

**PREVENTION OF CLASSICAL SWINE FEVER
IN THE BORDER REGION CROATIA – SERBIA
(STOP – CSF)**

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SPREČAVANJE ŠIRENJA KLASIČNE KUGE SVINJA U POGRANIČNOM REGIONU KROZ POBOLJŠANJE SANITARNIH STANDARDA I EDUKACIJU FARMERA (STOP – KKS)

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“PREVENTION OF CLASSICAL SWINE FEVER IN THE BORDER REGION CROATIA – SERBIA (STOP – CSF)” „SPREČAVANJE ŠIRENJA KLASIČNE KUGE SVINJA U POGRANIČNOM REGIONU HRVATSKA – SRBIJA (STOP – KKS)“

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EPIZOOTIA THAT STILL LASTS – CLASSICAL SWINE FEVER IN SERBIA FROM 1990 TILL TODAY

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Abstract

Classical swine fever (Pestis suum Classics, CBC) is a viral infectious disease of pigs of all races and categories. The disease was first described in the U.S. during the 1833 (or 1830) in Ohio, where it quickly spread along major roads and junctions. Some literature data indicate that the CSF was first described 1822 in France and 1833 in Germany. During 1862 was transferred to Europe (England), and in 1895 entered the territory of the Austro-Hungary toward Serbia. For the past 117 years in Balkans and Serbia, appeared in several long outbreaks leaving behind great economic damage. Previous occurrence of CSF was in March 1985 /Novi Sad, Nis/ while the outbreak of disease that is still going on started in 1990 (30 May 1990) with pigs that came from Croatia till territory of Macva. During past 21 years of working on the prevention and eradication of CSF different radical measures toward eradication of the disease were applied, carried mandatory immunoprophylaxis, brought isolation policies and restrictions of movement and trade of animals, and the damage is enormous. Today, when Serbia has no registered clinical cases of CSF and immunoprophylaxis is still carried out, the question is if the disease is eradicated from our country.

Key words: CSF, epizootia, Serbia

Introduction

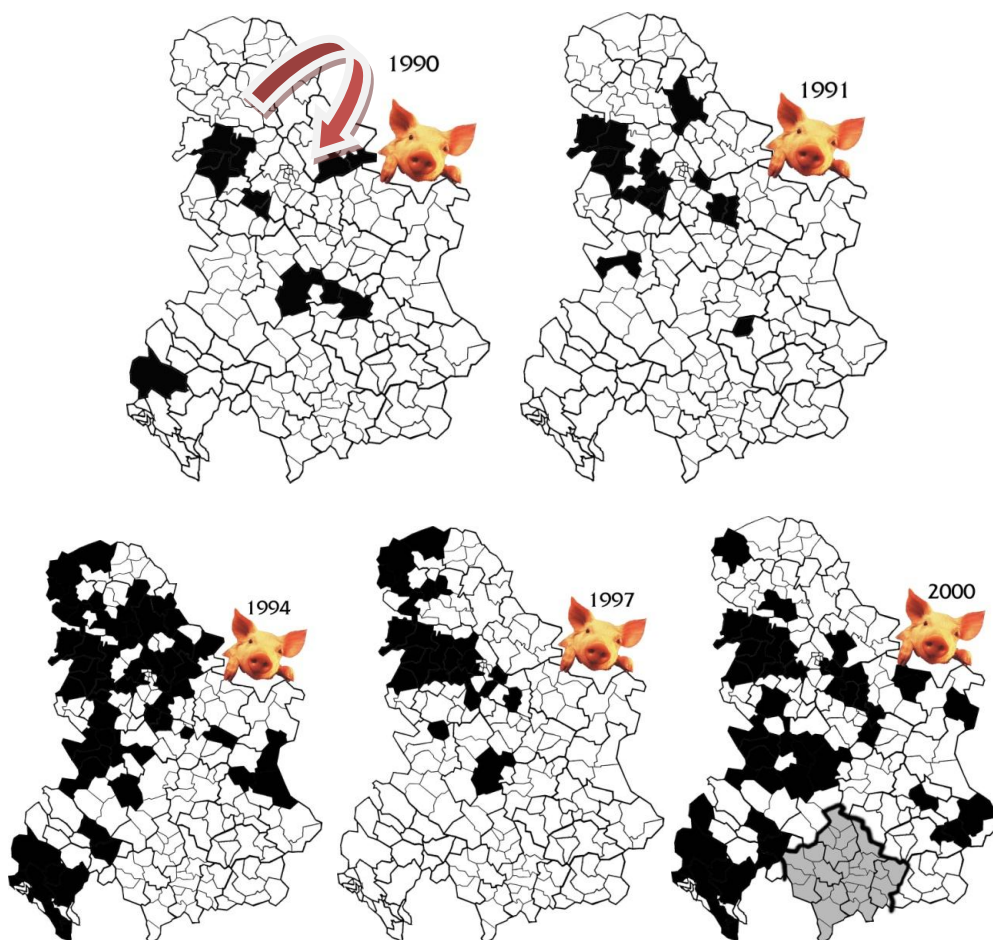
Classical swine fever is a viral, highly contagious infectious disease of pigs of all races and all categories. The disease was first described in the U.S. during the 1833 (or 1830) in state of Ohio, where it was quickly spread along major roads and junctions. Concerning historical data related to European continent some literature data indicate that the CSF was first described in 1822 in France and 1833 in Germany. CSF is officially transferred over in Europe (England) in 1862, and during 1895 entered the territory of the Austro-Hungarian Empire and the territory of the Kingdom of Serbia. During the 1903 it was found that it is caused by filtrative agent (virus).

For the past 117 years in the Balkans and in Serbia, it appeared in several longer outbreaks leaving great economic damage behind. Previous occurrence of CSF was in March 1985 / areas of Novi Sad and Nis/ while outbreak of the disease that still goes on started in 1990 (30 of May 1990, Department of infectious animal diseases FVM, Belgrade) and it entered with the pigs coming from Croatia

(Vukovar) over the territory of municipality of Titel to territory of Macva. At that time the CSF in the former Yugoslavia existed in Slovenia (Brezice) and Croatia (Vukovar). From these sites and in connection with the tumultuous events during 1990- 91, CSF was spread to territory of Bosnia and Herzegovina (Bosanska Dubica, Tesanj, Doboj, Maglaj) and during 1992 in municipalities of Bosanski Novi, Prijedor, Mrkonjić Grad and Sanski Most.

Later, due to the recent war in Croatia and Bosnia and Herzegovina, appearances of CSF were not properly registered in these areas and therefore it was not possible to control the distribution of pigs across the porous borders between these countries and Serbia. Certainly, epizootiological situation in the territory of one reflected on the occurrence of CSF and other infectious diseases on the other side and vice versa.

Figure 1. Appearance and distribution of CSF in R. Serbia during 1990 and 1991



Distribution of CSF in the Republic of Serbia (Republic of Yugoslavia) in 1990 recorded increase of infected territories (Figure 1) but there is no accurate data for the first 2 years about numbers of diseased, dead or killed pigs (Table 1). In the

absence of control of the disease from 1993 in R. Serbia (Yugoslavia) mandatory immunoprophylaxis against CSF was introduced. During that period, as recommended by the OIE, Europe has abandoned mandatory vaccination with standard vaccines (in 22 European countries where CSF was also present, 1992 to 1993), with the recommendation of 'ring' vaccination with subunit vaccines. Some neighboring countries (Croatia (Vukovar, 1990, and beyond), Republic of Srpska, Federation of BiH (1991 - Posavina, 1992 - Bosanska Krajina, Semberija), Macedonia, Bulgaria, Hungary, Romania and others) were implementing stamping-out method without vaccination or combined. During the period 1994-2000 (11 years of disease presence) in Serbia (FR Yugoslavia) was affected 16.679, 23.779 killed and 48.256.151 vaccinated animals. In total, epizootiological status of the disease in the field was disproportionate in relation to the number of produced and consumed vaccine doses (about 60 million doses), and disease had dominated stationary three major territories - Macva and Srem regions, regions of Kraljevo and Raska, and Smederevsko- Branicevski region. 'The persistence of infection' was after every calming measures and implemented eradication starting again in one of these areas and spreading to the other parts of the country.

During these first 10 years in Republic of Serbia, as in Yugoslavia, enormous efforts have been invested by the entire veterinary profession and whole society and spent significant financial resources to prevention and eradication of the disease. The total losses incurred in CSF persistence in FRY and material resources spent for the vaccine and the work can be calculated from epizootiological data of the Ministry of Republic of Serbia (Table 1).

Table 1. Epizootiological data of the Ministry of Republic of Serbia for the period of 1990-1999

| | foci(%) | died(%) | killed(%) | died+killed(%) | vaccinated |
|-------------|------------------|---------------|----------------|----------------|------------|
| 1990 - 1993 | No accurate data | | | | |
| 1994 | 244 (41,3%) | 5.844 (69,0%) | 15.086 (68,6%) | 20.930 (0,37%) | 5.521.470 |
| 1995 | 65 (11,0%) | 503 (5,9%) | 1 218 (5,5%) | 1.721 (0,02%) | 7.788.916 |
| 1996 | 120 (20,3%) | 740 (8,7%) | 1.647 (7,4%) | 2.387 (0,02%) | 9.657.511 |
| 1997 | 66 (11,1%) | 431 (5,0%) | 616 (2,8%) | 1.047 (0,01%) | 7.384 501 |
| 1998 | 34 (5,7%) | 300 (3,5%) | 681 (3,0%) | 981 (0,01%) | 5.487.095 |
| 1999 | 61 (10,3%) | 642 (2,9%) | 2.731 (1,2%) | 3.373 (0,05%) | 6.102.023 |
| Total | 590 | 8.460 | 21.979 | 30.439 | 41.941.516 |

During the period of 2000 – 2007, CSF with larger or smaller number of diseased continued to maintain in the territory of R. Serbia (Figure 2, 3 and 4).

During 2001 about 1000 diseased pigs were registered, with 52% that died and about 3.946.551 vaccinated pigs (Figure 2).

Thus, in 2005 in Republic of Serbia was CSF registered in 221 cases (in 68 municipalities and 160 establishments) with the total of 3.957 dead and killed pigs.

Figure 2. CFS in Yugoslavia during 2001

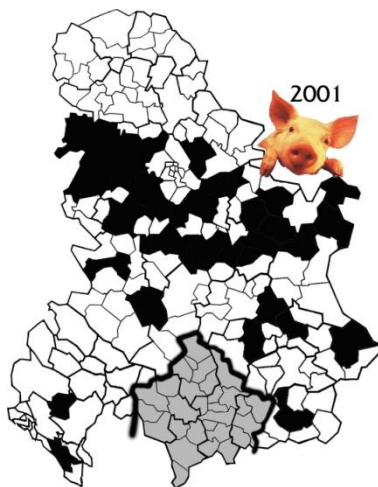


Figure 3. CSF in Serbia and Europe during 2003 (OIE)

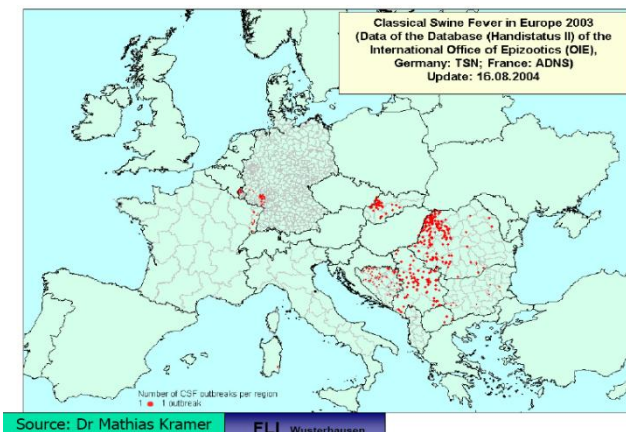


Figure 4. CSF in the Republic of Serbia, in Europe, in 2007 (OIE, WAHID)

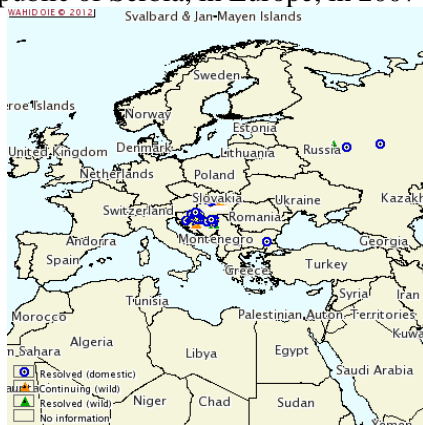


Figure 5. CSF during 2008 (Croatia and Macedonia) (OIE, WAHID)

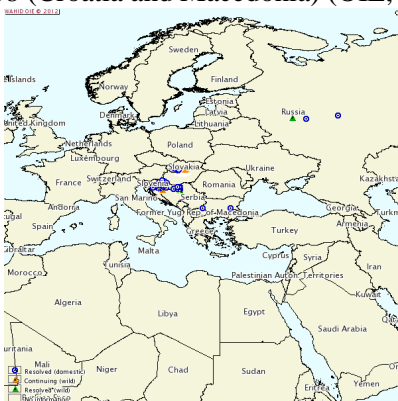


Figure 6. CSF in R. Serbia, in Europe, during 2010 (OIE, WAHID)



The current epizootiological situation (in former Yugoslavia) of CSF may be seen as the clinical disease occurs sporadically in Federation of BiH, while in Serbia last clinical appearance was registered in October 2007 and 2010 (wild boars) (Figures 4 and 6) and in Croatia and Macedonia in 2008 (OIE, Figure 5). Immunoprophylaxis is still carried out in Serbia, Bosnia and Macedonia, while other countries in the region left the vaccination method and conduct only stamping-out method if clinical symptoms of disease appear.

Epizootiological data related to the implementation of immunoprophylaxis in pigs in Serbia indicate that during 2007 was made in VI Zemun and VI Subotica and spent about 6.5 million doses of vaccine (VIZ delivered 3.344.900 dose), in 2008 about 4 million (VIZ 1.879.100 doses), in 2009 about 5.5 million (VIZ 2.751.000 doses); in 2010 about 6.3 million (VIZ 3.155.000 doses) and for year 2011 - 4.3 million (VIZ 2.140.700 doses), in total of 26.6 millions of vaccine doses for the specified period of 5 years. All this suggests that the emergence of extremely dangerous infectious diseases such as the CSF continues to exist as a real danger.

Conclusion

If we analyze the periodic check-ups for the past 21 years, from first diagnosis and confirmation of suspected CSF entering the territory of Serbia to this day, it can be concluded that the occurrence and maintenance of infection in such a long period of time was contributed by more epizootiological factors such as: foci's stationarity and reservoirs in receptive types (random entry and stationarity of infection); atypical appearance and uncontrolled dislocations of such animals; difficulties to detect sources of infection /natural foci/; difficulties in diagnosing at an advanced stage of widespread infection; severe economic damage - direct and/or indirect; objectively difficult work for epizootic service in animal traffic control and etc. Special problems are reservoir species in nature (population of wild pigs and boars). Preparation and implementation of control programs for this population as well as the experience of neighboring countries to uncover the source of infection in CSF (Romania, Bulgaria, Hungary) indicate that this method of maintaining of the virus in nature is very significant, which further complicates the implementation of prescribed measures to combat and eradicate this disease. Given the known facts of the epizootic emergence and spreading of infection during past 21 years, invested material and human resources toward the eradication of CSF in Serbia, it can be said that it have caused enormous damage, both direct and indirect.

Today, in 2012, when Serbia has no registered cases of clinical appearance of CSF and vaccination is still carried out, the question is whether is this disease really eradicated in our country?

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EPIZOOTIJA KOJA JOŠ TRAJE – KLASIČNA KUGA SVINJA U SRBIJI OD 1990. GODINE DO DANAS

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Kratak sadržaj

Klasična kuga svinja (Pestis suum clasica, KKS) je virusna talasasta zarazna bolest svinja svih rasa i svih kategorija. Bolest je prvi put opisana u SAD tokom 1833. (ili 1830.) godine u državi Ohajo, gde se veoma brzo raširila duž većih puteva i saobraćajnica. Neki literaturni podaci govore da je KKS prvi put opisana 1822. u Francuskoj a 1833. u Nemačkoj. Tokom 1862. godine prešla je u Evropu (Engleska), a 1895. uneta je sa teritorije Austro-Ugarske u Srbiju. Za proteklih 117 godina na Balkanskom poluostrvu a i u Srbiji, pojavljivala se u nekoliko dužih epizootija ostavljajući za sobom velike ekonomske štete. Prethodna pojava KKS bila je marta 1985. /N.Sad, Niš/ dok je epizootija bolesti koja još uvek traje započela 1990.godine (30. maja 1990.g.) sa svinjama unetim iz Hrvatske na teritoriju Mačve. Tokom proteklih 21 godinu rada na suzbijanju i iskorenjivanju KKS primenjivane su radikalne mere iskorenjivanja bolesti, sprovedena obavezna imunoprofilaksa, donošene mere izolacije i zabrane kretanja i prometa životinja a nastale štete su ogromne.....Danas kada u Srbiji nema registrovanih kliničkih slucajeva pojave KKS a imunoprofilaksa se i dalje sprovodi, postavlja se pitanje da li je u nasoj zemlji bolest iskorenjena.

Ključne reči: KKS, epizootija, Srbija

Uvod

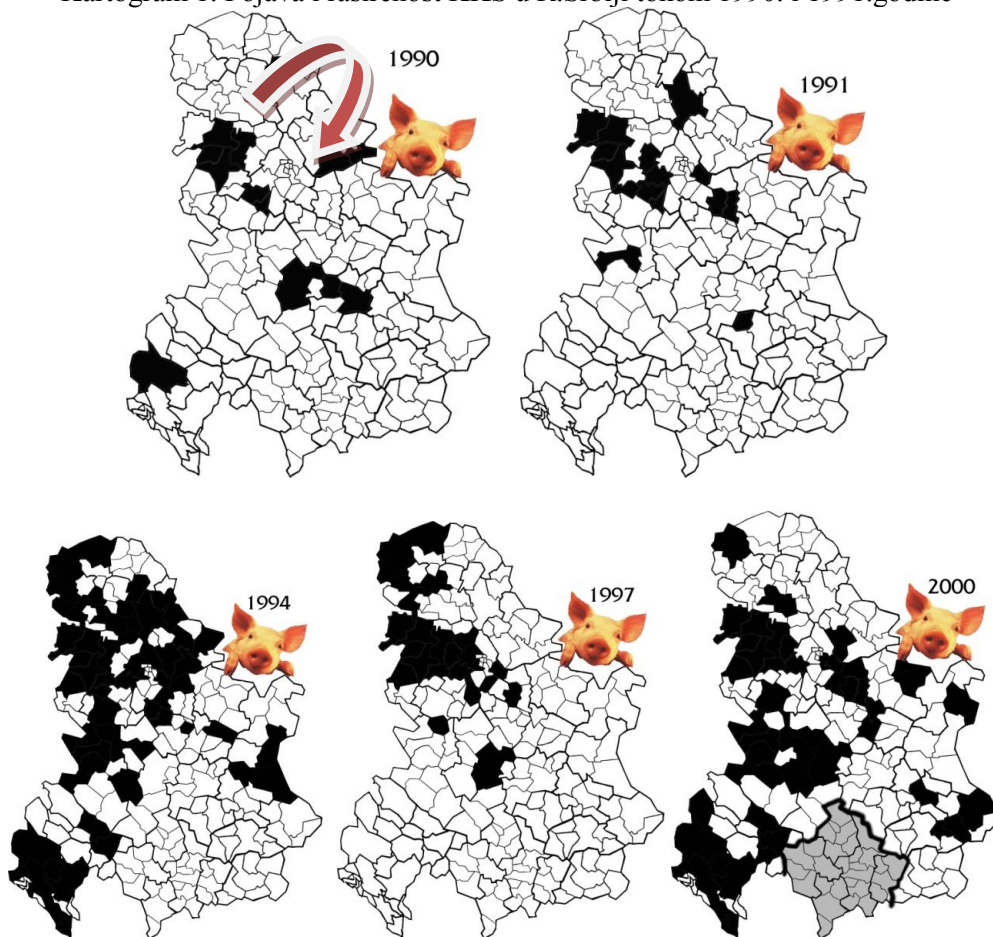
Klasična kuga svinja je virusna, visoko kontagiozna talasasta zarazna bolest svinja svih rasa i svih kategorija. Bolest je prvi put opisana u SAD tokom 1833. (ili 1830.) godine u državi Ohajo, gde se veoma brzo raširila duž većih puteva i saobraćajnica. {to se istorijskih podataka tiče vezano za evropski kontinent neki literaturni podaci govore da je KKS prvi put opisana 1822. u Francuskoj a 1833. u Nemačkoj. Zvanično KKS je tokom 1862. godine prneta u Evropu (Engleska), a 1895. uneta je sa teritorije Austro-Ugarske i na teritoriju Kraljevine Srbije. Tokom 1903. ustanovljeno da je uzročnik filtrabilan agens (virus).

Za proteklih 117 godina na Balkanskom poluostrvu a i u Srbiji, pojavljivala se u nekoliko dužih epizootija ostavljajući za sobom velike ekonomske štete. Prethodna pojava KKS bila je tokom marta 1985. /područje Novog Sada i Niša/ dok je epizootija bolesti koja još uvek traje započela 1990.godine (30. maja 1990.g., Katedra zarazne bolesti zivotinja FVM, Beograd) sa svinjama unetim iz Hrvatske (Vukovar) preko opštine Titel na teritoriju Mačve. U to vreme KKS na prostorima

bivše SFRJ postojala je u Sloveniji (Brežice) i Hrvatskoj (Vukovar). Sa ovih lokaliteta a vezano i sa burnim događanjima tokom 1990-91.godine, KKS se proširila na teritoriju Bosne i Hercegovine (Bosanska Dubica, Tešanj, Doboј, Maglaj) a tokom 1992.godine i u opštine Bosanski novi, Prijedor, Mrkonjić grad i Sanski most.

Kasnije, zbog proteklih ratnih događanja na teritoriji Hrvatske i Bosne i Hercegovine nisu uredno registrovane pojave KKS na tim prostorima a samim tim nije bilo moguće kontrolisati distribuciju svinja preko poroznih granica između Rep. Srbije i ovih teritorija. Svakako da se postojeća epizootiološka situacija na jednoj teritoriji odražavala na pojavu KKS i drugih zaraznih bolesti na drugoj strani i obrnuto.

Kartogram 1. Pojava i raširenost KKS u R.Srbiji tokom 1990. i 1991.godine



Kretanje KKS u R.Srbiji (SR Jugoslaviji) od 1990. beleži porast zaraženih teritorija (Kartogram 1) ali za prve 2 godine nema tačnih podataka o broju obolelih, uginulih i ubijenih svinja (tabela 1.) U nemogućnosti da se bolest stavi pod kontrolu od 1993. u R. Srbiji (SR Jugoslaviji) je uvedena obavezna imunoprofilaksa protiv KKS. U tom periodu prema preporuci OIE-a Evropa je napustila obaveznu

vakcinaciju sa standardnim vakcinama (u 22 zemlje Evrope u kojima je KKS takođe bila prisutna, 1992-1993.) uz preporuku prstenaste vakcinacije sa subjediničnim vakcinama. Neke zemlje iz okruženja (Hrvatska (Vukovar 1990. i šire) Republika Srpska i Federacija BiH (1991-Posavina, 1992-B. Krajina, Semberija), Makedonija, Bugarska, Mađarska, Rumunija i dr.) su sprovodile stamping out metoda bez vakcinacije ili kombinovano. Za period od 1994-2000. godine (11. godina prisustva) u Srbiji (SR Jugoslavija) obolelo je 16 679, ubijeno 23 779 i vakcinisano 48 256 151 životinja. Ukupno, epizootiološka slika bolesti na terenu je bila nesrazmerna u odnosu na broj proizvedenih i utrošenih doza vakcine (oko 60 miliona doza), dominirala je stacionarnost bolesti u povezanost za 3 glavne teritorije – region Mačve i Srema, region Kraljeva i Raške i Smederevsko Braničevski region. ~Upornost infekcije~ je posle svakog smirivanja zaraze i provedenih mera eradikacije ponovo kretala iz jednog od ovih područja i širila se u druge delove zemlje.

Tokom ovih prvih 10 godina u Rep.Srbiji kao i u SR Jugoslaviji ulagani su ogromni naponi kako od strane veterinarske struke tako i društva u celini i utrošena velika materijalna sredstva na njeno suzbijanje i iskorenjivanje. Ukupni gubitci nastali održavanjem KKS u SRJ kao i utrošena materijalna sredstva kroz vakcine i rad mogu se izračunati iz epizootioloških podataka Ministarstva Rep.Srbije (Tabela 1).

Tabela 1. Epizootiološki podaci Ministarstva Rep. Srbije za period 1990-1999.

| | žar.(%) | uginulo(%) | ubijeno(%) | ug.+ub.(%) | vakcinisano |
|----------------|-------------|---------------|----------------|----------------|-------------|
| 1990- 1993. g. | Nema | tačnih | podataka | | |
| 1994 | 244 (41,3%) | 5.844 (69,0%) | 15.086 (68,6%) | 20.930 (0,37%) | 5.521.470 |
| 1995 | 65 (11,0%) | 503 (5,9%) | 1 218 (5,5%) | 1.721 (0,02%) | 7.788.916 |
| 1996 | 120 (20,3%) | 740 (8,7%) | 1.647 (7,4%) | 2.387 (0,02%) | 9.657.511 |
| 1997 | 66 (11,1%) | 431 (5,0%) | 616 (2,8%) | 1.047 (0,01%) | 7.384.501 |
| 1998 | 34 (5,7%) | 300 (3,5%) | 681 (3,0%) | 981 (0,01%) | 5.487.095 |
| 1999 | 61 (10,3%) | 642 (2,9%) | 2.731 (1,2%) | 3.373 (0,05%) | 6.102.023 |
| Ukupno | 590 | 8.460 | 21.979 | 30.439 | 41.941.516 |

Tokom perioda 2000- 2007. KKS je sa većim ili manjim brojem obolelih i dalje održavala na teritoriji R. Srbije. (Kartogram 2, 3 i 4.).

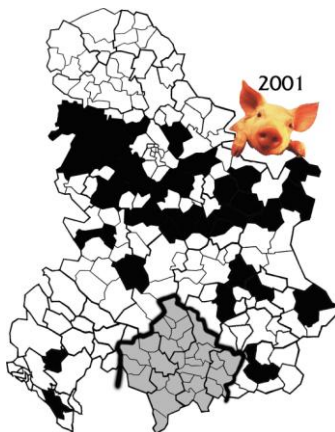
Tokom 2001.g. registrovano oko 1000 obolelih svinja sa 52% uginulih a broj vakcinisanih svinja je bio oko 3 946 551 (Kartogram 2).

Tako je tokom 2005. godine u R. Srbiji KKS registrovana u 221 slučaju (u 68 opština i 160 naselja) sa uginulih i ubijenih 3957 svinja.

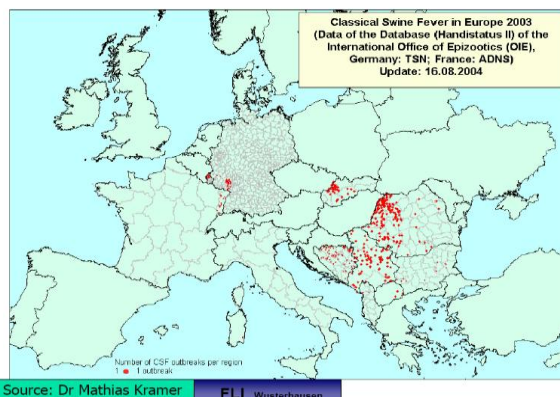
Trenutna epizootiološka situacija (na prostorima bivše SFRJ) kada je u pitanju KKS može se reći da se bolest klinički javlja sporadično u BiH, u Srbiji je zadnja klinička pojava registrovana oktobra 2007. i 2010. (divlje svinje) (kartogram 4. i 6.) a u Hrvatskoj i Makedoniji 2008. (OIE, kartogram 5). Imunoprofilaksa se i dalje sprovodi u Srbiji, BiH, i Makedoniji dok su druge zemlje u regionu napustile

vakcinaciju i sprovode stampingout metod u sličaju pojave kliničkih simptoma bolesti.

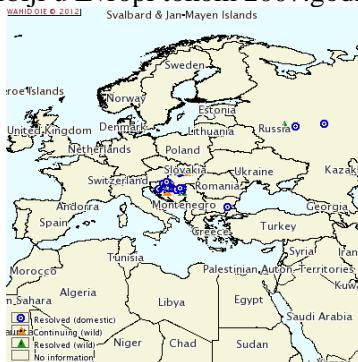
Kartogram 2: KKS u SR Jugoslaviji tokom 2001.godine



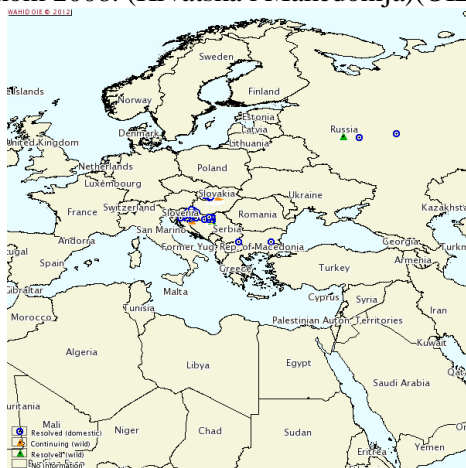
Kartogram 3 . KKS u Srbiji i Evropi tokom 2003. godine (OIE)



Kartogram 4.: KKS u R.Srbiji u Evropi tokom 2007.godine (OIE, WAHID)



Kartogram 5: KKS tokom 2008. (Hrvatska i Makedonija)(OIE WAHID)



Kartogram 6: KKS u R.Srbiji u Evropi tokom 2010.godine (OIE, WAHID)



Epizootiološki podaci koji se odnose na sprovođenje imunoprofilakse svinja u Srbiji ukazuju da je tokom 2007. g. proizvedeno u VZ Zemun i VZ Subotica i utrošeno oko 6,5 miliona doza vakcine (VZZ je isporučio 3,344.900 doza), 2008. oko 4 miliona (VZZ 1,879.100 doza), 2009. oko 5,5 miliona (VZZ 2,751.000 doza); 2010 oko 6,3 miliona (VZZ 3,155.000 doza) a za 2011. - 4,3 miliona (VZZ 2,140.700 doza) što za navedeni period od 5 godina ukupno iznosi 26 600 000 doza vakcine. Sve to govori da pojava naročito opasnih zaraznih bolesti kakva je i KKS i dalje postoji kao realna opasnost.

Zaključak

Ako se analizira period za proteklih 21 godinu, od prve dijagnostike i potvrde sumnje na unošenje KKS na teritoriju Srbije do danas, može se zaključiti da je pojavi i održavanju infekcije u ovako dugom vremenskom intervalu doprinisilo veći broj epizootioloških faktora kao što su : Stacionarnost i rezervorna uporišta u

prijemljivoj vrsti (Slučajno unošenje i stacioniranost zaraze); atipično pojavljivanje i nekontrolisana dislokacija ovakvih jedinki; teško otkrivanje izvora zaraze/prirodna žarišta;/ otežana dijagnostika u već poodmakloj fazi raširenosti; velike ekonomske štete - direktne i indirektne; objektivno otežan rad epizootiološke službe u kontroli prometa životinja i dr. Poseban problem čine rezervoarne vrste u prirodi (populacije divljih svinja). Primena programa kontrole ove populacije kao i iskustva susjednih zemalja na otkrivanju izvora zaraze kod KKS (Rumunija, Bugarska, Mađarska) ukazuju da je ovaj način održavanja virusa u prirodi veoma značajan što dodatno otežava primenu propisanih mera u suzbijanju i iskorenjivanju ove zaraze.

Imajući u vidu poznate epizootiološke činjenice o pojavi i širenju infekcije proteklih 21 godinu, uložanim materijalnim i ljudskim resursima na iskorenjivanju KKS u Srbiji može se reći da su nastale štete ogromne kako direktne tako i indirektne.

Danas 2012., kada u Srbiji nema registrovanih kliničkih slučajeva pojave KKS a imunoprofilaksa se i dalje sprovodi, postavlja se pitanje da li je u nasoj zemlji bolest iskorenjena.