EPIDEMIOLOGICAL RESEARCH CONCERNING THE PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME DURING 2011

Sorina Eugenia Filip [(1)], Iulian Togoe[(1)], Lucica Comanescu[(2)]

[(1)] University of Agronomical Science and Veterinary Medicine Bucharest, Faculty of Veterinary Medicine,
E-mail: sorinavet83@yahoo.com
[(2)]Braila County Veterinary Laboratory

Abstract

The swine from the present study confront with serious breathing and reproduction problems specific to PRRS disease (Rotaru 2005).
This disease affects the immune system of pigs and has a concomitant evolution with another viral and bacterial infection.
*PRRS is recognized around the world by the economical impact that it produces in swine breeding units (*Perianu T. *et al 2005).*
It is a viral disease with endemic evolution characterized by reproduction alert signs to sows and by breathing signs to young pigs(Benfield, 1999).
In most of the cases of evolution the multiple ethyology includes the following bacterium: Mycoplasma hyopneumoniae, Pasteurella multocida, Actinobacillus pleuropneumoniae and viruses: virus Aujeszky virus, porcine reproductive and respiratory syndrome, influenza virus, transmissible gastroenteritis virus and virus respiratory coronavirozei, low conditions of maintenance will overtake the protection mecanism of the body (Benfield, D 1999).
In this paper are presented the epidemiological researches achieved during 2011 in two proffesional swine units from Braila.

Key words: *epidemiological indicators, PRRS.*

INTRODUCTION

Respiratory disorders and reproductive syndrome (PRRS), is a swine disease recognized worldwide by the economic impact which it produces in pigs industry (Stănuică, 2005).
It is a viral disease, with endemic evolution, characterized by reproductive disorders in gilts and sows, and respiratory signs at weaned piglets (Răpunteanu, 2002).
It is occurred almost simultaneously in the United States (1987) and Canada (1988), and in late 1990 was described in Germany. Since 1991, he quickly released in the Netherlands, Belgium and Spain, causing panic among pig farmers from Europe (Răpunteanu, 2002).

Existence of the disease in Romania was confirmed by laboratory methods by a team of researchers, led by Stănuică, at the Pasteur Institute in 1998 (Stănuică, 1999).

MATERIALS AND METHODS

In 2011 were conducted epidemiological investigates in two units of pig husbandry industry.
The company consists of two separate farms located at a distance of about 30 km from one another.
First unit work called "Farm T" has a capacity of 31,989 pigs and farm is organized as closed circuit consisting of the following areas: pregnancy, maternity, youth, fat pig.
"Farm B" has a capacity of 120,000 pigs and is divided into three farms as follows:
- Farm 1 (pregnancy - maternity-youth)
- Farm 2 (youth and pork fat)
- Farm 3 (closed circuit farm produce F2 for Farm 1).

This paper aims conducting an epidemiological study in a PRRS outbreak which occurred in 2011 in the 2 swine farms. Data were obtained by collating more information about movement of livestock (new animals introduced, births, birth rates, fecundity, morbidity and mortality) and the clinical episode of PRRS in flocks under study. Epidemiological researches followed up on the following parameters:
- Birth,
- Prolificacy,
- Abortions in sows and gilts.

In farms with open-circuit, the risk of contamination is directly proportional with: herd size, frequency of introduction of new animals and application of prophylactic quarantine. In geographic areas with several swine farms, the major risk factor is the represented by the density of pigs. Other factors depend on the virulence of strains, breeding technology, hygiene, stress, quality of feed and the presence of bacterial diseases (Benfield, 1999).
In PRRS syndrome, the epidemiological investigation leads to a presumptive diagnosis and at the same time allows: identifying sources of infection, dissemination of disease in farm livestock, virus dissemination outside the farm and identify contributing extrinsic factors (Benfield, 1999).

RESULTS AND DISCUSSION

Disease began shortly after the entering of newly acquired lots of animals.
In farm T, during the year were buying a total of 23 boars in the following months: February (7 boars) May (6 boars) and July (10 boars).
First signs of disease appeared in the maternity unit when animals were found dead and reduced viability piglets, piglets after farrowed in short time (within 10 days) have respiratory distress, reduced viability, digestive disorders and skin bruising (Albina, 1997).
Morbidity was extended to youth and fat pigs.
The highest percentage of disease was reported in newborn piglets, weaned piglets and less at fatty pigs. It seems that these categories (newborn piglets and weaned piglets) are most susceptible to infection because passive immunity transferred from sows to piglets is short (Albina, 1997).
A possible source of infection may be represented by introducing boars in February.
In farm B during the year were purchased gilts and boars with unknown situation on PRRS syndrome as: January 1100 gilts, February 1020 gilts, March 1200 gilts and 8 boars, April 1100 gilts, May 1300 gilts and 7 boars, June 1050 gilts.
The first signs of disease were found in pregnant sows manifested by: decreased appetite, pyrexia, dyspnea, dead piglets, reduced viability, rarely agalactia, sometimes cyanosis of teats and vulva. (Rotaru 2005).
Clinicaly the disease manifested a period of about 25 days during which were observed abortions complicated by bacterial infection of the uterus.
Analyzing the evolution of birth in 2011, at B farm, there is an obvious decline in February (at 72.3% from 88.0% value recorded in august) due to the PRRS evolution during January. So the animals that were between 80 to 100 days of gestation, during the disease progression they are lost products of conception due abortion.

Table 1. Evolution of birth in B farm

Birth	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
%	73,2	**72,3**	74,2	75,3	74,4	73,6	78,1	**88,0**	86,0	81,5	81,5	74,6

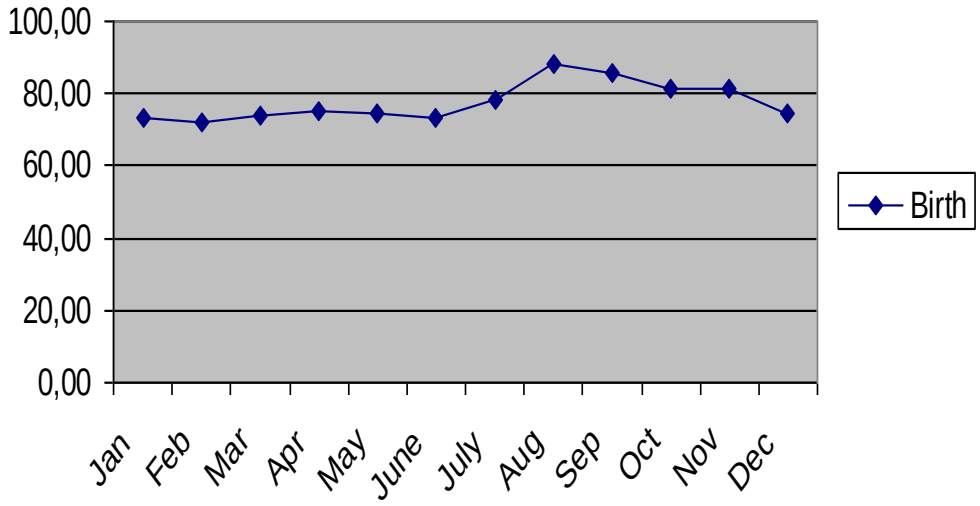

Figure 1. Dynamic of birth in B farm

By analyzing how has evolved birth at T farm, can conclude the presence of the syndrome in September, when there was a decrease in the value of this parameter (69.0%) compared with other months (November 83.2%).

Table 2. Evolution of birth in T farm

Birth	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
%	79,8	79,5	81,2	75,6	82,5	87,9	80,0	83,9	**69,0**	78,6	**83,2**	90,8

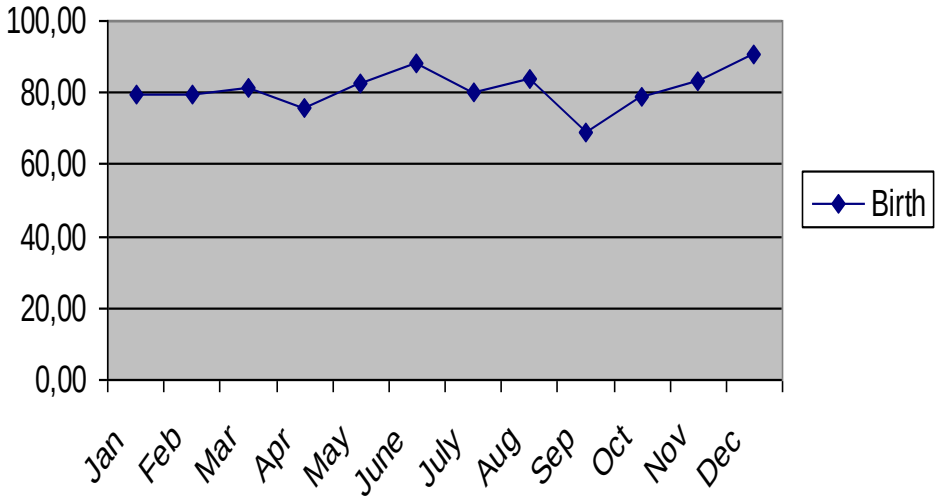

Figure 2. Dynamic of birth in T farm

Another parameter studied was prolificacy.
In T farm, this indicator has high values in June, July and August after which values decreased in the next months.

Table 3. Evolution of prolificacy in T farm

Prolificacy	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
%	9,7	9,4	9,8	9,6	9,5	9,9	9,8	9,9	9,5	9,5	9,5	9,5

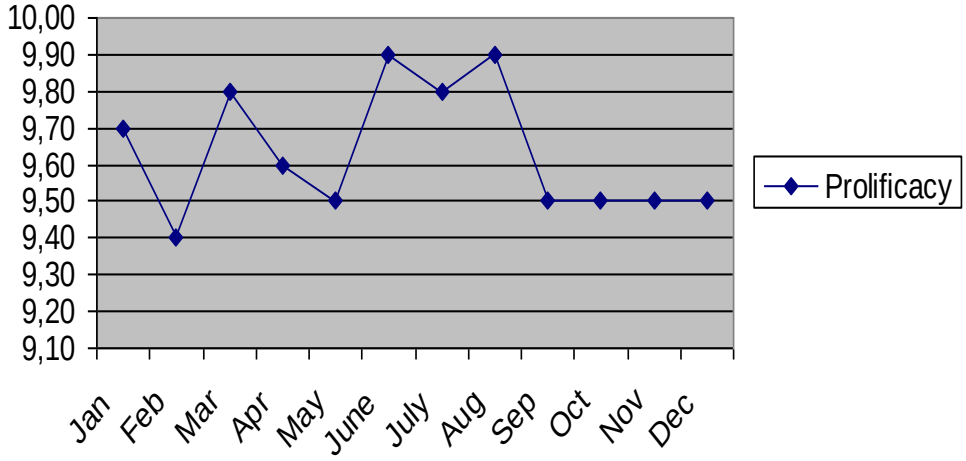

Figure 3. Dynamic of prolificacy in T farm

Declines of this indicator in T farm, at September, October and November are due to the increased number of dead piglets at farrowing.

In B farm evolution of this indicator is presented in Table 4.

Table 4. Evolution of prolificacy in B farm

Prolificacy	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
%	8,9	8,6	8,8	9,0	8,8	8,3	8,6	7,8	8,5	8,5	8,1	9,6

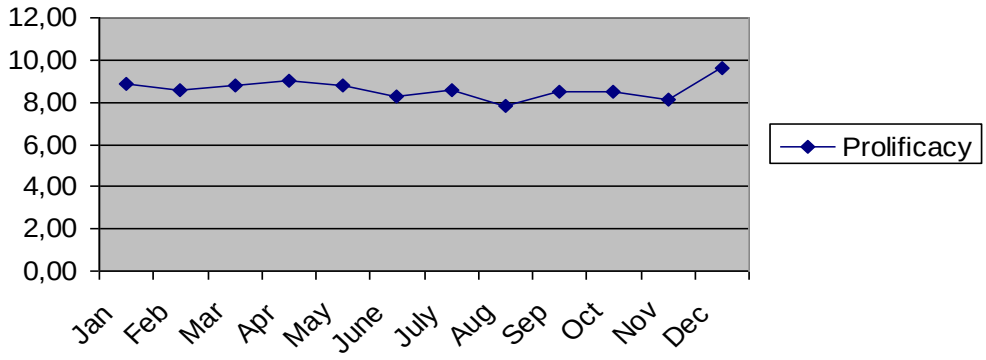

Figure 4. Dynamic of prolificacy in B farm

Evolution of PRRS virus in T farm generated an excessive increase in abortions. However, the slightly high level of abortions from July (compared with previous months) reveals that this virus had a influenced in pregnant sows and gilts. Presence of abortion in B farm has a high incidence than in T farm. In this farm was predominant the genital form at sows.

Tabelul 5. Situation of the abortion in farm T and B

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Farm T	3	3	3	3	3	4	5	3	2	4	1	3
Farm B	4	4	8	2	5	5	2	3	8	7	5	3

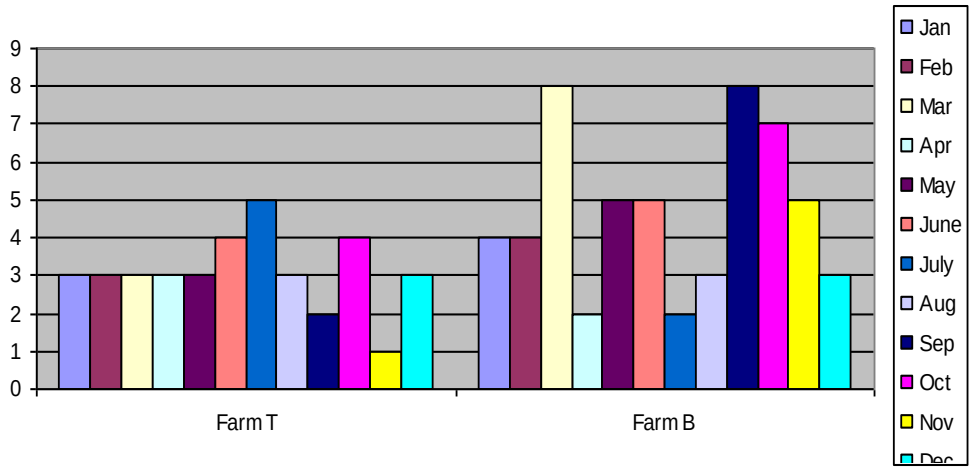

Figure 5. Dynamic of the abortion in farm T and B

CONCLUSIONS

The disease appeared in farms after the acquisition of new effective of animals without respecting the prophylactic quarantine.
The birth in B farm showed a clear decrease in February (72.3%).
The values of prolificacy obtained recorded a fall in these months: August, September and October.
In T farm the birth rate recorded value was 69% in September compared to other months (November 83.2%).
Prolificacy in T farm recorded high values in June, July and august after that the values decreased in the coming months.
The highest number of abortions occurred in B farm.

ACKNOWLEDGMENTS

The work of Filip Sorina Eugenia was performed as part of the project POSDRU/107/1.5/S/76888 *"Doctoral Scholarships for high quality training for young Researchers in the field of agronomy and veterinary medicine"*, co-financed by European Social Fund with the Operational Program Human Resources Development 2007-2013, area of intervention: 1.5. Doctoral and Post-doctoral Programs to support the research.

REFERENCES

Albina E., 1997. Epidemiology of porcine reproductive and respiratory syndrome (PRRS),Veterinary Microbiology, 55, p. 309-316.
Benfield, D.A. 1999. Porcine Reproductive and Respiratory Syndome, In: Diseases of swine, 8th edition, Edited by Barbara E.Straw, Sylvie D`allaire, William l., Mengeline D.,Taylor J., p. 201-224, Iowa State University Press / Ames Iowa USA.
Perianu T., Stefan N., Carp Carare M., Velescu Elena, Alexandru N., Spataru T., Tanase Irina Oana, 2005, Infectious diseases of animals. Viruses, Volume II, Universitas Publishing XX, Iasi.
Răpunteanu G., Boldizar, E., 2002. Special Veterinary Virology, AcademicPres Publishing, Cluj-Napoca.
Rotaru Elena**,** 2005. Porcine Reproductive and Respiratory Syndrome, in viral and prion Diseases of animals, edited, Radu Moga Manzat, p. 245-261, Brumar Publishing, Timişoara.
Stănuică, D., Pancă, C., Caraivan, I., Draghici, D., 1999. Seroepidemiological investigation into an outbreak of PRRS (Porcine reproductive and respiratory syndrome) scientific papers., Veterinary Medicine, Vol XXXII, p.115-130, Timişoara.
Stănuică, D., 2005. Porcine reproductive and respiratory syndrome. Work performed under the "Support Services in Agriculture", Timisoara.