RISK MANAGEMENT PARADIGMS AT AGRICULTURAL ENTERPRISES

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The paper focuses on empirical opinions expressed by owners and managers of agricultural industrial enterprises, summarises their practical knowledge, outlines the formation of strategic interpretations and paradigms of production development risks, describes the experience of managers’ actions in risk situations, and deals with productivity risk issues. The exchange of views by managers and owners of large farms attributable to different levels of the Industrial Era or the Knowledge Era of agriculture is summarised separately to provide a more explicit disclosure of their opinions. Conclusions and final considerations of the paper include a summary of the discussions and analytical studies.

Key words: agriculture, industry, management, risks, risk management.

JEL classification: Q19, R11.

Introduction

The topicality of management problems at agricultural enterprises ensues from the growing numbers of factors, circumstances and potential of continuous changes. Changes can be aroused by several or even manifold processes:

- the development of the science of genetics leads to new practical outcomes in selection: new sorts of crops and new breeds of reproductive domestic animals;
- a rapid advancement of technical sciences offers new opportunities for agricultural machinery modernisation; major developments in practical engineering facilitate introduction of cutting-edge machinery at modern agricultural enterprises, which may improve dramatically the economic outcomes of the use of agricultural production resources;
- logical activities in agricultural science at the institutes of Latvia University of Agriculture also reveal a new approach towards a more constructive employment of up-to-date machinery, increased labour efficiency, and a rational use of resources, such as plant nutrients and plant protection products, photosynthetic active radiation, etc.;
- the development of cattle-breeding and empirical conclusions lead to significant changes in habits and earlier paradigms in feeding, welfare, reproduction, and technologies of all processes that generally provide possibilities for higher productivity, better quality, and larger production output per square metre of the stock farm area and increase the investment efficiency;
- the development of management science facilitates more efficient managing by executives and owners of agricultural enterprises as well as sets higher professional requirements for all level managers;
- the development of the science of economics coupled with the rapid progress of information technologies establishes an intellectual background for targeting economic decisions not only on relatively cheaper production, but also on more expensive sales;
- the paradoxical flexibility of conventional agricultural product, food raw material and product market is increasingly imposing specific requirements on company management;
- a general increase of knowledge capacity in all sectors of production and services creates specific problems in agriculture, which are related to the management of agricultural enterprises and agricultural professionalism;
- power industry problems and an inconsistent development of the energy resource structure.

The latest conception of Peter Drucker (Peter Drucker, 2003), a world famous management science classic of Harvard Business School, on the role of a manager may mark scientifically interesting and specific changes in

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management. The core of his new paradigm might be interpreted as follows: a manager of today’s or even tomorrow’s intellectual society should abandon the philosophy of a boss, administrator, manager and organiser, and become a manager – tutor, mentor, consultant and colleague who institutes the independence, decision-making power and responsibility of every employee. Such changes may also lead to a different grouping of functions and responsibilities in risk management.

Continuous and substantial changes in biology, genetics, engineering, technology, power industry, organisation, management theory, economics, marketing, society, etc. build up, complicate, and update riskology issues in at least two blocks of risk types:

- risky opportunities and risks of their maximum use;
- threat risks and their reduction or prevention possibilities.

Publications on the research results in risk management problems related to the management of agricultural enterprises are not a wide-ranging or frequent phenomenon. Several researchers, including K. Špoglis (2003, 2004, 2007), P. Rivza (2004), L. Mihejeva (2005), A. Dobele (2004), L. Slīna, D. Švēdare (2007), etc., recently published their studies on risks and their management. It proves the topicality of the problem and prompts the following research hypothesis: management and management quality related to the management risks at agricultural enterprises is a key provision for efficient economy.

The following aim was advanced to verify the hypothesis – to analyse practical experience and theoretical concepts of agricultural enterprise managers and field experts in managing management risks and to review prevalent management risk problems.

The tasks set to implement the research aim include:

- to analyse the experience and concepts of several agricultural enterprise and field experts in risk problem management;
- to discuss the new paradigms of agricultural enterprise management risks;
- to study the managers’ action rationale and decision making results in crop farming risk management;
- to assess the possibilities of improving the enterprise management and risk management quality.

Materials and methods

Publications reflecting real actions of agricultural enterprise managers while tackling opportunity risks and threat risk management, publications or interviews of branch experts and management professionals as well as statistical data were used to complete the research tasks.

For the purpose of the study, the economic research methods included discussion, synthesis and analysis, induction and deduction, and abstract-logical methods.

Discussion

Industry development risks. Viesturs Brālis (2007), the director of the Corporation Study Centre, provided an extensive analytical description of the functions of a manager and management and traced the transformation of methods related to the change of societal development eras and the level of risk management. After the shift from the Agrarian Era to the Industrial Era the means of production rather than the land properties became the central value, whereas knowledge, intellectual property rights, and the capability to use knowledge in creating and developing a wide range of goods and services have become the greatest value in the third era – the Knowledge Era. Furthermore, the researcher describes the fourth era, which he calls the Era of Intangible Resources.

Each era has a different theoretical management concept, a different understanding of risk management, and a different level.

However, in line with the said interpretation and classification of the development eras, it is important to define the beginning and the end of each of them. In Latvia, for instance, several or even all the eras still simultaneously exist in the national economy. A relatively large part of elements characteristic of the Agrarian Era can be still observed in Latvia: the employment rates are high; the sector gross product share is 2–3 times higher than that in the developed countries, etc.

The development of the Industrial Era in Latvia has been rather erratic. In the 1970s–1980s industrial production represented a very large share of the economy, whereas during the last 10–15 years it has shrunk significantly. The level of large agricultural farm operations is attributable to the Industrial Era.

Nevertheless, the Knowledge Era is concurrently developing at full tilt, and some features of the Era of Intangible Resources can also be already observed.

While analysing the problems of management and managers from the point of riskology, V. Brālis says that an employee can be considered as knowledgeable if he/she undertakes any of the following activities in his/her job: planning, searching, analysis, organisation, data storing, programming, distribution, marketing or transforming and/or selling information.

A preliminary assessment of the capacities of the Era of Intangible Resources in Latvia enables to identify four factors determining the competitiveness of sales staff:

- knowledge – what the employees know and use;
- cooperation aimed at added value generation;
- action – employee energy used to perform their assignments;
time quality – how fast new values are created.
Therefore it can be concluded that management methods and the qualitative level of management required to achieve the best results of the entire employee team become particularly valuable in the most modern era – the Era of Intangible Resources.

The author also concluded that in Latvia the Era of Intangible Resources is developing very slowly due to a very slow transition to the personnel management methods characteristic of the Era of Intangible Resources. To a certain extent we can agree with V. Brālis that those methods became apparent only when Western companies came to Latvia.

The key difference between the management methods applied in the eras of Knowledge and Intangible Resources lies in the essential or even radical changes of the management philosophy: the share of the intellectual management aspect increases while the share of administration increasingly shrinks.

Economists take an active part in discussions on the direct relationship between productivity and riskology issues.

Professor Grigorjs Oļevskis (“Komersanta Vēstnesis”, 2008) uses the Global Competitiveness Index to describe the threat levels of production risks or capacity. According to this index, Latvia ranks only No. 45 and considerably falls behind Lithuania and Estonia, while the top ten countries in 2007 and 2008 included the USA, Japan and Switzerland as well as a number of the European Union member states: Denmark, Sweden, Germany, Finland, the UK, and the Netherlands.

Professor Andris Deniņš (“Komersanta Vēstnesis”, 2008) put a special emphasis on the investment impacts. He came to a righteous conclusion that an increase in labour productivity could be achieved only by virtue of a shift from labour intensive economy to knowledge economy. Here investments play a paramount role. They are also directly related to the risk of wage increase as a factor reducing competitiveness.

Sandis Babris (2008), a business expert, recommends introducing a labour result management system, i.e. determining and introducing indicators identifying the scope of duties, the quality of performance, and the work loads of each employee.

Such a solution may definitely become an instrument for managing performance quality and efficiency risks.

We can also agree with S. Babris that improvements in labour management play a significant role in the growth of productivity.

Jānis Žēlavs (2007), a management expert and a consultant, offers an interesting interpretation of five principles of an efficient manager:
1. the notion “failure” is nonexistent (it is never used);
2. “I create my own life” and “I am responsible for everything I achieve”;
3. the principle of positive intention;
4. the purport of communication lies in the reply we receive;
5. the idea of the World map.

Such brief definitions are too philosophical to provide a straightforward explanation of their substance and practical content; however they might also be efficient instruments for managers of agricultural enterprises who could use them as principles in managing intellectual and other risks.

Professor Tatjana Volkova (2007), rector of the BA School of Business and Finance, has concluded that the ability of a manager to undertake a risk is one of the features and elements of creativity.

T. Volkova analysed and cited the classification of creativity levels developed by American scientists and noted that the Americans consider people employed in agriculture as super creative professionals. This judgement is supportable, as the whole process of agricultural production is related to live organisms – plants and animals. Yet the situation in the production cycles and processes is persistently changing and thus it is not possible to apply standards here.

If we take into account the known specifics of agricultural production we may agree to the classifier created by American scientists where company managers are included into the group of creative professionals, since managers of agricultural enterprises, and managers of super-size and large agricultural enterprises in particular, require more expert and knowledge-intensive competence, skills and abilities to make unconventional creative decisions in once-in-a-lifetime situations.

Experience of managers’ actions in risk situations. Jānis Vālko (Saimnieks LV, 2008), the chairman of the board of agricultural business company “Pampāļi”, has been managing and developing the company since 1978 as during the agrarian reform over the last 10–15 years the established model farm (which was then called a collective farm) was not destroyed. First it was reorganised into a share holding company and later it became a limited liability company. It continued its operations and provided jobs and satisfactory life for Pampāļi population. Therefore Jānis Vālko’s conclusions on risk management are found to be very important.

According to Jānis Vālko, a primary condition for fast, high quality, and optimal in agro-technical terms performance of all field works is a strong technical base. This opinion proves to be true since agricultural risk factors resulting from climatic and meteorological conditions may only be managed by adjusting relevant resources and applying an ultimate professional organis-
tion of the labour process with respect of the complexity of the human factor.

Jānis Vaļko considers the technical and technological modernisation of dairy farms the second most important priority in risk management, which enables the whole production force of 1000 cows to operate under minimum or reduced risk conditions. Furthermore, another risk management factor, i.e. reduction or prevention of risks related to the productivity and health of highly productive cows is found less significant: Jānis Vaļko excluded the risk group that is directly or indirectly related to cow pasturing.

Selection of plant types and sorts for fodder and arrangement of their sowing areas in order to harvest and preserve each sort when it has reached not only the highest productivity level but also the top quality of biochemical content represent his third priority in the system of risk management.

The fourth priority is to maintain a high quality milk yield since it has a direct impact on the price and economic outcomes. Jānis Vaļko developed a rational high-capacity technological system of milk collection, pre-processing and storage, which enables to manage the milk quality. It should be born in mind that the milk collection and pre-processing device also supports 400 other small producer farms in managing milk quality risks.

The managerial experience of Jānis Vaļko produces argumentation for another priority in the management of agricultural enterprises – creativity in fast and timely decision making in a typical situations persistently occurring in agriculture. The nature of risk and economic capacity largely depend on the quality of the manager’s decisions – a wrong decision may bring about losses, while a correct decision may generate certain economic and material benefits.

Jānis Vaļko’s conclusion reveals unique characteristics of the likelihood and capacity of management risks: “I am convinced that managers should never overestimate their abilities. It is wrong when people are unable to judge themselves correctly” (Saimnieks LV, 2008).

We can support without reservation the experts (Šuškeviča, 2007; Karlovs, 2008 etc.) who implicitly define specific risks attributable to managers only.

The summary of opinions expressed by several authors leads to a certain overall finding. Enterprise managers might aim risk management at the following aspects or criteria:

I. professional and specific competence of the manager;

II. the manager’s abilities to make an unbiased and complete assessment of the processes, events or phenomena occurring outside the enterprise. The following considerations should lie at the basis of the manager’s decisions:

• how external phenomena may impact the enterprise performance;
• how risks resulting from external phenomena could be prevented;
• how external phenomena or external processes susceptible to risk could be used in the best interest of the enterprise;

III. professional and information competence of financial managers of the enterprise;

IV. knowledge, skills or experience of the enterprise and department managers (second level managers in risk management) on risks that:

• threaten the main activities of the enterprise;
• constitute a menace to the processes.

Furthermore, managers of agricultural enterprises and their assistants – field specialists – face three key problems or task groups in risk management:

1) managing the economic situation and the position of the enterprise in every respect, i.e. being well aware of the standing of the enterprise;

2) defining the directions of the enterprise development, including specialisation, concentration, branch industry structure, and economy; obtaining and maintaining required competence – the course regularly pursued by the enterprise;

3) identifying the way, methods and resources required to meet the target.

It is easy to understand that the second task involves a large degree of risk and the risk factors may have a particularly large economic impact. A manager’s decision-making mistake may result in large, even enormous losses, while a correct decision guarantees respective benefits or starts operational instruments for positive opportunities.

Other qualities of managers, lower level managers in particular, may materialise in performing the third task:

• some may submit to general trends and go with the enterprise in any direction;

• on the other hand, active, talented and professional managers are in full and continuous control the processes, and direct them towards the set aim.

The manager of “Lāčīši” farm, Gulbene district, manages 1200 ha of land. He considers three factors to be particularly important farm managers’ tasks in risk management and prevention or decrease of negative consequences, i.e. in minimising losses of the potential or existing yield. The first factor is related to equipping the farm with high efficiency machinery – powerful tractors and machines – relevant to the existing conditions and making sure that all field works are completed within a period of time which is considered reasonable from agrotechnological point.

The opinion of the farmer and the emphasis placed thereby can be considered thoroughly substantiated since his fields are located in the North-East intra-region of
Latvia, where the frequency and unpredictability of rainy days is a more common risk factor than in many other locations of Latvia. The surplus in humidity in Gulbene mav also act as a rather obstructive factor.

Judging by the wheat yield level (6–7 t/ha) the farmer completes crop cultivation and harvesting in due time.

The manager considers that selection of winter crop sorts, wheat in particular, is another extremely important factor. Thus he conducted field trials which revealed the most suitable frost resistant sorts for an estimated yield of 7 t/ha, which is an economically sound result with respect of the soil and natural conditions in Gulbene.

The third factor includes two aspects of the farm work management level: timeliness and quality of performance.

Diversification of sectors, products and services is the fourth risk mitigation factor: farm “Lāčiši” is involved in grain cultivation for human consumption and forage, winter and spring crop cultivation and dairy farming. Furthermore, it provides services to other farms.

The factor of diversity is definitely open to discussion assuming that intellectual and professional skills of a farm manager and owner are not infinite. There are those who believe that threats of some risk factors in diversified farms decrease even though the management levels do not reduce in all sectors proportionally, which is reflected in crop capacity, productivity and earning power. And they can offer quite a number of arguments.

The managers of industrial agricultural enterprises often encounter specific problems in risk management.

In Latvia, there is a new type of agricultural production risk that can be regarded as the risk of herd syndrome, which has gained a persistent character. Media reports suggest that foreign subjects also purchase land in Latvia and establish agricultural enterprises. Generally they are large-scale entrepreneurs who see agricultural production as a high-priority industrial sector with large numbers of cattle and sizable sowing areas. Needless to say that such extensive production may also have a material impact on the environment, which becomes noticeable to the population of a respective area; and therefore gives rise to public disapprovals of the establishment of beef production enterprises or dairy farms. Such reaction of Latvian population is not difficult to understand, especially if we bear in mind the historically absolute government of small-scale farming and the Latvian mentality.

Under the present market conditions consumers may even fail to know that, say, Latvia’s share in meat production is rather negligible, since meat is supplied by farmers of neighbouring countries with a different level of agricultural production. For instance, for many years in Denmark or the Netherlands the density or total number of pigs and cattle per one unit of land area has been much higher than in Latvia.

Various methods can be applied to manage production risks. One of them is to spill manure and slurry following strict guidance of meteorologists, in concert with the weather conditions: where slurry is applied when the rain begins, it is washed into the soil and thus it is prevented from polluting the environment.

An adjustment of the livestock feeding system to ensure that the feed, content, components and their succession promote digestion rather than rotting processes in the body is another method that can supplement the first one.

The third method deals with establishing well shielded enclosures (plantations) for stockyards that can markedly minimise undesirable directions of horizontal flows of unacceptable smells.

The fourth method is to place the stockyards with regard of the respective territory plan so that the smells generated by the population would flow in the direction of animals rather than the other way round.

The fifth method is to turn to genetics for optimisation of animal organisms.

The sixth method is to abandon the herd syndrome activities by replacing them with activities based on evaluations of professional experts.

Combining and synchronising those (and other) methods undoubtedly enable to prevent risks that hinder concentration and specialisation, known as an absolute must in agricultural production.

Productivity risks. David Allen (David Allen, 2007), a well known American business consultant and expert, has created and continues to develop a theoretic incentive programme of productivity and a methodology for its implementation. His methods are based on three primary models for the formation of a person-manager’s actions:

1. to obtain and maintain control over his/her attention which means to study absolutely all the works and responsibilities to be completed during a certain period of time;
2. planning of his/her action that reflects the natural process – how a person-manager plans his/her action;
3. a hierarchical system for the determination of priorities or a manager’s horizon of concentration.

David Allen and some other management science experts (Volkova, 2007; Verje, 2008, Brāls, 2007, etc.) have theoretically justified and practically proven the skills and knowledge of enterprise managers of delegating management functions, tasks, and responsibilities to experts or second level managers.

Knowledge and skills of a senior manager are crucial in risk management at agricultural enterprises. However in large-scale agricultural operations it is particularly important for the manager of an enterprise to find and hire a specialist in each field who would be professionally ready to undertake and manage any risks in the respective field and would also be a loyal manager of specific risks.
Discussions reveal different opinions on the resource prices of agricultural production and production costs. Some experts consider that an increase in the price of mineral fertilisers, plant protection products and other resources represents the main cause of low profitability or losses incurred by grain producers. Specialists have other calculation-based opinions, though. For instance, Egils Svīķis, a specialist from “Kemira Grow-How” Ltd, (Saimnieks LV, 2008) has estimated that the share of mineral fertiliser costs accounts for only 7% of the prime cost of grain provided that the yield rates account for 6-7 t/ha\(^{-1}\) rather than 2–3 tons.

In terms of management of agricultural enterprises, his conclusion is economically interesting and even radical: “...we must employ comprehensive technologies and use high quality products – good mineral fertilisers, quality plant protection products, good harvesting machinery - only then it is possible to harvest large quantities of high quality grain”.

**Risks caused by top politicians.** Tatjana Verje (2008), a consultant working at the European Commission, studied the future opportunities of Latvia in the light of the development of the global market conditions and came to a conclusion that service sector is dominating in Latvia, while the development of production can be hardly perceived. Moreover, she even casts doubt upon production development: “Latvia will hardly develop production”, she says.

The consultant emphasises the responsibility of top political decision makers in particular. She says that they should be pressed to respect facts, figures, and calculations rather than the interests of a political party.

Tatjana Verje indicates that in Latvia people keep talking about increasing productivity. However, real actions are still scarce. Tatjana Verje offers an interesting interpretation on the aspects of productivity: “Productivity results from 3 aspects, where human resource training is the first. ... The second one leads to investments in process automation technologies. The third aspect is optimisation of labour processes which is a very important factor, although it is yet to be implemented in Latvia”.

**Management risks and potential opportunities in cereal sort and type selection in Latvia.** Agricultural specialists are aware that each type of cereals has a different capacity to utilise the sunniest spring period in order to accumulate the solar energy in biomass; they are characteristic of different sensitivity against low temperatures and different other features that generally determine or influence the yield rates, quality, stability, and even its risk rates.

Both winter and spring wheat are cultivated at Latvian rural farms, thus it is scientifically interesting and practical to study the risk factors characteristic of the said cereal cultivation.

The data and calculations in Table 1 reveal a certain strategic tendency:
- the increase in winter wheat crop is quite steady and significant, the chain growth rate of winter wheat crop amounts to 35.8%,
- the share of spring wheat crop has fallen to 29–30%, while the base growth rate of spring wheat is higher than that of winter wheat.

The comparison of wheat sorts shows that the spring wheat yield is considerably lower than the winter wheat yield; however the intense types of winter wheat may be characterised by a greater risk related to cold resistance. Therefore the action of farm managers who are involved in managing those risks may be viewed as employment of productivity opportunities in order to obtain higher and economically more efficient yield while allowing for more risky winter conditions in some years. The actions of many farm managers are diverse and they differ radically when it comes to barley sort selection: since winter barley amounts to barely 3–4%, it is clearly considered a high-risk crop.

Recent studies of Latvia University of Agriculture (Kreita, 2008) prove that with appropriate crop management for barley sorts in Latvia, especially in Zemgale, the yield of winter barley does not even trail that of winter wheat.

| Table 1. Selection of winter wheat and spring wheat sorts at Latvian rural farms from 2000 to 2007 |
|------------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Indicators                              | 2000           | 2001           | 2002           | 2003           | 2004           | 2005           | 2006           | 2007           |
| Winter wheat crop areas, thousand ha    | 117.4          | 131.3          | 115.9          | 127.9          | 129.1          | 132.0          | 152.3          | 159.4          |
| Spring wheat crop areas, thousand ha    | 40.7           | 35.5           | 37.6           | 39.9           | 40.8           | 55.4           | 62.8           | 65.2           |
| Total wheat crop areas, thousand ha     | 158.1          | 166.8          | 153.5          | 167.8          | 169.9          | 187.4          | 215.1          | 224.6          |
| Winter wheat crop, %                    | 74.3           | 78.7           | 75.5           | 76.2           | 76.0           | 70.4           | 70.8           | 71.0           |
| Base growth rate, %                     |                |                |                |                |                |                |                |                |
| winter wheat                           | 100            | 111.8          | 98.7           | 108.9          | 110.0          | 112.4          | 129.7          | 135.8          |
| spring wheat                           | 100            | 87.2           | 92.4           | 98.0           | 100.2          | 136.1          | 154.3          | 160.2          |
| Chain increase, ha                     |                |                |                |                |                |                |                |                |
| winter wheat                           | -              | 13.9           | -15.4          | 12.0           | 1.2            | 2.9            | 20.3           | 7.1            |
| spring wheat                           | -              | -5.2           | 2.1            | 2.3            | 0.9            | 14.6           | 7.4            | 2.4            |
| Chain growth rate, %                   |                |                |                |                |                |                |                |                |
| winter wheat                           | -              | 11.8           | -11.7          | 10.4           | 0.9            | 2.2            | 15.4           | 4.7            |
| spring wheat                           | -              | -12.8          | 5.9            | 6.1            | 2.3            | 35.8           | 13.4           | 3.8            |

Source: data of the Central Statistics Bureau and calculations by the authors
Table 2. Risk capacity in selection of winter barley and spring barley sorts in grain cultivation in Latvia, 2006 through 2007

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter barley crop areas, thousand ha</td>
<td>4.4</td>
<td>5.6</td>
</tr>
<tr>
<td>Spring barley crop areas, thousand ha</td>
<td>149.8</td>
<td>139.7</td>
</tr>
<tr>
<td>Total barley crop areas, thousand ha</td>
<td>154.2</td>
<td>145.3</td>
</tr>
<tr>
<td>Share of spring barley crop, %</td>
<td>97.1</td>
<td>96.1</td>
</tr>
</tbody>
</table>

Source: data of the Central Statistics Bureau

Yet specialisation in crop and rape cultivation significantly increases the importance of winter barley as an early harvested plant from the previous year and thus barley crop areas are likely to markedly increase.

According to the data included in Table 3, in Latvia rye cultivation and rye grain production fail to expand. It could be possibly caused by to two reasons: the demand for rye grain does not grow which depends on the rye bread market; moreover, rye is less suitable for forage than other grain.

The aforesaid situation causes problems to those farm managers who deal with soil that is not suitable for efficient wheat cultivation.

Table 3. Farmer’s choice in winter rye cultivation in Latvia based on information for the period from 2000 to 2007

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye, thousand ha</td>
<td>54.8</td>
<td>55.8</td>
<td>42.3</td>
<td>44.2</td>
<td>45.1</td>
<td>39.3</td>
<td>42.8</td>
<td>57.5</td>
</tr>
<tr>
<td>Base growth rate, %</td>
<td>101.8</td>
<td>77.2</td>
<td>80.7</td>
<td>82.3</td>
<td>71.7</td>
<td>78.1</td>
<td>104.9</td>
<td></td>
</tr>
<tr>
<td>Chain increase, ha</td>
<td>-1.0</td>
<td>-13.5</td>
<td>1.9</td>
<td>0.9</td>
<td>-5.8</td>
<td>3.5</td>
<td>14.7</td>
<td></td>
</tr>
</tbody>
</table>

Source: data of the Central Statistics Bureau and calculations by the authors

Table 4. Oat as a stabilising cereal crop factor in Latvia based on information over 8 years

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oat crop, thousand ha</td>
<td>45.5</td>
<td>55.2</td>
<td>47.1</td>
<td>49.4</td>
<td>56.7</td>
<td>58.0</td>
<td>62.9</td>
<td>62.4</td>
</tr>
<tr>
<td>Base growth rate, %</td>
<td>121.3</td>
<td>103.5</td>
<td>108.6</td>
<td>124.6</td>
<td>127.5</td>
<td>138.2</td>
<td>137.1</td>
<td></td>
</tr>
<tr>
<td>Chain increase, ha</td>
<td>9.7</td>
<td>-8.1</td>
<td>2.3</td>
<td>7.3</td>
<td>1.3</td>
<td>4.9</td>
<td>-0.5</td>
<td></td>
</tr>
<tr>
<td>Chain growth rate, %</td>
<td>-21.3</td>
<td>-14.7</td>
<td>4.9</td>
<td>14.8</td>
<td>2.3</td>
<td>8.4</td>
<td>-0.8</td>
<td></td>
</tr>
<tr>
<td>Oat crop area share in total cereal crop, %</td>
<td>10.8</td>
<td>12.4</td>
<td>11.3</td>
<td>11.5</td>
<td>13.0</td>
<td>12.4</td>
<td>12.3</td>
<td>12.0</td>
</tr>
</tbody>
</table>

Source: data of the Central Statistics Bureau and calculations by the authors

Oats play a rather stable role in crop farming risk management, and specialised crop farming in particular. Oats localise dissemination of organisms hazardous to some cereals. Therefore it is understandable that farmers specialising in crop farming maintain a stable share of oat crop ranging between 11% and 13%.

Table 5. Role of pulses and cereal-pulse mix in protein balance risk management in the period from 2003 to 2007

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse crop, thousand ha</td>
<td>2.9</td>
<td>2.6</td>
<td>2.2</td>
<td>1.4</td>
<td>1.6</td>
</tr>
<tr>
<td>Base growth rate for crop, %</td>
<td>89.7</td>
<td>75.9</td>
<td>48.3</td>
<td>55.2</td>
<td></td>
</tr>
<tr>
<td>Total cereal-pulse mix crop, thousand ha</td>
<td>6</td>
<td>7.6</td>
<td>8.1</td>
<td>6.6</td>
<td>6.0</td>
</tr>
<tr>
<td>Base growth rate, %</td>
<td>126.7</td>
<td>135.0</td>
<td>110.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Total pulse and pulse-cereal mix crop, thousand ha</td>
<td>8.9</td>
<td>10.2</td>
<td>10.3</td>
<td>8.0</td>
<td>7.6</td>
</tr>
<tr>
<td>Base growth rate, %</td>
<td>114.6</td>
<td>115.7</td>
<td>89.9</td>
<td>85.4</td>
<td></td>
</tr>
<tr>
<td>Chain growth rate, %</td>
<td>-14.6</td>
<td>1.0</td>
<td>-22.3</td>
<td>-5.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: data of the Central Statistics Bureau and calculations by the authors

The issue of protein content in livestock feed remains important. Protein deficit causes a risk of a reduced efficiency of forage use. Unfortunately statistical data and calculations provided in Table 5 fail to demonstrate farmers’ efforts to cultivate those crops: small pulse crop areas keep decreasing while pulse-cereal mix areas are not increasing either. It could be explained by technological inconveniences in mixed cereal cultivation.

Strategic discussion by managers of agricultural enterprises. Rihards Circcenis (2008), a doctor of economics and the owner and manager of “Irbītes” farm, who works under Ziemeļvidzeme plain soil conditions and studies the conditions in a large farm, has come to two main conclusions related to an efficient management of an agricultural enterprise:

- the choice and implementation of a structural strategy of production sectors;
- an intellectual, anthropogenic and ownership factor in management.

“Irbītes” farm owns 1280ha of land and rents another 230ha. The farm is located in Trikāta, Plāņi and Valle districts, which researcher A. Boruks (2000) classified as favourable for agricultural production due to the agrophysical, technological, and other natural factors of the soil.

10 years ago, cattle-breeding in 480 cattle farms was the main sector of the farm production; however the
owner and manager was not satisfied with the economic results of the farm. Therefore he focused on a study seeking a more economically efficient use of the natural and soil conditions in his territory to obtain higher economic result with lower direct labour input.

Following the research results he radically changed the farm specialisation and production structure: he chose winter wheat and rape as strategic products and opted for crop farming as the main specialisation field.

Another conclusion made by the farmer Rihārds Circeņs is based on the fact that only the farmer-owner himself may efficiently manage an agricultural enterprise.

The manager’s skills in risk management and the use of risk management opportunities largely or directly correlate with his/her personality and genetically encoded manager’s talent and they are clearly reflected in the manager’s thinking.

Gātis Karļovs (2008 LBL), the owner and strategic manager of “Veģē” farm, a large commercial enterprise located in Pērīga region, and a limited liability company “PS Līdums” (Zemgale region), is one of such outstanding personalities.

The level, type and scope of his strategic thinking are characterised by his understanding of the crop yield level: “I am living two years ahead; hence in the year 2010”.

In answer to a question of a journalist from the Rural Business Newspaper on what was his yield target per one hectare he has replied “I am living two years ahead. Hence in the year 2010 the target will be ten tons of grain and five tons of rape. This year the yield is six and three tons respectively. ... Latvia has an enormous potential in grain, land and weather conditions. I think that soon we are going to harvest 10–15 tons of grain and 8 tons of rape. That’s only a question of time”.

Moreover, Gātis Karļovs’ opinion radically differs from the opinions of some other large producers and farmers on the development of harvested crop sales strategy and decision-making. It is generally known that some managers of agricultural enterprises store the harvested crop in hope to sell it for a higher price at a later stage. Gātis Karļovs has a diametrical opposite opinion: “Today it is not possible to make any forecasts; therefore it is better to let money work – grain should be sold at the spot price, the money should be invested into technologies and then we are ready to proceed”.

He has defined two main strategic priorities in risk management:

- to create the most cutting-edge technical and technological base guaranteeing a possibility to perform all the work in an optimal time and to ensure high quality;
- to build a loyal highly professional and united team, which would be able to apply the provided technical and technological facilities and resources in the most efficient way.

Jānis Bogdāns (Ozola, 2008), the manager of the farm “Īves” in Izvalta district, summarised his experience and concluded that there were only two possible options to continue or develop pig-breeding: a super-sized complex with integrated cooperation in the fields of processing and sales or a complete cycle farm, involved in extensive grain cultivation and pig-breeding and selling approximately 200 pigs in its own meat sales points every month.

The efficiency of such wide profile management model is disputable: if the manager is not seeking higher income but rather sets a strategic goal of regular and stable income this risk management form might be considered acceptable.

Albert de Haan (2007), a businessman from the Netherlands, has offered a unique settlement for risk management in dairy sector. He elaborated a project for a dairy exchange, the implementation of which started in August 2008. The operation of the dairy exchange under the project is based on certain principles:

- execution of milk supply contracts;
- the contracts are concluded for the period of up to 2 years.

The existence of such dairy exchange sharply decreases or excludes several risk factors or threats:

- a milk producer – a farmer – obtains a guaranteed possibility for milk sales;
- a milk producer gets a certain contractual milk quantity and a regular and exact supply of milk;
- the production farm has a guaranteed income, and the processing company knows its future costs for the supplies.

Pēteris Skrinda, a farmer from Kalupe district, Latvia region, identifies the main risk in the management of his large-scale farm related to strategic planning and choice possibilities:

- crops relevant to the natural and soil conditions of the farm;
- cereals demanded in the market, as global grain consumption may only increase;
- sorts relevant to the cultivation conditions including frost resistant sorts;
- successful cooperation with partners.

Conclusions

1) Under the circumstances of a general industrial progress, the content of risk management as well as its philosophy and theoretical concept change with the shift of the development eras from the Agrarian Era to the Industrial Era, and further to the Knowledge Era, which has the first signs of the dominant Era of Intangible Production Resources.

Each era produces its own paradigm – the share of intellectual components and factors increases with the de-
crease of administration, organisation, commanding, and governing.

2) Both the Agrarian Era (subsistence and semi-subsistence farms) and the Industrial Era (commercial agricultural enterprises and business companies) keep operating simultaneously in the primary production of Latvia, while the production technologies and the level of productivity in several field enterprises may be already considered to meet the characteristics of the Knowledge Era. The share of intangible resources also increases.

3) The management of management risks at agricultural enterprises of the Industrial Era and the Knowledge Era is characterised by a high capacity of technical resources allowing to perform each production operation in the shortest possible time and to ensure high quality.

4) The management of management risks at industrial and knowledge enterprises may be focused on certain criteria or principles:
   - the level of a manager’s intellectual skills;
   - professional competence of a manager;
   - a manager’s ability to make an unbiased and competent assessment of both the opportunity and threat risks emerging inside and outside the enterprise;
   - the levels of responsibility and creativity of junior managers.

5. The strategy of using complete technology and high quality resources is particularly significant in managing productivity risks.

6. An experimentally proven and scientifically substantiated selection of kinds, forms and sorts of cultivated plants to be grown is particularly topical in the management of opportunity risks in crop farming.

7. The management strategy of gifted managers of large-scale agricultural industrial enterprises is based on a skilled use of opportunity risks in achieving the set goals while maximally applying the genetic potential of the cultivated plant yield by using a complete technology.

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