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**Sri Lanka**

# Sri Lanka

- **A beautiful Island in the Indian ocean**
- **Adjacent to the India**
- **Size of the country is 65610 sqKm with land capacity of 64,630 sqKm.**
- **Human population is 20 million with population growth rate of 0.89%**
- **Having three climatic zones based on the rain pattern – Dry, Intermediate and Wet**
- **Agricultural based production contributed 11.1% of the total GDP**

# Livestock in Sri Lanka

- **Animals rearing for food are mainly**
  - cattle, buffalo, goat, sheep, swine and poultry
- **Cattle & buffaloes are mainly rearing for milk purposes**
- **Livestock farming is belong to**
  - **28 State owned farm** (National livestock development board)
  - **Private farm**
- **Management systems are**
  - Extensive,
  - Semi intensive &
  - Intensive

# Livestock Population in Sri Lanka

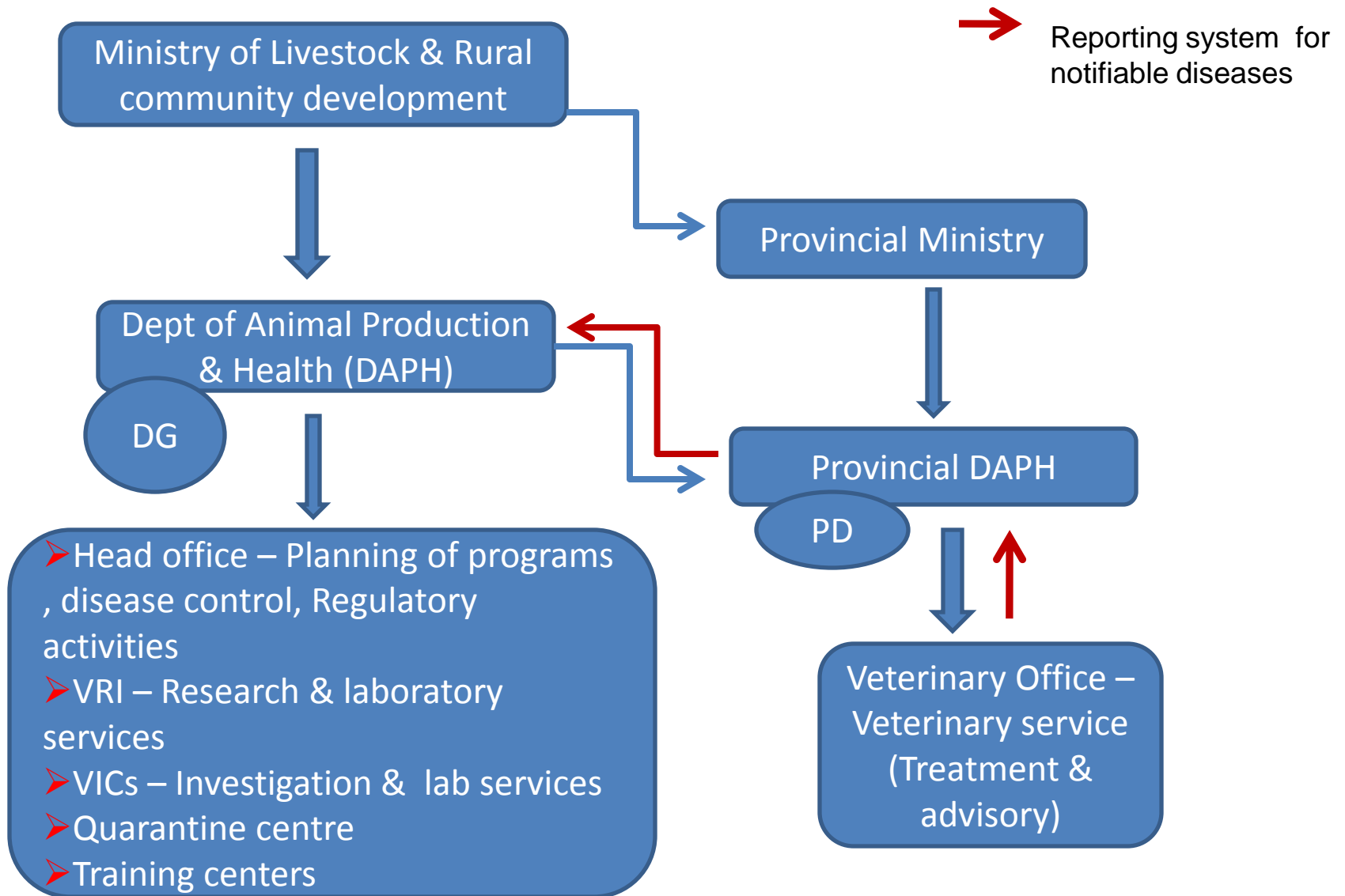
(C&S, 2012)

Species	population
Cattle	1.2 million
Buffalo	0.4 million
Goat	0.3 million
Sheep	9000
Swine	89000
Chicken	14 million

# Milk & Meat Production (C&S, 2012 )

Species	Average Annual Milk production (L)	Average Annual Meat Production (MT)
Cattle	270 Million	35000
Buffalo	66 Million	-
Goat & Sheep	-	1600
Swine	-	910
Chicken	-	137000

# Government structure to support for Livestock development



# Brucellosis in Sri Lanka

- First confirmed case reported in 1956
- At present, spread through out the country
- Up country (centre of the country) considered as free
- Found in cattle, goat, sheep, dog & swine
- Suspected in wild animals
- Prevalence strain In Sri Lanka - *B. abortus* bio var 3 (Priyantha, 2011; Kumaraswamy, 1980)
- No laboratory evidences for *B. melitensis* in recent years
- No island-wide survey has ever been conducted
- Several surveys covering restricted population were carried out

## Surveys conducted in restricted population

Year	Target population	Test performed	Prevalence
1995	4270 animals	Indirect ELISA	5.6% - Cattle 3.4% - Buffalo
1991	Bulk milk samples representing 5204 herds	Milk ring test (MRT)	0.12% herd incidence rate
1992	5322 animals in 12 farms	RBT and CFT	Range between 1.5 - 9.6%
1982	Bulk milk samples in 3 districts	Milk ring test	7.7% 12% 14.4%
1982	305 herds	RBT	1.6% herd incidence rate
1960	4000	Serum agglutination test	6%
1968	3000	Serum agglutination test	12%
1971	5000	Serum agglutination test	40%
1956	680 buffaloes	Serum agglutination test	21.8% (including bulls)



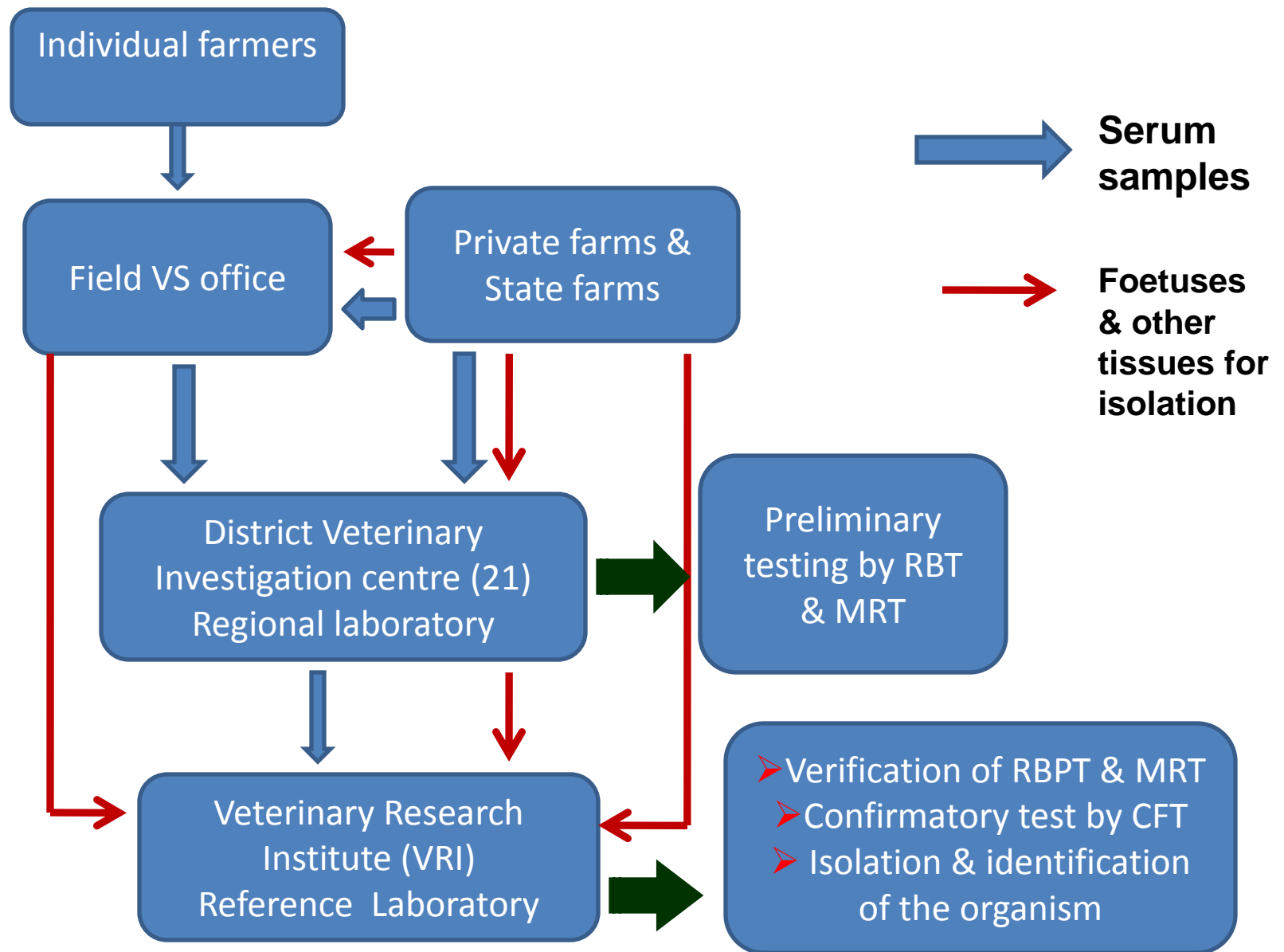
# Laboratory confirmed cases for brucellosis

Year	Species	Number of RBPT positive samples/Number of Submitted serum samples	Number of CFT positive samples(Caprine samples tested for both antigens)	Number of culture positive samples/Number of submitted samples (Foetuses , vaginal swabs, placenta etc)
2010	Cattle	46/747 (6%)	18/46 (39%)	0/9
	Buffalo	3/23 (13%)	0/3	0/2
	Goat/Sheep	0/7	-	-
	Swine	0/9	-	-
	Dog	0/94	-	-
2011	Cattle	105/427 (24.5%)	30/105 (28.5%)	04/45 (+ve foetuses)
	Buffalo	02/41	0/02	-
	Goat/Sheep	0/97	-	0/5
	Swine	0/7	-	0/1
	Dog	0/4	-	-

# Laboratory confirmed cases for brucellosis

Year	Species	Number of RBPT positive samples/Number of Submitted serum samples	Number of CFT positive samples (Caprine samples tested for both antigens)	Number of culture positive samples/Number of submitted samples
2012	Cattle	93/559 (16.63%)	24/93 (25.8%)	0/30
	Buffalo	2/51 (3.92%)	0/2	0/6
	Goat/Sheep	0/44	-	0/1
	Swine	0/26	-	-
	Dog	0/17	-	-
2013	Cattle	65/352 (18.46%)	25/65 (38.46%)	0/22
	Buffalo	10/60 (16.66%)	5/10 (50%)	-
	Goat/Sheep	0/21	-	0/7
	Swine	-	-	-
	Dog	-	-	-

# Sample submission and disease diagnosis



# Sample submission and disease diagnosis

Rose Bengal plate test



Antigen prepared by VRI according to the OIE guidelines using S99 reference strain

Milk Ring test



Antigen prepared by VRI according to the OIE guidelines using S99 reference strain

Complement Fixation Test



-Both antigen (*B. abortus* & *B. melitensis*) purchased from the Weybridge laboratory  
-- Complement & Haemolysin prepared in VRI

Isolation & identification



Isolation , identification and biovar identification done according to the Manual “Techniques for the Brucellosis Laboratory” by G. G. Alton et al (1988)& OIE guidelines.

# Laboratory facilities at VRI

- Separate laboratory going through 2 doors to handle zoonoses including Brucella organism
- Equipped with
  - Class 3 biohazard
  - CO2 incubator & other incubators
  - Personal protective cloths
  - Other requirements in Microbiology laboratory (autoclave, centrifuge, homogenizer etc.)
  - Animal house for laboratory animals
  - Separately rearing sheep for blood for laboratory purposes [Laboratory Picture - Copy](#)
- Human resources
  - Qualified Research Officers
  - Trained & experienced technical staff
  - Supportive staff

# Prevention & control

- **Vaccination**

- **Type of Vaccine –**

- Produce local freeze dried live vaccine using S-19 reference strain according to the OIE guideline
    - Annual production – approx. 50000 doses.

- **Vaccination policy –**

- All female animals in high reactor herds above 6months of age excluding pregnant animals
    - Administered 1ml subcutaneously

# Prevention & control

- **Control animal movements by law**
  - **Need to issue a health certificate by range veterinary surgeon with the approval for transport**
- **Regular screening for animals used in semen production**
- **Emergency vaccination of animals in newly infected herds**
- **Serological examination of animals in suspected herds and confined them within the farm**

# Prevention & control

- **Suggested control programmes were submitted to the Government several times**
- **Those include**
  - screening & culling in phase out basis
  - Vaccination of calves in all herds at 6 months of age etc.
- **However, all these efforts were not worked out**
  - Due to financial difficulties for compensation
  - Due to religious issues &
  - Some other reasons



# Prevention & control

- **Therefore, the disease is still in the country under control and believed to be at the rate of 5 – 10% prevalence (based on unpublished data).**

# Proficiency test result

RBT		CFT		iELISA		
Test performed on:	02/01/2014	Test performed on:	03/01/2014	Test performed on:		
Antigen supplier:	NIAH/Thailand	Antigen supplier:	CVI, Weybridge, UK	Kit supplier:		
Antigen batch number:	RBA5013	Antigen batch number:	Lot 16	Kit batch number:		
Antigen expiry date:	Sep/2015	Antigen expiry date:	06/02/2018	Kit expiry date:		

	Tube ID:	Result <sup>(1)</sup>	Interpretation (P/N) <sup>(2)</sup>	Result <sup>(3)</sup>	Interpretation (P/N) <sup>(2)</sup>	OD	Calculating index (%)	Interpretation (P/D/N) <sup>(2)</sup>
Positive control								
Internal Positive control								
Negative control								
1	50	2+	P	1:32 (1+)	P			
2	120	2+	P	1:16 (1+)	P			
3	279	3+	P	1:32 (3+)	P			
4	303	2+	P	1:16(3+)	P			
5	418	0	N	0	N			
6	530	0	N	0	N			
7	660	0	N	0	N			
8	785	1+	P	1:16(1+)	P			
9	809	0	N	0	N			
10	968	0	N	0	N			
11	1043	1+	P	1:8(1+)	P			
12	1200	2+	P	1:16(3+)	P			
13	1228	2+	P	1:16(3+)	P			
14	1355	3+	P	1:32(4+)	P			
15	1428	0	N	0	N			
16	1512	0	N	0	N			
17	1690	0	N	0	N			

1: Give the raw result (0 or +) and, if possible, the intensity of the reaction (0, +, ++, +++ or ++++)

2: P=positive; N=negative; D=doubtful

3: Give the titre in IU/ml

Positive cut-off (%) :
Doubtfull cut-off (%) :
Negative cut-off (%) :



Thank You