

INTERNATIONALIZATION OF LIVESTOCK BREEDING**H. A. M. van der Steen****Summary**

The internationalization of livestock breeding will continue. The speed of this process and the present situation the breeding industry is in varies between species. Variation in strategy, investment, risk taking and targets exists between organisations. A further rationalization will lead to successes as well as failures. One thing is certain: the variation between livestock breeding organisations is large which gives us animal breeders the confidence that improvements will come out of this variation.

International breeding companies will have or will further develop dispersed global nucleus structures, will invest in R&D through in-house and contract research and will meet local requirements while benefiting from global scale.

Introduction

Internationalization of livestock breeding can be looked at in many different ways. What do we mean by it?

- International companies
- International breeding populations
- Global markets
- Animal /semen/ embryo transport across borders
- Global research programme

It will probably be a bit of everything and important species differences exist. In this paper the aforementioned aspects will be discussed for pigs, poultry, cattle and sheep with special focus on future developments in pig breeding.

International companies

Do breeding organisations, whether herdbooks or breeding companies, operate locally (country), in one of the continents or at global level? Important

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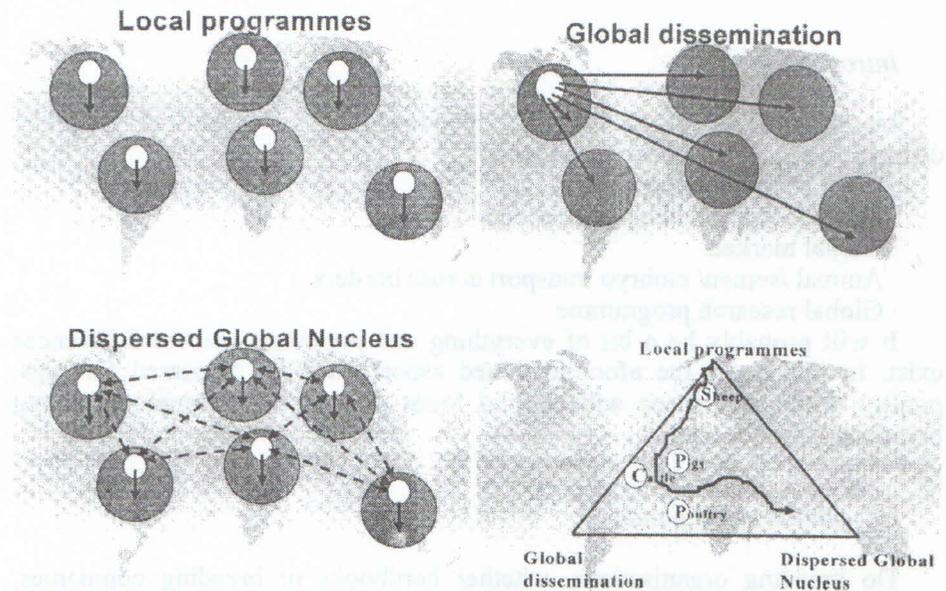
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differences between species do exist and changes take place over time. Poultry breeding companies are to a large extent working at global level while sheep breeding organisations tend to operate locally. Pigs and cattle are in an intermediate position. In general we see over time a development from local to global.

The differences between species can to a large extent be explained. Differences in reproductive capacity, success of AI, cost of an individual, cost of transport, health barriers, government support etc., etc. have played a role. These differences become less and less important due to technical developments.

International breeding populations

The international dimension of breeding programmes varies and depends on which animals contribute through their genes and/or data to the genetic improvement programme and on to which commercial populations the genetic improvement is disseminated.



Local programmes rely on the locally available animals and the genetic improvement is only disseminated to that population. Several, an different programmes are implemented in parallel, within as well as between regions. Global dissemination involves a local genetic improvement programme but the

genetic value is disseminated to the local as well as other populations. With a dispersed global nucleus programme we have nucleus populations spread over the regions. These nucleus populations are connected through exchange of genes through animals, semen or embryos. All local populations are equal and can support the production in their own region. Several intermediate situations can be defined.

Programmes tend to develop from the local programme model to global dissemination to eventually the dispersed global nucleus model. Species differences occur with sheep breeding programmes being local while pig and poultry breeding programmes are further down the tract to a dispersed global nucleus programme.

Global markets

A global market might be described as one where no differences exist in the type of product that will give optimal results. This is often not the case due to differences in environment (production systems, regions), differences in market requirements and costs, differences in professionalism of producers and economical, political or veterinary barriers. This will have an impact on the number of different populations that will need to be developed and on the production structure.

Animal, semen and embryo transport across borders

International dissemination of genetics can be difficult due to veterinary or cost barriers. The advantage for poultry breeders has been the low cost of shipment of 1-day old chicks. Cattle breeders have made extensive use of semen distribution.

New technologies can have a major impact. The availability of frozen semen and embryos reduces the logistical problems and health risks. In particular in a transparent market where product differences are known and where access to the products is not a problem, customers will make use of the stock that delivers best value for money. This will stimulate the internationalization of animal breeding.

Internationalization of pig breeding

In the table below a number of factors are listed that have an impact on the internationalization (positive or negative) of pig breeding.

Factor	Effect
Developments in reproductive technology and molecular biology	++
Increase of investment in R&D	++
Development of standard pig productions systems world wide	+
International trade	+
Increase of professionalism in pig production	+
Environmental differences	-
Variation in market requirements	-
Political and veterinarian barriers	-

Developments in reproductive technology and molecular biology will result in cost effective and safe distribution of genetic material across the globe. The investment in basic and applied research and in line and product development will increase. These costs need to be spread over a larger customer base. The combined effect will lead to the further development of international pig breeding companies. This will be further enhanced by the need for competitive pig production systems world wide which will lead to more standardized production systems and an increased professionalism of the pig producer. Still, environmental differences (climate, available feed resources), variation in market requirements and political and environmental barriers will favour the local pig breeding organisations. International organisations will negate these effects by the structure of their breeding programme and production systems, by developing a number of different lines and by the development and implementation of new technology (veterinary diagnostics, cryobiology).

Conclusion

The internationalization of livestock breeding will continue. The speed of this process and the present situation the breeding industry is in varies between species. Variation in strategy, investment, risk taking and targets exists between organisations. A further rationalization will lead to successes as well as failures. One thing is certain: the variation between livestock breeding organisations is large which gives us animal breeders the confidence that improvements will come out of this variation.

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INTERNACIONALIZACIJA UZGOJA STOKE

Sažetak

Internacionalizacija uzgoja stoke se nastavlja. Brzina tog procesa i sadašnja situacija u uzgojnoj industriji razlikuju se prema vrstama. Među organizacijama postoje razlike u strategiji, investiranju, preuzimanju rizika i ciljevima. Dalja racionalizacija vodit će uspjesima kao i neuspjesima. Jedno je sigurno: razlike među organizacijama za uzgoj stoke su velike, što daje nama uzgajaćima životinja pouzdanje da će te razlike dovesti do poboljšanja.

Međunarodna uzgojna poduzeća nastavit će razvoj razbacanih globalnih struktura jezgre, investirat će u R i D putem istraživanja kod kuće i po ugovoru, te zadovoljiti lokalne potrebe i istovremeno se okoristiti na globalnoj razini.

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