



SMALL RUMINANT PRODUCTION & HEALTH AS A SOCIAL & ECONOMIC BUFFER AGAINST CLIMATE SHOCK

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I am going to cover

- Role of small ruminants in maintaining food security for vulnerable people in the poorest parts of the world
- Why sheep and goats should be considered differently than cattle
- Animal health, with focus on peste des petits ruminants (PPR) and resiliency to climate shocks
- The role of the UN FAO OIE PPR global eradication program (PPR-GEP) in enhancing this resiliency



Small Ruminants and Poverty



- There are 2.1 billion sheep and goats in the world; 80% are in Asia and Africa and are more typically owned by those with less income
- There is a strong correlation between poverty, small ruminant population density and distribution of PPR

Role of the sheep and goat in much of the world

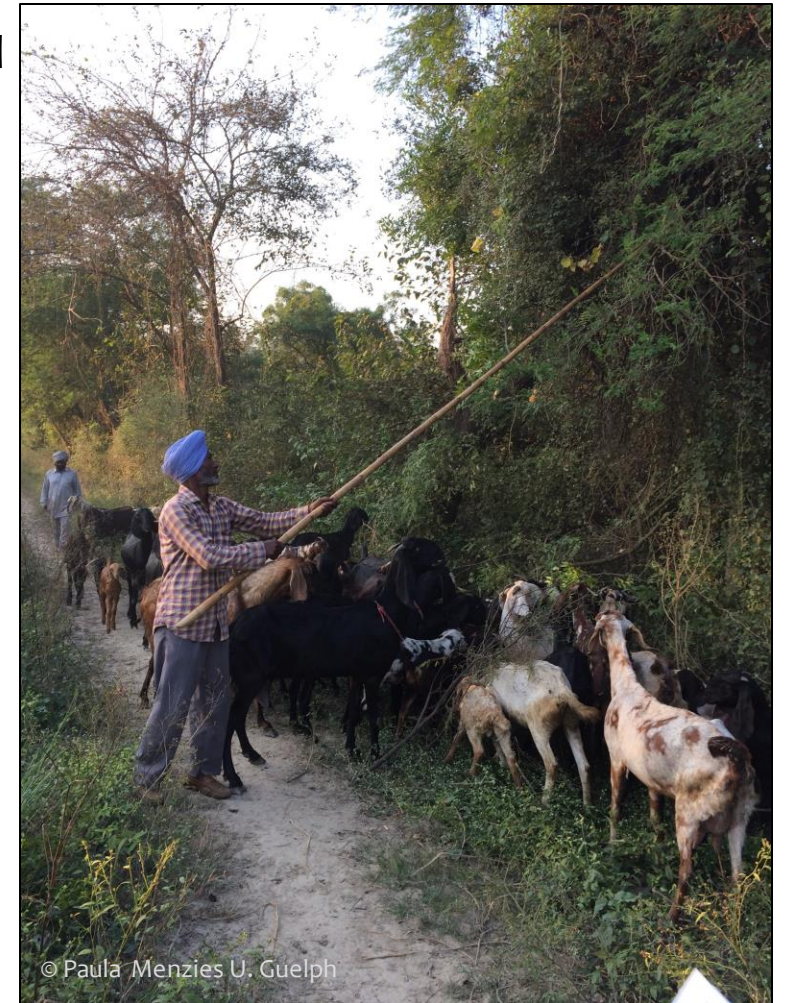
- Small ruminants are the business and livelihood of primarily women
 - They are their bank account – lower investment required than for cattle
 - They provide high quality protein (milk) for children
 - Manure is used for fertilization rather than chemicals
 - Sales of kids for feast day celebrations provides cash to women
 - Women overwhelmingly reinvest this income into their children – food, education, clothing
- Small ruminants are highly mobile
 - Are able to travel long distances to secure feed
 - In event of a political or climate crisis, animals may be taken with the family
- Very important for cultural and religious reasons
- Goats in particular provide an income / consumption buffer against substantive drought shocks
 - Acosta et al, 2021. Coping with climate shocks: The complex role of livestock portfolios. World Development. 146:105546.



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The niche that goats and sheep fit is different than cattle

- More adaptable, particularly goats
 - More heat and drought tolerant, able to exploit seasonal sources of food
- Require less daily water consumption
 - Goats more tolerant of brackish water
- Have lower enteric methane production than cattle
 - More adaptable feeding habits, drier manure
- Able to exploit marginal grazing lands with less soil damage
- Goats - browse a wider variety of plants and bushes
 - Used to reduce forest fire risk
- Graze garden residues, crop stubble
 - Reduce the need for burning
- Control noxious weeds
 - Reduce the need for herbicides
- Generation time is shorter
 - Able to produce offspring at 1 year old, most often multiple births



How does eradication of peste des petits ruminants (PPR) aid in improving resilience to climate shock?





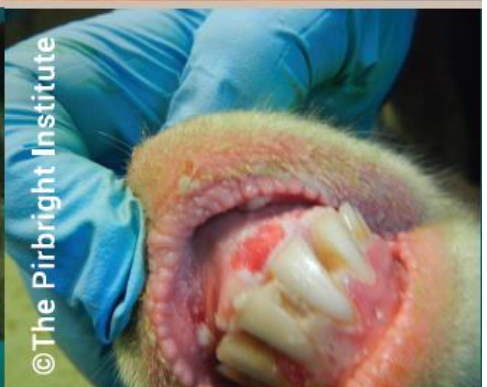


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What is PPR?

CLINICAL SIGNS	 <p data-bbox="802 811 1003 953">Affects sheep and goats.</p> <p data-bbox="802 975 1003 1153">Sudden death, specially in goats.</p>	RECOGNIZING THE DISEASE	
Cough.		<p data-bbox="1108 454 1403 739">Discharge from eyes, nostrils and mouth, initially thin and clear, turning to thick and yellowish.</p>	 
Depression.		<p data-bbox="1108 903 1403 1068">Sores in the mouth and the animal does not eat.</p>	 
Diarrohea.			
Difficulty breathing.			
Dry, cracked muzzle and nostrils.			
Eye and nostril discharge.			
Fever.			

What is PPR?

- A highly infectious and severely pathogenic viral disease of small ruminants
- Kills 30-90% of herd initially
 - Up to 40% of young stock annually when endemic
- Currently affecting animals in over 70 countries
 - Africa, Central, South and East Asia, Middle East
 - Incursion into Europe (Bulgaria)
- Spread almost exclusively by animal-to-animal contact
 - Diseased to susceptible by direct contact, aerosol, fomites
- No carrier state & immunity is good after recovery



What is PPR?

- Moves between regions by movement of humans and their animals
 - Transhumant pastoralists, pastoralists & agro-pastoralists
 - Illegal trade of animals
 - Contaminated livestock vehicles
 - Undeclared country status or inadequate surveillance
 - Conflict, climate shocks = increased migration
- Wild ruminants can become infected
 - Likely spillover – more knowledge is needed to know if also a reservoir
 - Often infected but not develop disease (seroconvert)
 - Others (e.g., Saiga antelope) can suffer very high mortality rates



Saiga antelope 2017 in Mongolia:
5,400 out of global population of
10,000 dead in three months

What happens to a family when their animals are ravaged by PPR?

- “*when my last goat died, I had lost everything – this, then is poverty*”
- No milk – children fed carbohydrates instead
- Disrupts cultural and religious practices
- No income from kid sales
- Forced to seek other sources of income
 - Cut down trees for firewood and charcoal sales
- Migrate from rural areas to cities
- Then add in climate shocks such as drought...
- Estimated financial impact of disease and vaccination is between *US\$ 1.4 and 2.1 billion annually*
- **Does not include the cost of human suffering from loss of livestock!**





The PPR Global Eradication Programme

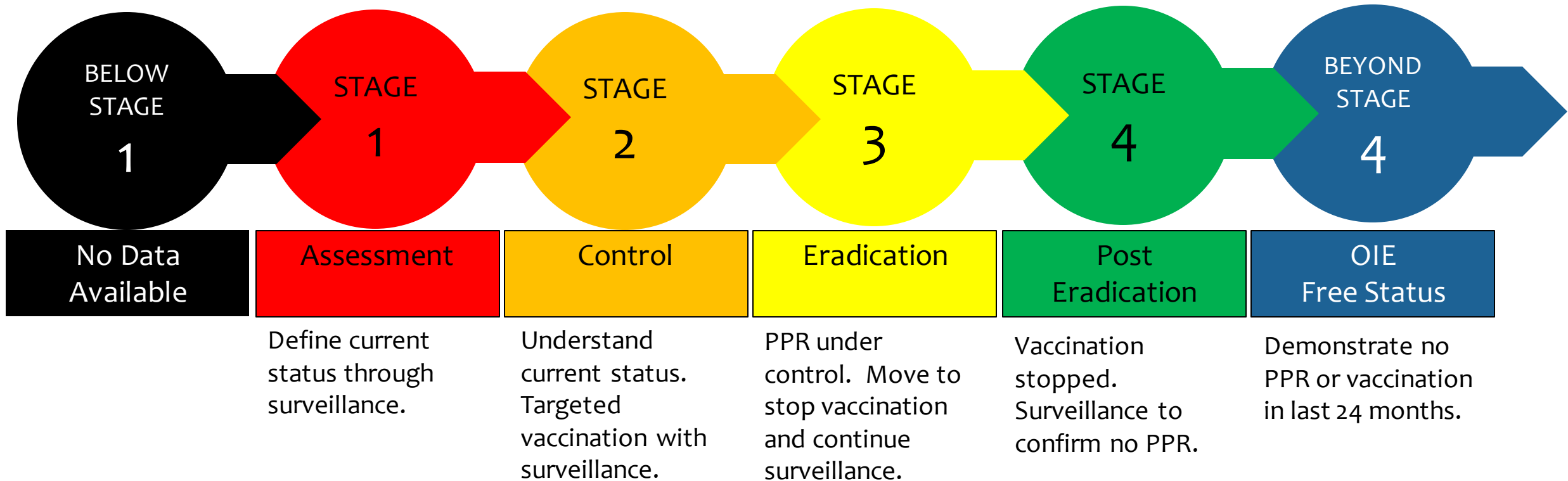
- **PPR Global Eradication Strategy aims to**
 - Eradicate PPR by 2030
 - Reinforce Veterinary Services
 - Reduce the impact of other major infectious diseases of small ruminants
- Rinderpest of cattle has been successfully eradicated (2011)
 - This has been used as a successful model for PPR, updated to reflect new technologies and differences in the disease, socioeconomic differences and animals affected
- The PPR-GEP is now undergoing review by expert committee to develop PPR-GEP II for 2022-2027

PPR Global Eradication Programme contributes to Sustainable Development Goals

- Particularly
 - SDG1 – no poverty
 - SDG2 – zero hunger
 - SDG5 – gender equality
 - SDG8 – decent work & economic growth
- *“Eradicating PPR will therefore sustainably improve the resilience of poor farmers and their communities and foster their capacity to deal with other shocks and threats, mitigating further migratory trends”*



PPR GEP: Step-wise approach to eradication at the national level; coordinated at regional and epizone level



- Each country develops a National Strategic Plan with three levels: assessment, control and eradication to move into Stage 1, 2 & 3 respectively
- Although stages occur at the national level, pastoralist management is common and animals often cross borders seeking grazing - episystem coordination critical

PPR global situation – Progress is being made

- In 2017 most countries were in Stage 1 and Stage 2
- As of 2021, considerable progress has been made
 - More countries have fulfilled the requirements to achieve OIE PPR free status
 - More countries have entered Stage 4 where freedom of PPR eradication is being confirmed
 - And many more countries have moved from Stage 1 assessment, into Stage 2 control with active vaccination programmes ongoing, as well as surveillance

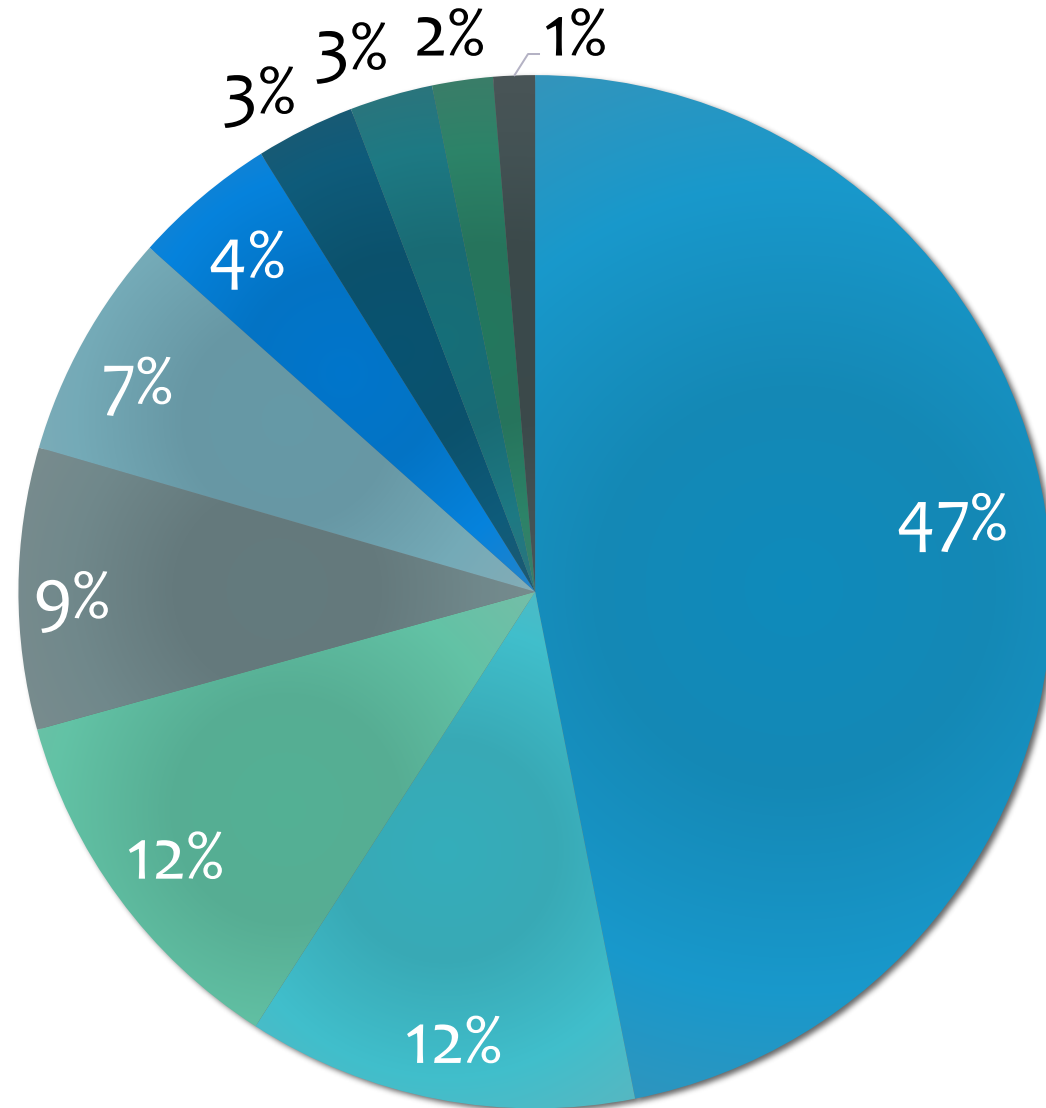


Vaccination is key for PPR control

- Vaccine (modified live), given once can provide protection for the life of the animal
- Cost of the vaccine is very low compared to the value of the animal
 - USD 0.06 per dose versus USD 54.00 per animal
- Cost of vaccination is higher but still affordable if for short, limited period
 - Investment in vaccine development (e.g., thermotolerant, DIVA), manufacturing and QA
 - Stakeholder engagement to commit to vaccination
 - Equipment and supplies to deliver the vaccine
 - Cold chain management
 - Labour and time to assemble animals and vaccinate
- But vaccination is difficult to sustain over time
 - Given the millions of animals and limited resources for animal health in most countries
- **Eradication of PPR must be the goal!**



PPR GEP Budget 2017 – 2021 – 996 million USD



- Vaccination logistics
- Vaccines
- Post-Vaccination Evaluation
- Control of other small ruminant diseases
- Coordination & management
- Epidemiological assessment & surveillance
- Strengthening veterinary services
- Strengthening laboratory capacity
- Strategy, advocacy, communication
- Regional roadmap & other meetings

Summary

- Small ruminant ownership is an important part of food security, social wellbeing and wealth of smallholder producers
- Ownership of goats provides resiliency from climate shocks such as drought
- PPR is a costly, widespread and devastating disease
 - It can be controlled with targeted widespread vaccination
 - It can be eradicated with vaccination and surveillance
 - It can be eradicated from the world through the PPR GEP
- Global eradication of PPR will not only save well over USD one billion annually, it will protect the livelihoods and wellbeing of rural populations in poorer countries, and in particular women and their families and help to increase their resilience to climate shocks

Thank you



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