



## Strategies of Hungarian pig-breeding farms

O. Bíró<sup>1</sup>, L. Ózsvári<sup>1</sup>, Z. Lakner<sup>2</sup>

<sup>1</sup>Szent István University, Faculty of Veterinary Medicine, Budapest, H-1118 Villányi út 35-43.

<sup>2</sup>Budapest Corvinus University, Faculty of Food Science, Budapest, H-1118 Villányi út 35-43.

### ABSTRACT

*The article analyses the basic strategic directions of the Hungarian pig-breeding plans, and determines a possible clustering of these farms. The majority of enterprises tries to increase the quality of production, aiming at optimisation of the production technology and product-quality. Some enterprises try to differentiate their activity form concurrents by breeding of specific varieties. A third group of enterprises tries to increase their size by utilisation of relatively low input prices. Numerous enterprises try to stabilise their position by the minimalisation of input costs. In numerous cases there seems to be any well-defined strategy. Based on different productivity indicators the best results could be found in case of quality-oriented enterprises. The shrinking of production has improved the bargaining position of pig-breeders with feed suppliers, but there remained considerable problems with meat-industrial enterprises. As a consequence of worsening agricultural market situation and decreasing profit margin a further concentration process of producers can be predicted. At the same time, a general reconstruction of technical and technological infrastructure seems to be a necessity.*

(Keywords: strategic planning, categorical principal component analysis, competitiveness)

### INTRODUCTION

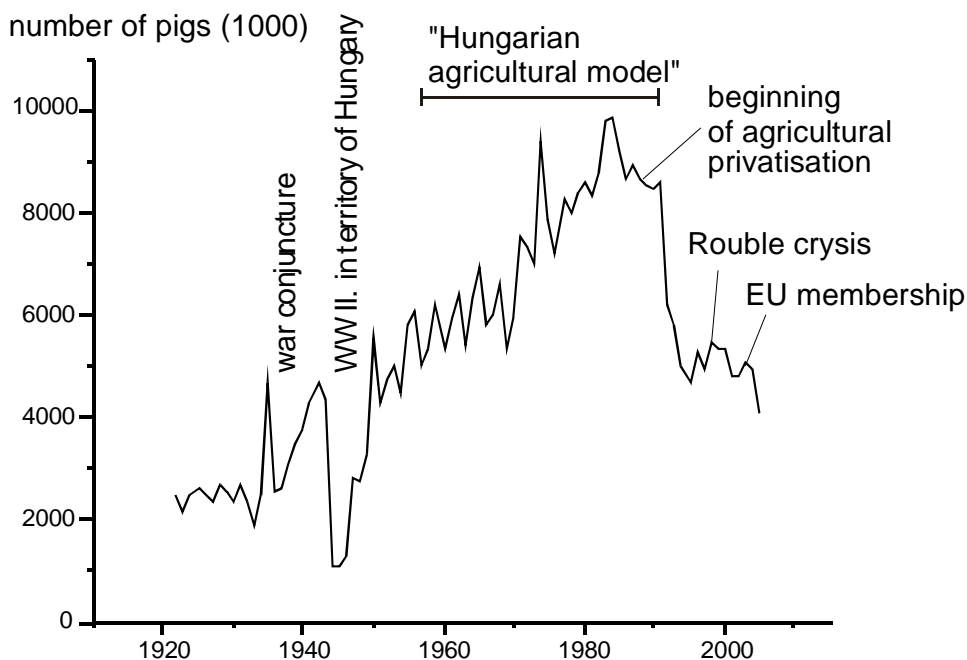
Pig production has been an emblematic part of the Hungarian agriculture (*Hajduné*, 1980). The demand of the former “socialist market” system meant a practically unlimited possibility for the increasing of meat production in the 70's and 80's of the last century. At this time the pig production has been divided into two sectors: the large-scale production of big farms in the ownership of co-operatives and state farms, and the small scale production (generally less than 20 weaners) in private (household) farms. These two types of activities were closely interrelated, because the small scale producers in most cases have been integrated by larger producers via contracts for supplying of veterinary service, forage, breeding sows and advisory service. As a result of these processes the Hungarian pig production has achieved a considerable increase from point of view of the quantity of production, but the technical and technological level and the efficiency of the agricultural production was relatively low even at the “golden age” of the Hungarian agriculture.

The Hungarian pig-breeding is especially sensitive to the changes in foreign markets (*Figure 1*). As a consequence of collapse of former foreign trade market structure, low level of competitiveness of Hungarian meat sector as well as the increasing input from another EU member states the Hungarian pig-production has decreased rather rapidly. These tendencies highlight the weak competitiveness of

Hungarian pig-breeding sector. Knowledge of the current tendencies and strategies of pig-breeding farms is a necessary precondition for the reconstruction of the sector.

**Figure 1**

**The development of Hungarian pig-breeding (number of pigs in interval 1937-1944 convertet to the current territory of Hungary)**



Source: own construction, based on Statistical Yearbooks of the Hungarian Central Statistical Office.

## METHODOLOGY AND HYPOTHESIS DEVELOPMENT

The current survey is based on 150 (mostly anonymously) filled out questionnaires. To analyse the strategic directions of farms three focus group interviews have been carried out. The level of consent with directions have been measured by Likert-type interval scales, consisting of 1–5 scores, where 5 meant the highest level of consent.

H<sub>1</sub> The Hungarian pig-breeding enterprises can be divided into different from each other groups according to the strategic directions they follow.

H<sub>2</sub> The differences in strategies of enterprises are mirrored in their performance.

## RESULTS

The have analysed the hidden structure of the responses by the categorical principal component analysis (Table 1).

For the determination of the exact number of the categories there is not a simple method available, that's why we have utilised the generally utilised elbow-approach.

Based on this method four dimensions seemed to be satisfactory for the explanation of the variances.

**Table 1**

**Results of the principal component analysis of the strategic ways of development of breeding**

| Strategic way of development   | Number of dimensions |        |        |       |
|--|----------------------|--------|--------|-------|
|  | 1                    | 2      | 3      | 4     |
| Utilisation of traditional, Hungarian pig breeds                                 | 0.452                | 0.914  | 0.214  | 0.264 |
| Increasing of the forage-base of the plant by land –buying                       | 0.324                | 0.657  | 0.788  | 0.341 |
| Increasing of the professional knowledge of the blue-collar workers of the plant | 0.874                | 0.314  | 0.224  | 0.784 |
| Improvement of the quality of feeds  | 0.784                | 0.324  | 0.218  | 0.121 |
| Utilisation of cheaper feed –purchasing resources                                | -0.756               | 0.121  | 0.224  | 0.911 |
| Increasing of professional knowledge of the white-collar workers of the plant    | 0.741                | 0.214  | 0.211  | 0.478 |
| Achievement of more favourable conditions with the feed suppliers                | -0.234               | 0.354  | 0.354  | 0.847 |
| Achievement of more favourable conditions with the meat industrial plants        | 0.844                | 0.547  | 0.145  | 0.441 |
| Wider utilisation of the benchmarking for the evaluation of the plant            | 0.842                | 0.100  | 0.214  | 0.654 |
| Improvement of the efficiency of veterinary medical attendance                   | 0.377                | 0.125  | 0.128  | 0.214 |
| Increasing of the programs for prevention  | 0.297                | 0.340  | 0.237  | 0.124 |
| Bio-production   | 0.124                | 0.847  | -0.421 | .118  |
| Improvement of the technology in framework of the current buildings              | 0.741                | 0.654  | 0.421  | 0.456 |
| Increasing of the efficiency of the medical treatment                            | 0.332                | 0.421  | 0.234  | 0.129 |
| Improvement of the technology with the modernisation of the buildings            | 0.654                | 0.482  | 0.221  | 0.241 |
| Utilisation of the western-European breeds                                       | 0.877                | -0.658 | 0.241  | 0.235 |
| Improvement of the feed conversion rate  | 0.715                | 0.232  | 0.652  | 0.148 |
| Improvement of the meat categories   | 0.841                | 0.211  | 0.452  | 0.451 |
| Improvement of the information and traceability system of the farm               | 0.732                | 0.321  | 0.458  | 0.421 |
| Increasing of the size of the herd to achieve a better                           | 0.101                | -0.587 | 0.847  | 0.154 |
| Decreasing of the overhead cost of the plant                                     | 0.214                | 0.427  | 0.421  | 0.848 |

It is obvious, that in the first dimension the highest correlations are with the statements emphasising the production of specialities for the Hungarian meat industrial enterprises. It is worth to mention, that the price decreasing in this dimension has an extremely low weight. Put it in another way: this dimension is especially suitable for the differentiating of the strategic approaches into the direction of price lowering versus quality production.

In the second dimension the highest loading have statements, joining to the production of specific products. The distinctive competences in this dimension are the bio-production and the specific knowledge of workers. In a sense this approach is near to the strategic direction, summarised in first dimension. The only difference is that in the first dimension the highest loading have statements, joining to the quality of product in the traditional meat production system, in this, second dimension the most important distinctive competence is the quality increasing under modern market-conditions.

In the third dimension the highest loading have statements, joining to the increasing of the volume of the production. In this way a decreasing of unit cost and increasing of efficiency can be achieved.

In the fourth dimension the highest loading have the statements, joining to the cost-decreasing, by the better utilisation of the resources available. In this dimension the lowest loading had been given to statements, emphasising the product-differentiation. This is a well-defined strategy of large-scale pig breeders, with well-defined ways of development. Their owners are typically the meat-industrial plants or agricultural enterprises.

Based on the categorical principal component analysis, we have determined an object score for each respondent.

The scores obtained from the analyses above were utilised as the input variables to classify the pig-breeder plants. A five-cluster solution was found to maximise the distances between cluster means across four dimensions. To enhance the interpretation of each cluster, to each cluster has been given a fancy-name, emphasising the most important characteristic feature of the given cluster (*Table 2*).

- As a summary it can be stated, that the large-scale pig-breeding plants in Hungary can be divided into five groups, characteristically different from each other.
- In next phase of investigations we have analysed the hypothesis  $H_2$ . The aim of this investigation has been to determine whether exist a direct relation between the strategies, the production potential and the performance of enterprises.
- It is obvious from *Table 3*, that there are characteristic differences between the farms, following differing ways of development.

## CONCLUSIONS

Development of Hungarian pig-breeding sector should be built on pillars. These are as follows:

- Technological modernisation of pig-breeding plants. To achieve this, there is not enough money available in agricultural enterprises, that's why the utilisation of outside resources gains in importance. The majority of pig-breeding plants did not get any additional support for the reconstruction or development of the breeding facilities from the EU budget or from the resources of the Hungarian Ministry of Agriculture and Rural Development. The pig-breeding plants investigated had only rather limited possibility for the access of bank credits. This can be explained on the supply side of the credits with the reluctance of banks to finance agricultural enterprises with low income-generating capacity.
- According to the latest results of the enterprise-theory, the enterprise should concentrate on the optimal utilisation of the core competences, outsourcing all of the activities, not forming an integral part of the basic activity of enterprise. In case of Hungarian pig breeders, however we can see a rather diversified field of activities. This phenomenon by itself is not a negative one, if it is a consequence of the well-established, predetermined strategy. A series of interviews of plant managers proves, that the majority of plants has not developed as a result of a well-determined strategy, rather a result of rather spontaneous events. That's why a portfolio-cleaning should be essential.
- The regulatory frameworks should be more clear and transparent. In work of veterinarians, the advisory and controlling activities should be separated from each

- other. The domestic pig production of pig-breeding plants workers should be prohibited.
- Continuous development of professional knowledge of white-and blue collar workers is essential. In this case there was an especially wide gap between the theory and practice, because during the last, rather turbulent years the education got only a secondary importance.
  - In technological development of the plants the environmental and animal welfare considerations should be given an even higher priority too.

**Table 2**

**The most important characteristic features of the pig-breeding farms investigated**

| <b>Characteristic feature</b>   | <b>The quality-oriented producers</b>   | <b>Differen-tiators</b>                    | <b>Enlargers</b>                        | <b>Thrifts</b>  | <b>Drifters</b>  |
|---|---|--|---|---|--|
| Most important strategic directions   | Increasing of profitability by the quality increasing   | Breeding traditional Hungarian varieties   | Utilisation of economic of scale effect | Increasing of profitability by the decreasing of production cost      | Decreasing the cost of production  |
| Mode of the date of the beginning of operation  | 1985  | 1997                                       | 1971                                    | 1968  | 1974   |
| Latest reconstruction   | In last five years  | It has not been necessary yet              | In last ten years                       | In last ten years   | In last ten years  |
| Typical owner   | Limited partnership. The majority of partnership interest is in hand of meat processing companies | Family farm, or limited partnership        | Limited partnership                     | Co-operative with a high level of animal husbandry (>50% in turnover) | Co-operative with a low level in the animal husbandry (<50% in the turnover) |
| Typical variety   | Holland   | Mangalica (traditional Hungarian breed)    | Hungarian large white pig               | Kahyb, Hungarian large white pig                                      | Kahyb, Hungahyb  |
| Data and aim of variety-change  | 1999–2001<br>Increasing of efficiency   | 2001–2003<br>Back to traditional varieties | 1999–2000<br>Increasing of efficiency   | Not any variety-change  | Not any variety-change   |
| Utilisation of the capacity (in % of show-spaces )  | 60%   | 45%  | 70%                                     | 30%   | 35%  |
| Share of E+S quality-grades according to the EUROP meat classification system in the output | 71.2  |  | 62.1                                    | 63.4  | 64.2   |

**Table 3**

**The productivity ratios of the pig-breeding plants**

| <b>Indicator</b>                         | <b>The quality-oriented producers</b> | <b>Differentiators</b> | <b>Enlargers</b>   | <b>Thrifts</b>      | <b>Drifters</b>    |
|--|---------------------------------------|------------------------|--------------------|---------------------|--------------------|
| Fertility ration                         | 81.5 ( $\pm 7.2$ )                    | 67.2 ( $\pm 6.9$ )     | 75.5 ( $\pm 8.4$ ) | 69.5 ( $\pm 12.5$ ) | 66.4 ( $\pm 7.2$ ) |
| Live pigs born per litter                | 11.5 ( $\pm 1.3$ )                    | 7.2 ( $\pm 1.9$ )      | 8.5 ( $\pm 2.2$ )  | 7.9 ( $\pm 2.8$ )   | 7.3 ( $\pm 1.7$ )  |
| Average number of litterings             | 2.4 ( $\pm 0.3$ )                     | 2.1 ( $\pm 0.2$ )      | 2.3 ( $\pm 0.3$ )  | 2.2 ( $\pm 0.4$ )   | 2.3 ( $\pm 0.3$ )  |
| Mortality percentage to the age of 8 wks | 8.1 ( $\pm 2.3$ )                     | 7.4 ( $\pm 1.3$ )      | 10.4 ( $\pm 2.3$ ) | 11.2 ( $\pm 2.3$ )  | 11.6 ( $\pm 2.3$ ) |
| Pigs produced per year                   | 25.4                                  | 17.2                   | 22.4               | 21.5                | 16.2               |
| Number of days of finishing              | 55                                    | 71                     | 61                 | 63                  | 62                 |

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*Corresponding author:*

**Zoltán Lakner**

Budapest Corvinus University, Faculty of Food Science

H-1118 Budapest, Villányi út 35-43.

Tel-fax: 36-1-20909061

e-mail: zoltan.lakner@uni-corvinus.hu