

## RISK MANAGEMENT ON ANIMAL FARMS

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**Abstract:** *Risk management on animal farms can be assessed depending on the risk categories on animal farms, on the risk management components, and on the prevention of associated diseases. Biological risk analysis concerns the inventory and analysis of the potential sources of zoonoses outbreaks and of accidental pollution on animal farms, epidemiological analysis laboratories, and catching disease hospitals.*

**Keywords:** *management, risk, farms, animals*

### INTRODUCTION

**Risks that can generate emergencies are biological, fire, natural, social, and technological [3,7].**

**Fire risk analysis concerns the analysis and differentiation of fire risks depending on the context:**

- records per:
  - public institutions;
  - localities;
  - economic agents;
- built fund;
- statistics of fires and of other emergency situations;
- vegetation;
- vehicles.

**Natural risk analysis should concern[1,8]:**

- **geological phenomena:**
  - identifying statistics data on the victims and damage caused by previous earthquakes;
  - identifying places where there are landslides as well as possible other similar places;
  - seismic macro- and micro-mapping of the national territory;
  - evacuating people and establishing camps for the people affected;
- **meteorological phenomena:**
  - analysing the possibility of relocating the buildings from flooded areas to non-flooded areas;
  - analysing the risk of storms, floods, frost, drought, or tornadoes in new places;
  - analysing the opportunity of supplementary protection measures;
  - analysing the necessity of establishing camps for the people affected;
  - identifying the area planned to be flooded in a controllable way.

**Technological risk analysis should aim at identifying the following [2,4]:**

- **the risk of objects falling from the atmosphere or from the cosmos** (if the case): they inventory places where such phenomena occurred and their consequences;
- **the risk of water pollution**: they inventory places where such phenomena occurred as well as possible places where it could occur, areas that could be affected in case of **epidemics** and **zoonoses**;
- **the risk of transporting and storing hazardous products**: they analyse possible accidents that can occur on the road, on the rail, on water courses, and at sea during the transport of hazardous substances, the structure of the transports, and their destination:
  - **transport by air** (if the case): they analyse the risks depending on the existence of airports, their capacity and class, and flight routes;
  - **transport by rail**: they take into account the existing railroad, the transport of hazardous substances, the structure of the transport, the destination of the transport, the number of events in time, the frequency of the events in time, and the number of annual travellers;
  - **transport by water course** (if the case): they analyse the risks depending on the existence of the harbours, of the navigable transport routes;
  - **transport by pipe roads**: they analyse risks depending on the existence of transport pipes, the nature of the products;
  - **transport by road**: they take into account the existing infrastructure, the transport of hazardous materials, the structure of the transports, the destination of the transports, the number of accidents per km and per year;
- **industrial risks**: they analyse the activities that could produce major accidents involving hazardous substances as well as the type of hazardous chemicals used in the production process;
- **nuclear risks**: they analyse risks depending on the existing specific objectives and of trans-border risks.

**Social risk analysis** is done depending on the **existing evidence** on [5,6]:

- meetings;
- other events gathering large numbers of people;
- festivals;
- possible social movements caused by the social policy and the situation of the labour force in the area;
- fairs.

The **analysis of other types of risks** concerns the **statistical overview of the most frequent interventions**, such as:

- medical assistance and medical transport;
- de-blocking people;
- freeing people from rambles;
- evacuating water from cellars;
- **saving animals in case of diseases asking for quarantine** [9,10].

The **elements** taken into account in the identification of **high-risk areas** are:

- public buildings, because of either the number of people or their vulnerability (commercial sites, hotels, hospitals, schools, theatres, etc.);
- **technological equipment on animal farms**;
- **activity areas along the communication routes (pig farms, poultry farms, cattle farms) in case of epidemics (avian flu, swine flu, anthrax)**;
- other elements such as flooding areas, areas affected by gliding, areas affected by earth collapse, etc.

## MATERIAL AND METHOD

From the point of view of the type of administrative-territorial unit, there are three types of classifications of risk areas around animal farms:

- peri-urban risk areas close to animal farms: adjacent communes, towns, commercial areas, industrial areas;
- rural risk areas around animal farms;
- urban risk areas close to slaughterhouses.

The strategies, plans, and programmes of an animal farm are elements that allow the configuration of reality and, then, the comparison of both real and expected results. To achieve an animal farm's objectives, we suggest the following set of activities.

## RESULTS AND DISCUSSION

A **risk element** is *any element that has a measurable probability of deviating from a plan*. This supposes, of course, the existence of a plan.

**Achieving the objectives of an animal farm, no matter the species (swine, poultry, or cattle), supposes knowing and assuming multiple risks. A risk management process** should count the following three phases (Figure 1):



**Figure 1. Phases of the risk management process**

- **risk identification** can be done through:
  - the analysis of archives;
  - the listing of animal health state;
  - the organisation of meetings meant to identify risks and guide in case of catching diseases;
- **risk analysis**, using such methods as:
  - decisional trees;
  - determining expected value;
  - the Monte Carlo simulation;
- **reaction to the risk**, covering measures and actions for the diminution, elimination, or repartition of the risk.

**Risk identification** should be done on a regular basis. It should take into account both **inner risks** and **outer risks**:

- **inner risks** are risks that can be controlled or influenced by the management team by monitoring animal health state and maintaining the proper status;
- **outer risks** are risks that cannot be controlled or influenced by the management team: such a risk is the import of reproducers that could spread severe diseases.

Therefore, we consider that **risk can be identified by using the following methods** (Figure 2):

- analysing documents available in the animal farm's archives;
- identifying outer risks (epidemics, carrier agents);
- listing potential risk sources such as environmental conditions, carriers, etc.;
- using the expertise of the directly productive staff to identify risks using the following identification methods:

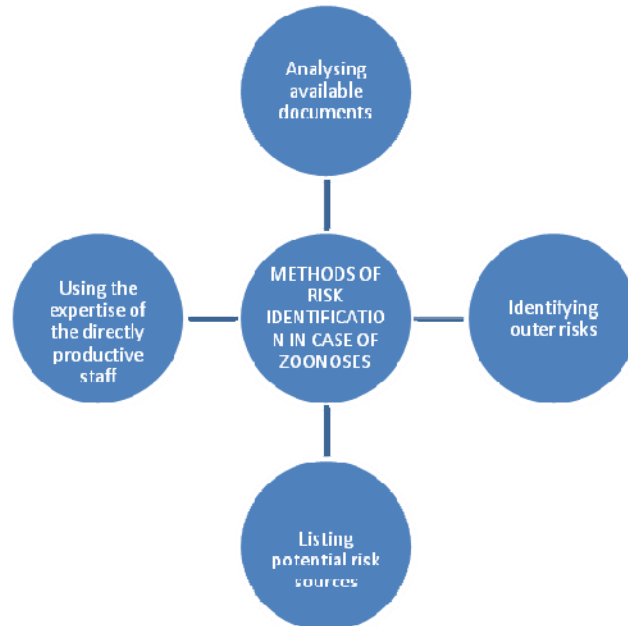


Figure 2. Methods of risk identification in case of zoonoses

**Reaction to risk** is the phase of **risk management** when they try to *eliminate risks*, to *reduce risks*, or to *distribute risks*:

- **eliminating risks tends to eliminate the animal farm from business** by:
  - conditioning the offer by employing specialists;
  - avoiding initiating transactions or business with animals, meat, or milk in calamity areas;
  - establishing high prices to cover the risks in case of epidemics or zoonoses;
- **reducing risks** can be done through *training, programming* or *re-designing*;
- **distributing risks** concerns the parties that will accept part of or the entire responsibility for risk consequences.

Achieving the objectives and projects of an animal farm supposes the identification and acknowledgement of **multiple risks**:

- designing unrealistic strategies concerning animal contamination;
- making errors and omissions in the design and execution of the supply of fodder as sources of contamination;
- operating environmental or inner changes.

**Risk** occurs on animal farms when events occur for certain, when the effect of an event is known but the occurrence of the event is uncertain, and when both event and event effect are uncertain.

## CONCLUSIONS

A risk management process can have positive effects only if we take into account all its aspects: **performance in risk management is given by the quality of the**

managers and of the staff involved in ensuring animal health on an animal farm. Animal farm managers should make sure that the risk management team is competent and has found a way between excessive technologisation and intuition-based action.

Risk on an animal farm concerns the *probability of not observing the objectives established as performance* (not achieving growth standards because diseases affecting reproduction, which asks for the slaughtering all the animals), *programme and costs* of vaccines and quarantine.

#### BIBLIOGRAPHY

1. FRASER A. F., (1990), Farm Animal Behaviour and Welfare. 3 rd Edition Wallingford:CAB International
2. HUTTON, T., DELIBERTO, T., OWEN, S. & MORRISON, B. (2006). Disease Risks Associated with Increasing Feral Swine Numbers and Distribution in the United States. Midwest Association of Fish and Wildlife Agencies & Wildlife and Fish Health Committee
3. MILIOTIS, MARIANNE D. & BIER, J. W. (2003). *International Handbook of Foodborne Pathogens*. New York – Basel: Marcel Dekker, Inc
4. MARIN DIANA, PETROMAN CORNELIA, PETROMAN I., BĂLAN IOANA, TOADER COSMINA, CIOLAC RAMONA, HEBER LOREDANA, (2010), Distribution of pig livestock by development region in Romanian, Animal Science and Biotechnologies vol 43 (1,2), Facultatea de Zootehnie și Biotehnologii, Editura Agroprint Timișoara
5. NUTHALL, P. L. (2010). Farm Business Management: The Human Factor. Wallingford – Cambridge: CABI
6. OSWEILER, G. D., ROSS, P. F., WILSON, T. M., NELSON, P. E., WITTE, S. T., CARSON, T. L. RICE, L. G. & NELSON, H. A. (1992). Journal of Veterinary Diagnosis Investigation 4: 53-59; Characterization of an Epizootic of Pulmonary Edema in Swine Associated with Fumonisin in Corn Screenings
7. PETROMAN I., (2000). Sisteme de creștere și exploatare a animalelor, Editura Mirton, Timișoara
8. PETROMAN I., (2007) Managementul sistemelor de creștere și exploatare a animalelor, Editura Eurostampa, Timișoara
9. RISATTI, G. R., CALLAHAN, J. D., NELSON, W. M. & BORCA, M. V. (2003). Rapid Detection of Classical Swine Fever Virus by a Portable Real-Time Reverse Transcriptase PCR Assay. Journal of Clinical Microbiology 41 (1): 500-505
10. CORINA RUȘEȚ, ELENA PEȚ, MILIN IOANA ANDA, R. PREJBEANU, 2008- Aspects concerning employees degree of satisfaction, Bulletin UASVM, Horticulture Cluj-Napoca, Volume 65 (2) ISSN 1843-5254, pg. 320-324,