



Livestock brucellosis in the Republic of Tajikistan and the development of new struggle approaches

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General information about the Republic of Tajikistan

Total Area - 143 000 sq. km
Population - 8 100 000
Capital - Dushanbe

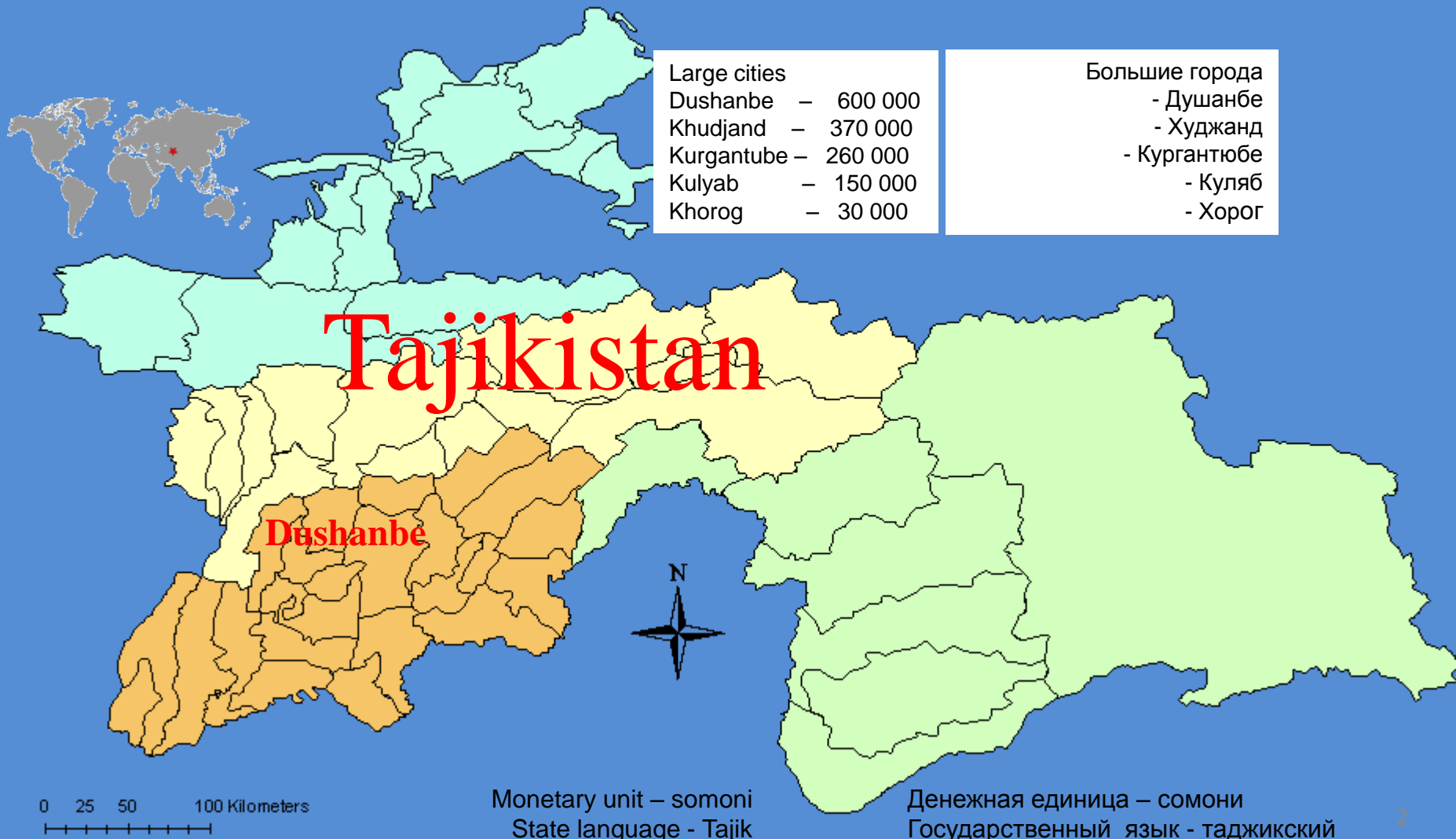
Площадь - 143 000 кв. км
Население - 8 100 000
Столица - Душанбе

Large cities

Dushanbe - 600 000
Khujand - 370 000
Kurgantube - 260 000
Kulyab - 150 000
Khorog - 30 000

Большие города

- Душанбе
- Худжанд
- Кургантубе
- Куляб
- Хорог



Breed of cattle in the Republic of Tajikistan



Местная порода / Native breed **55%**



Швицезебувидная порода
Schwyz breed **10%**



Чернопестрая порода
Black-and-white breed **30%**

Breed of Sheep in Tajikistan



Таджикская порода коз
Tajik breed of goats

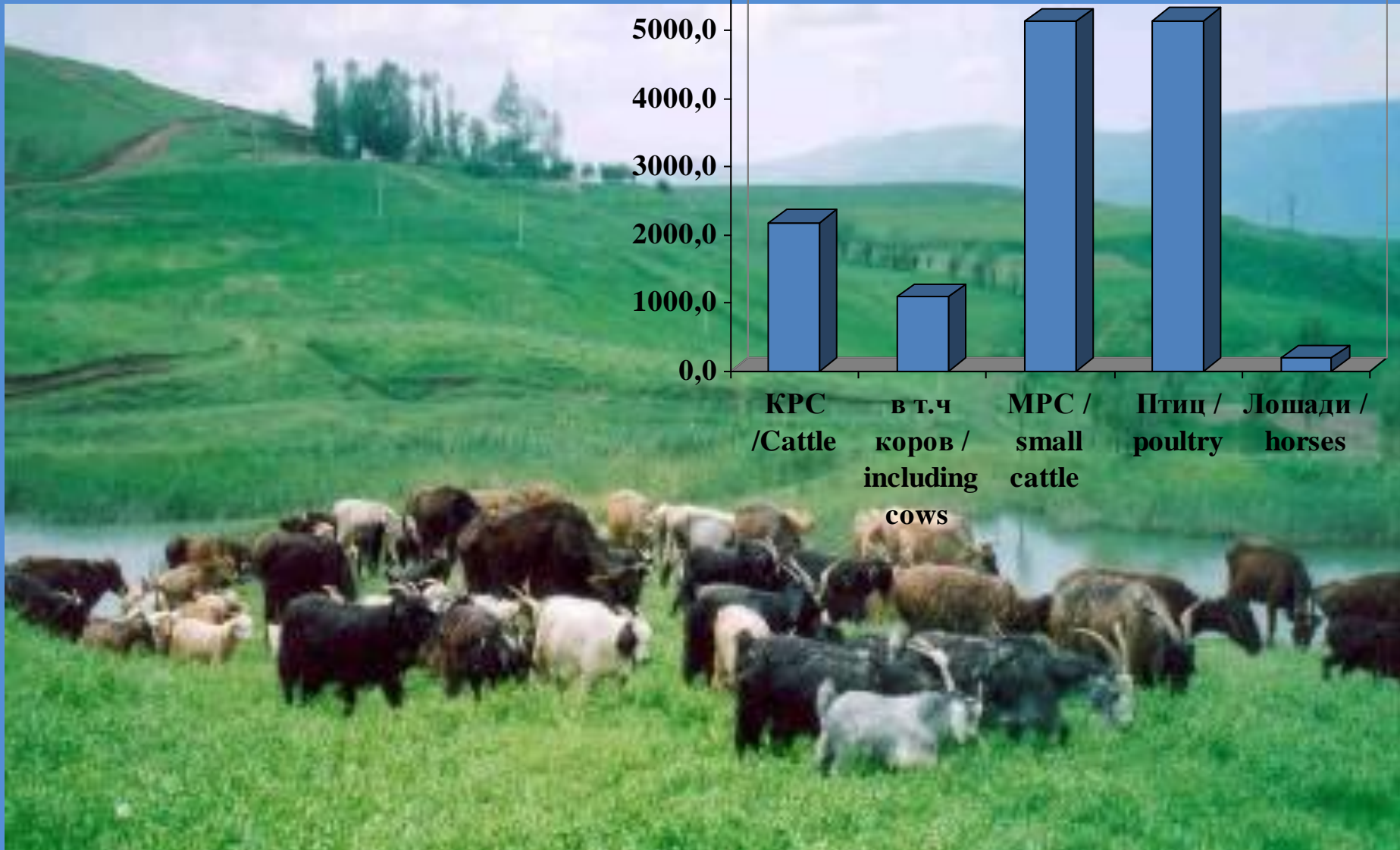
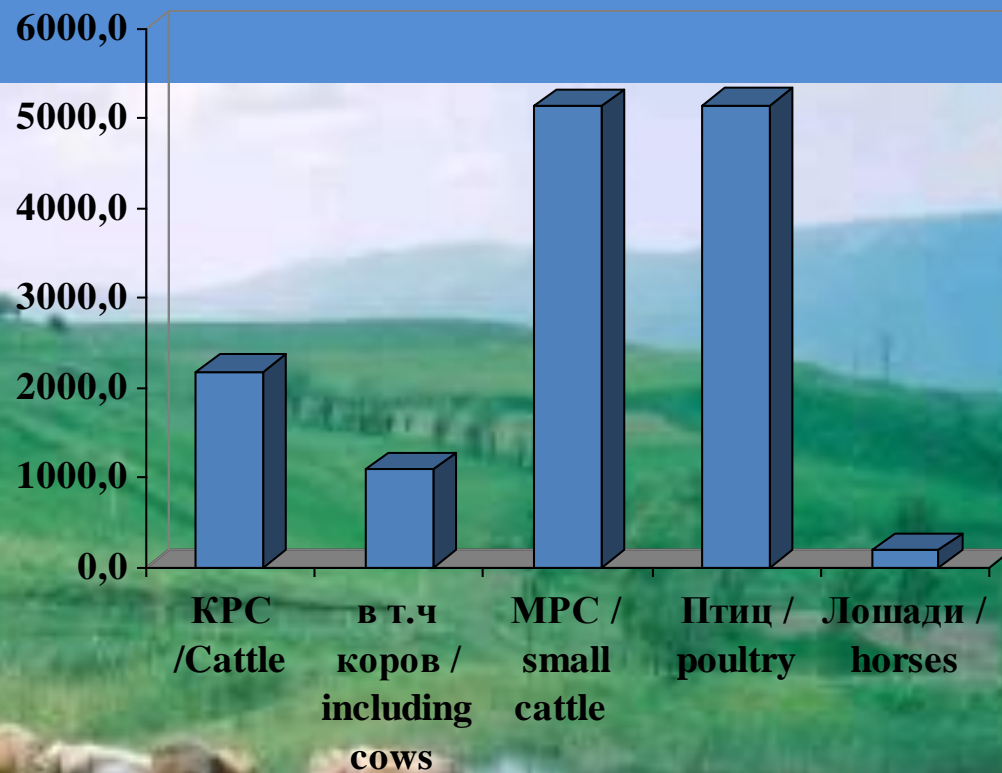


Таджикская порода овец
Tajik sheep breed



Гиссарская порода овец
Gissar sheep breed

Livestock in Tajikistan



Definition

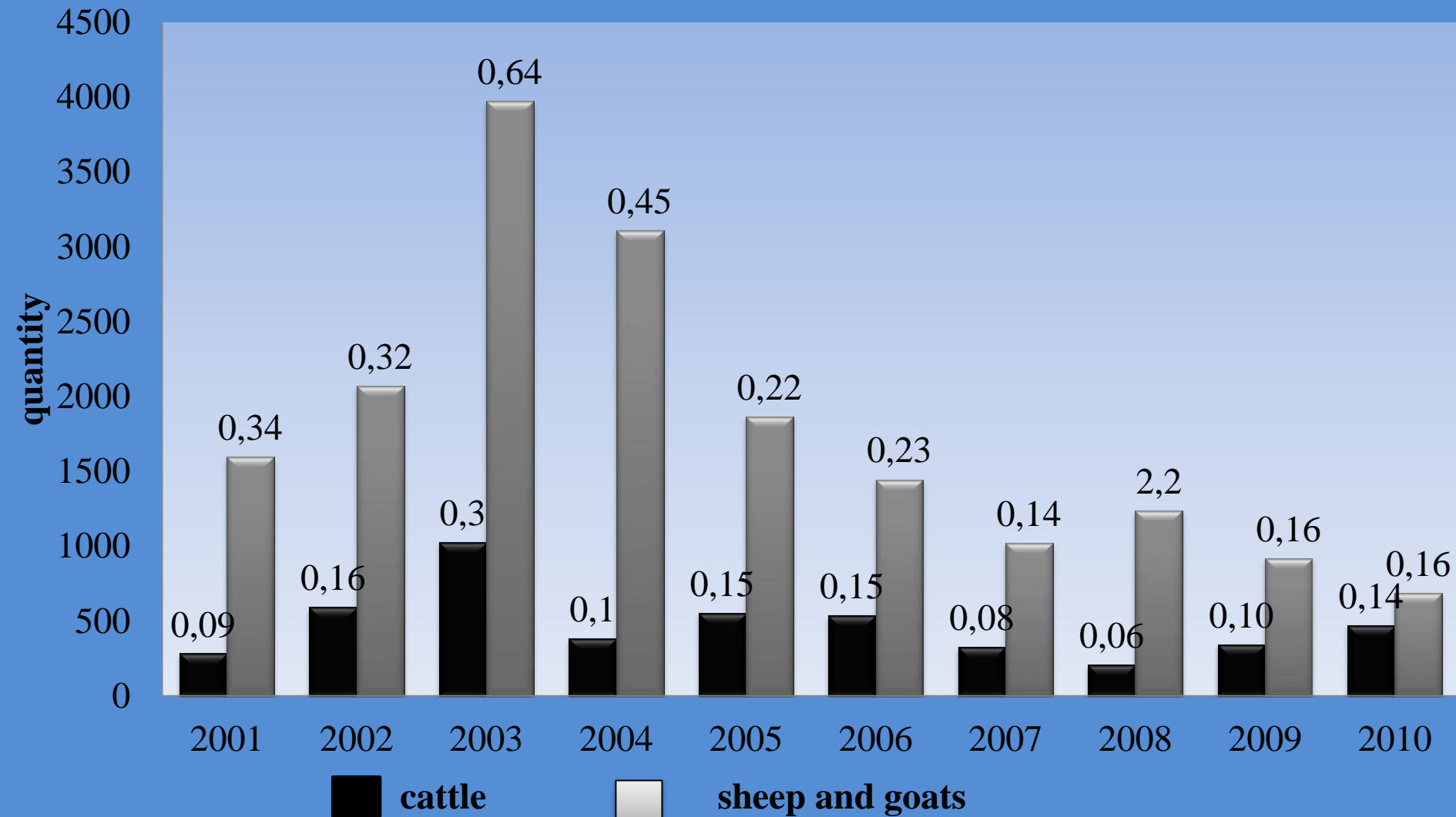
- Brucellosis – infectious disease, which can infect all the livestock farms
- It is caused by bacteria of six species of *Brucella*, which can also cause the disease in human (*B. melitensis*, *B. abortus*, *B. suis*, *B. ovis*, *B. neotomae*, *B. canis*)
- In most cases, the disease in cattle caused by *B. abortus* and *B. melitensis* in sheep and goats

Brucellosis is still quite widespread among animals in many countries, including Tajikistan. The fight against brucellosis remains an urgent challenge for the veterinary and healthcare organizations.

Brucellosis in Tajikistan

- First registered in 1936
- Measures against brucellosis carried out since 1949

The incidence of brucellosis in cattle and small cattle, according to the Republican Antiepidemiological Center



Dynamic of brucellosis in cattle and small ruminants for the period 2011-2015

Years	In Tajikistan		
	Investigated	Responded positively	% Infection
Sheep and goats			
2011	433816	731	0,16
2012	416717	1066	0,25
2013	421442	1662	0,39
2014	437150	1851	0,42
2015	173300	1091	0,62
Cattle			
2011	315678	413	0,13
2012	210117	347	0,16
2013	321960	439	0,13
2014	331407	812	0,24
2015	237890	526	0,22

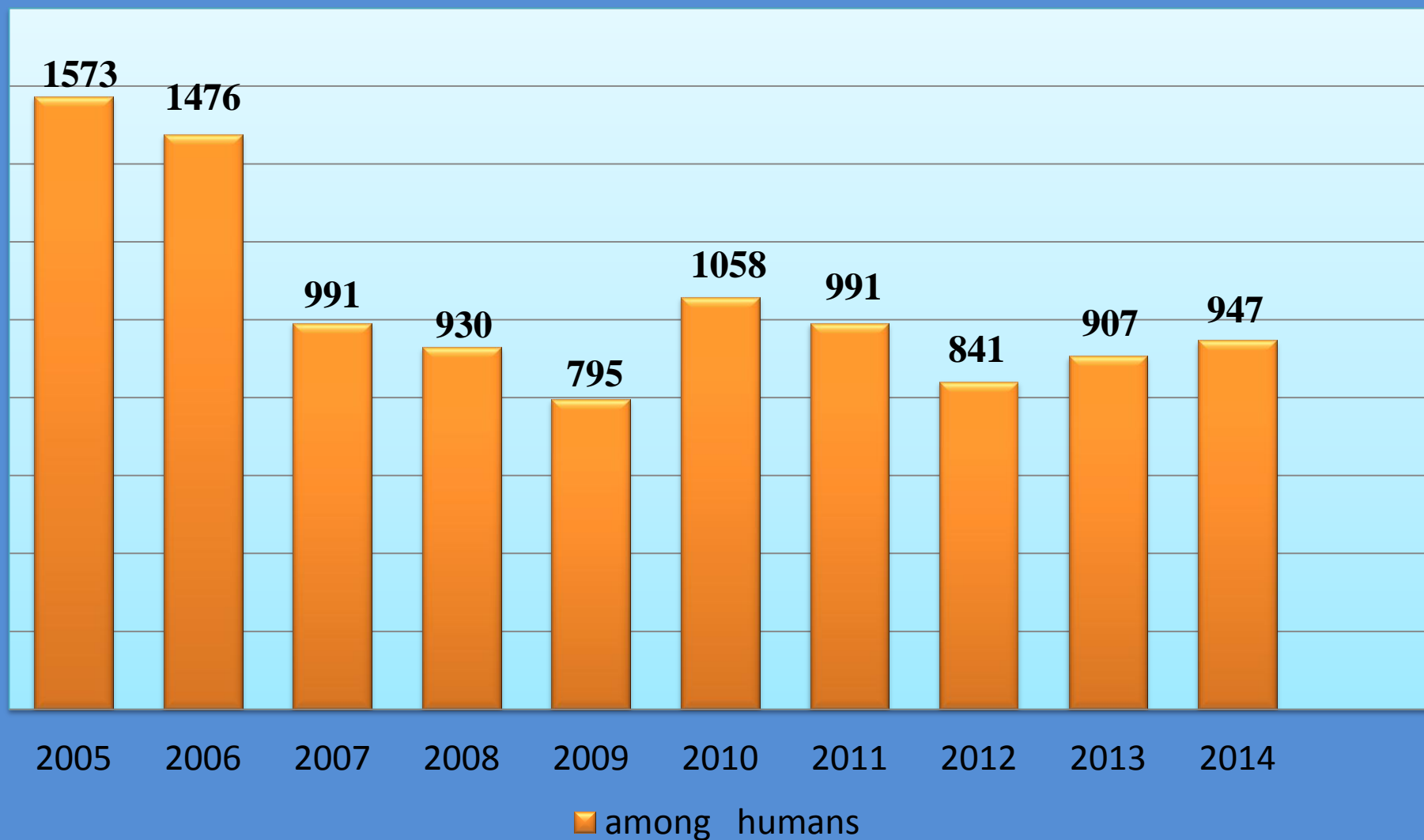
Aborted fetus spreads infection in the environment



Abortion in sheep



The incidence of brucellosis in humans in Tajikistan (according to the data of Sanitary Epidemiological Station)



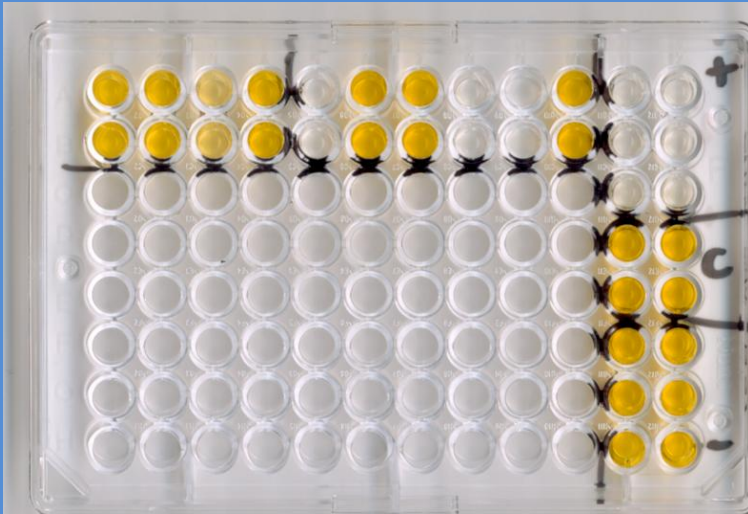
Measures against brucellosis

- **1949 – 1954** - Diagnostic (serology) animal research;
- Detection and slaughter of the sick animals.
- Transhumance system contribute to the spread of the pathogen, the appearance of new lesions, annually allocates 12-13 thousands of sick cows, who often have abortion of brucellosis etiology.

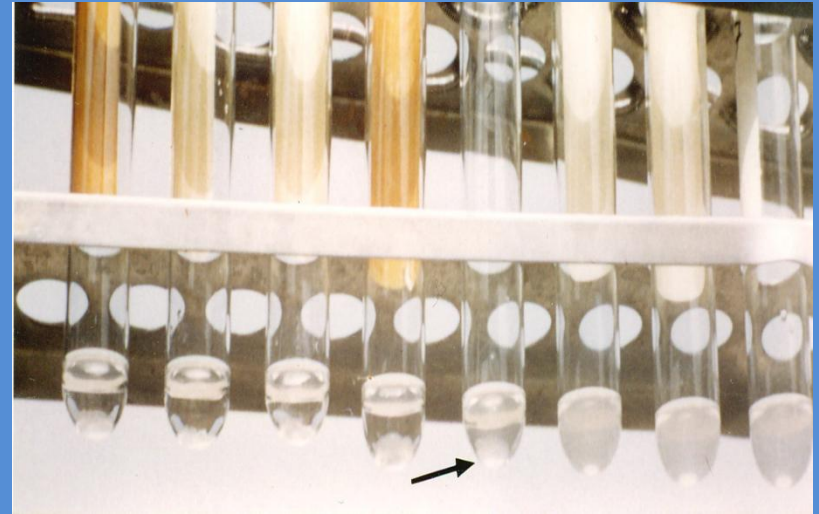
Measures against brucellosis

- Since 1974 immunization of animals
- Vaccine from strain 82 for cattle and Rev-1 for sheep
- Infecting of brucellosis in cattle decreased from 2.4% (1974) to 0.1% (1999) of cattle has decreased from 2,4% (1974) to 0,1% (1999).
- Infecting of small ruminants has decreased from 3,6% (1974) to 0,5% (1999).

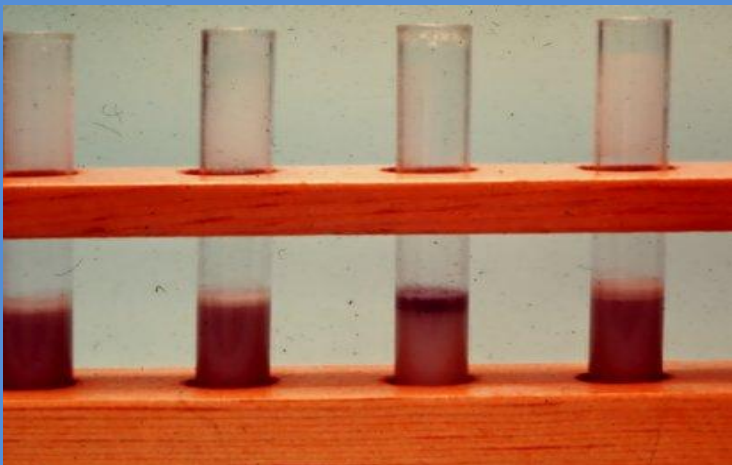
Elisa



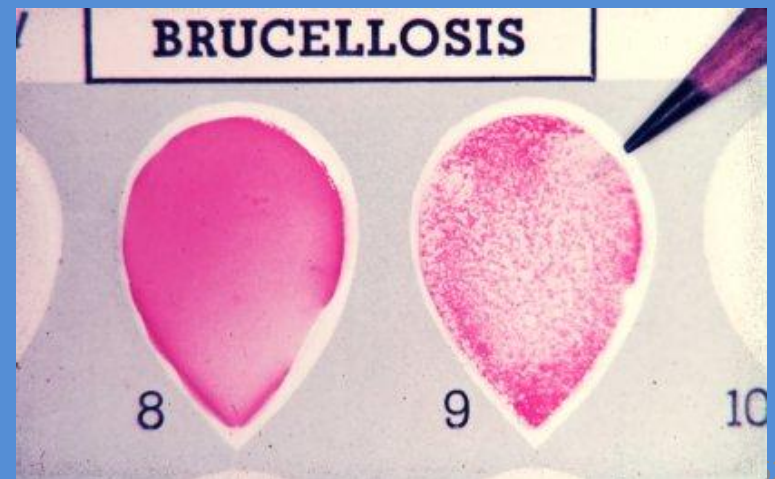
The tube agglutination test



The ring test



The Rose Bengal or card test



The system is based on:

- The formation of the individual young sheep flocks
- Preventive immunization yearling and rams a full dose of the vaccine against brucellosis from strain Rev-1
- Isolation of the yearling and rams from an adult sheep
- Annually re-immunization of adults ewes sheep (ewes goats), with a small dose of the vaccine strain Rev-1 to eliminate the threat of their infection
- Complete coverage preventive vaccination of all breeding stock of sheep and goats in the collective and state farms, other farms engaged in breeding, sheep and goats, as well as in private farms of citizens
- Gradual replacement of older ewes sheep, young sheep ewes, which were grown in isolation from adult sheep and planted at the age of 3-5 months
- Performing of other activities provided instructions for the control of animal brucellosis

Rev-1

vaccination of small ruminants

- The system of preventive and curative measures against brucellosis of small ruminants and infectious epididymitis of sheep with the vaccine from the strain of Rev-1 in farms of Tajikistan.

Rev-1

vaccination of adult small ruminants

- Flocks of adult sheep (goats) are vaccinated every year in July and August after the separation of young. Research on brucellosis and two months before insemination were vaccinated with the low doses.

Vaccination of young small ruminants with Rev-1

- Every year in July and August all the young sheep of the year of birth is isolated from sheep and ewes by taking into account their gender in separate flocks, apart from the young rams;
- Yeanling and rams for preventive purposes immunized for the first time a full dose of the vaccine strain Rev-1 at the age of 3 - 5 months without preliminary investigation on brucellosis.
- Vaccinated yeanling were tested for brucellosis not earlier than 12 months after vaccination. In 2 years after the first immunization, animals were re-examined and re-vaccinated with low doses of the vaccine of strain Rev-1.

Small doses of the vaccine Rev-1

- For a low dose vaccination, a full dose of the vaccine diluted in a volume of 2 ml, poured into 1000 ml vial add 998 ml of solvent and each animal was injected with 1 ml of the prepared preparation.

Recovery of brucellosis in farms

- Within four years, annual vaccination (small doses of Rev-1)
- After a full recovery farms from the brucellosis, its diagnostic control test is subjected to (serological monitoring) 10% of the animals.

Development of protective antigen for prevention of brucellosis in animals

- At the present time for the prevention of brucellosis of cattle in Tajikistan are widely used live vaccine from strain B.abortus-82, and for small cattle strain Rev-1.
- However, the use of live vaccine is dangerous because of the long-term carriers of the bacteria, the possibility of existence of residual virulence in immune deficiency animals and debilitated animals.
- However, the repeated use of live vaccines contributes to the development of pathological changes. Given the importance of the value of this question we have developed protective antigen for prevention of brucellosis.
- To this development we have received a patent TJ-686.

ҶУМҲУРИИ
ТОҶИКИСТОН



ИДОРАИ
ДАВЛАТИИ
ПАТЕНТИ

НАХУСПАТЕНТ

№ ТҶ 686

БА ИХТИРОИ

Тарзи ҳосил намудани ваксина барои пешгирии бруцеллёз

Дорандаи
нахустпатент

Муминов А., Сатторӣ И., Маҳмудов К.Б., Сулаймон Х.Н.,
Сатторов Ғ.М., Кашкулов М.Ш.

Сарзамин

Ҷумҳурии Тоҷикистон

Муаллиф(он)

Муминов А., Сатторӣ И., Маҳмудов К.Б., Сулаймон Х.Н.,
Сатторов Ғ.М., Кашкулов М.Ш.

Аввалияти ихтироъ 10.03.2015

Таърихи рӯзи пешниҳоди ариза 10.03.2015

Аризаи № 1500922

Дар Феҳристи давлатии ихтироъҳои

Ҷумҳурии Тоҷикистон 17 апрели с. 2015 ба қайд гирифта шуд

Нахустпатент

этибор дорад аз 10 март с. 2015 то 10 март с. 2025



ДИРЕКТОР

Чумъахонзода Ҷ.Ҷ.

Method of producing vaccine for the prevention of brucellosis

Method of producing vaccine for the prevention of brucellosis from protective antigen, comprising growing the bacterial mass on a solid medium, which is washed from ballast material with saline, conducting resuspension in distilled water at a ratio of 1:5, preparation of the hydrolyzate and mixing it with the obtained cell suspension, washing the resultant slurry with distilled water and centrifuging.

As a hydrolyzation is used 0.1 normal acetic acid.

Dosing and injection of the vaccine

Produced an experimental series of the vaccine, and its sterility and harmlessness examined in the laboratory conditions. For studying the properties of the vaccine immunized subcutaneously 30 goats of 5-8 monthly healthy calves.

Experiments are underway. Based on the obtained data will be developed a temporary instruction on the application of the vaccine from protective antigen for prevention of brucellosis in cattle.

Conclusion

- The vaccine provides good effect when applied in a complex of measures against brucellosis
- Each drawing blood and vaccination should definitely be disinfected
- Recommend urgently on farms having infected more than 1% of these farms all animals subjected to a serological test. Sick animals pass to the meat, remaining animals to immunize in accordance with the instruction.

**THANK YOU FOR YOUR
ATTENTION!**

