

Conservation of livestock genetic resources by targeted on-farm management: a case study of Hinterwälder Cattle in the Southern Black Forest

Diethild Wanke, *Department of Organic Animal Husbandry, Faculty of Agriculture, International Rural Development and Environmental Protection, University of Kassel, Nordbahnhofstr. 1a, D-37213 Witzenhausen, Germany, wanke@wiz.uni-kassel.de*

Engelhard Boehncke, *Stölzinger Büro für Ökologische Agrarkultur, Stölzingen 3, D-37284 Waldkappel, Germany, boehncke-agrarkultur@onlinehome.de*

ABSTRACT

All EU countries are obliged to conserve livestock genetic resources (UN Convention on Biological Diversity, Rio, 1992). In-situ conservation is regarded as the most favourable approach. For rare and endangered livestock breeds extensive and organic farming systems seem appropriate. Council Regulation (EC) No 1804/1999 on organic farming recommends keeping indigenous breeds and strains that have adapted to local conditions. This project analyses the current situation and develops future scenarios for Hinterwälder farms. Aspects of farm structure, housing system, marketing concept, farm viability as well as environmental services and social factors were analysed in an interdisciplinary approach. Here, we summarise the analysis and concentrate on "Conversion to organic farming" as one option. More than 30 % of Hinterwälder farms produce to EU organic standard, and a further 60 % could easily convert as they already fulfil the criteria for extensification grants. But most farms cannot achieve sufficient prices even for organic products. Moreover, investment in animal housing would be required to meet the organic standard. Enhancing farm viability is essential for conservation of Hinterwälder cattle, but many of the social and environmental services are beyond the reach of the market mechanism. Policy makers in particular are asked therefore to take a much wider interpretation of farming and the countryside.

INTRODUCTION

For rare and endangered livestock breeds in-situ conservation means that the breed is integrated into a commercial farming system. Most rare livestock breeds declined during agricultural intensification, when livestock selection and management were directed towards high productivity and other important qualities such as longevity, disease resistance, ease of parturition, meat quality and efficiency of feed conversion were often neglected (Sambraus, 1994). These together with a high degree of adaptation to local environmental conditions are the strength of many rare breeds. This suggests that rare breeds are most suitable both for extensive agricultural systems and for organic farms. At first sight, circumstances for on-farm-management appear to be favourable for Hinterwälder cattle, a rare and endangered breed in the southern Black Forest. The breed has still a strong tradition in the region. Especially the semi-natural grassland of the extensive pastures is of high nature conservation value. The southern Black Forest is a well-known holiday area mainly due to its

attractive landscape. Due to the importance of tourism, there is an interest in supporting community life and local infrastructure. This paper summarises the main results of the analysis of the present situation of Hinterwälder cattle in the southern Black Forest, and then concentrates on "Conversion to organic farming", as one development option for Hinterwälder farms.

RESEARCH APPROACH

The analysis includes aspects of housing systems, pasture management, marketing concepts and farm viability, participation in agri-environmental schemes and farmers' motivation for breeding Hinterwälder cattle. This involved on-farm research, working with standardised and free interview techniques combined with on-farm surveys on case-study farms. The results are put into perspective by using spatial data on land use, statistical data on the agricultural structure, and by considering objectives of regional agencies in relation to nature conservation, agriculture and socio-economics. Future scenarios were developed from a participatory approach with Hinterwälder farmers, considering their implications for conservation of the Hinterwälder population. The scenarios examined conversion to organic farming, farm co-operation with large-scale extensive pasture systems and improved marketing of Hinterwälder products.

HINTERWÄLDER CATTLE

Hinterwälder is a traditional and distinctive dual-purpose hill breed, indigenous to the southern Black Forest. The small lightly built cows are yellow pied with white head, chest, legs and underparts and distinctive lyre-shaped horns. It is the lightest and smallest central-European breed; cows weigh 400-450 kg with a height at withers of about 120 cm. Relative to size it has a high milk yield of 3400 kg with 4,0 % fat and 3,4 % protein (LKV, 2000). The daily growth rate of young bulls is 800 g on hill pastures, but can reach up to 1150 g under intensive conditions (Jilg *et al.*, 2000). More than 31,1 % of the cows are 8 years or older, and the average intercalving period lasts 384 days (LKV, 2000). Formalised breeding has been carried out since the establishment of the breed society in 1889. The Hinterwälder population in Baden-Württemberg today covers 2777 cows on 487 farms (MLR, 2001).

STRUCTURE OF HINTERWÄLDER FARMS

The project area in the southern Black Forest covers approximately 36.000 hectares. Poor soils, steep slopes and unfavourable climatic conditions allow only for grassland-based agricultural systems. Structural changes in agriculture have caused an overall decline in farm- and livestock numbers, especially of full-time and dairy farms. Further, afforestation covering up to 90 % of the area has changed the landscape visibly. This development continues and is especially true for the small-scale and traditional Hinterwälder farms. The following tables, based on a survey of 155 Hinterwälder farms, summarise the farm structure and their degree of extensive and/or environmentally friendly management.

- farm size: Ø 14,3 ha, max. 79,7 ha

- stocking density: $\bar{\varnothing}$ 0,93 LU/ha; 69% of the farms have a stocking density < 1,0 LU/ha

Table 1: Structure of Hinterwälder farms

	Dairy cows	Suckler cows	Dairy & suckler cows
Number of farms	50	90	15
$\bar{\varnothing}$ number of cows/farm	6,7	7,3	12,7

Table 2: Extensive production

	Organic farming	Extensification ¹
Percentage of farms	29 %	60,7 %
Percentage of grassland area ²	34,3 %	46,8 %

Table 3: Special measures to compensate environmental hardship and habitat management

Grass-lands	Sloping 25-50°	Sloping > 50 °	max. 2 uses/y	max 1 use/y	wet & soggy	Habitat management	Management of protected areas
Number of farms	140	61	98	19	49	21	3
ha/farm	61,5	10,2	31,7	1,4	2,5	3,2	4,6

MARKETING AND FARM VIABILITY

Viability always needs to be regarded within a regional context. In the southern Black Forest part-time farming has a long tradition. In the project area family income always derived from several sources such as agriculture, forestry, mining, handcraft and later small manufacturers and industries. As agriculture becomes less important in the region, other employers consider less and less, the flexibility in working hours needed by part-time farmers. Additionally, small-scale farms are not eligible for most credit facilities, and therefore often give up agriculture altogether when higher investments (new buildings, etc.) become necessary. Nevertheless, the maintenance of valued countryside characteristics in the southern Black Forest depends largely on the survival of part-time farms.

Marketing

Most Hinterwälder farms sell a combination of milk, meat, veal and breeding stock.

- Milk: All dairy farms in the project area deliver their milk to the one and only creamery in the region, which, however, does not collect organic milk. A couple of

¹ Extensification = no mineral fertilisers nor pesticides applied

² Agricultural and grassland areas are identical, as there is no arable farming in the project area.

- organic Hinterwälder dairy farms, who have not obtained a milk quota, produce cheese and sell it at the farm gate.
- Beef: Most suckler cow farms sell beef on the conventional market and by direct marketing; veal is usually sold to local butchers. So far, only one marketing cooperative ("Junges Weiderind") has been successful in selling organic baby beef to local retailers, but the recently increased required minimum slaughtering weight is difficult to achieve with Hinterwälder cattle.
 - Breeding stock: Most heifers and cows are sold outside the traditional breeding area, some also out of Baden-Württemberg, notably, in recent years, to Switzerland. Bulls are twice yearly registered at bull markets, and usually bought off the market by local villages as community bulls or by private farmers with larger herds. On average 45,2 % of the cows leave the farms for breeding (LKV, 2000).
 - Male calves: The Hinterwälder farmers prefer to sell their male calves to other Hinterwälder farms who either produce veal (many farms rear a few male calves for the veal market) or to farms with multiple suckler cows. The remainder are sold locally; almost no calves go to commercial cattle dealers.
 - Breed specific marketing: In 1987, Hinterwälder farmers founded the society "Förderverein Hinterwäldervieh e.V." to promote the breed and to establish a breed-specific marketing scheme. As a marketing tool, a specific label was registered in 1991. So far, this has not been successful in opening new markets for Hinterwälder products; only one hotel and one restaurant bought a licence for this label.

Viability

The viability of the Hinterwälder farms depends on the market return as well as on public support via the CAP. Among the case study-farms, gross margins for dairy cows vary between 680 € and 1174 €, and for suckler cows between 678 € and 827 €. Best prices for meat are achieved for veal (5,25 €/kg), and for meat sold at the farm gate (5,5-7,5 €/kg). The BSE-crisis has caused severe problems in selling calves and cows, causing overcrowded barns in winter 2001/2. Although generally the demand for organic products increased, that for beef decreased until April 2001 (Mayer, 2001). Since then direct marketing sales have recovered in the southern Black Forest, but BSE-testing and the disposal of high riskmaterial caused higher production costs of up to 100 €/animal.

Together with the suckler cow- and beef special premiums and hill livestock compensatory allowances, public support contributes up to 80 % to farm income. In the Federal State of Baden-Württemberg a package of agri-environmental measures is implemented under the umbrella of the MEKA programme (Marktentlastungs- und Kulturlandschaftsausgleich), and especially in upland areas the uptake has been very high (Zeddies u. Doluschitz, 1996). In Germany these EU-co-funded agri-environmental schemes include measures to support the conservation of rare and endangered livestock breeds. Almost all Hinterwälder farmers apply for the annual premium for Hinterwälder cows (current rate: 100 €).

The contribution of indirect activities such as tourism to farm income is often overestimated (Mohr, 1998), although 22 % of the Hinterwälder farms are engaged in various types of tourism-based activities.

Selling milk and meat from Hinterwälder cattle is a depressing example of the difficulties of marketing products from environmentally friendly farming systems. On markets where the EU classification system is implemented only low prices are achieved, although the meat is considered to be of high quality in physical as well as in animal welfare and environmental terms. Additionally, often inflexible regulations make it difficult to establish infrastructure in the form of local slaughter houses and retailers required for local cycles for processing and marketing. Safe, healthy and environmentally friendly products from animals reared with high welfare standards do not yet get sufficient financial support or social esteem (Luick, 1997).

ORGANIC FARMING AS A DEVELOPMENT OPTION FOR HINTERWÄLDER FARMS?

From Table 2, 29 % of the Hinterwälder farms already produce to EU organic standards, and a further 60 % almost manage their fields organically, as they have joined the extensification measure of the MEKA Programme and apply no mineral fertilisers or pesticides. In terms of grassland management and fodder production, Hinterwälder farms have no difficulties in meeting organic standards.

Hinterwälder farms can easily meet many aspects of COUNCIL REGULATION (EC) No 1804/1999 on livestock production in organic farming. First, they all fulfil the recommendation for the choice of breed. In ANNEX 3 (3.1) it states: *"In the choice of breeds and strains, account must be taken for the capacity of animals to adapt to local conditions; their vitality, and their resistance to disease....Preference is given to indigenous breeds and strains"*. As recommended in ANNEX 6 (6.1.1) natural reproduction methods with 85 % of the Hinterwälder cows are extremely high (Maus, 1999). The still widespread keeping of community bulls contributes importantly to this. Furthermore, most Hinterwälder cows are not dehorned, as asked for in ANNEX 6.1.2. But this is closely linked to the fact that most cows are kept in traditional buildings where they are tethered.

Tethering is the most serious constraint to organic conversion for Hinterwälder farms. Most small-scale farms retain the traditional housing system because they cannot afford building investments. Also, the demand for comfortably littered areas cannot be met, as all farms have to buy straw or other bedding material. Common bedding for cows is rubber mats sprinkled with saw dust, while the bought-in straw is saved for the young calves. For many of the Hinterwälder farms the smallholder derogation applies, allowing tethering until 31 December 2010, if open-air runs are provided. In some locations there is not enough space for open-air runs because of steep slopes, but more often the farmers prefer the picture of a warm and cosy barn. Some of the organic feeding requirements are expensive for farms in remote areas. Without arable fields, all grains and concentrates need to be bought. Although Hinterwälder dairy cows are fed only up to 2,0 kg concentrate per day, the higher prices for organic grain and concentrates, milk powder and mineral supplements causes feed costs to rise considerably for small-scale farms. Furthermore, until recently it has been almost impossible to obtain organic milk powder for calves in the southern Black Forest region.

Tethering is partly compensated by full-time access to pastures for all animals during the whole vegetation season. In winter, farmers spend much time with management of the individual animal; often the animals are fed and manure is removed three times

a day, and most cows are groomed regularly. This is possible because stock numbers are low and in traditional Black Forest houses people and animals live under the same roof. Nevertheless, the controlling agencies increasingly advise even small farms, who think of converting, to plan new housing. So, on the one hand conversion usually requires high capital investments, and on the other, most farms are not able to achieve sufficient prices for organic products. Therefore better market opportunities must be established before it is viable for most Hinterwälder farms to convert to organic farming.

REFERENCES

- Council Regulation (EC) No 1804/1999 of 19 July 1999 supplementing Regulation (EEC) No 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs to include livestock production. Official Journal L 222, 24/08/1999 p. 0001-0028.
- Jilg T; Augustini C; Maus F (2000) Intensive Bullenmast mit Hinterwäldern. Versuchsbericht 1/2000 Staatliche Lehr- und Versuchsanstalt Aulendorf.
- LKV (2000) Ergebnisse der Milchleistungsprüfung Baden-Württemberg 2000. Landesverband Baden-Württemberg für Leistungsprüfungen in der Tierzucht e.V.: Stuttgart.
- Luick R (1997) Extensive pasture systems in Germany – realising the value of environmental sustainability. Livestock systems in European rural development. Proceedings of the 1st conference of the LIRD network: Nafplio, Greece; MLURI, Scotland.
- Maus F (1999) Die Hinterwälderzucht von 1990 bis 1999. Festschrift zum 110-jährigen Jubiläum der Hinterwälder – Zuchtgenossenschaft Schönau und der organisierten Hinterwälder Zucht am 8. und 9. Mai 1999.
- Mayer B (2001) Wirtschaftlichkeit der Rindfleischproduktion in Deutschland. Diplomarbeit an der Universität Hohenheim, Institut für Landwirtschaftliche Betriebswirtschaftslehre: Stuttgart.
- MLR (2001) Ministerium Ländlicher Raum Baden-Württemberg; schriftliche Mitteilung zur Hinterwälder Förderung im Rahmen des MEKA Programms: Stuttgart.
- Mohr B. (1998) Auf der Suche nach neuen Einkommensquellen. Die Landwirtschaft in der Regio unter Anpassungsdruck.. *Regio Brasiliensis* **39/1**, 3-12.
- Sambraus H (1994) Gefährdete Nutzierrassen. Ihre Zuchtgeschichte, Nutzung und Bewahrung. Ulmer Verlag, Stuttgart.
- Zeddies J; Doluschitz R (1996) Marktentlastungs- und Kulturlandschaftsausgleich (MEKA). Wissenschaftliche Begleituntersuchung zu Durchführung und Auswirkungen. Agrarforschung Baden-Württemberg Band **25**. Eugen Ulmer Verlag: Stuttgart.

From: Powell et al. (eds), *UK Organic Research 2002: Proceedings of the COR Conference, 26-28th March 2002, Aberystwyth*, pp. 237-242.