Country Presentation - Pakistan

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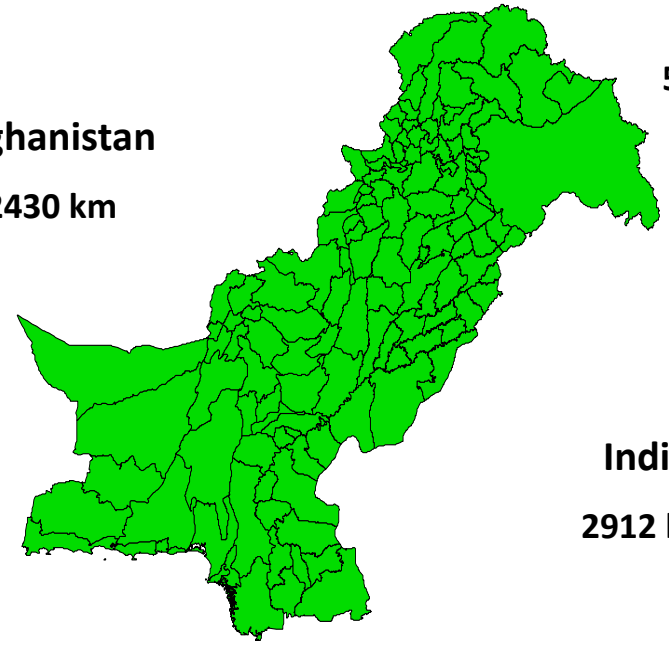
Format of Presentation

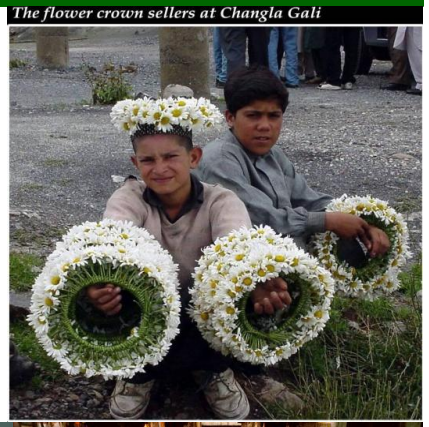
- Pakistan a Geographical Overview
- Food Producing Livestock Resource
- Importance & Production Systems
- Vet Establishments & Lab Network
- Diagnostics & Prevalence of Brucellosis
- Diagnostics Strategy for Brucellosis Diagnostics
- Prevention and Control
- Regional ILPT 2013 – Procedure
- Test Results
- Policy & Plan for control of B. melitensis

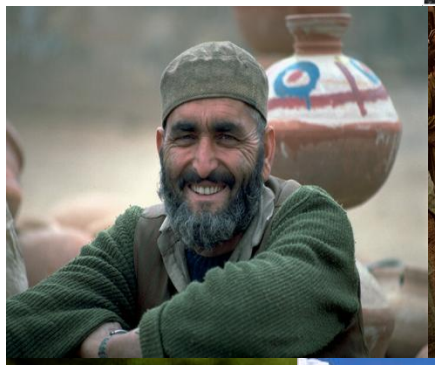
Pakistan

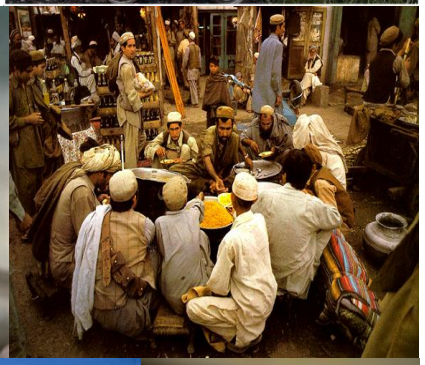
Total area = 803,940 km^2

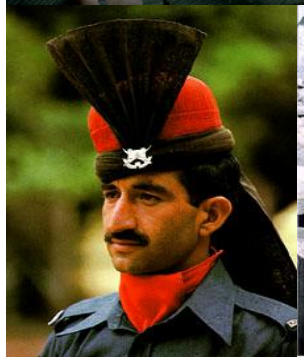
Total human population =180 Million




The flower crown sellers at Changla Gali







Livestock Population - Pakistan

Species	2010-11*	2011-12*	2012-13*	Percent Growth
Cattle	35.6	36.9	38.3	3.77
Buffalo	31.7	32.7	33.7	2.97
Sheep	28.1	28.4	28.8	1.18
Goat	61.5	63.1	64.9	2.71
Camels	1.0	1.0	1.0	1.30
Horses	0.4	0.4	0.4	0.58
Asses	4.7	4.8	4.9	1.85
Mules	0.2	0.2	0.2	1.76

Livestock Population (Million No)

• *Estimated Figure based on inter census growth rate of Livestock Census 1996 & 2006*

ECONOMIC IMPORTANCE OF LIVESTOCK SECTOR OF PAKISTAN

- **Contributes 55.1% to the agriculture value added**
- **Share in National GDP is 11.5% with 3.7% growth rate**
- **Share in Total Foreign Exchange Earnings is more than 8.5%**
- **Nearly 8 million families involved with 30-35% income dependent on livestock production activities**
- **Value of livestock & its products is more than the combined value of major and minor agricultural crops.**
- **Provides raw material to Leather Industry, Carpet industry, Soap industry, Pharmaceutical industry, etc.**

Livestock Production

Livestock Production and Consumption 2012-13 (000 Tons)*				
Species	Milk		Meat	
	Gross Production	Human Consumption		
	49,512	39,945	3,397	
Cow	17,372	13,897	Beef	1,829
Buffalo	30,462	24,370	Mutton	643
Sheep	37	37	Poultry Meat	907
Goat	801	801	*Ministry of National Food Security & Research; Year Book 2012-13.	
Camel	840	840		

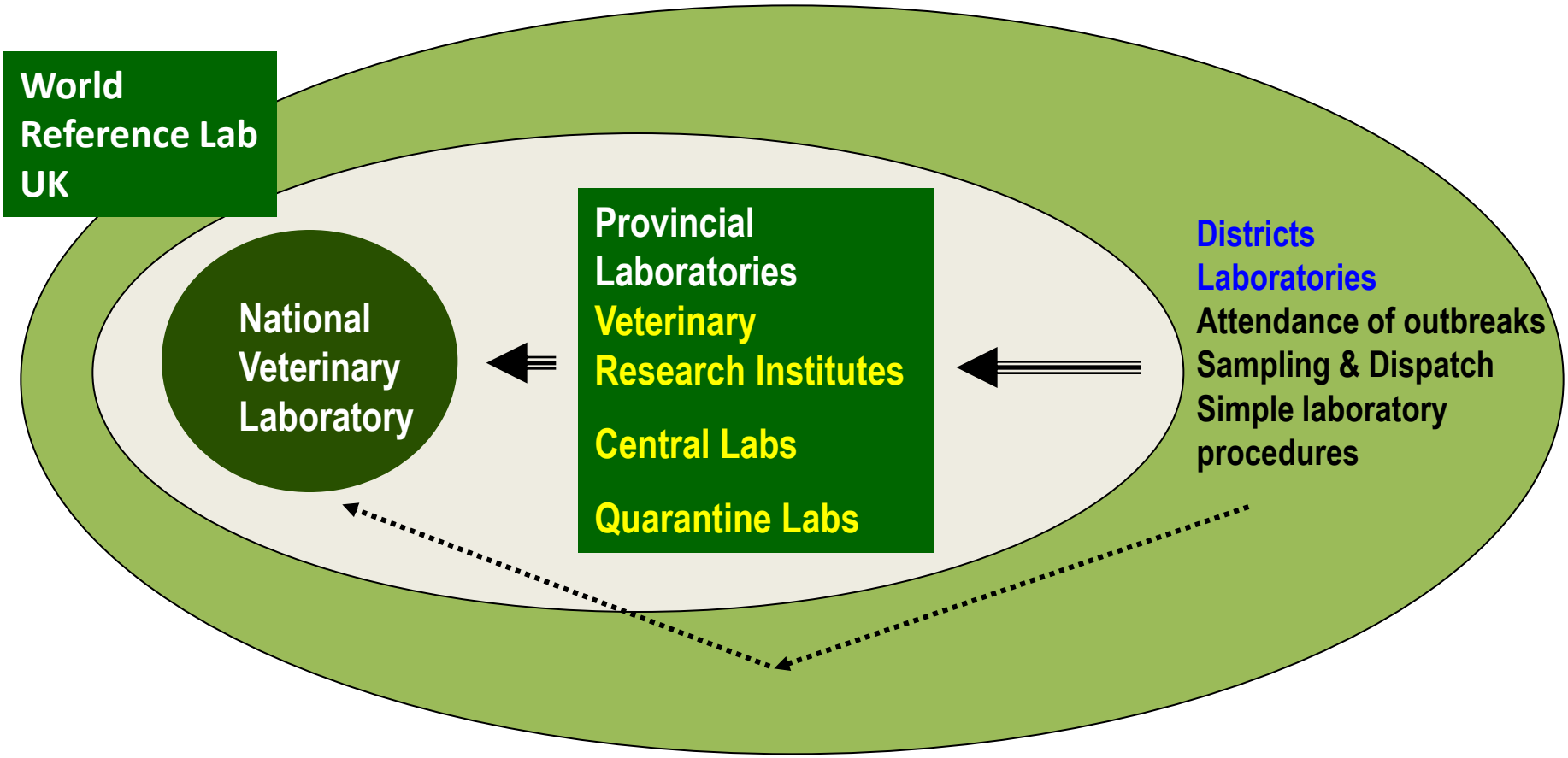
Livestock Production Systems

- **Large Ruminants**
  - Subsistence small holdings
  - Small market oriented small holdings
  - Rural commercial farms
  - Urban/peri urban dairy farming
  - Desert cattle farming
- **Small Ruminants**
  - Nomadic
  - Transhumant
  - Stationary

Veterinary Establishments

PROVINCE	Vet. Hospital	Vet. Dispensary	Vet. Centers	Diagnostic Labs.	Mobile Dispensary
Punjab	565	1595	1972	36	106
Sindh	179	----	607	10	23
KPK (NWFP)	127	341	204	17	----
Balochistan	101	715	----	06	---
Northern Areas	11	150	0	02	---
AJK	12	26	-	03	---
ICT/ NVL	07	05	05	01	---
Pakistan	1002	2832	2788	75	129

Veterinary Laboratory Network



Diagnostics and Prevalence (%)of Brucellosis

Area	Cattle	Buffalo	Sheep	Goats	Human	Study Reference	Tests used
Overall country	Incidence varied 3.25-4.4				-	Naeem et al. (1990)	RBT, SAT, MRT
Kohat	17.58		32.5			Hamidullah et al. (2009)	RBT, SAT
Punjab	5.06	7.74	-	-	-	Abubakar et al. (2010)	ELISA
Quetta	3.0	8.5	-	-		Shafee et al. (2011)	MRT, i-ELISA
Quetta	3.0	3.2	-	-	-	Shafee et al. (2012)	RBPT, i-ELISA
AJK	-		-	11.33	7.55	Din et al. (2012)	RBT, SAT
ICT/ N. Punjab	6.9	6.6	-	-	-	Ali et al. (2013)	MRT

Use of ELISA, PCR and Isolation have gradually evolved and is increasing

Current Scope of Brucellosis Diagnostics

- More widely performed tests
  - RBT , MRT and SAT
- Less frequently used confirmatory tests
  - ELISA, PCR
- Isolation least frequently attempted and if ever, mainly for research
- More institutions need to be involved in *Brucella* antigen production and training on Brucellosis related tests and analysis

Prevention and Control

- **Brucellosis is a neglected disease with increasing incidence in large dairy herds**
- **Official Control Policy**
  - need from curative to preventive strategy
  - need from voluntary to mandatory/ compulsive
  - need to be reviewed for considering, Proper Diagnosis; Screening of herds, markets, abattoirs; removal of +ve reactors and awareness as way forward
- **Due to high price of cattle/ buffalo Test-n-Slaughter is neither feasible nor pragmatic**
- **Immuno-prophylaxis as an option to control**
  - Main obstacles to such control are less adequate investments on veterinary services; different herding system; lack of local vaccine production
- **Testing-Isolation-Separate Management of positive reactors is viable option in official and large private herds, to limit spread**
  - impact of this approach will need to be demonstrated

Procedure for Conducting the ILPT

- Organizers and the Coordinator
  - **NIAH – Brucellosis Laboratory; Dr. Monaya Ekgatat**
- Participating Laboratory ID
  - **National Veterinary Laboratories, Islamabad**
    - **Diagnostics & Surveillance Section**
- Material received
  - **17 vials of bovine serum having antibodies against Brucellosis**
  - **RBT antigen (LOT RBA0513)**
- Date samples were analysed
  - **26-12-2013**
- Date results were sent
  - **27-12-2013**
- Methods and procedures used
  - **RBT; OIE Terrestrial Manual 2008, Chapter 2.4.3; 2 (a)**
- Equipment used
  - **White Tile**

Brucellosis Serum Proficiency Test 2013 - Results

	Tube ID:	Result[1]	Interpretation (P/N)[2]
Positive control	PC(a)	+4	P
Internal Positive control	IPC(a)	+4	P
Negative control	NC(a)	0	N
1	443	0	N
2	1580	0	N
3	836	0	N
4	1014	+4	P
5	1155	+4	P
6	1366	+4	P
7	286	+4	P
8	586	0	N
9	1264	+4	P
10	735	+4	P
11	1662	+4	P
12	949	0	N
13	400	+4	P
14	698	0	N
15	1439	0	N
16	102	+4	P
17	18	+4	P

Policy/ Plan for Control of *B. melitensis*

- Pakistan has been actively participating efforts towards control of diseases of economic importance and of veterinary public health significance
- It is imperative to enhance efforts and regional collaboration on understanding of diagnostics, distribution and epidemiology of *B. melitensis* in the region and developing strategy to control the disease

Thank You!