

## PORCINE REPRODUCTIVE RESPIRATORY SINDROME (PRRS)\*

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*SUMMARY: Respiratory disease in pigs are major cause of morbidity, mortality, and major cause of economic losses. As results of this situation, it is necessary to carry out timely diagnoses, adequate therapy and on farms established prophylactic measures. Our intention was to show in this paper, production indicators, such as consequence presence of PRRS in pig farms industrial type. The biggest losses in pigs were the first three months of outbreak in the period from 3-12 months mortality gradually decreased. The costs of prevention and treatment of secondary infections during the 12 months after outbreak of the disease were on average about 40% higher in the period before in relation to period before disease appear.*

**Key words:** pigs, farm industrial type, PRRS.

### INTRODUCTION

Respiratory disease of pigs have been expanded throughout the world and in past years has become their tide, as it becomes increasingly difficult health problem in almost all technological stages of production. Appear in various scenarios, the disturbing frequency and intensity as a result of the interaction of multiple pathogens. Our intention was that specific case of industrial swine farms show any health problems can cause reproductive respiratory syndrome, the presence of pigs and (PRRS) and the measures are applied.

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## RESEARCH IN PIGS REPRODUCTIVE RESPIRATORY SYNDROME (PRRS)

Reproductive cause respiratory syndrome is isolated from nasalsecretions, feces and urine. Infection is spread by direct contact with infected animals, as well as droplets. Experiments have demonstrated the transfer agent of boar semen (Petrujkić et al., 2011). In addition, the virus can be transmitted transplacentary (in the last trimester pregnancy). The infection is characterized by the occurrence of abortion and irregular return to estrus (Blackburn, 1995; Petrujkić et al., 2011).

The disease is diffusion worldwide. It is characterised by the emergence of abortion, premature farrowing sows, birth nonvital animals or and a high percentage of deaths in the first days after farrowing. Cause of the virus was classified as a *Arteriviridae* family, genus *Arterivirus*, order *Nidovirales* (Cavanaugh, 1997). Clinical picture of reproductive respiratory syndrome varies considerably depending on virulence strain, dose of virus, the immune status of individuals, categories of production animals and housing conditions. It has been shown that PRRS virus infection as multisystemic disease. Initially manifested viral load, and after distribution of the virus in many organs where the virus multiplies and causes pathological changes (pneumonia, vasculitis, myocarditis, lymphadenopathy). Vasculitis varied in intensity and change and affect all dimensions of blood vessels. Based on findings of vasculitis in aborted fetuses, nursing and weaning piglets in the lungs and nervous system, it was felt that the blood vessels of the primary goal of PRRS virus.

Clinical symptoms depend on the stage of gestation and age animals. Abortion may occur sporadically or as a mass phenomenon. Usually, fetuses can be mummified at late abortion and weak piglets occur at premature farrowing. Piglets can be infected immediately after farrowing, showing severe dyspnoea, conjunctivitis, eyelid edema, increased body temperature, tremors and slow blood coagulation (Jackson and Cockcroft, 2007). The clinical picture in suckling piglets are usually manifests several days after onset of symptoms in sows. In most cases the resulting respiratory symptoms, cough, inappetence, tremors, cyanosis of ears, glowing conjunctiva, swelling of the eyelids, and behavioral disorders. Our observations indicate the occurrence of dark circles and eye sockets and ruffled hair. Diarrhoea may be present in case there is no response to therapy, there is possibility of dehydration (Radojčić, 2009; Bojkovski et al., 2008a,b, 2009a, and 2010a,b). First notice the changing appetite (one day of eating, not eating one day). Finally, the animals lose their appetite back. Body temperatures at 41°C. The animal enters into lethargy and dyspnea. Cough not always present symptoms. The appearance of the redness occurs on the skin, ears, back, hind limbs, vulva and perianal region. They can be caused premature births or abortions, as well as the increased number, weak piglets, mummified fruit and stillborn piglets. In the coming period may develop irregular estrus, hypo and agalactia, great loss newborn piglets (Radojčić, 2002, 2003 and 2009; Šamanc, 2009; Petrujkić et al., 2011). Rarely leads to death from PRRS infected sows, but in acute PRRS in sows and gilts percentage of deaths could be 8% (Blackburn, 1995). Fig. 1 show pathology changes on lungs caused virus PRRS. It is noticeable reticulate appearance of lung tissue as a result of the island interlobular connective-tissue compartment.

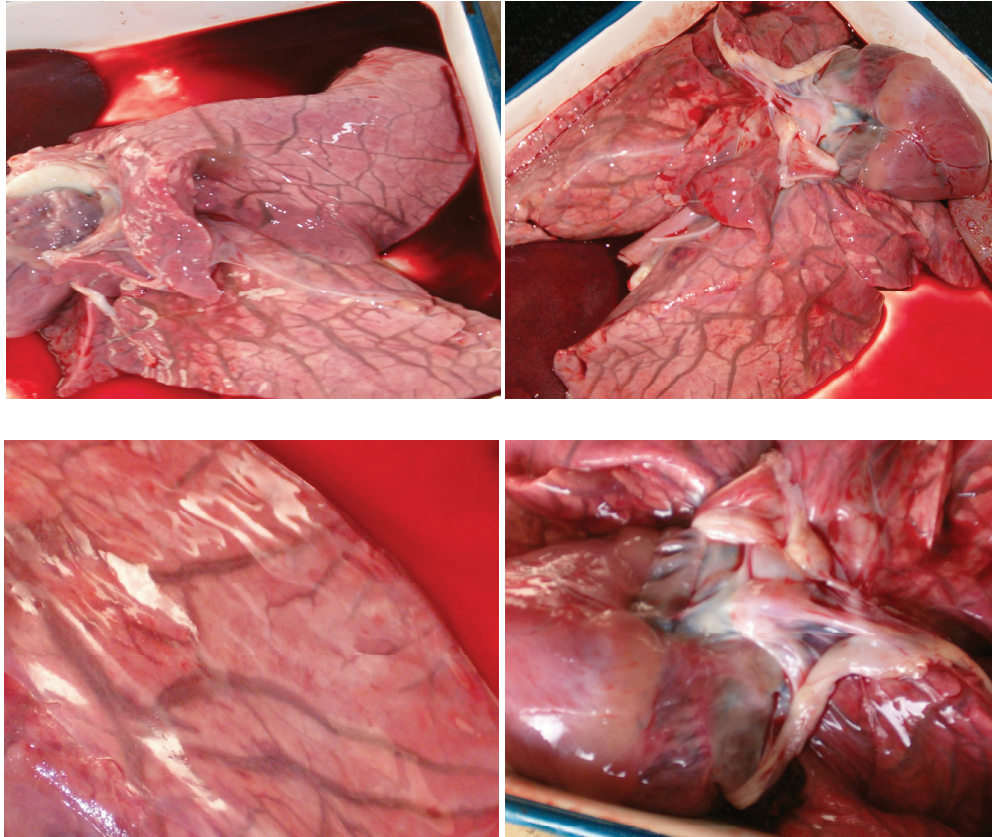


Fig. 1. Pathology changes on lungs caused by PRRS virus (Dobrosavljević, orig. photo)  
*Slika 1. Patološke promene na plućima izazvane virusom PRRS*

### **PRODUCTION INDICATORS AS RESULT OF PRRS PRESENCE AT PIG FARM**

Intensive pig production involves a large concentration of pigs in a relatively small area, making it necessary to apply certain measures to preserve the herd to prevent the spread of disease in the herd and maintaining production. In suckling piglets, great importance is given to variations of pathogenic microorganisms, not only the expression of resistance to drugs, but also the appearance of genetic recombination, which could affect the clinical course of disease and all of which makes diagnostic installing and implementing treatment and prophylaxis (Bojkovski et.al., 1997, 2005 and 2011b).

#### **Case report on one farm in Serbia**

At pig farm „A“ industrial type in December 2006 years there has been a sudden and massive outbreak of symptoms typical of PRRS. Live stock consisted of 240 sows with an annual production of 4,000 pigs. Before the advent of on farm PRRS piglets the percentage of death was below 10 %, 6 % of weaned piglets and fattening pigs in the final 1,4 %. The average body weight at weaning pigs at 30 days was 7,1 kg. Respiratory form of PRRS is commonly encountered in suckling piglets and young pigs, with the emergence of anorexia, dyspnoea, cough, and occasional deaths. There is some pig severe abdominal cyanosis and ears.

In december 2006<sup>th</sup> in the course of disease in laboratory send 10 samples of weaning piglets with respiratory symptoms. Diagnosis was performed serologically and (Enzyme-linked immunosorbent assay – ELISA). Of the total number of serum samples send for testing anti PRRS antibody ELISA positive samples was 80 %. In this way confirmed the suspicion of reproductive respiratory syndrome and swine. In the first stage of the disease in sows in farrowing observed the following symptoms loss of appetite, premature farrowing, stillborn, and mummified piglets, agalactia, mastitis, and individual cases of cough. At weaning piglets dominated the respiratory symptoms, discharge from eyes and cyanosis of ears, cough and temperature above 40,8<sup>o</sup> C.

The first symptoms were observed in sows farrowed in a form of premature farrowing. In December 2006 the 40 sows farrowed, 3 (7,5%) were farrowed 112<sup>th</sup> day and 2(5%) 109 of pregnancy. Premature births were occurred in the next 3 month from the onset of disease.

Production indicators are given for the period prior to and during the 12 months from time of the outbreak. In the present form was no difference in conception in sows and it was 83%. The number of piglets born alive in the year before the outbreak was 5656 in the period after the outbreak of 55000, so the number of piglets born alive was reduced by 156 pigs. After the outbreak of stillbirths pigs increased to 5,05% (293 of total 5793) and the number of mummified piglets on 2,41% (140 of 5793). Pigs in relation to the period before the onset of the disease was 2,88% the stillbirths (168 of 5824) and 0,20% (12 of 5824 pigs) in mummified piglets. The percentage of stillborn and mummified piglets was constantly increased from the time an outbreak of infection during the period and not after 12 months returned to previous levels. The number of stillborn piglets per litter increased from 0,33 % to 0,57% in the period. In the first three month of the onset of clinical symptoms observed the occurrence of mastitis and agalctia in sows. Pigs less weight and weak pigs broke in hypoglycemia and have little chance to survive. Before the outbreak of disease mortality suckling piglets amount is less than 10% in the 12 months after onset was approximately 14 % (811 of 5793 piglets). The highest percentage of death was the first 3 month after the outbreak of 18,19 % (181 of 995 piglets). Percentage mortality of weaned piglets from 6 % before the onset of the disease increased to 13,7% (564 of 4117 piglets) in the period after the onset of the disease. For such pigs were clearly marked respiratory symptoms and mortality was consistently increased throughout the period of observation. Mortality in pigs before the onset of PRRS was 1,4% in the period after onset of illness was 4,26%. The biggest losses in pigs were the first three months of the outbreak in the period from 3-12 months mortality gradually decreased. The costs of prevention and treatment of secondary infections during the 12 month after the outbreak of the disease were on average about 40 % higher than the period before the outbreak of the disease.

## **PROPUSRD MEASURES AND CONCLUSIONS**

It is believed that PRRS is very complex disease and its controls in itself is complex. Since the primary mode of transmission of pathogens in direct contact with an infected animal, the main problem is how to protect healthy herd of entering pathogens. The measures used in the protection of the introduction an all other disease in the herd, and used here. They include only the purchase of pigs from herds free from PRRS, strict compliance with quarantine institutions which in the case of PRSS a must persist for at

least 60 days, the production „all in all out“, cleaning and disinfection of facilities at each introduction of new animals, destruction of rodents, birds, cleaning and disinfection of transport. Among other measures recommended „multi site“ system of growing pigs, a partial early weaning, rearing depopulation medication early weaned piglets (Stanković, 2009).

Control strategy must be established for each farm separately. There is no universal control program, each program must be based on the epidemiology of viruses, pathogenic agent that is active on the farm, their capabilities and management. The application of medications helps to prevent the emergence of secondary infections. Due to the large differences in antigen structure, even within the same farm, vaccinated against PRRS is not given a satisfactory result. The effectiveness of vaccination ranges from 30 to 70 % and can not prevent infection. Efficiency vaccination against reflected mainly in reduction incidence of disease and mitigation of clinical symptoms. According to the findings (Gagrčin and Došen, 2004) medication or vaccination against PRRS, failed to reduce the losses incurred as result of the emergence of PRRS). In our studies (Rogožarski et al., 2007; Savić et al., 2009 and 2010.) medication and vaccination against mycoplasma with improving housing conditions have been able to reduce the losses that occur in the presence of PRRS virus on farms possible and successful business.

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## REPRODUKTIVNO RESPIRATORNI SINDROM SVINJA (PRRS)

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### Izvod

Bolesti organa za disanje kod svinja su jedan od glavnih uzroka morbiditeta, mortaliteta i jedan od glavnih uzroka ekonomskih gubitaka. Kao rezultat takvog stanja, neophodno je blagovremeno sprovesti dijagnostiku, adekvatnu terapiju i na farmama uvesti profilaktičke mere. Namera nam je bila da u ovom radu prikazemo proizvodne pokazatelje, kao posledicu prisustva PRRS na farmi svinja industrijskog tipa. Najveći gubici kod tovnih svinja bili su prva 3 meseca od izbijanja zaraze a u periodu od 3-12 meseci moratilitet se postepeno smanjivao. Troškovi prevencije i lečenja sekundarnih infekcija tokom 12 meseci posle izbijanja bolesti bili su u proseku oko 40 procenata veći u odnosu na period pre izbijanja bolesti.

**Ključne reči:** svinje, farma svinja industrijskog tipa, PRRS.

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