

Energy forests or vineyards?

Koncz, Gábor – Kozsdáné Bata, Mária – Szabóné Pap, Hajnalka

Károly Róbert College, Faculty of Natural Resource Management and Rural Development, Institute of Agroinformatics and Rural Development, Gyöngyös
konczg@karolyrobert.hu

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SUMMARY

This paper primarily aims at giving an introduction to an alternative opportunity for vineyards owners many of whom have come to a decision about elimination of their vineyards. The paper is focusing on the Mátra wine-region as a study area, which is the largest mountain wine region in Hungary where more than one third of supported clearing of vineyards have been implemented in the last few years. The abandoning of vineyards is explicable in more than one way such as very small average size of land or the increasing mean age of owners etc. The fundamental reason is the chronic doubtfulness of the grape and wine market and the low level of overall profitability of production. Grape production has a long tradition in this region, thus the disappearance of vineyards caused serious problems in land use through the absolute lack of plans for the future. The popularity of biomass production in the press and the biofuel resultant from vine stocks raise interest for short rotation forestry within a group of farmers. Short rotation forestry offers a new chance for some farmers to cut oneself adrift from the harmful effects of the market of agricultural products.

INTRODUCTION

In the European Union, like in Hungary, a surplus is produced year after year in some areas of food-oriented agricultural activities. The vinicultural countries of the European Union produce significantly more wine than the decreasing internal consumption and the volume of wine import is decreased too as a result of the increasing role of third countries in the international markets. In order to maintain a relative balance of wine market, the increase of the territory of existing wine-growing vineyards is prohibited in the European Union. The position of European countries will remain prospectively strong only in the category of high quality wines. Holding back production could improve the marketing possibilities, but this solution would evidently worsen the living standards of the producers.

One possible solution for this contradictory situation, an alternative way of securing the maintenance of the present production level and the profit of the producers is to feed the surplus into the energy supply system. The technologies available are suitable for this purpose, despite some existing problems. Another advantage of this solution is that it allows the EU to meet its obligations accepted in Kyoto as the use of biomass is neutral for the carbon-dioxide balance: it emits as much carbon-dioxide as much was absorbed by the plants during their life cycles (Gyulai, 2006).

The replanting of vineyards is allowed only in the place of former vineyards while the ultimate clearing is supported in most cases (the support is not available for abandoned plantations or for plantations with an area less than 1000 square-metres or less than 10 years old). Because of the hopeless situation of small-scale producers in Mátra wine-region, their majority decides to have this, in favour of termination of production, in hope for decent one-time revenue instead of transformation of land use structure. This income is the assistance for the owners of vineyards that compensates only partly the dropped profit in the last decade. The majority of farmers will not recycle the money into agriculture and will not have a steady plan for the future of the arable land. The popularity of biomass production in the press and the biofuel resultant from vine stocks pique interest for energy forests in a group of farmers. Short rotation forestry offers an opportunity for some farmers to cut themselves from the negative tendencies of the market of agricultural products as the demand for energy produced from renewable sources is expected to further increase in the long run.

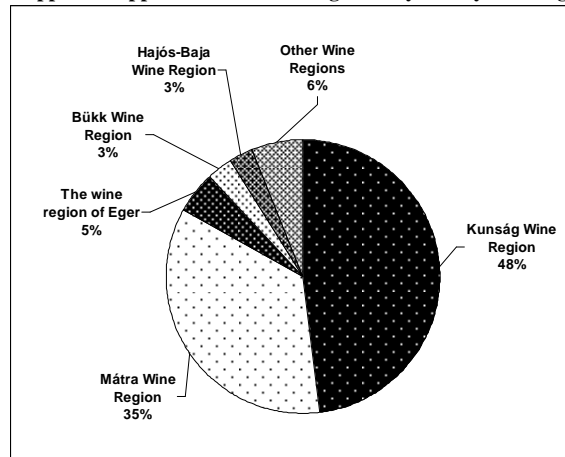
ELIMINATION OF VINEYARDS

The vinicultural regulations are market based, simple, effective and in each country comply with the national particularities to favour the balance of supply and demand however have various impacts regarding many traditional wine regions where wine production plays a significant role in the subsistence of rural population. On the other hand, the final clearing of vineyards induce sharp environmental changes in the territories of historical wine regions. The disappearance of vineyards will not follow the aspects of territorial planning. Vineyards and uncultivated lands alternate in a characteristic mosaic pattern. This mosaic structure is unfavourable for those intending to continue vine production and those willing to undertake the production of other cultures; on the contrary, this uncertain situation is favourable for the degradation of environment.

The statistical statements indicate that the Hungarian wine consumption requires 700-800 square kilometres of vineyards while in the last years the total extent of plantations has been reduced to 830 square kilometres as in 2008. A further decline leads to a dependence on wine import.

Between 2008 and 2011, the maximum territory of supported clearing of vine plantations is 6821 hectares country-wide which is divided unequally among wine regions. In the territory of the Mátra wine-region, this is ca. 7000 hectare which is 8-9% of the total territory of vineyards in Hungary. In comparison, the share of the wine region in supported clearing of vineyards was 35% in the wine market year of 2008-2009 (Figure 1). The respected century-old traditions proved to be weak factors against global market processes. By this fourfold difference, the size of structural crisis of land use and agriculture in the settlements involved is well demonstrated; meanwhile the proportion of all other mountain wine regions is only half of this.

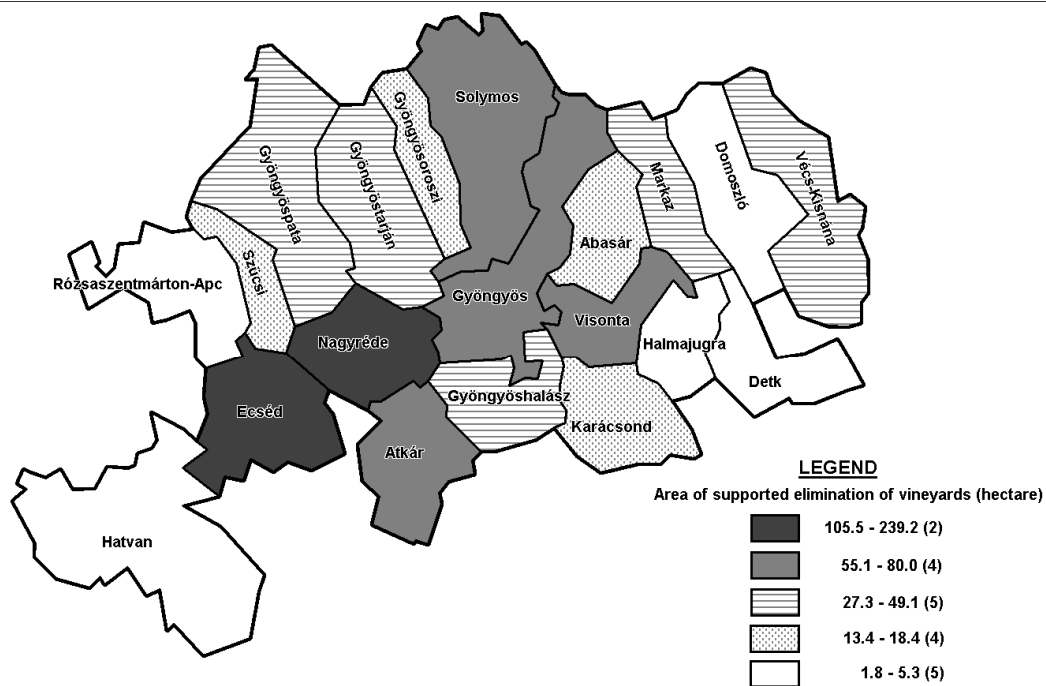
Figure 1: The distribution of approved applications for clearing of vineyards by wine regions in Hungary (2008-2009)



Source: Database of Agricultural and Rural Development Agency, 2009.

The territorial differences are significant within the wine region, too. The division is influenced by the total extension of vineyards, the natural circumstances and mainly the market relations, the breakdown of constructors made some smallholders dejected. The elimination of vineyards impacted primarily the central settlements of the wine region, where the total area of vineyards exceeds 500 hectares per village. In the settlements located in the foreground of the Mátra Mountains such as Nagyréde and Ecséd, the territory of cleared wine plantations is higher than 100 hectares (Figure 2).

Figure 2: The total area (in hectares) of eliminated grape vineyards on the base of accepted applications in the Mátra Wine Region by wine communities (2007-2009)

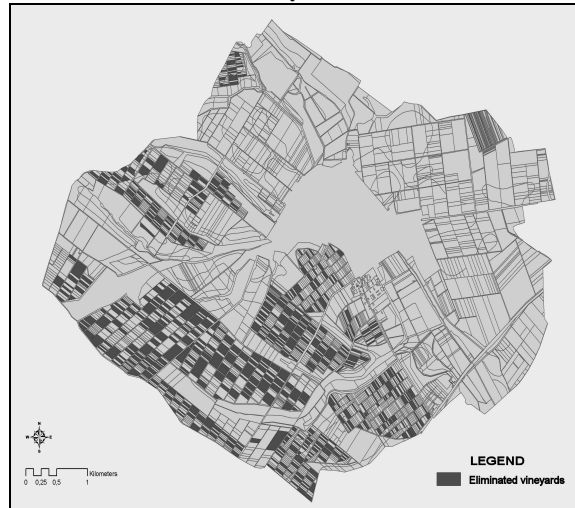


Source: Edited by the authors, based on the data of Mátra Wine Community, 2010.

The manifestation of disappearance of vineyards is the most spectacular in the village of Nagyréde, where the territory of cleared vine plantations is, in total, some hundred hectares. The sum of supports allocated to the

residents of Nagyréde to complete this objective was 340 million Hungarian Forints (ca. 1.26 million Euros) only in 2008 being 8.7% of all Hungarian monetary assistance. The vineyards involved were located southwest from the centre of the village. In the first years the agricultural landscape was very mosaic due to the newly appeared waste lands. For today the area of cleared and uncultivated lands is ever more continuous and wide (Figure 3).

Figure 3: The location of eliminated vineyards between 2005 and 2010 in Nagyréde



Source: Database of Agricultural and Rural Development Agency, 2010. Edited by Kiss, Sz.

EXPANSION OF ENERGY PLANTS

In the past decade, the use of biomass for energy purposes has increased year after year in most of the European states. A slight decline or stagnation could be observed just in countries (e.g. Finland or France) that already kept their production at a high level, using their good endowments. The largest expansion was seen in countries where the share of renewable energies is smaller and where possibilities for the expansion of production were limited. Hungary belongs to this second group of countries; without the large capacity wood – and other biomass, such as vine branch – fired power plants the country could not be able to fulfil its obligations for the growth of the proportion of renewable energies in electricity generation (Koncz, 2009).

Biomass fired power plants and electricity generation plants create few jobs in themselves, as with a high level of automation it is possible through internet connection to control the mechanised work processes from another settlement, maybe with one part-time staff employed. In the employment conditions of rural areas, agriculture still has to play a significant role, as the significance of agriculture is still one of the dominant features of ‘rurality’.

Hungarian agriculture has great possibilities in the use of biomass for energy purposes; this may considerably promote the decrease of employment tensions coming from the restructuring, the preservation and expansion of job opportunities in the rural areas and the preservations of the conditions of the rural habitats. In order to achieve this, a harmonized series of actions is needed, consisting partly of targeted research and development activities, of an integrated skills transfer and attitude shaping programme furthermore of the provision of investment supports (Nagyné Demeter, 2009).

The amount of biomass, presently coming from areas used by silviculture, could be expanded by the plantation of short rotation forestry, and from time to time by the clearing of the derelict areas. The use of biomass produced in plantations for energy purposes requires 15 work phases based on living labour, which can be a great help in improving employment in all, but especially the backward micro-regions (Nagyné Demeter, 2007).

The plantation of short rotation forests serves three objectives, namely (1) to improve the position of Hungarian environmental protection in the EU, (2) to help holding back the market problems caused by food overproduction and (3) could also play an important role in the implementation of regional development programs. The relevant publications emphasize the significance of short rotation forests in arable areas with unfavourable conditions, but uncertain market situations in making biomass production competitive in lands with good soil properties. Fulfilling of own energy demands in unfavourable conditions is worth investing for farmers even in case of small farms as 1-1.5 hectares can assure the whole energy demand for a family. Investment for energy plantations let farmers reach secure and favourable profits however only in long term (Bai 1999).

In Europe, solid biomass energy crops covered about 50,000-60,000 ha of land in 2007. It is a rather small area compared with that used for traditional energy crops grown for transportation biofuels covering about 2.5 million ha (mostly cereals and rape). The largest areas of energy crops are found in the UK (mainly Miscanthus and willow), Sweden (willow, reed canary grass), Finland (reed canary grass), Germany (Miscanthus, willow, etc.), Spain and Italy (Miscanthus, poplar) (Lötjönen, 2009).

The whole territory of short rotation forests in the country was 1500 hectares in 2009, while the areas licensed to plant short rotation forestry were 2700 hectares. Based on the number of claimed assistance it is inferred that within a few years, the total area of energy plants will reach approximately 7000 hectares, and three-quarters of this amount will be short rotation forests. Locations of the majority of plantations are in close connection with biomass, especially wood fired power plants. The location of the Mátraalja sub-region is advantageous from this point of view due to the presence of Mátra Power Plant Close Corporation where technical specifications developed for combustion of lignite make possible the firing of biomass from different sources. The sum of wood chips production originating from short rotation forests is inconsiderable compared to sylvan wood cutting.

The popularity of the utilization of biomass for energy purposes in the press is not in absolute conformity with the opinion of people. According to a research about emotional relationship of mankind to forests, the majority of people questioned recognized the impairing effects of the fossil energy resources on the environment, as well as the harmful and unwanted environmental effects of deforested areas. Meanwhile, forests were not judged to be as useful as a wheat-field and a vineyard. As a whole, it was judged to be moderate both in the usefulness and in the impairing of environment and this overall view is not too promising as far as the wide-spreading of firewood as wood biomass utilized for energy purposes is concerned (Baros-Patkós, 2004).

CONCLUSIONS

The utilization of former vineyards is a hard task for smallholders as a unit of carefully planned plantations is 0.3 hectare surrounded by sensitive stationary cultures. Moreover the Heves County Government created a rule about land use in the territory of vineyards whereby the reclassification of these is prohibited in case of first class of grape cadastre. There are two contrary opinions about clearing of vineyards associated with a loss and maintenance of century-old landscape structure. The possibilities of farmers are very restricted for the production in the future. The worst possibility is a long-term non-utilisation of soil resources. The first step towards a more effective land use may be the changing of rules and the second is the concentration of estates that is required by almost all possible scenarios. The thickness of surface soil limits the range of alternative plant cultures. There are two feasible ways for farmers, who intend to continue the agricultural production in this region. The primary is keeping tradition of vine cultivation after rational restructuring considering market demands. The second choice may be the plantation of short rotation forests on the base of optimal territorial separation of radically different plant cultures. In this form the pressing force of difficulties in wine market result in numerous useful effects for environmental protection, as energy production without a surplus CO₂ emission or a more efficient soil protection.

REFERENCES

- Bai, A. (1999): Az energiaerdő, mint alternatív növénytermesztési ágazat (Short Rotation Forestry as Alternative Plant Production Branch). In: Tiszántúli Mezőgazdasági Tudományos Napok, Debrecen: Debreceni Agrártudományi Egyetem, pp. 125-130.
- Baros Z.-Patkós Cs.: Az erdőkhöz fűződő érzelmi viszonyulás vizsgálata a biomassza energetikai célú hasznosítása kapcsán (Researching People-Forest Emotional Relationship in Connection with Energetic Utilization of Biomass). In: A Geográfus Doktoranduszok VIII. Országos Konferenciájának (Táj, tér, tervezés; Szeged, 2004. szeptember 4-5.) CD-kötete. 2004.
- Gyulai, I. (2006): Fejlesztéspolitika, biomassza, fenntarthatóság (Development Policy, Biomass, Sustainability). – Észak-magyarországi Stratégiai Füzetek, Vol. 3. No. 2. Pécs, CRS of HAS, pp. 106-126.
- Koncz G. (2009): The role of solid biomass in the renewal of the energy industry in the region of north Hungary. In: The role of environmental industry in the regional reindustrialisation in Hungary (Ed.: Baranyi, B.-Fodor I.). CRS of HAS, Debrecen-Pécs, pp. 197-213.
- Lötjönen, T. (Ed.) (2009): Energy from field energy crops – a handbook for energy producers. Jyväskylä Innovation Oy, Finland, 64 p.
- Nagyné Demeter, D. (2007): Az egyéni gazdaságok energetikai célú biomassza-termelésben betöltött szerepe a Mátészalkai kistérségben (The Role of Private Farms in Biomass Production for Energy Purposes in the Mátészalka Microregion). In: Kovács T. (szerk.) A vidéki Magyarország az EU-csatlakozás után. VII. Falukonferencia. MTA RKK, Pécs, pp. 280–286.
- Nagyné Demeter, D. (2009): Aspects of the location of bioenergetics complexes in poorly industrialised areas. In: The role of environmental industry in the regional reindustrialisation in Hungary (Ed.: Baranyi, B.-Fodor I.). CRS of HAS, Debrecen-Pécs, pp. 215-229.