member countries (Cooper at al., 2006).

The European Commission aimed to propose and pass such set of criteria, which would be particularly oriented on the areas with the highest danger of abandoning the land cultivation, which would be stable, independent on the land use, simple, transparent and equal, i.e. comparable among all the member countries.

Expert group of the Joint Research Centre (Eliasson, Terres, Bamps, 2007) has prepared a technical report, including a set of bio-physical criteria, which should be further used to delimit LFA. Based on following discussions with the member countries the guidelines for application of these criteria were prepared (JRC 2009).

When the states have delimited areas with these constraints, they should exclude the areas (fine-tuning), where the farmer are capable of overcoming the handicap either by technical measures (amelioration, irrigation), or by using specific structure of production (for example areas of higher-than-average standard gross margin per hectare of agricultural land). Using these criteria, the member countries including the CR have defined their LFA and submitted the results to the Commission.

In the original proposal, the dry areas in Europe were defined by the criterion of soil water balance. Considering that many countries had problems with defining this parameter, it was consequently proposed to use the aridity index for the definition of the dry areas.

Aridity index is expressed as:

$$AI = \frac{P}{PET}$$

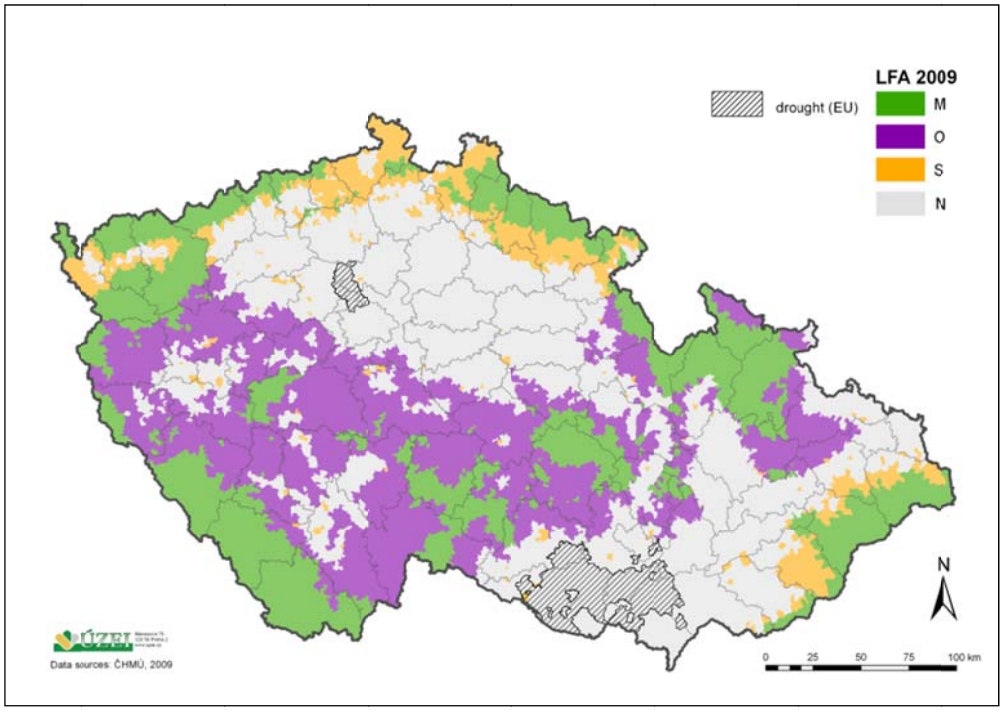
where:

PET... potential evapotranspiration
P..... average annual precipitation

Classification	Aridity Index
Hyper arid	AI < 0.05
Arid	0.05 < AI < 0.20
Semi-arid	0.20 < AI < 0.50
Dry sub humid	0.50 < AI < 0.65

Tab 1. Classification of the area according to the aridity index value. Source: FAO 2004

The CR considered to set the limit for the arid regions delimitation to AI<0,65. The municipality area is eligible for the LFA if the above-defined dry areas cover more than 66% of its agricultural land.



M – mountain areas, O – Other LFA, S- areas with specific handicap, N – non LFA

Fig 1. Dry areas according to aridity index compared with the current LFA. Source: Štolbová at al. (2010) IAEI

After the definition of these dry areas using the aridity index, it was - in accordance with the Commission guideline - necessary to exclude the areas where the farmers manage to overcome the natural handicaps. This concerns the municipality with irrigation systems covering more than half of their agricultural land. Using the aridity index, 178 thousands hectares of agricultural land registered in the Land Parcel Identification System (LPIS) was marked as the dry areas. Of this area, 30 thousands ha were excluded due to the irrigations, leaving thus total dry area 148 thousands ha of utilised agricultural area (UAA). These areas (after removing the irrigated land), further in the article called “EU-ari”, are shown on Fig. 1.

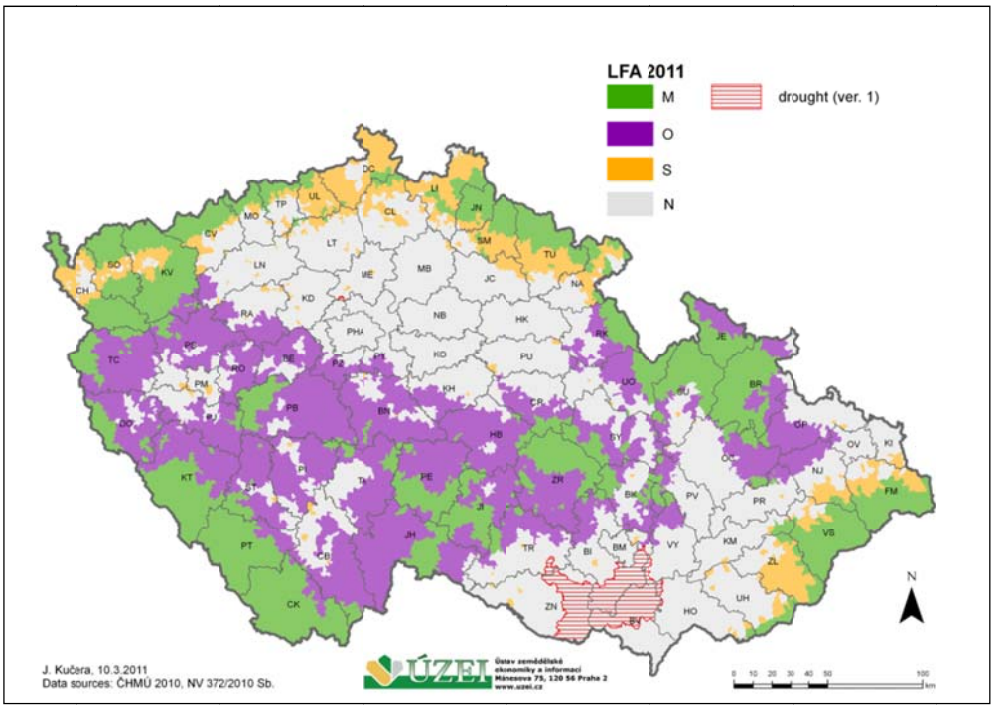
Aside from this European criterion for the LFA delimitation, specialist from the Czech Hydro meteorological Institute (CHMI) delineated in cooperation with the Research Institute for Soil and Water Conservation two variants of areas endangered with agricultural drought in the conditions of the Czech Republic.

Based on the demand by the Ministry of Agriculture (MoA), the specialists (Vráblík, Kohut, Chuchma, 2010) have proposed methods for delimitation of the agricultural drought-endangered

areas in the CR. The authors of the mentioned methodology stress that the resulting areas with various degree of a long-term endangering with the agricultural drought are relative, taking into account only the area of the CR. Using MoA data the delimitation was performed in two versions, differing in the degree of the drought danger. Irrigated areas were not excluded.

Variant 1.

Category "extraordinary danger of drought" (EDD) covers 113 thousands ha of the UAA according to LPIS, and currently is outside the LFA. Further in text, this variant is referred to as V1. The municipalities, which have more than 50% of UAA within the EDD category, are shown on Fig. 2.



M – mountain areas, O – Other LFA, S- areas with specific handicap, N – non LFA

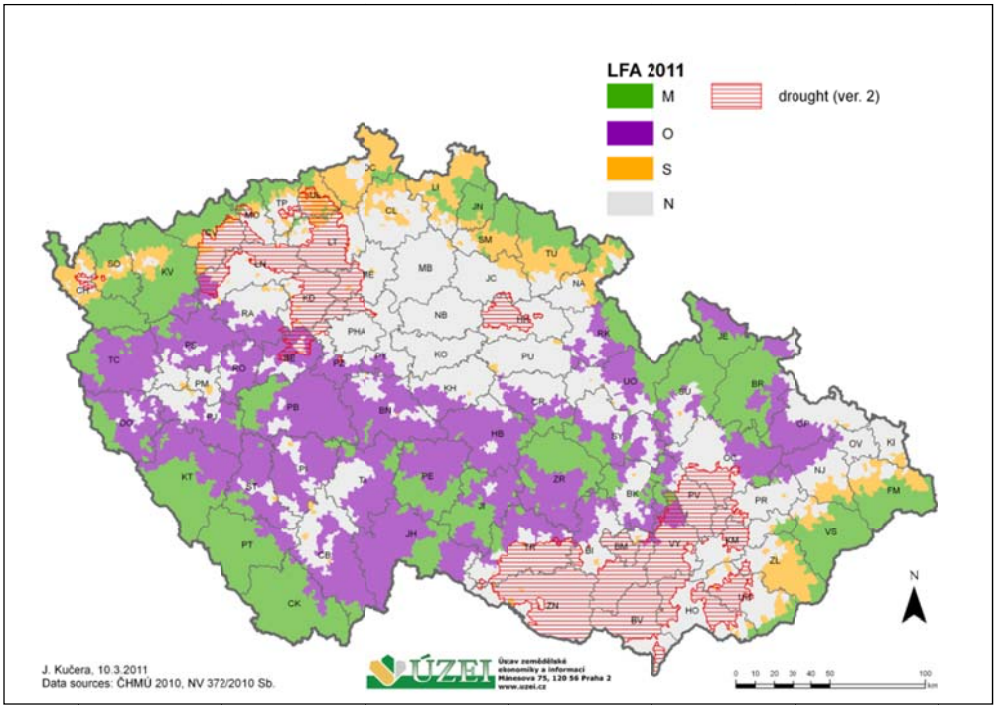
Fig 2. Extent of the area endangered with drought according to V1 compared to the LFA. Source: Kučera 2010, IAEI

Variant 2.

Area of the municipalities with more than 50% share of agricultural land in the "extraordinary and very high danger of drought" covers 579 thousands ha of UAA. (Fig. 3). 21 thousands ha of this area belong already to some of the LFA type. The aim of this paper is to analyse the data from the LFA viewpoint, therefore the areas that are already in the LFA were excluded. Area of 558 thousands ha of the UAA endangered by drought was analysed in this case. This less strict variant is marked in the text as V2.

The aims of this article are:

- to analyse production and economic parameters of farms in the Czech Republic farming in dry areas defined according to above-described methods
- to assess the possibilities of obtaining subsidies for less-favoured areas according to the rules of the EU.



M – mountain areas, O – Other LFA, S- areas with specific handicap, N – non LFA

Fig 3. Extent of the area endangered with drought according to V2 compared to the LFA. Source: Kučera 2010, IAEI

2. Material and methods

The structure of agricultural production and economic results of the farms, which have major part of their utilised agricultural area within the above delimitated dry regions were analysed. The observed parameters were compared with the results of farms in other regions of the CR, differentiated according to the severity of the soil and climatic handicaps. These categories were: mountain areas, other-than-mountain LFAs, and areas not included in the LFA.

The data, covering the above-described areas, were derived from several sources. The Land Parcel Identification System allowed determining per each farm the share of UAA in the dry areas and categories of LFA. Special attention was given to the evaluation of the share of the grasslands as current eligible area for the LFA payments in the CR and to the evaluation of the share of the vineyards as an example of an intensive culture. Based on the special sorting of the data from the crop yield survey by the Czech statistical office (CZSO), data on the average crop yield per hectare for the period 2004-09 were obtained. Yields were assessed for the following crops: winter wheat, spring barley, grain maize, all cereals and rape.

The farms were sorted into the above said LFA categories based on the fact that more than 50% of their UAA falls into given category (dry areas, mountain LFA, other-than-mountain LFA – i.e. Other LFA + areas with specific handicaps and current non LFA with excluded dry areas). This classification was performed for the area EU-ari within the frame of the Report prepared for MoA CR (Štolbová at al., 2010). However, the obtained results can be generally applied also to the more strictly defined Czech drought defined by the CHMI (V1), as the two delimited areas overlap for the major part (see fig. 1 and fig. 2). It can be expected that the analyses conclusions is valid for both dry areas delimitation. Average number of samples (year 2004-09) is given in the Table 2.

Area	Cereals	Winter wheat	Spring barley	Maize	Rape
Mountain	198	168	159	.	106
Other than mountain LFA	735	688	586	74	563
Non- LFA	1612	1513	1289	477	1074
EU-ari	183	170	158	90	83

Tab 2. Number of the samples of the observed crop yields by area category. Source: CZSO, own calculations

Similarly, the data on the amounts of Standard gross margin, based on the specially assorted data from the Structural survey of agriculture 2007 (CZSO) were applied on the EU – ari as well as on V1 area. In this case, the EU-ari group is represented by 569 farms, mountain LFA by 2238 farms, other-than-mountain LFA 3662 and non-LFA (excluding the dry areas) 4927 farms.

The data for evaluation of the economic results of farms were obtained from the Farm Accountancy Data Network (FADN) for all the variants of drought areas delimitation by the assorting of the farms representing each category. A farm became a representative of the given group if more than 50% of its UAA falls into given category of region (drought area, mountain LFA, Other LFA, areas with specific handicaps and non-LFA). The averages of economic parameters for the years 2007-09 were calculated for every group of farms

3. Results and discussion

Yields per hectare

Table 3 shows results of the crop yield survey of farms in the EU-ari dry area group in comparison with the mountain LFA, other-than-mountain LFA and non-LFA groups. The yields of cereals in the dry areas (average of observed six years) were similar to those in non-LFA areas, 29% higher than in mountain LFA and 15% higher than in other-than-mountain LFA.

Year	2004	2005	2006	2007	2008	2009	average
Area	**Cereals**						
Mountain	4.2	3.6	3.1	3.8	4.1	3.6	3.7
Other LFA	4.8	4.1	3.4	4.1	4.6	4.2	4.2
Aridity EU-ari	5.6	5.1	4.3	3.6	5.3	5.1	4.8
Non-LFA	5.4	4.8	4.1	4.4	5.3	5.0	4.9
	Winter wheat						
Mountain	4.7	4.2	3.4	4.5	4.8	4.0	4.2
Other LFA	5.2	4.6	3.9	4.6	5.2	4.6	4.7
Aridity EU-ari	5.8	5.0	4.4	4.0	5.3	4.8	4.9
Non-LFA	5.8	5.1	4.5	4.9	5.7	5.3	5.2
	Spring barley						
Mountain	4.0	3.5	3.2	3.4	3.7	3.4	3.5
Other LFA	4.4	3.7	3.1	3.3	3.9	3.5	3.7
Aridity EU-ari	4.9	4.2	3.5	2.7	4.6	3.8	3.9
Non-LFA	4.9	4.2	3.6	3.3	4.5	4.2	4.1
	Maize						
Mountain	3.8	2.1	7.6	8.3	8.2	5.7	6.0
Other LFA	5.2	6.9	7.1	8.8	7.0	8.5	7.3
Aridity EU-ari	6.9	8.9	7.4	5.2	7.5	10.2	7.7
Non-LFA	6.5	9.3	6.9	8.2	8.3	9.5	8.1
	Rape						
Mountain	3.1	2.4	2.6	2.9	2.5	2.9	2.7
Other LFA	3.3	2.7	2.8	2.9	2.7	2.9	2.9
Aridity EU-ari	3.4	2.7	3.2	2.6	3.2	2.8	3.0
Non-LFA	3.7	2.9	3.0	3.0	3.0	3.2	3.1

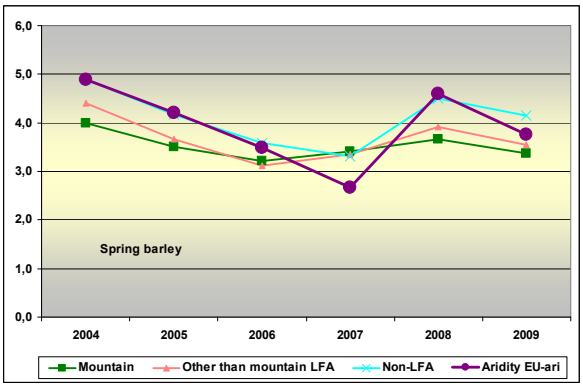
Tab 3. Average yields in tonnes per hectare for selected crops by area category. Source: specially assorted reporting units of the CZSO survey –the final agricultural crop yield, own calculations

Biggest difference in average yields between dry areas and the non-LFA areas was observed for the wheat, where the average yield was 6% lower in the dry areas. Still, compared to the mountain LFA yields, the dry areas were by 15% higher, a by 4% higher than other-than-mountains LFA. Only little differences in six-year average yields were observed in the case of spring barley. In the EU-ari areas, the average yield was only by 4% lower than in the non-LFA regions, but by 12% higher than in mountain LFA and by 7% higher than other-than-mountain LFA. Even more balanced were the yields of the rape. EU-ari areas had only by 5% less than

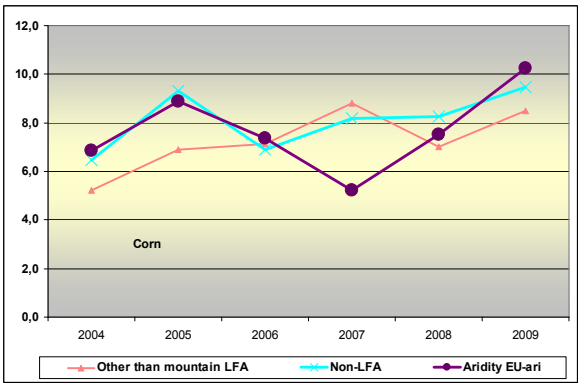
non-LFA; by 9 % higher than mountain LFA; and by 3% higher than other-than-mountain LFA. Similarly, the average yield of the maize was only by 5% lower in the case of farms in dry areas than in the case of the non-LFA farms. The statistical analysis of yield data was carried out. Thus, the analysis did not prove statistically significant difference in the yields between the EU-ari farms and those outside LFA.

The year 2007 was very significant in terms of weather impact on dry areas. The droughts lasted from the end of March till the beginning of the May. Most severe droughts hit Southern Moravia and North-western Bohemia. The drought influenced most the spring-sown crops (spring barley and maize), while the winter crops suffered less. These fluctuations in the years 2004 - 2009 are shown on the graphs 1 – 4.

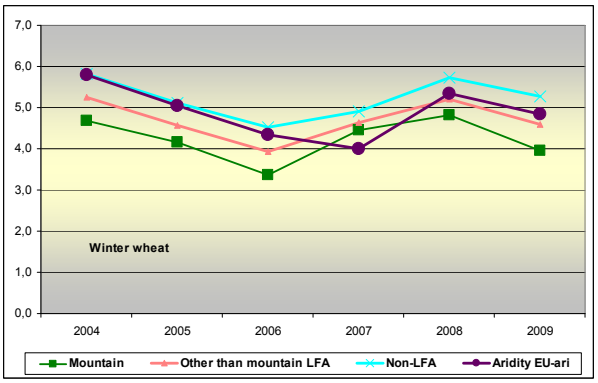
Graph 1 – Spring barley



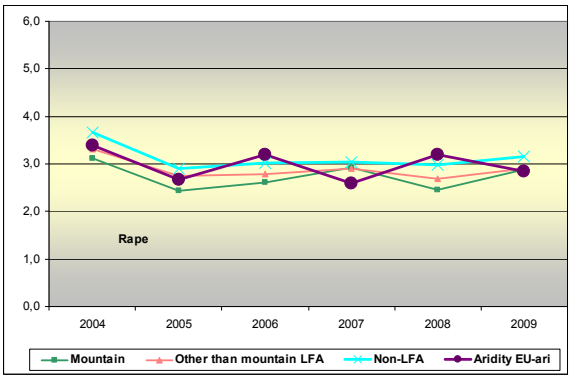
Graph 2 - Maize



Graph 3 - Winter wheat



Graph 4- Rape

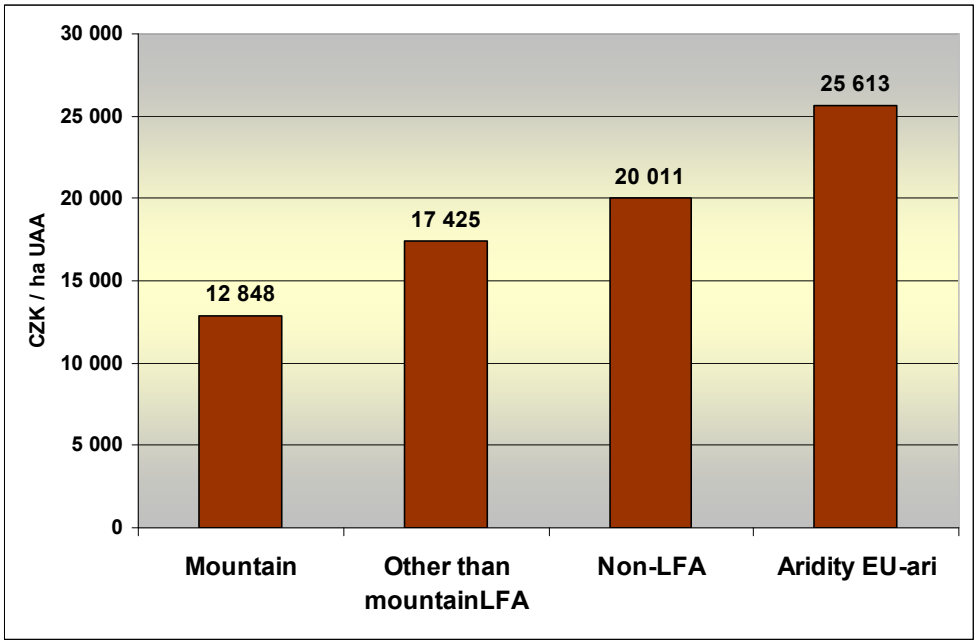


Source: specially assorted reporting units of the CZSO crop yield survey

The yields analysis shows that the long-term level of the yields cannot serve as an argument for the LFA support, as it does not prove permanent handicap. Other tools and support than LFA payments should be used for dealing with the impact of dry years on the crop yields (e.g. support for insurance).

Standard gross margin

This parameter is recommended by the EU Commission for assessing whether the farms manage to overcome the natural handicaps using suitable production structure. High values of standard gross margin (SGM) per hectare is typical for vineyards, fruit orchards, hobs production, vegetable and fruit tree nurseries, while the meadows and pastures have generally low values of the SGM. Comparison of the average SGM per ha of the UAA classified according to the target groups is shown on the Graph 5. The average SGM is rather high in the category EU-ari compared to other areas of the CR, which is a consequence of high share of the permanent cultures in the dry areas. Similar result can be expected if the delimitation of dry areas were done according to Czech methods, for also this definition of dry regions includes areas with above-average share of permanent cultures and arable land on total UAA.

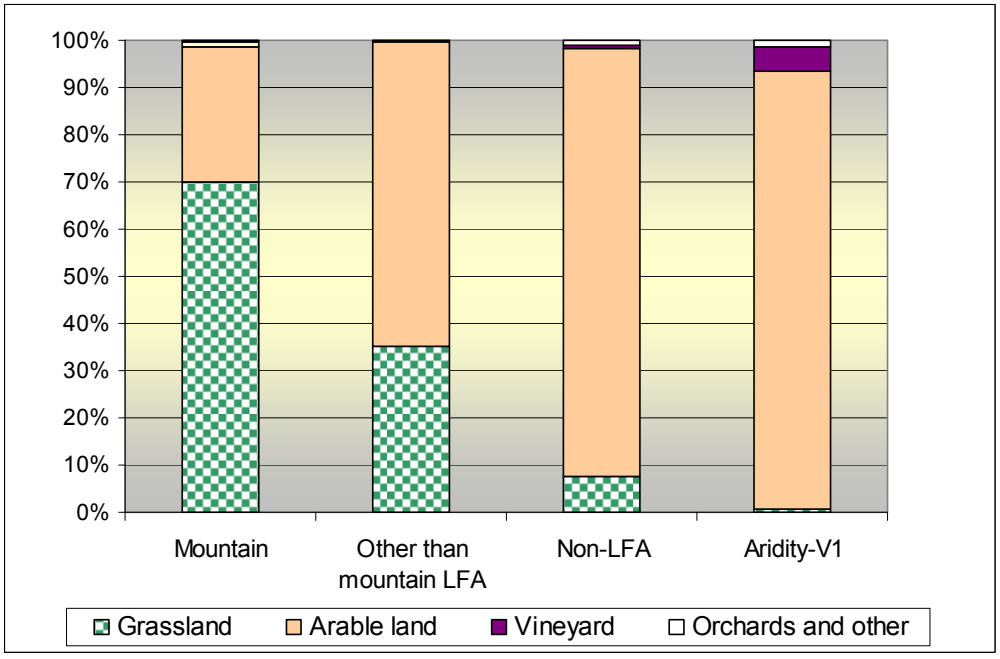


Graph 5. Average standard gross margin per ha UAA. Source: specially assorted reporting units of the CZSO survey 2007, own calculations

Use of the agricultural land

Areas delimited as dry (all variants) have typically very low share of grasslands. In the EU-ari category, grassland covers only 1% of the UAA, in stricter dry area delimited according to CHMI methods it is only 0.5% (V1), in the alternative variant V2 it is 2.5% of grassland on UAA. Currently, the grassland areas only are eligible for the LFA support payments in the CR (Unlike other EU countries, Štolbová, 2007). Structure of the land-use of the agricultural land according to the farm groups (for the V1 version) is shown on the Graph 6.

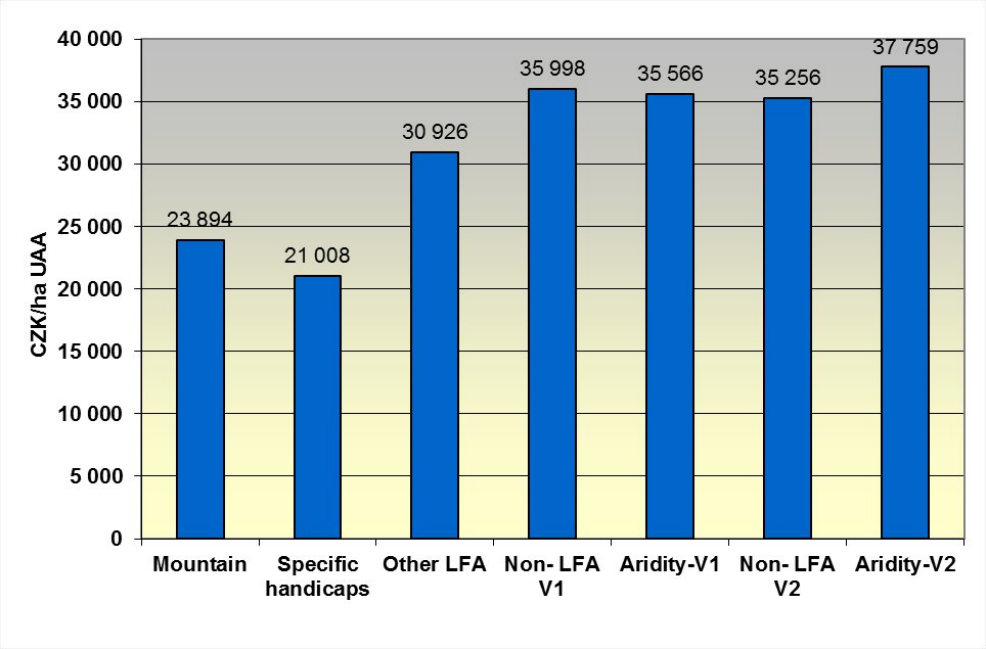
The dry areas delimited as version V2 include major part (82%) of the vineyards enlisted in the LPIS in the CR. For the stricter version V1 it is 49% and for the EU-ari areas it is 44% of the vineyards in the CR.



Graph 6. Land-use of the agricultural land according to the farm groups (%). Source: LPIS 2010, own calculations

Economic results of the farms

In order to reach at the EU funds support for the LFA, it is necessary to prove the economic losses caused by lower production or by higher production costs due to permanent natural handicap as a consequence of unfavourable soil or climatic conditions in given area. Comparison of the results of farms in different natural conditions is the subject of many scientific papers (Střeleček, Lososová, Zdeněk, 2008, Crabtree et al., 2003 A, 2003 B; Štolbová, Hlavsa, Lekešová, 2010; Hovorka, 2004). Proving of this state is handled differently in various EU countries (Cooper, at al., 2006). In some countries, comparison of standard gross margin per hectare of agricultural land in the LFA and outside LFA is performed. This method does not prove any losses in the dry areas in the case of CR as is shown in Graph 5. Similar conclusion was reached when comparing the total production (in CZK per ha of the UAA, exchange rate for 2010 was 26,285 CZK per Euro) of the farms in the areas defined as drought-endangered with that of non-LFA farms. Graph 7 shows the comparison of total production in 2007-09 average calculated per hectare of the UAA.

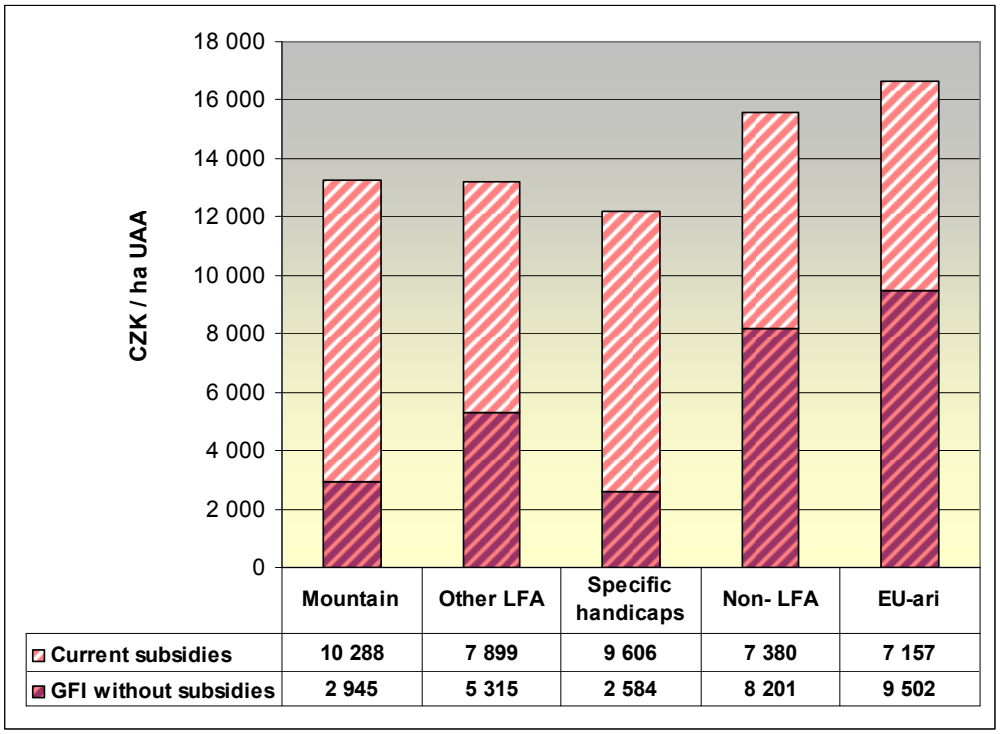


Graph 7. Total production outputs average 2007-09 (CZK per ha of UAA).

The total production output of the farms in the dry areas (as defined by less strict version V2) even exceed that of non-LFA farms (according to the V2 definition). This is probably caused by the fact that the V2 dry areas include more productive parts of current non-LFA areas.

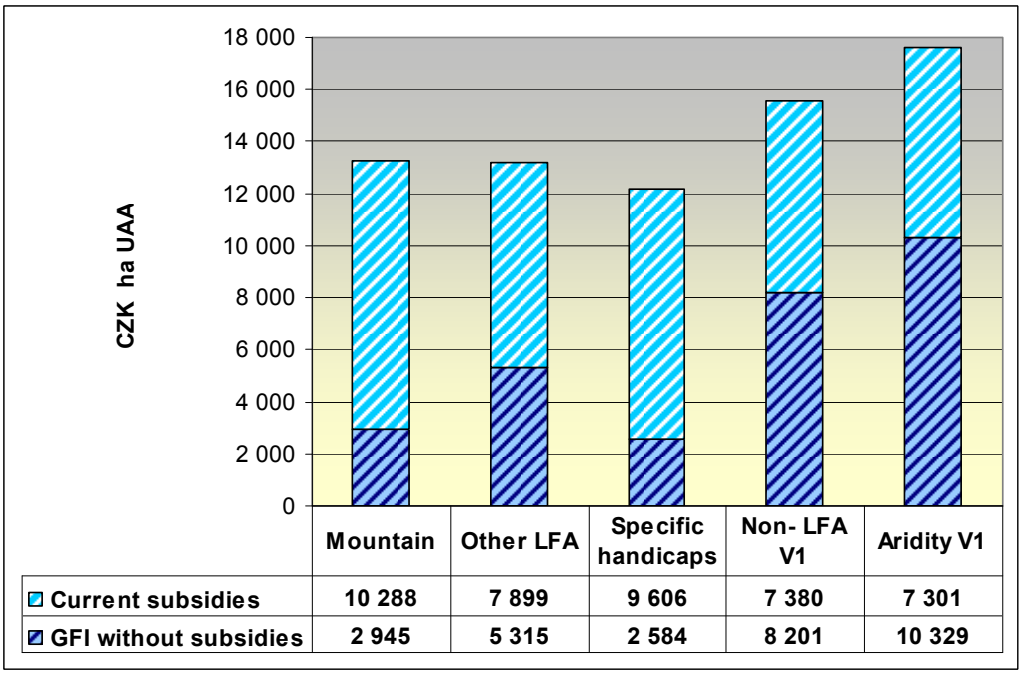
A parameter, which accounts for total output, intermediate consumption, depreciation, wages, rent and interest, needed for securing that production, is the gross farm income (GFI). Therefore, we have performed also comparison of this parameter for the farm groups. The GFI also includes the current subsidies. The comparison of the GFI values after subtracting the subsidies (Graph 8) was carried out. The GFI per ha of the UAA in the dry areas EU-ari was in the 2007-09 average 16 659 CZK, which is by 1 thousand CZK higher than in the non-LFA farms, and by about 3.5 thousand CZK higher than in mountain LFA and Other LFA farms and by 4.5 thousand CZK higher than in the case of farms in specific handicapped areas.

Current subsidies per hectare of the UAA were (in the average) lower at the EU-ari farms than at the non-LFA farms. But their GFI without subsidies significantly exceeded that of all groups of farms. The GFI without subsidies at the EU-ari farms was by 1.3 thousand CZK higher per ha of the UAA than in the case of non-LFA farms. Thus, it could not be proved economic losses for the EU-ari farms compared to the farms in favourable areas.



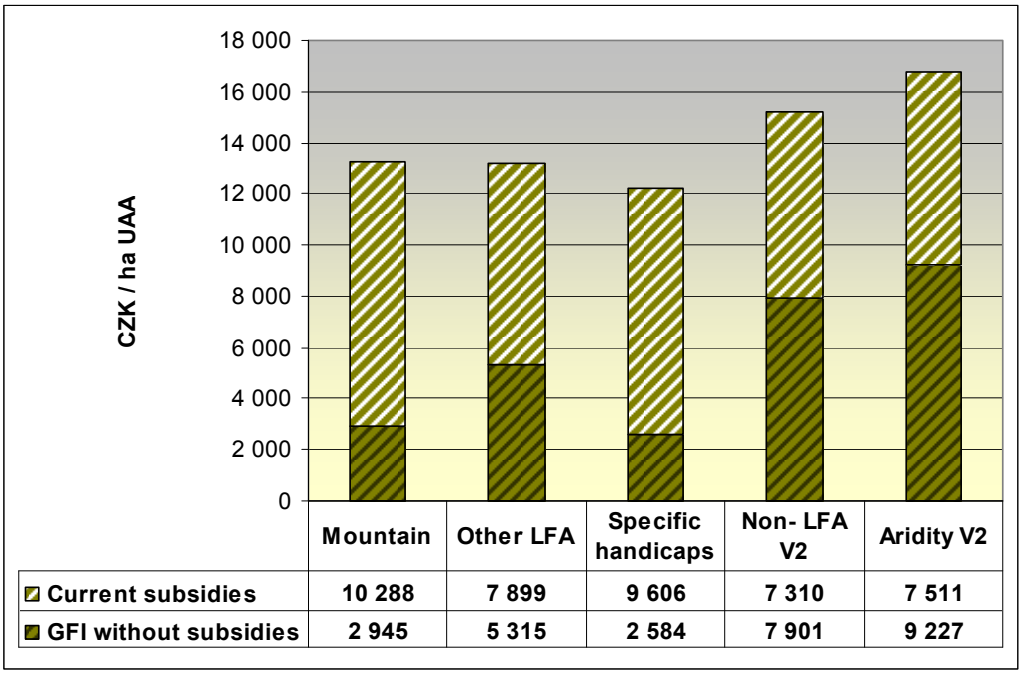
Graph 8. Gross farm income according to the farm groups EU-ari. Source: FADN 2007-09, own calculations

This fact becomes even more evident if we analyse the Czech variants of the definition of the drought-endangered areas. Stricter variant V1 is shown on Graph 9. The difference in average GFI per ha of the UAA between farms in the dry areas and non-LFA farms is more than 2 thousand CZK per ha in favour of the dry-areas farms.



Graph 9. Gross farm income according to the farm groups V1. Source: FADN 2007-09, own calculations

Also, if the farms in the areas delimited according the less-strict drought definition V2 are compared, the GFI per ha of the UAA is in average higher in the areas than in the non-LFA. The difference is 1500 CZK per ha of the UAA in favour of the V2 farms (see Graph 10).



	Mountain	Other LFA	Specific handicaps	Non- LFA V2	Aridity V2
Current subsidies	10 288	7 899	9 606	7 310	7 511
GFI without subsidies	2 945	5 315	2 584	7 901	9 227

Graph 10. Gross farm income according to the farm groups V2. Source: FADN 2007-09, own calculations

Presented numbers confirm the statement of the authors of the drought-endangered areas definition for the CR (Vráblík, Kohut, Chuchma, 2010). The authors remind that "real effects of the drought in the delimited areas depend, aside from impact of soil and weather in actual given years, on many other factors that cannot be included in the calculations. These can be namely the way of the usage of the agricultural land, type of crops and their water demand, using of the irrigations or economic opportunity of the farms allowing them to cope with the drought consequences".

In order to assess the economic potential of the farms to overcome the natural handicaps, the farms situated in the drought-endangered areas (as delimited by the CR methods) and the non-LFA farms were divided into two groups. First was formed by the farms with vineyards (according to the LPIS) and the other by the farms without vineyards. The vineyards were chosen as an example of the intensive cultures, which in some municipalities cover even more than half of its agricultural area.

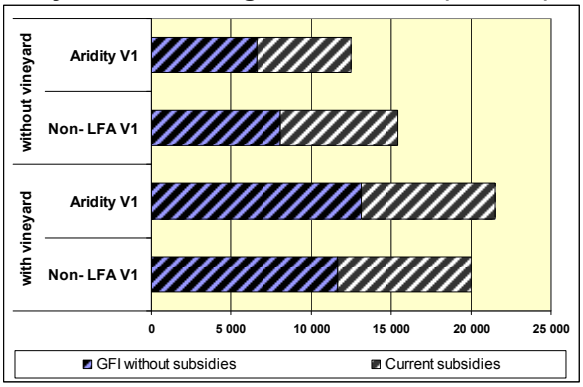
Fig 4. South Moravia – area with vineyard. Photo author

Fig 5. South Moravia – area without vineyards. Photo author

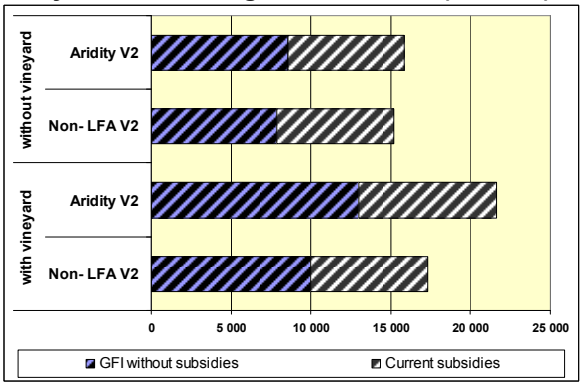
Average GFI per ha of the UAA and share of current subsidies on GFI in observed years were calculated and compared for these farm groups. The number of the farms for the group representing the drought-endangered areas was in this case less representative. The group "V1 without vineyards" was the least numerous, containing only 13 farms. Therefore, the observed

differences can be regarded only as orientation figures. However, they suggest interesting conclusions. Also in this case the data in the more illustrative form of figures (Graphs 11 and 12) are presented.

Graph 11 - GFI per ha of the UAA for the vineyards according to version V1 (CZK/ha)



Graph 12 - GFI per ha of the UAA for the vineyards according to version V2 (CZK/ha)



Source: FADN 2007-09, own calculations

The calculations performed for the groups of farms with vineyards have shown that the average GFI per ha of the UAA produced by the farms in the areas defined as endangered with drought (according to CR methods), is actually higher than that of the farms with vineyards outside LFA. This is valid for both variants, in the case of V1 the difference is 1.5 thousand CZK per ha of the UAA in favour of the dry areas, in the case of V2 it is even more than 4 thousand CZK per ha of the UAA in favour of the dry areas. The farms with no vineyards, falling into drought-endangered area according to the less strict definition V2, reach values of the GFI per ha of the UAA by 0.7 thousand CZK per ha higher than the non-LFA farms with no vineyards (see Graph 12).

Completely different are the results for the drought-endangered farms with no vineyard, defined according to the version V1 (see Graph 11). These results can be extended on the group of EU-ari farms, as these two areas practically overlap. The farms from group V1, which have no vineyards, have in average the GFI by 2.9 thousand CZK per ha lower than the farm in the non-LFA with no vineyards.

Calculated average GFI per ha for the farms in the group V1, which do not have vineyards (12.5 thousand CZK per ha of the UAA), is even lower than the GFI per ha for the mountain LFA and Other LFA farms (both 13.2 thousand CZK per ha, see Graphs 9 and 10). The GFI after subtracting the subsidies is in the case of the farms in the V1 area by 1.4 thousand CZK lower than the same parameter for the farms outside LFA.

Now it should be noted once more that the set of analysed farms is, after dividing them into with- and without vineyards groups, rather little numerous. Nevertheless, the results point to the fact that the problem exists in case of some farms and that tendencies towards abandoning of the agricultural land can occur in drought-endangered areas.

4. Conclusions - possibilities of obtaining subsidies for less-favoured areas

The production and economic parameters of the CR farms farming in dry areas defined according to different methods were compared with groups of farms representing different LFA categories. The aim of analysis was to assess the possibilities of obtaining subsidies for less-favoured areas according to the rules of the EU.

The yields analysis shows that the long-term level of the yields cannot serve as an argument for the LFA support, as it does not prove permanent handicap. It was proved that the average yields of the crops at farms in drought-endangered areas were significantly lower in the years with dry weather. A long-term average of the yields is not significantly lower than that of non-LFA farms, while in the frame of the LFA measures, long-term and permanent consequences of the given handicap should be mended. Thus the yield values cannot serve as an argument for

the LFA support, as it does not prove beyond doubt that this area is permanently handicapped. This problem can be solved by a measure for agriculture risk management

High average values of the Standard Gross Margin in areas defined as dry indicates rather high intensity of the production, which does not correspond to the European definition of the LFA as an area endangered with abandoning of the land, demanding maintenance of extensive agricultural production.

The average Gross Farm Income per ha of the UAA is higher in the case of farms in the drought-endangered areas than in the non-LFA farms. It means, that even if some of the municipalities in Southern Moravia and a few in Central Bohemia could be eligible for the LFA support due to the droughts, these farms manage (in average) to overcome the drought handicap so that it does not influence negatively their economic performance.

But despite this the above mentioned areas could be threatened by the abandonment of agricultural land. The performed analyses have shown that the limitations given by drought are reflected in the economic results of some farms in the dry areas. The handicapped farms was found notably in the group defined according to the aridity index (or V1 group, i.e. areas extremely endangered by droughts) with no vineyards. For the observed years, the value of the GFI per ha of the UAA at the farms in those groups was even lower than at mountain LFA farms.

The findings of analysis were compared with the text of the Proposal for a future Regulation, the Commission published in October 2011 (European Commission, 2011). If the drought-endangered areas should be included into category “Other” LFA after 2013, it would be necessary to define these areas according to the requirement and threshold agreed by the EU Commission. The condition for including the dry areas in the CR into LFA after 2013 within the frame of the LFA redefinition would be setting of the European threshold for the index of aridity to 0.65. But annex II of Regulation proposal set the dryness criterion (ratio of the annual precipitation to the annual potential evapotranspiration) ≤ 0.5. This threshold of the aridity index value was set too low and excluded the possibility of including the areas in southern Moravia into future Other LFA.

It remains only chance for inclusion the drought-endangered regions into areas with specific handicaps. In order to support the farms handicapped by the drought it would be necessary to extend the Czech definition of LFA payments eligibility area to other land use types than currently solely supported grasslands. The grassland usually flourishes in wetter soil conditions, which don’t occur in dry areas. Future regulation should solve this problem. Article 32 of the proposal says: Payments to farmers in mountain areas and other areas facing natural or other specific constraints shall be granted annually per hectare of UAA (European Commission, 2011).

In order to make the support available for the farms in the dry areas through the LFA payments, it would be necessary to adjust the rule, considered by the EU Commission for the fine-tuning of the LFAs. This assumed additional exclusion of the municipalities from the LFA, if it can be proved that they in average reach high SGM per ha of the UAA, have high density of the cattle, high share of irrigated areas, etc. Many countries including the Czech Republic has expressed dissatisfaction with the proposed rule already in the beginning of the LFA redefinition negotiations. This is supported by the critique of the LFA measure by some of the NGOs, such as for example the European Forum on Nature Conservation and Pastoralism (Jones, 2008). In the proposed system of fine-tuning it can easily occur that one very intensively working farm may influence the average of given municipality area so much that it may be excluded from the LFA even though the other farms in the same area cannot irrigate their land or grow intensive cultures and thus they operate with losses. In the frame of the performed analyses, this situation occurred when comparing the farms with and without vineyards. According to the Commission proposal, the whole area would lose the status of LFA support eligibility, even though it contains farms which would be without the support seriously handicapped. A solution to this situation might be in applying the “fine-tuning” not by municipality areas, but by excluding from the LFA support the farms where the production intensity exceeds certain limit. For

example, a share of intensive cultures on the UAA or a share of irrigated areas could serve as a basis for this limit.

The rules for regional aid should be better tailored to various conditions in the different EU regions. This avoids the threat of abandonment of agricultural land.

References

[1] Boháčková, I. & Hrabánková, M. (2009). *Strukturální politika Evropské unie*. Praha: C. H. Beck.

[2] Cooper, T. et al. (2006). *An Evaluation of the Less Favoured Area Measure in the 25 Member States of the European Union*. Report for DG Agri, London, Institute for European Environmental Policy (IEEP) November, 2006. Avaiable at http://ec.europa.eu/agriculture/eval/reports/lfa/full_text_en.pdf (accessed September 2011).

[3] Copa & Cogeca (2011). *The future of the CAP after the 2013*. Brussels, 2011. Available at: romhttp://search.seznam.cz/svet?q=http%3A%2F%2Fwww.copa-cogeca.be%2Fimg%2Fuser%2Ffile%2FPAC_BROCHURE%2F7400%2520VERSION%2520E.pdf&sId=IGWlnGE7wACq4WCFVo3y (accessed November 2011).

[4] *Council Directive 75/268/EEC of 28 April 1975 on mountain and hill farming and farming in certain less- favoured areas.*

[5] *Council Regulation (EC) No 1257/1999 on Rural Development Support by Means of the European Agricultural Guarantee Fund* (EAGGF); Brussels, 1999.

[6] *Council Regulation (EC) No 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development* (EAFRD).

[7] Court of Auditors (2003): *Special Report No 4/2003 concerning Rural Development: Support for Less-favoured areas, together with the Commission's replies*; Court of Auditors. Official Journal of European Union - C151, Luxemburg.

[8] Crabtree, R. et al. (2003 A). *Review of Area – based Less Favoured Area Payments Across EU Member States*; Report for the Land Use Policy Group of the GB statutory conservation, countryside and environment agency. Oxford: CJC Consulting.

[9] Crabtree, R et al. (2003 B). *Review of Area – based Less Favoured Area payments Across Great Britain*; Final report for the Land Use Policy Group of the GB statutory conservation, countryside and environment agencie. Oxford.

[10] Dax, T. (2005). *Cooperation strategies, the decisive element of sustainable territorial development in mountain areas – assessment of the Interreg IIIB Alpine Space Program. Paper at the Open Science conference on Global Change in Mountain Regions*, 2–6 October, Perth, Scotland.

[11] Dax, T. (2009). Recognising the amenities of mountain agriculture in Europe. *Mountain Forum Bulletin*, 9(1), 3-4.

[12] Eliasson, Å., Terres, J. & Bamps, C. (2007). *Common Biophysical Criteria for Defining Areas which are Less Favourable for Agriculture in Europe*, Joint Research Centre, European Commission 2007.

[13] European Commission (2009). *Peak performance. New Insights into Mountain Farming in the European Union*, SEC (2009) 1724 final, 16.12.2009, commission staff working document, Brussels.

[14] European Commission (2010 A): *EUROPE 2020 a strategy for smart, sustainable and inclusive growth*. Communication from the Commission, Brussels, 3.3.2010.

[15] European Commission (2010 B): *The CAP towards 2020: meeting the food, natural resources and territorial challenges of the future*, Brussels 29/9/2010.

[16] European Commission (2011): *Proposal for a regulation of the European parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development* (EAFRD) available at: http://ec.europa.eu/agriculture/cap-post-2013/legal-proposals/index_en.htm (accessed November 2011).

[17] FAO (2004) *Carbon sequestration in dryland soils*, Worlds soils resources reports 102. FAO 2004. ISBN 92-5-105230-1 Available at. *http://www.fao.org/docrep/007/y5738e/y5738e06.htm* (accessed September 2011).

[18] Hovorka G. (2004): *Den Bergbauernbetrieben wird nichts geschenkt*. Forschungsbericht Nr. 52. Wien: Bundesanstalt für Bergbauernfragen.

[19] Iglesias, A., Garrote, L., Quiroga, S. & Moneo, M. (2009). *Impact of climate change in agriculture in Europe*. *PESETA-Agriculture study*. Luxembourg: Office for Official Publications of the European Communities.

[20] Jones, G. (2008). „EFNCP´s vision for the LFA measure". *La Cañada* 22, 2-4.

[21] JRC (2008): *Common bio-physical criteria to define natural constraints for agriculture in Europe*, JRC Scientific and Technical Report. Available at http://agrienv.jrc.ec.europa.eu/activities/Common%20Criteria%20Fact%20sheets.pdf (accessed August 2011).

[22] JRC (2009): *Guidelines for Application of Common Criteria to Identify Agricultural Areas with Natural Handicaps*. Technical report. European Commission- Joint Research Centre Institute for Environment and Sustainability European Communities, 2009. http://agrienv.jrc.ec.europa.eu/activities/lfa.html (accessed August 2011).

[23] JRC (2009) *Guidelines for Application of Common Criteria to Identify Agricultural Areas with Natural Handicaps*, JRC Technical Report.

[24] Lloyd-Hughes, B. & Saunders, M. A. (2002). A drought climatology for Europe. *International Journal of Climatology* 22(13), 1571-1592. Doi: 10.1002/joc.846.

[25] Kučera J. (2011): *Analýza oblastí postižených zemědělským suchem*, Zpráva mimořádného úkolu pro MZe. Praha: IAEI.

[26] Nordregio (2004). *Mountain areas in Europe, Analysis of mountain areas in EU Member States, acceding and other European countries*, Nordregio Report 2004, Stockholm, Available at: http://www.nordregio.se/en/Publications/Publications-2004/Mountain-areas-in-Europe/ (accessed September 2011).

[27] Schrier, G., Briffa, K. R., Jones, P. D. & Osborn, T. J. (2006). Summer Moisture Variability across Europe, *Journal of Climate* 19(12), 2818-2834. Doi: http://dx.doi.org/10.1175/JCLI3734.1.

[28] Štolbová, M. (2006). *Méně příznivé oblasti pro zemědělství v ČR a EU*. Study of the Agricultural Research Institute (VÚZE) no 85, Prague: VÚZE.

[29] Štolbová, M. (2007). Comparative analysis of less-favoured areas payments in the EU states. *Agricultural Economics – Czech* 53(10), 455-465.

[30] Štolbová M. at al. (2010). *Zpracování a analýza podkladů pro redefinici LFA a posouzení dopadů redefinice -rozsah území, výpočet plateb*. Report to the Ministry of Agriculture No. 6. Praha: IAEI.

[31] Štolbová M., Hlavsa T. & Lekešová M. (2010). Methods of calculating the handicaps of less favoured natural conditions. *Agricultural Economics – Czech*, 56(5), 215–223.

[32] Střeleček F., Lososová J. & Zdeněk R. (2008): Economic results of agricultural holdings in less favoured areas. *Agricultural Economics – Czech*, 54(11), 510–520.

[33] Stucki, E. W., Roque, O., Schuler, M. & Perlik, M. (2004): *Contents and impacts of mountain policies Switzerland. National report for the study on "Analysis of mountain areas in the European Union and in the applicant countries"* Institute of Agricultural Economics.

[34] Vráblík T., Kohut M. & Chuchma F. (2010): *Metodika zpracování míry ohrožení území ČR zemědělským suchem*. Ministry of Agriculture. ČHMÚ, 2010.

[35] Zahrt, V. (2009):" *The future of the CAP 2013: The Budgetary Aspects of the New CAP Payments"*, Study for European Parliament, November 2009. Available at www. europarl.europa.eu (accessed February 2011).