

Breeding in Organic Animal Husbandry - where to go?

ANNA WALLENBECK¹, LOTTA RYDHMER¹, OTTO SCHMID²

Key words: Breeding, Genetics, Animal, Livestock

Abstract

Questions and thoughts from a web-based discussion about breeding for organic animal husbandry are summarised. The result of organic production is highly influenced by the genotype of the animals used. Breeds should be chosen and breeding animals should be selected that the animals are well adapted to the production system. The development of tools facilitating such choices should be encouraged.

Introduction

The European Consortium for Organic Animal Breeding (Eco-AB) is a network for researchers studying breeding for organic production (www.eco-ab.org). This paper summarises a discussion on animal breeding for organic farming initiated by Eco-AB and IAHA (IFOAM Animal Husbandry Alliance). The discussion forum was a web page open from June to September 2014. The goal of the discussion was to give input on animal breeding at the IAHA Workshop "Towards an Action Plan for the development and strengthening of Organic Animal husbandry" in Istanbul October 2014.

Seven key questions about breeding for organic production

The starting point of the discussion was a previous documentation on organic animal breeding, especially a position paper from Eco-AB (Nauta et al., 2012) and a documentation from an animal breeding discussion at the IFOAM Animal Husbandry Conference in Hamburg 2012 (Rydhmer and Spengler Neff, 2012). For some species and some organic livestock systems, the use of animals bred for conventional systems based on a high input of resources is inappropriate. However, in other situations there are relatively small differences between organic and conventional systems and the use of livestock bred for conventional production systems may be appropriate (Nauta et al., 2012). The discussion on future organic breeding at the IFOAM Animal Husbandry conference in Hamburg in 2012 concluded that the following steps are needed for the development of organic animal breeding: In the first step there is a need for evaluation of current animal material (in most cases these are modern breeds) in organic production systems. If the environment and management cannot be adjusted towards the animals' needs there is a need for change of genotype in the second step, either by using the best animals (e.g. sires) of the animal material available (within the breed currently used) or changing to a breed better adapted to the environment in the specific organic production system (if there is such a breed). In

¹ Department of Animal Breeding and Genetics, Swedish University of Agricultural Sciences. Lotta.Rydhmer@slu.se, Anna.Wallenbeck@slu.se. Members of ECO-AB

² Department of Socio-Economic Sciences, FiBL, otto.schmid@fibl.org, IFOAM Animal Husbandry Alliance (IAHA)

cases with large differences between the environments in the organic production system and the system where the breeding animals are tested and selected (and when the organic production is performed in a large scale), it could be relevant and realistic to develop special organic breeding programs (Rydhmer and Spengler Neff 2012). In general, traits related to health (e.g. resistance to parasites), robustness and reproduction are supposed to be of extra importance for organic production. Roughage consumption and the ability thrive on local feed is also important.

The discussion was centred on the following seven statements:

1. For animal welfare reasons organic farming needs a breeding system within the organic production chain, based on organic principles.
2. Organic breeding including selection of animals under organic circumstances is a must in order to minimize effects of GxE (genotype by environment interaction).
3. The use of native breeds should be stimulated since such animals fit the local environments.
4. Artificial reproduction increases the possibility to genetically improve traits especially important for organic production, e.g. health traits.
5. The use of breeding animals resulting from Embryo Transfer (ET) should be forbidden since these techniques are forbidden at organic farms.
6. Organic breeding standards must be introduced in the legislation stepwise.
7. The techniques used to produce breeding animals are of less importance, what matters are the animals' breeding values for organic production.

There is a need for a clearer position and recommendations on animal breeding for organic production, but the opinion on what parts of the breeding system that should be included in such recommendations varied. Recommendations on what should be included in breeding goals for the animal material used in organic production systems was one suggestion while some focused more on which breeding and selection techniques that could be allowed. Animal welfare was not highlighted as a motive for 'organic breeding'.

It was argued that the general magnitude of GxE in organic and conventional production systems is too small to affect the ranking of breeds. Even though specific organic breeding programs could be a good idea for other reasons, GxE should not be a reason for such requirements. Native breeds are important gene pools for biodiversity that should be preserved, but how that should be related to, and used, in organic production is not clear. It was argued that improved biodiversity can be achieved also by using the variation within conventional breeds and lines that are more genetically progressed. Such breeds can be well adapted to local conditions, often even better than local breeds.

Concerning artificial reproduction, the responses reflect two lines: 1) Artificial reproduction is a good tool to gain genetic progress in breeding traits important in organic production (e.g. health and fertility traits) and 2) There are enough possibilities for genetic gain in breeding without using artificial reproduction. An interesting reflection was presented regarding the term "natural"; is it less natural to use artificial reproduction than to feed grain to ruminants and omnivores? It was also stated that exclusion of ET would exclude all modern breeds of all mammal species in organic livestock production.

The need of legislation/regulations regarding organic breeding was questioned. The best possible methods should be used to arrive at the kind of animal that is best suited for organic production systems.

Discussion

The discussion reflects the variety of views on breeding for organic production; from a rather pragmatic perspective (simply do what gives the largest genetic progress) to a perspective that seems literally based on IFOAM's basic principles. This range shows the need for an on-going discussion.

Suggestions to contribute towards an Action Plan for the development and strengthening of Organic Animal Husbandry

The result of organic production is highly influenced by the genotype of the animals used. Breeds should be chosen and breeding animals should be selected with great care, so that the animals are well adapted to the production system. The development of tools facilitating such choices should be encouraged.

References

- Nauta, W., Spengler Neff, A., Conington, J., Ahlman, T., Lövendahl, P., Rydhmer, L. 2012. Organic animal breeding 2012 – a position paper from the European consortium for organic animal breeding, Eco AB. Proc. 2nd Organic animal husbandry conference, 12-14 Sept. 2012, Hamburg, Germany. p 309-320.
- Rydhmer, L. and Spengler Neff, A 2012 Summary of the Workshop „Future Organic Breeding“ at the 2nd IFOAM- Animal Husbandry Conference, Hamburg, 12-14 September 2012