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ЕВОЛЮЦІЯ МОСКІТІВ: ІСТОРІЯ УКУСУ

Стрікман Д.

Служба сільськогосподарських досліджень Міністерства сільського господарства США

Комарі є одним з багатьох сімейств комах. Як переносники збудників, які викликають такі захворювання, як малярія, жовта лихоманка і лихоманка денге, комарі дуже шкідливі для здоров'я людини та економіки. Через їх важливість для здоров'я людини, комарі були вивчені, можливо, більш широко, ніж будь-яке інше сімейство комах. Специфікація комарів є відображенням їх таксономії, яка є відображенням дослідження систематики на основі еволюційного філогенезу.

Більшість дебатів щодо назв родів комарів є наслідком розбіжностей між тими вченими, які віддають перевагу практичній системі виявлення груп комарів і тими, хто прагне більш точної відповідності філогенетичним дослідженням.

AN EXAMPLE OF MODEL OF ESTIMATING THE LEVEL OF BIOLOGICAL RISK ON FARMS BASED ON THE GAP REQUIREMENTS

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Introduction. *Biosecurity, as a technical term, describes a series of activities that must be implemented to prevent the entry of infectious organisms and their spread throughout the farm. Good biosecurity program is an effective way to reduce the risk of the outbreak and spread of infectious diseases from animal to animal and from animals to humans. To be effective it requires a careful analysis of all individual situations and individual parameters. In essence, they require the satisfaction of the previously required programs in order to achieve the desired goal, which is the highest possible level of security of the end product. Previously recognized as the most necessary programs are: GAP (Good Agriculture Practice), GVP (Good Veterinary Practice), GMP (Good Manufacturing Practice), GHP (Good Hygienic Practice), GLP (Good Laboratory Practice) and others [1].*

Systems and quality standards and farm animal breeding. Standardization of good business and management practices in the world is becoming increasingly widespread. In particular, the dominant approach to the management systems in the organization connect and integrate quality management based on business, technology and manufacturing processes. Based on this approach, today the integration of management systems is performed according to the principle: QMS (*Quality Management Systems - ISO 9000: 2000*), EMS (*Environmental Management Systems - ISO 14000: 1996*); OHSMS (*Protection And Safety Of Employees - ISO 18001: 1999*), ISO 22000, HACCP (*Monitoring And Analysis Of Critical Control Points*), GAP (*Good Agriculture Practices*), GMP (*Good Business Practice*), GLP (*Good Laboratory Practice*), GHP (*Good Hygienic Practice*) [2]. When it comes to farm animal breeding based on this concept, an initial approach to defining product safety by meeting the requirements of the HACCP system is now obsolete, making primarily GAP standards, which in itself integrate the HACCP system, ISO 9001, ISO, 14000, ISO 22000, OHSMS 18001, with the support of scientific knowledge of the field of the achieving a high level of biosecurity as a basic precondition for obtaining safe products of animal origin. It should be borne in mind that there isn't something called the ''only'' proper interpretation of any standards and does not answer the question "how" but "what" [3, 4]. The idea to develop international standards at the outset was evaluated as an unusual move, as had previously been exclusively technical standards. Today they have a much wider application. Quality policy in this area aims to: protect consumer health, protection of consumer interests and the establishment of market competence. They are regularly reviewed in line with scientific developments and customer requirements with the aim of customer satisfaction, legal requirements, survival in the market, good business practice, providing management control, reduce costs, poor quality [5].

Good Agriculture Practices – GAP. To ensure that all previous requirements were accomplished during the process of development of any product of agriculture, the basic prerequisite is that at the very beginning of the creation of products and primary production, clearly define the conditions under which the product will meet the newly required criteria. The basis for this approach in primary production is to meet the standards presented in GAP [6]. GAP (*Good Agriculture Practice-Good Agronomic Practices*) is a system of rules and principles, covering all aspects of agricultural activity and protects the environment from any adverse impact of agriculture. Agricultural producers who comply with the provision of GAP having a more likely and easier methods for environmental protection, human and animal health and preserving the original appearance of the environment to biodiversity of wildlife and plants [7].

Quality policy in this area aims to: protection of consumer health, protection of consumer interests and the establishment of market competence. For a GAP is essential to reduce risks in agricultural production directly and objective verification of the best production practices. Protocol of introduction of standard were developed y the experts in certain fields.

Indeed, using GAP increase the connection of the country with EU and their way of working, thinking and acting, and the adoption of certain agricultural and environmental standards [8, 9]. GAP has direct application in agricultural production and it is faced to the farmers, experts, but it is also an essential tool to experts from the companies management and owners, "consulting" firms and other services. GAP is designed as a manual to high and specialized agricultural institutions [6].

Risk management at farm level. Intensive production involves keeping a large number of animals in a relatively small area. Such a mode of production presents to a modern veterinary science and practice a number of new problems. In terms of mass production and growing demands in terms of increasing the productive capacity of animal body, raised the problems of health care. In this regard, in large agglomerations the emphasis is on protection and implementation of preventive measures [10, 11].

Today's intensive livestock production of any type can not be imagined without biosecurity measures. This preventive hygienic measures includes cleaning, disinfecting, insect control, rodent and bird control, the entry and movement of vehicles, movement control of the personnel and visitors, an effective methods of disposal of waste and fecal matter and the efficient handling of by-products of animal origin which are not for human consumption. Systematic implementation of these measures with a good diet and a genetic basis can expect a successful production, good animal health, and therefore a safe and healthy product [12].

Biosafety means the removal of pathogens from the environment of animals. All pathogens, from viruses to bacteria, coccidian and the fungus can be spread across the known vector, or from animal to animal, with people who care for animals, then through contaminated food, water, equipment and environment and air. Especially important link in this process is called "human factor", which means competence and responsibility of all employees involved in the production process, as well as understanding the basic principles of the program implemented [13, 14]. Modern biosafety methods are a major element of disease control because they provide a healthy environment for animals. The aim of the measures is to prevent transmission of pathogenic microorganisms. Schematic overview of the considered hazards in primary animal production is shown in the Figure 1 [14, 15].

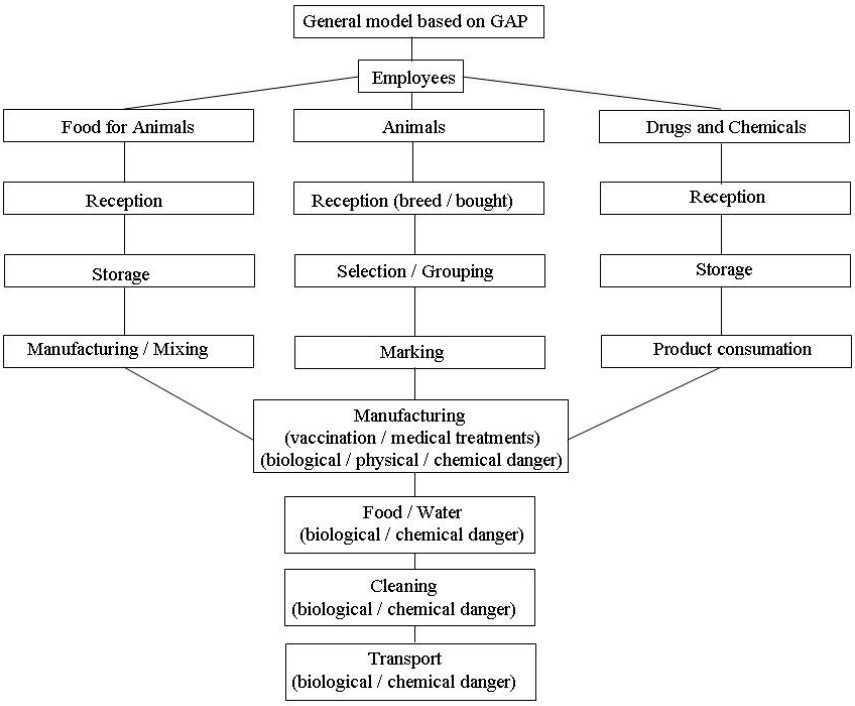

Figure 1. Considered hazards in primary animal production

Taking into account the numerous of scientific reviews related to the assessment of risk defined by the experts based on scientific recommendations and analysis of information, which includes hazard identification and characterization, as well as assessment and risk characterization [12, 16, 17, 18, 19, 20], requirements of standards and directives [2, 3, 4, 5, 6, 7, 8, 9, 21, 22], and legal regulations [23, 24, 25], the authors of this paper have attempted to incorporate a list of demands of modern veterinary science and practice, the requirements of standards and legal requirements, and create a unique form of a check list in the form of the web application and to enable a fast model of satisfaction of pre-defined required programs, and therefore the level of biosecurity on the farm. Of course this approach of defining the level of biosecurity at farm level is not the only, but it is definitely a good way to quickly define the level of biosecurity, and

which of requirements is not accomplished, and also the possibility of analysis the indicators through various methods and techniques to improve work processes on the farm.

Evaluation model of biosecurity level on the farm. The localized farms were from a group of commercial pig farms in Vojvodina, and on sample of 10 farms the questionnaire were done. The questionnaire was established with clearly defined methods of indirect and direct introduction of contagious diseases to the farm, which contains questions and answers offered, made to incorporate the requirements of GLOBAL GAP (*Control Points and Compliance Criteria, Integrated Farm Assurance Version 4.0_Mar2011 PIG*) and the Biosecurity Guide for Pork Producers, National Pork Board and American Association of Swine Veterinarians, Iowa, USA [26, 27]. The results are discussed and an analysis of indirect factors were done using a web application created by the authors. On the basis of these indicators, the analysis of process capability was done using the control charts as one of the statistical methods and techniques in order to determine the degree of variation of biosecurity, and according to this stability and the ability of pig production processes to establishing control level of biosecurity measures.

Results and discussion. On the territory of AP Vojvodina currently is 35 active pig farm identified as a commercial farm (in accordance with the Guidelines on the method of determining the categories of farms on which are kept and bred pigs in terms of hygiene and biosecurity). We analyzed data from 10 farms on the basis of the above methods and the following results were obtained indicating the level of biosecurity in terms of indirect factors. Obtained data related to the achieved level of biosecurity for the controlled processes, in terms of indirect factors, are:

– reaching the level of biosecurity in a state of control for parameter values which are food (nutrition) related;

– possibility of maintaining the level of biosecurity in a state of control for parameter values related to the location, transportation, acquisition and buying of sperm, tools and equipment, removal of dead animals, cleaning and disinfection, maintenance of roads within the facility and the supply and delivery of products

– the possibility of bringing the level of biosecurity in the state of control for parameter values related to farm access, programs of pest control, wild animals, employees, visitors policy.

In presenting these results as part of a pilot project to define the level of biosecurity on commercial farms, it should be noted that this approach and an analysis are only one part of the overall food safety assurance system, and other parts that deal with other problems in the food chain are no less important.

Despite the fact that all the good natural conditions for agricultural development in Serbia exist, that a large share of the population are engaged in agriculture, manufacturing indicators are far below the European and world standards. A small number is ready and able to apply modern methods and revive in its production. In terms of implementation and application of standards related to agriculture, situation is even more drastic. The most common is that small number of existing certificates is seen as a “fashion trend”, or impost, and not as an urgent need for improvement, or inclusion in mainstream European and world markets [28].

The EU accession process, means a process of introducing equality in the race for market and for our farmers. However, the farmers must to evaluate: whether to start the race preparations immediately, in order to gain a good starting position, or to watch processes around them with distrust, deeply believing that everything is a miracle for three days. Unfortunately, the experience of the environment is that the tactic of silent observation is very wrong and certainly leads to a situation where those same farmers who ignore the trends at the time when the process terminates, capture the head and frequently shut production.

However, it is important that farm owners realize that the adoption of the Veterinary Law, Food Law and numerous of by-laws is a legal obligation. The fulfillment of this legal obligation will check inspection authorities and any attempt to compromise at the expense of the consumer is extremely dangerous for the owners because of risk of inspection which can banned their work.

Conclusion. Based on the data and the analysis we can conclude that the level of biosecurity in terms of taking veterinary preventive satisfactory, but that the problem of obsolete farm, especially the unresolved issues of farms surrounding and access of desirable and undesirable visitors, as well as the low level of training of workers in manufacturing, is the biggest problem of achieving a high level of biosecurity, which increases the risk to the safety of the end product of pig farms in Vojvodina. From the aspect of satisfying the requirements of GLOBALG.AP, there are small number of farms in Vojvodina which could in near future to implement all the requirements and be certified. Used models of estimating the level of biosecurity enable objective evaluation of the achieved level of biosecurity and analysis of variation, but not the practical answers and solutions. The authors of this paper find that this approach is only beginning of defining the state-level biosecurity, and in order to obtain responses it should be looked for a comprehensive approach to the problem and the inclusion of a larger number of methods and techniques to improve biosecurity and obtaining of healthy safe products.

It should be noted that all funds invested in maintaining of biosecurity are only a small fraction of the costs that arise when the disease occurs. Because the process of joining the European Union, Serbia has to literally and consistently apply European standards in the entire territory, linearly for all manufacturers. Otherwise, the export of defective products as well as spread of disease on even one single farm in Serbia, can jeopardize all other exporters, since the EU may ban import from the entire territory of Serbia, demanding that the authorities in Serbia improve surveillance system on the whole territory.

Taking into account everything mentioned above, in order to achieve the desired effect, it is necessary to educate farm owners and employees of the measures to be taken, and after that, it is necessary to carry out continuously monitoring of farms in order to comply with the given determinants, as well as the implementation and certification of system.

Acknowledgements. The study was supported by the Ministry of Science and Technological Development of Serbia (Project No. TR 31034).

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ПРИКЛАД МОДЕЛІ ОЦІНКИ РІВНЯ БІОЛОГІЧНОГО РИЗИКУ НА ФЕРМАХ НА ОСНОВІ ВИМОГ GAP (НАЛЕЖНОЇ СІЛЬСЬКОГОСПОДАРСЬКОЇ ПРАКТИКИ)

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Підвищення обізнаності щодо важливості відповідності вимогам щодо безпечного виробництва тваринницької продукції та забезпечення якості продукції (м'ясо, молоко, яйця) вимагає попереднього виконання певних програм, при яких може бути визначений рівень біологічної безпеки на фермах. Метою даної роботи є розробка моделі у вигляді веб-додатку, який дозволяє швидко оцінити рівень біологічної безпеки на фермах, визначити рівень відповідності необхідним стандартам, а також можливість використання різних методів для поліпшення робочих процесів.

EPIDEMIOLOGY OF BLUETONGUE IN FRANCE AND DEVELOPMENT OF MOLECULAR TOOLS FOR BTV AND EHDV TYPING IN THE FRENCH MARTINIQUE AND LA RÉUNION ISLANDS

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Bluetongue virus (BTV) and Epizootic haemorrhagic disease virus of deer (EHDV) are two species of the genus Orbivirus within the Reoviridae familly. Bluetongue virus (BTV) is the cause of bluetongue (BT), an insect-transmitted disease of domestic and wild ruminants [1, 2]. BTV infection occurs throughout much of the temperate and tropical regions of the world, coincident with the distribution of specific species of Culicoides biting midges that act as biological vectors of the virus [3, 4]. BT typically occurs when susceptible animal species are introduced into areas where virulent strains of BTV circulate, or when virulent strains of BTV extend their range into previously unexposed populations of ruminants. Following the recent northern European epidemic, BTV has spread far beyond the historical northern limits of its range [5].

BTV is the prototype member of the genus Orbivirus, family Reoviridae [6]. As a reovirus it has a segmented genome of double-stranded RNA (dsRNA) and a characteristic virion morphology and structure. On the basis of serotype-specific virus neutralization assays 24 distinct serotypes of BTV have been described to date, but a virus isolated from goats in Switzerland (Toggenburg virus) likely is a 25th serotype [7].

EHDV is morphologically, structurally and biologically similar to BTV; 7 serotypes of EHDV have been identified. EHDV is also transmitted by biting midges. EHDV which is present in the US but also in the North of Africa (Morocco, Algeria, Tunisia) is a real threat for the European livetosck.

From 1998 to 2006, five different BTV serotypes (1, 2, 4, 9 and 16) have spread throughout extensive portions of Mediterranean Europe [8, 9]. In 2006, BTV serotype 8 emerged unexpectedly in the North of Europe involving Belgium, France, Germany, Luxembourg and the Netherlands [5, 10]. In 2007, BTV-8 spread rapidly and widely throughout much of Europe, as to a lesser extent did BTV-1. In 2008, two other BTV serotypes were detected in Northern Europe: BTV-6 in the Netherlands and BTV-11 in Belgium [11, 12].

The European incursion of BTV has had a considerable negative economic impact, partly due to direct losses from mortality and reduced production in affected livestock but, more importantly, from the ban of ruminant trade between BTV-infected and non-infected areas.