

Swiss organic dairy farmer survey: Which path for the organic cow in the future?

E. Haas and B. Bapst

FiBL: Forschungsinstitut für biologischen Landbau (Research Institut for organic agriculture), Ackerstrasse,
Postfach, 5070 Frick, Switzerland

Introduction

Organic farming in Switzerland is very well developed but management, genetic and health problems persist among many organic dairy farms. In the summer of 2003, the Research Institut for organic agriculture (FiBL) carried out a survey of 1,000 organic dairy farmers to find out where some of the remaining problems are and to develop an idea of what the organic cow of the future should look like. The aims of the survey were:

- To produce an overview on the actual problems in organic cattle breeding;
- To establish the level knowledge of the ecological breeding index (EBI) among organic farmers and ask their opinion of the usefulness of it;
- To identify possibilities to improve the EBI; and
- To evaluate the farmers opinion regarding the general environment of breeding (organisations, standards etc) and to identify future needs in cattle breeding.

Sample size

Almost all Swiss organic farmers are members of the private organic agriculture label organisation BIO SUISSE. The BIO SUISSE member farmers were chosen for the survey. To minimise expenses of the project and the time needed for analysing the data, the sampling size for the survey was estimated in following manner (Lollier, 2003).

- Number of organic dairy farms in Switzerland in June 2003 (Bio Suisse, 2003): 3,595
- Estimated rate of response to the questionnaires: 50%
- Precision of the result aspired: at $\Delta = \pm 5\%$
- Estimated frequency of “Yes” to the principal question: 50%
- Risks standard for the analysis and confidence interval: $\alpha = 5\%$

Calculating the framing of the results at the risk α :

$$\left] f \pm u_{\alpha} \sqrt{\frac{f(1-f)}{n}} \right[\text{ or }] f \pm \Delta [\text{ with } \Delta = 5\%$$

($u_{\alpha} = 1.96$ with the risk of 5% in the reduced centred Gaussian distribution)

The minimal number of questionnaires to be treated:

A precision lower or equal to Δ is requested.

Thus $u_\alpha \sqrt{\frac{f(1-f)}{n}} \leq \Delta$ whereby $n \geq \left(\frac{u_\alpha}{\Delta}\right)^2 f(1-f) = \left(\frac{1,96}{0.05}\right)^2 (0.5) \times (1-0.5) = 384,16$

Therefore, at least 385 valid questionnaires were needed for analysis. With an estimated return rate of 50% at least 770 questionnaires had to be sent out. In fact, 1,000 randomized questionnaires were sent out (942 to the German speaking part of Switzerland, 46 to the French and 12 to the Italian speaking part of Switzerland).

Data analysis

In the case of two experimental qualitative variables, the test of homogeneity of χ^2 was used, which allows the comparison of several experimental distributions.

In the case of two independent samples, the test of Mann and Whitney was used, which makes it possible to carry out a nonparametric comparison of two average exits of independent samples.

In the case of K independent samples, the test of Kruskal-Wallis was used, which allows a non-parametric comparison of several experimental averages.

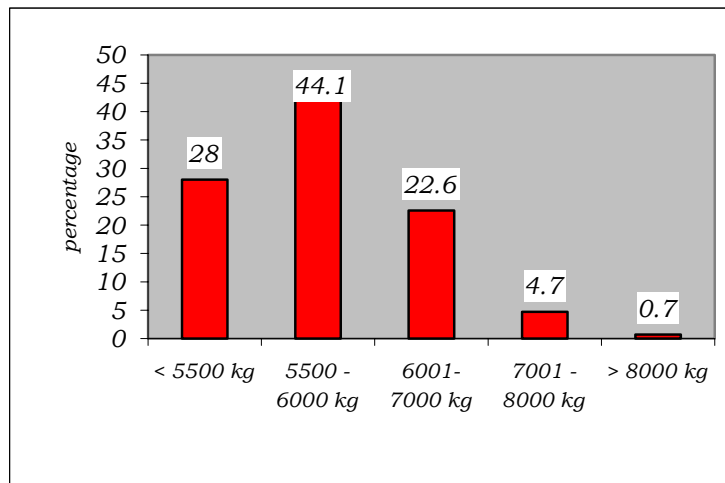
Results and discussion

608 valid questionnaires were returned. This return rate of over 60% reflects the high interest of the organic dairy cattle breeders to the survey. More than 70% of the farmers that answered were from the mountain area. The conversion from conventional to organic farming in this area is much easier, as the management in the mountain area is quite similar to that required by the organic standards.

Milk yield

The estimated milk production on the organic farms (Figure 1) was more than satisfying when compared with the national average of 5,570 kg (Schweizer Bauernverband, 2002). Production of 8,000 kg milk per lactation was reached only on very few farms. Such high milk production appears possible on farms capable of feeding the cows adequately, with accurate operating management high quality forage.

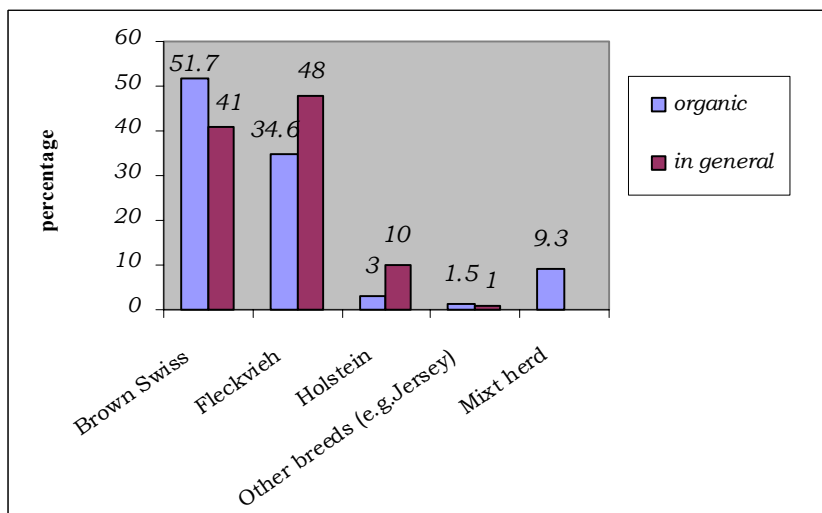
Figure 1: Distribution of the milk yield on the Swiss organic dairy farms.



Dairy breeds

The most common organic cow in Switzerland was a Brown Swiss cow (Figure 2). More than 50% of farmers work with this breed. This was followed by Fleckvieh on one third of the farms, the most numerous organic cow in the Western part of Switzerland. Holsteins were a rarity in the organic agriculture. This may be explained by the high performance of the cow that cannot always be fed correctly under organic agriculture conditions.

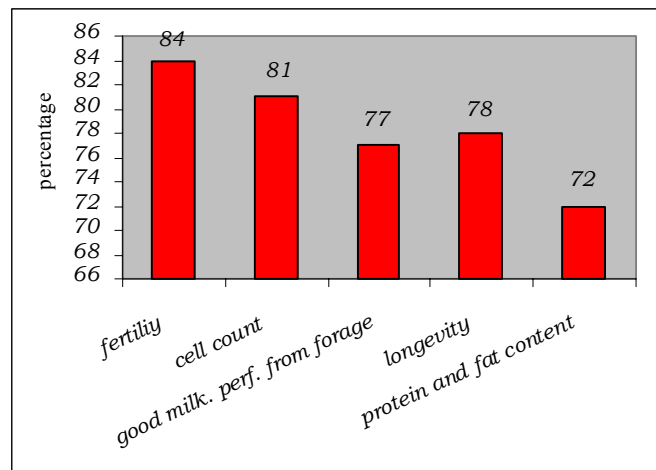
Figure 2: Breeds used by Swiss organic dairy farmers.



Selection criteria for breeding

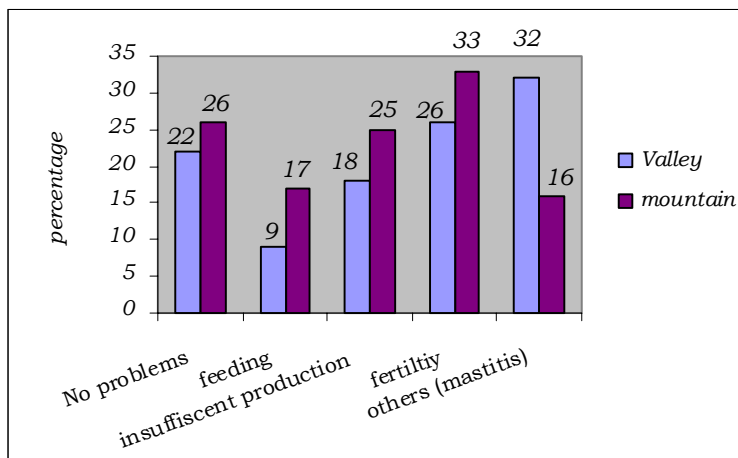
The most important criteria for breeding selection on organic dairy farms appeared to be fertility, low cell count, good milk production from forage, longevity and milk quality, especially protein content (Figure 3). This displacement of production traits in favour of functional traits was also observed in Austria (Schwarzenbacher, 2001). On organic farms with high milk yield (> 7000 kg milk per cow and lactation), the selection was focused on protein content of the milk. Fleckvieh holders emphasized, in particular, their selection criteria of speed of milking. Milk yield was important on farms in the valleys, whereas the meat production was of great concern for Fleckvieh holders, farms with low milk performances and farms in the mountain area. Persistence of yield over lactation was very important in the French part of Switzerland and on farms with high milk yield. It is not clear why persistence is not mentioned more often by other farmers, as in general it is an important criterion for organic dairy farming.

Figure 3: Importance of selection criteria in Swiss organic dairy farms.



Problem areas

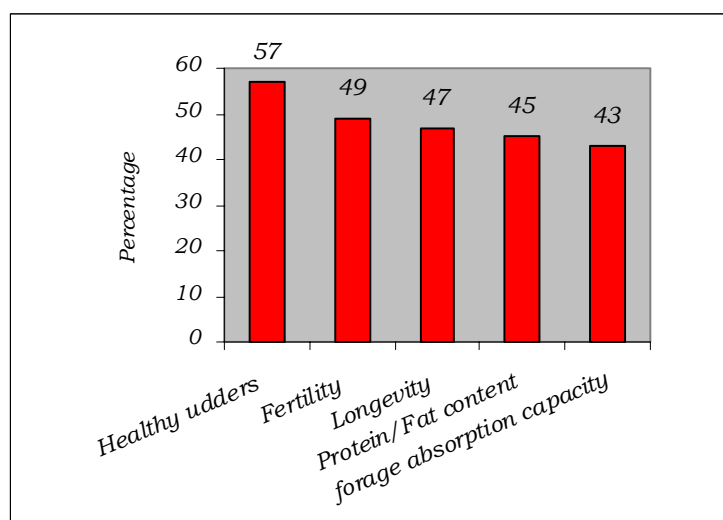
Various problems experienced by the Swiss organic dairy farmers were highlighted by the returns (Figure 4). A quarter of the respondents stated that they encountered no problems with their dairy cows. Especially farms that had a low herd replacement rate (< 15%) and farms using no or little concentrate fodder (<= 50 kg per cow and lactation) were among the “problem-free farms”. One third of farmers struggled with fertility; more often on farms that had high herd replacement rates (> 26%). A total of 20% had problems with low milk production and quality, especially with the protein content of the milk. Feeding problems were mentioned more frequently in mountain areas than in valleys. This may be a result of the bad fodder conditions at higher altitudes. The largest problem in the valley areas concerned udder health, which was mentioned by one third of all valley farmers.

Figure 4: Problems stated from Swiss organic dairy farmers.

Ecological breeding index

The ecological breeding index (EBI) was introduced in Switzerland in 2000. It ranks sires based on a quality evaluation of their off-springs regarding functional and performance traits. This tool is appreciated by farms working with artificial insemination. The knowledge on the EBI among Brown Swiss and Holstein holders was very good: four out of five organic farmers were familiar with it. Among the Fleckvieh holders, the EBI was less well known. This is not surprising, as the EBI had not been introduced at the Fleckvieh Federation during the study. Farmers in the French part of Switzerland with low milk yields and farms not registered in the herd-book also showed limited knowledge of the EBI. Almost 90% of the farms felt that the index is helpful for the selection of the matching sires for their cows, but there appeared to be a difference according to milk yield. Farms with no or very low concentrate fodder use (≤ 50 kg per cow and lactation) were mainly satisfied with the EBI, and farms with high milk performances (> 7000 kg) were mostly dissatisfied.

Despite the overall acceptance of the EBI, some adjustment is necessary to meet the requirements. There is a need to re-balance the weighting within the EBI (Figure 5). Healthiness of the udder, fertility, longevity, milk contents and forage absorption capacity (as soon as it can be seized in figures) should be weighted higher than before. Farmers from the French part of Switzerland, farmers using high amount of concentrate fodder and farms with average milk yield (6000 -7000 kg of milk per lactation) would like to have the trait of milk yield weighted higher in the existing EBI. A stronger weighting in favour to the milk contents is important for farms that use large quantities of concentrate fodder (> 400 kg per cow and lactation) or participate in progeny testing and for farmers who use alpine pastures for their cows during summer. The morphology is particularly under-weighted for the farms with high milk yield. The fitness to pasture is of great importance for production-weak farms and should be considered in the EBI.

Figure 5: Criteria stated to need more weight within the Ecological Breeding Index.

It is evident that the weighting within the EBI should be discussed. However it would be appropriate for these discussions to be based on research of the economic and ethical emphases of the individual traits.

General satisfaction with breeding services and requirements

Concerning satisfaction with the breeding institutions and the applied regulations, two thirds of the organic dairy farmers were content with the current situation. The others would like to see, above all, larger variety in the bulls offered. Most farmers were satisfied with the BIO SUISSE regulations. On one hand, farmers did not want a reinforcement of the regulations. Especially farms that fed no or little concentrate, farms with low milk performances and farms not registered in the herd book were satisfied. On the other hand, farms with high concentrate use (>400 kg per cow and lactation), farms with higher milk yield or farms participating in progeny testing were largely dissatisfied with the current regulations.

Conclusions

The survey showed a high interest of the Swiss organic dairy farmers in breeding, suggesting that there is potential to breed an adapted organic dairy cow. However, it is clear that it would be difficult to breed an “organic dairy cow” that would be suitable for all farms. The differences between farms, particularly between mountain areas and valley regions, were notable. As a result, each farm manager has to specify criteria and breeding goals essential for his or her farm and try to pursue and reach these goals with the available services. Existing tools, like the EBI, are widely considered as helpful, but have to be improved with new knowledge, and further possibilities should be developed.

The modern dairy cow for the organic sector must have a long productive lifespan, good milk yield and milk protein content, requiring little or no concentrate, and a low somatic cell count. In the future, FiBL will analyse anonymized herd book data of organic dairy farms. This should show whether the figures of the inquiry are confirmed or whether new perceptions become evident. FiBL also plan to discuss the results with representatives of breeding organizations and genetics associations as well as with interested organic dairy breeders, in order to evaluate the need of change and take action if necessary.

References

Bapst, B. (2001). *Ein grosser Schritt in Richtung Biokuh*. - FiBL Merkblatt: Der ökologische Gesamtzuchtwert ÖZW. 1-4.

BIO SUISSE (2003): S. Büsser, personal communication.

Lollier, M. (2003). Personal communication.

Schwarzenbacher, H. (2001). Vergleich von biologischen mit konventionellen Milchviehbetrieben in Niederösterreich. Diplomarbeit. Institut für Nutztierwissenschaften, Universität für Bodenkultur, Wien.

Schweizer Bauernverband (2002). www.bauernverband.ch.