KNOWLEDGE TRANSFER IN SLOVAK CATTLE PRODUCTION DURING THE TRANSFORMATION PERIOD

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Cattle breeding in Slovakia

Predominantly large-scale farms are used in cattle breeding in Slovakia at present. The size of farms has changed very little compared with the period before 1990. However, the management of farms has changed significantly.

In spite of there being large farms in Slovakia before 1990, there was a high proportion of tying stalls with milking into a bucket or through pipeline milking installations. There was also a high proportion of dual-purpose breeds with quite low performance. The quality, and sometimes also the quantity, of roughage were insufficient.

Immediately after 1990, the market for agricultural products opened up. The shortcomings in the management of breeding cattle could not cope with this situation, therefore a very rapid and significant decrease in the amount and intensity of breeding took place. Numbers and performance in cattle both decreased a lot. The largest depression was noticed in 1992. However, as a result of the open borders, farmers got new opportunities for biological and technological modernisation of farms.

The government supported modernisation, but a serious problem became apparent. There was no extension system in agriculture at that time. Before 1990, dissemination of knowledge was effected by means of a network of regional offices of the Ministry of Agriculture. The knowledge was not offered, but was ordered (by force) in most cases. In some districts, for instance, it was only possible to keep a certain type of cattle with specified technology, by order of the government and regional office. Rotation of crops was ordered, the areas of crops, mainly cereals, being controlled. This had a very negative impact on production and quality of roughage. In spite of existing knowledge about behaviour of dairy cows in various types of housing, certain types of housing began to be used that were unnatural for the animals and confined them. Livestock numbers exceeded the housing capacity. Therefore many animals were housed in inappropriate buildings. It was surprising that tying stalls for cattle actually became more numerous. The reason for this was that it was easier to manage the farm. One stockman looked after a certain group of animals. He fed them, littered them, removed manure and, with dairy cows, milked them and was also responsible for the control of reproduction.

However, at that time there already existed a small number of quite successful farms that were created mainly on the initiative of breeders themselves who were able to visit modern farms in the USA. Some farms in neighbouring Hungary were also good examples. Modernization of cattle breeding, mainly dairy cows, had already started there in 1975.

Need for extension services

Farmers struggled to adjust to the new market economy. In particular, they were unprepared for international competition that demanded higher quality standards, attractive presentation, continuity of supply, appropriate transport systems, and a degree of producer co-operation and organisation hitherto unknown. In the circumstances, profits were scarce and losses commonplace.

Government came under pressure to give greater financial assistance to agriculture, but overall state funds were severely limited and other sectors of the economy were seen as having higher priority in the years leading up to and following independence from the Czech Republic in 1993.

For significant progress to be made in Slovak agriculture, it was clear that greater efforts would be required to (a) create awareness of worthwhile innovations that were already in use on farms in other countries, (b) introduce new systems and technologies, and (c) assist farmers in the transformation process.

Creation of the extension system

As mentioned already, there was no extension system for Slovak agriculture at the beginning of the nineties. Regional offices of the Ministry of Agriculture continued with their activities. Some emerging private trade companies provided extension, usually related to their particular products; research and educational institutions began to encompass extension in varying degrees; and private extension specialists began to function. Also, new private extension companies were created, with the aim of meeting the obvious needs within the industry. But paying for advice was a new concept, its value was difficult to guage, and in any case farmers already had difficulty paying for more essential and tangible goods such as feed and fertiliser. A self-governing organisation, the Slovak Chamber of Agriculture and Food, supported extension significantly and its regional office activities gradually replaced those of the government regional offices. The Chamber tried to co-ordinate extension in Slovak agriculture in its own particular way. For purposes of extension, there arose an association of agricultural research institutes, Agroservis, that also contributed to co-ordination and to the creation of a new system of extension in Slovakia.

It became necessary to create a flexible extension network to accommodate the great diversity in status and objectives of the extension institutions and individual extension workers. Such a network was created as a result of the EU PHARE

"DESIPAP" project (Development of Extension Services to Improve Primary Agricultural Production) which ran from 1996 to 1999.

This project was preceded by a number of initiatives, some Slovak but mainly foreign. A number of individuals were trained in extension. Some outstanding foreign extension institutions organised these training courses and they tried to recommend the most suitable system of extension for Slovakia at the same time. We had the possibility of adopting various recommendations from representatives of foreign extension institutions. Some of them recommended creation of the same extension system in Slovakia that they had in their own countries. Pessimists said that no overall extension system could be created in Slovakia.

The team of the PHARE programme proposed the creation an original Slovak extension system and it was accepted by the government. It respected the current situation that had developed in Slovakia, and it proposed creating an Extension Services Network (ESN) that was open, and remains open, to all who are interested in working in agricultural extension. It was important that the proposal also respected the requirement of the government that it should give only partial financial support for extension. In addition to advising the government on the best structure for the network, the team provided detailed and specific training for those who would be involved in extension work, and organised the provision of suitable computing and communications equipment for extension centres.

The network consists of various groups of participants with specific functions:

Users of extension (farmers and farm managers),
Advisers,
Trainers of advisers,
Collection and dissemination of information,
Co-ordination of ESN,
Funding.

The system enables a given subject to be covered in more than one group. All existing institutions and individual advisers were able to register for the system, and it is expected that newly-emerging ones will also enter it. To be registered, advisers must have a specified level of qualifications and experience. Many are in fact part-time, having main careers in commercial, educational or research organisations. The system is open for providers as well as users of extension.

The training centre, Agroinstitute, supported by other existing educational institutes and individual tutors, provides basic training and updating for advisers. Also at the Agroinstitute, there is a co-ordination centre in which all participants in the extension network are registered. It co-ordinates 16 extension centres spread over the territory of Slovakia. This unit can put enquiring farmers and others in touch

with the names of the most appropriate advisers for solving their particular problems.

Information is concentrated on a separate website that is gradually filled with information mainly by users of the information. The existing Institute for Scientific and Technical Information in Agriculture administers the ESN website.

The regional offices of the Ministry of Agriculture provide the funding. They give subsidies to users of extension on the basis of the invoice submitted by the provider of extension. A percentage of the proven costs is refunded. Percentages are always set by the government at the beginning of the year. Some preferred spheres of production or regions can be allocated higher percentages, in line with current government priorities.

The ESN is essentially a facilitating organisation. It is not in charge of advisers or other extension organisations, which continue to run their own affairs but use ESN co-ordination services. Staff of the co-ordinating unit do not themselves provide advice to clients and are therefore not in competition with registered providers.

Cattle breeding was one of the spheres in which extension was provided even before the ESN was created. The Research Institute for Animal Production (RIAP) in Nitra was very active in this respect.

Communication between adviser and user of extension

The above-mentioned system of dissemination of knowledge by directive influenced the superficial outlook of the early advisers and users of extension. Advisers, most of whom were specialists, were aware of their abilities and were convinced that users should use their recommendations from A to Z. In the beginning, users also expected that they would get 100% proposals for solutions from specialists that they would be able to put into practice without the specialist's presence. However, both parties gradually realised that resolution of a given problem must follow known principles that they adopt step by step. The education of advisers is also helpful in this respect. The following principles illustrate the point:

Formulation of the problem by the farmer himself

The adviser should first of all listen to the farmer carefully and let him formulate the problem by himself. Often it happens that the adviser, focussing of his own abilities, does not pay enough attention to all the problems of the user because they seem to him to be solved already. However, they are important for the user and therefore the adviser should comprehend all the problems of the user, accepting his concerns even though they seem at first sight to be unimportant. It is very important that the adviser knows all the limitations that stop the user achieving an optimal resolution of his problem. If these guidelines are observed, the problem, to be solved jointly by the adviser and the user, should be well defined.

Common search for the most suitable method of solving the problem
The adviser must not exclude the user when looking for a solution. It is more satisfying for the user if he believes that he found the solution largely by himself. The adviser should be able to supply the user with an analysis of the advantages and disadvantages of the various possible methods of solution and support this analysis with technical knowledge. Besides the limitations familiar to the user, there often exist further limitations - external ones - about which a qualified adviser should be able to inform the user.

Adviser should help to reduce the number of possible solutions
Of course, there are many more possible solutions at hand than can be implemented in practice. Therefore it is necessary for the adviser, together with the user, gradually to decrease the number of possible solutions. After they have chosen the most suitable, they should discuss expected results.

To achieve satisfaction of the user
The discussion should end with the user expressing satisfaction. It is not good if the user starts implementation with doubts or with a feeling of dissatisfaction. In such a case, the adviser must suggest to the user that they go back and search together for another solution that will make the user happy. If they reach agreement, it is very important that the adviser participates in the implementation of the chosen solution.

Expectations of the user when implementing the solution
The user should feel that he still needs the adviser during implementation. However, he should not see him as a controller; nor should he have the feeling that the adviser must lead him at every step. Our experience indicates that the results of extension are most effective in circumstances where the farmer is capable of implementing the solution by himself but chooses to have the assistance of the adviser. In this relationship, the adviser should act as a catalyst.

Extension in the Research Institute for Animal Production in Nitra
As mentioned earlier, one of the biggest problems to be solved in Slovak agriculture was that of cattle breeding, mainly in dairy cows. In the Research Institute for Animal Production in Nitra there are specialists in various spheres of animal production. The institute initiated the creation of an association of research institutes for extension in agriculture, called Agroservis.
Since 1993, development projects for advancement in cattle breeding were supported by the state. Mostly, breeders themselves prepared these projects. The RIAP took over the role of adviser at the beginning. During this activity, a need arose to establish guidelines for the methods and principles to be used in the creation of such projects. The processes of project preparation which emerged respect the principles of communication between adviser and user described above.
The institute also elaborated a number of model development projects on real operational farms. A Department for Extension and Marketing was created at the institute. It uses high-calibre specialists in research departments (mainly in the

spheres of genetics and selection, management and economy, nutrition of animals, welfare of animals, and buildings and equipment) and sets up flexible teams for individual projects in accordance with the requests of the breeder.

Most projects have been aimed at breeding in dairy cattle. A development project in dairy cattle breeding usually contains:

An analysis of the herd, highlighting the proportions of breeds, performance, milk composition, number of lactations, and parameters related to reproduction. The analysis is carried out on the basis of data obtained from the breeder and from organisations involved in performance testing.

Expected future parameters of performance on a time schedule. The projections start with the visions of the breeder, which are then adjusted by the adviser to values that are achievable in practice.

Larger herds need thorough processing of herd turnover data. Processing is carried out by the adviser, in conjunction with the breeder, in a way that takes into account the current structure and quality of the herd and any possible improvements. Numbers of cattle in separate categories determine housing capacities and the requirements for cultivated feeds. Procedures vary. In many cases, the future size of the herd is determined first, then the capacity of livestock housing, barns and area of fodder crops are adjusted to meet it. In a number of cases, however, the capacity of buildings and/or the area of crops are limited.

Stock numbers and planned production determine the total amount of product that is to be placed on the market. There was no milk quota system in Slovakia until this year. Quota limits the current possibilities. Therefore total stock and herd turnover are now, and will continue to be, dependent on the total product that can be placed on the market.

A suitable selection programme is also determined. Mostly, this involves basic recommendations and identifying present shortcomings that should be improved by implementation of the breeding programme. Actual implementation is carried out by an authorised commercial insemination company, with which the breeder has entered into a contract.

The programme of modernisation of buildings is a very important element. It starts first of all from the above-mentioned target numbers in the separate categories of cattle and the buildings that are currently available. Livestock decreased by more than 50 % in Slovakia after 1990. Therefore there are usually enough buildings available, and it is mostly older ones that are modernised. However, if necessary, the construction of new buildings is recommended. RIAP occupies an important position in these developments, mainly because it is the author of recommendations that were used in the period of legislative vacuum on animal welfare before EU legislation was officially adopted. It is worth pointing out that the recommended parameters used then are not at variance with the present legislation, so the model projects can still be used.

Technological modernisation was very demanding in many old buildings. Problems associated with limited internal dimensions and distances between supporting structures necessitated quite demanding solutions. The institute published detailed modernisation plans in a booklet that was put at the disposal of all breeders and advisers through the extension services network. As a result, acceptable planning methods came into general use.

The necessary investment costs are calculated from the specific technological plans generated; management of the breeding process is organised and the optimum number of staff is determined. As employees are involved, it is necessary to observe the Labour Code, in which the number of working hours and requisite breaks are fixed.

The balance and production of feeds are critical parts of the project. The latest knowledge on utilisation of nutrients obtained in the RIAP is used. The institute is administrator of the National Feed Data Bank. These data can also be used in any given project. It is necessary to co-operate with the farmer himself during the preparation of feeding plans, as in other spheres. Natural and technical conditions on the farm must be known in order not to cause environmental, technical or economic imbalance by the intensification proposals. Suitable crop rotations for the production of roughage are elaborated, or pasture and optimal alternatives of feed rations for separate categories of cattle are prepared. Proceeding by stages, the increases in performance that were given in the programme of development are achieved. If the farmer asks for more alternatives for economic or environmental reasons, the specialist checks and quantifies these alternatives.

Previous recommendations are economically re-evaluated so that the farmer can make up his mind to continue implementation of the programme or to make necessary adjustments.

The programme is presented in written form, with annexes to supplement it. The annexes include mostly layout of the farm and buildings but there can also be a complete budget for modernisation, a list of proposed sires, alternative feed additives, various prospectuses, etc.

Of course, the process of transformation continues and changes are occurring on many fronts, and in many institutions.

The Research Institute for Animal Production is first of all a research institution and it does not have ambitions to be involved in extension activities across the whole spectrum of animal production. However, research scientists must try to ensure that the knowledge they generate is transferred into practice. The creation of model projects for the development of dairy cattle enterprises is one of many complex examples. The extension activity of the institute starts from scientific results obtained from research, not only in the RIAP but also from across the world, and the identified needs of practical farming in the particular conditions of Slovakia. Information about needs is gained during the 10 – 12 conferences and

workshops that are organised for practice each year by the institute, and from many other sources.

At the present time, for certain advanced scientific developments, only the specialist research scientist is capable of transferring the new knowledge on to the farm. In many other areas, a good livestock adviser is well able to absorb the information and pass it on, modified if necessary according to particular farm circumstances. But general advisers, capable of bringing together the various technologies of the whole farm, e.g. livestock, cropping, machinery, labour and finance, are very scarce in Slovakia.

This varied background to dissemination of results creates a dilemma for the RIAP, and also for other research institutes. How far should the RIAP go in terms of dissemination? It already employs a wide range of dissemination techniques, including leaflets, booklets, selected books, web pages, lectures and presentations, on-farm demonstrations, newspaper and magazine articles, scientific journal papers, occasional broadcasts, and training courses. Offering a full range of extension services in livestock production is simply not possible, for various reasons. On the other hand, managers at research institutes no not want valuable new knowledge to wither and die because there are inadequate resources to transfer it on to farms. And a small amount of on-farm extension experience is a desirable component in applied scientific pursuits.

With that problem in mind, the RIAP recently commissioned a study and report covering its present methods of dissemination and suggestions for improvement. The study is complete and the report has just been presented. The report, although in many ways complimentary to the institute, contains a range of recommendations, and these will have to be studied in detail. They cover such broad areas as (a) creating closer links with practice, (b) using farm systems as the template against which much of livestock research planning and dissemination of results should be seen, (c) The extent to which RIAP scientists should engage in direct extension, and (d) the need for agreed internal policies for both extension and dissemination.

It is always necessary to move with the times, and managers of the RIAP are confident that some of the recommendations in the report, when implemented, will bring further improvements in the work of the institute and in the transfer of new knowledge.