Methodology mapping for resilient production systems: approaches and results from surveys in Bolivia, India, and Nepal

G. Meldrum*, S. Sthapit, W. Rojas, I.O.E. King, and S. Padulosi

September 26, 2013

Photo credit Neil Palmer/CIAT

In partnership with:

Fundación PROINPA

20 years LINKING SCIENCE AND SUSTAINABLE DEVELOPMENT MSSRF

LI-BIRD

CGIAR

RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security

CCAFS

IFAD
Enabling poor rural people to overcome poverty

PAR PLATFORM FOR AGROBIODIVERSITY RESEARCH

Climate Change and Agricultural Biodiversity

Changes in weather could have grave consequences for food security

Adaptation will require conservation & strategic use of agricultural biodiversity (e.g. planting new crops and/or varieties, adapting current materials)

On-farm conservation of local crops and varieties is an essential component of adaptation

Women and children in a field in Bihar, India Photo by D. Graetzer

Farmers Perspectives

Farmers are central actors in on-farm conservation and the adaptation of agricultural production

Their perspectives on climate change and the actions they take to cope are critical to gain insight on what is happening on the ground and what support is needed

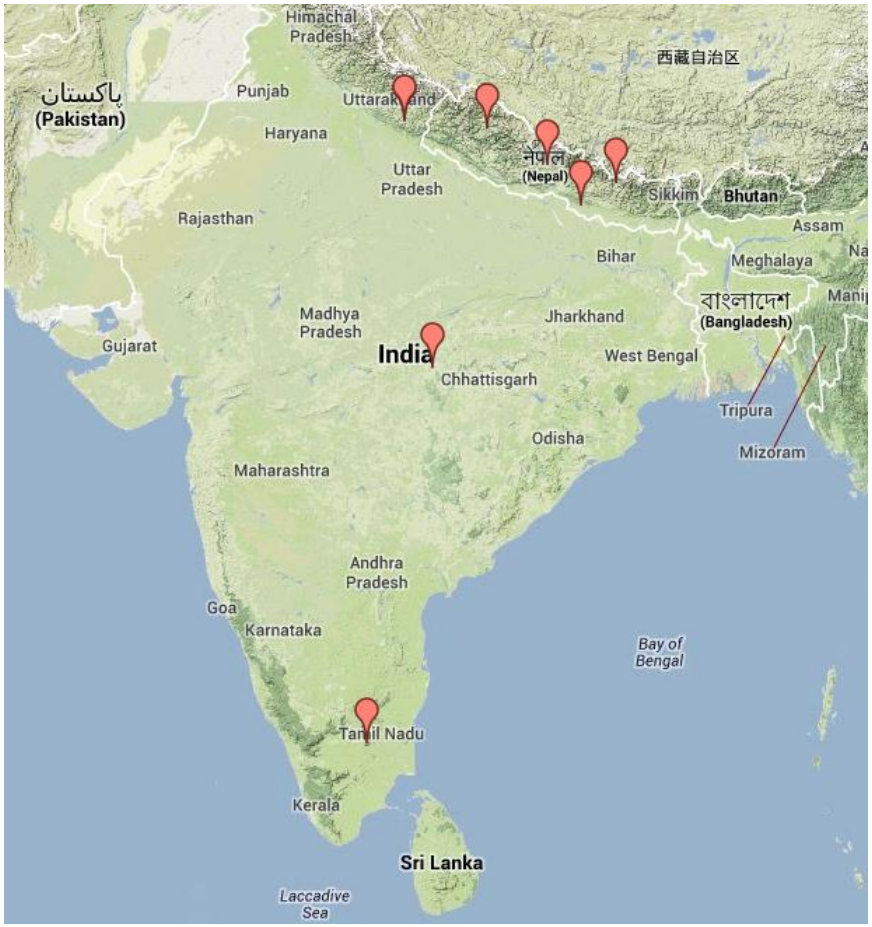
Arborist prunes an apple tree in Hawaii Photo by the Honolulu Advertiser

Farmer Survey

Farmers till potato beds in Cochabamba Photo by P. Bordoni

Bioversity International

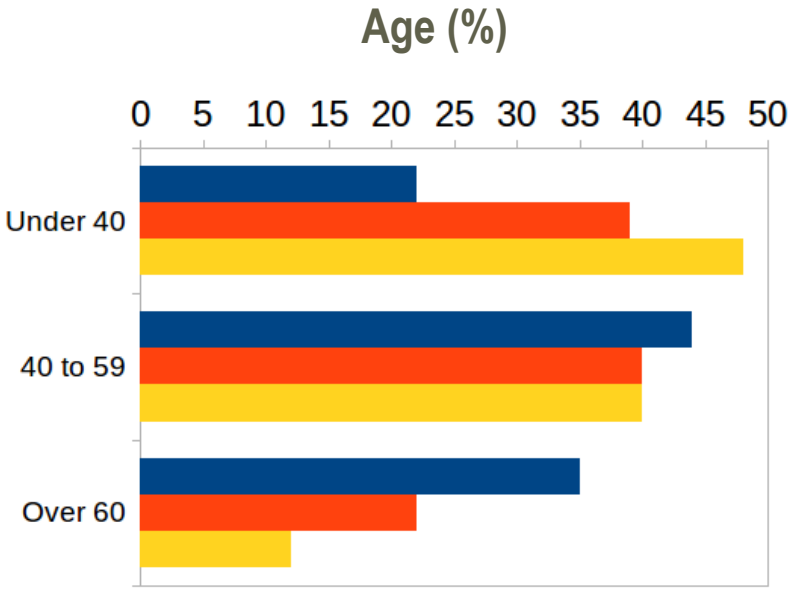
Survey Locations

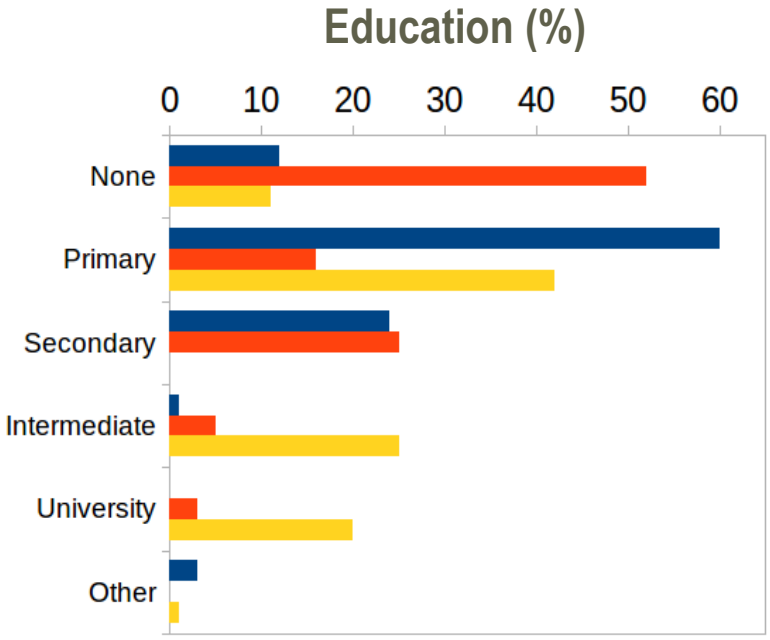


Maps of Bolivia and India from Google Maps

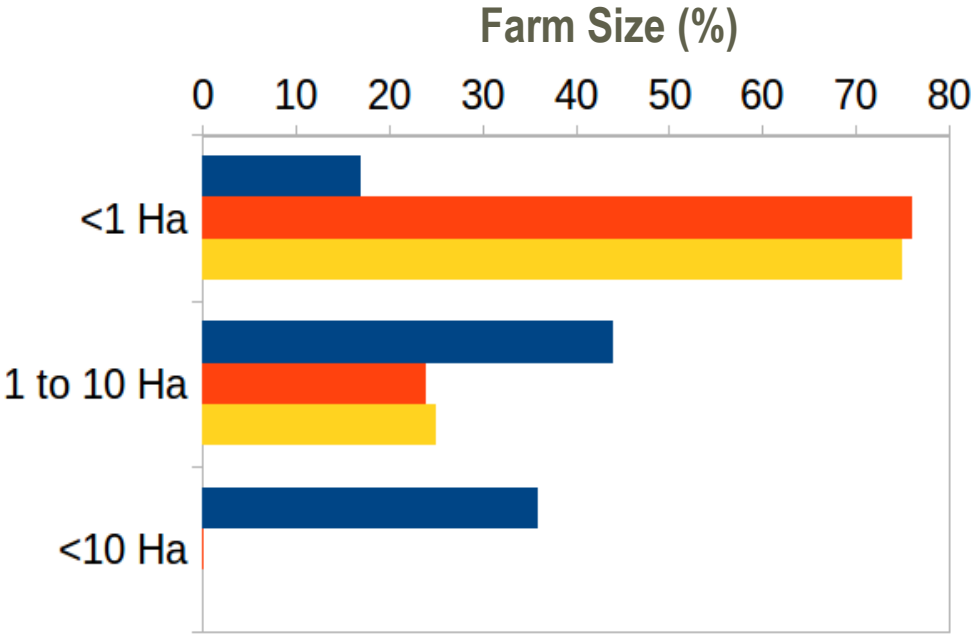
Survey Participants

	Bolivia	Nepal	India
Sample Size	234	1171	989
Women (%)	53	47	40





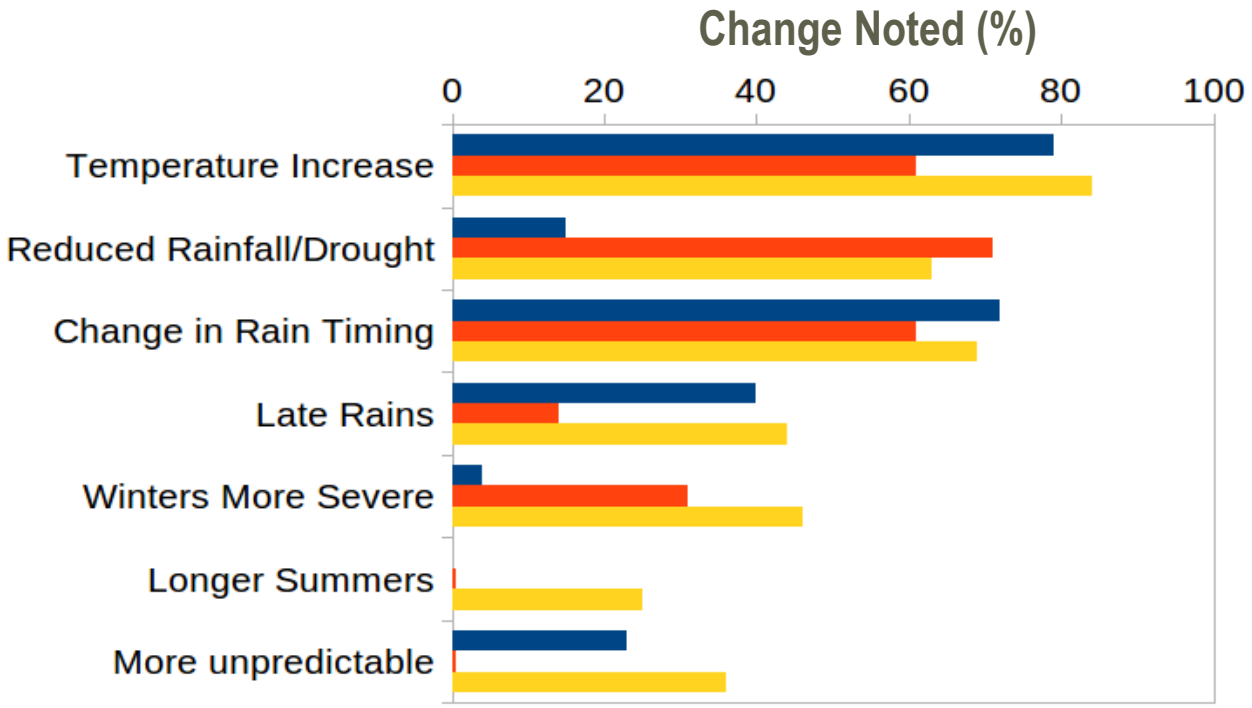
Farm Profiles



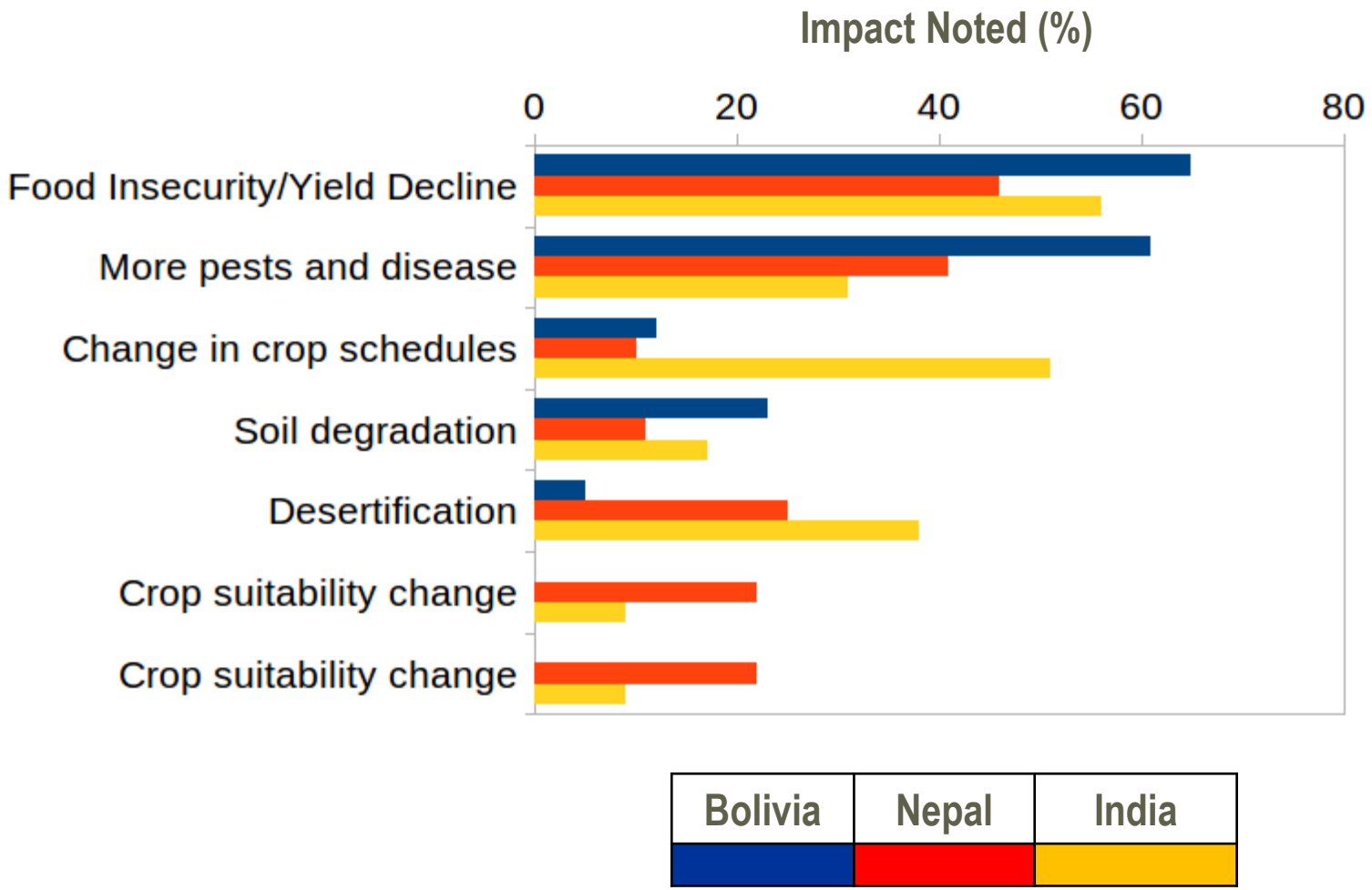
(%)	Bolivia	Nepal	India
Irrigation	23	74	36
Hire Workers	29	52	28
Tractor/Vehicle	11	11	20
Livestock	94	90	85

Perceptions of Climate Change

	Bolivia	Nepal	India
Noted weather change in last 20 years (%)	92	80	99

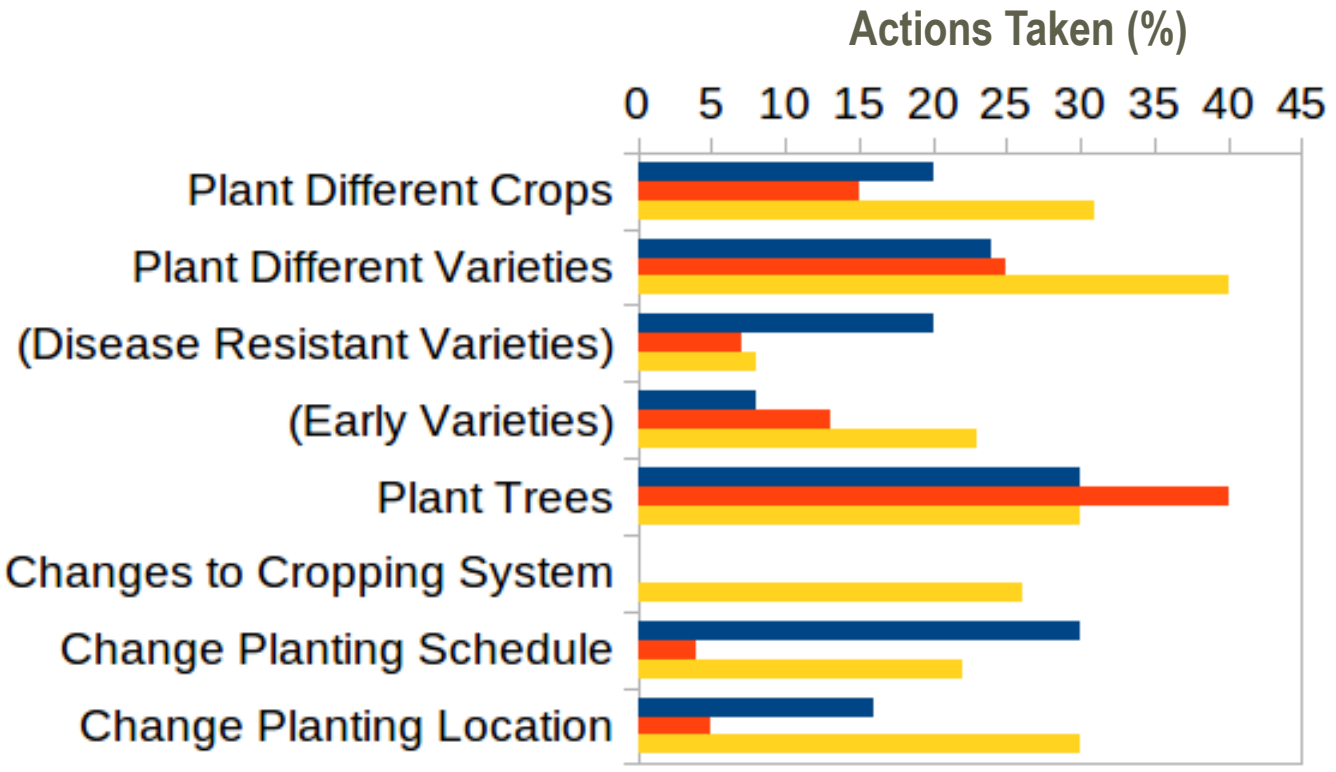


Impacts of Climate Change



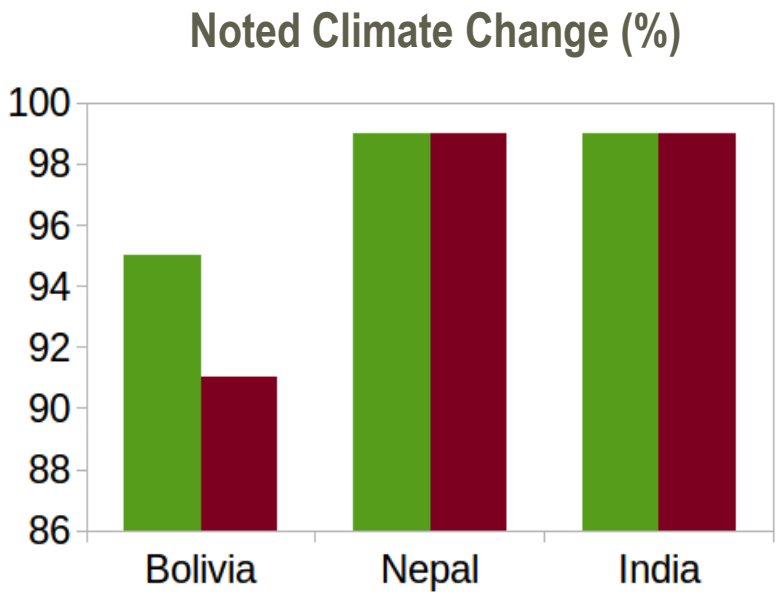
Actions Taken to Cope with Climate Change

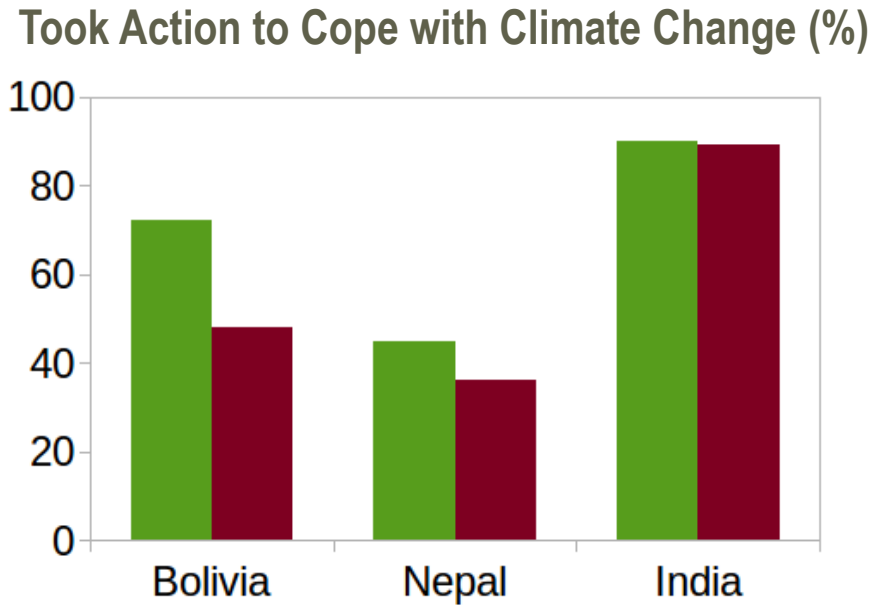
	Bolivia	Nepal	India
Action taken to cope with climate change (%)	56	39	88

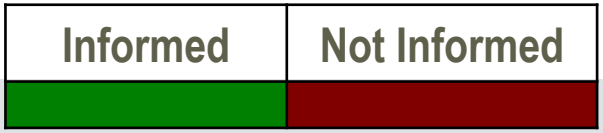


The Effect of Information

	Bolivia	Nepal	India
Informed about climate change and its risks (%)	34	34	10*
Major Sources of Info:	Radio Municipality NGOs	Media (Radio, TV) Friends & Relatives NGOs	(Few listed) Research Org Ministry of Agri







Bioversity International

Climate Change Resistant Crops

Crop Indicated (%)	Bolivia	Nepal	India
Potato	76		
Variety HH	*5*		
Variety Luki	*1*		
Wheat		21	6
Variety NL297		*12*	
Rice		20	26
Variety 1442		*5*	
Maize		8	29
Barley	11	8	16
Quinoa	28		
Finger Millet		8	33
Kodo Millet			21
Small Millet			10
Litchi		31	

Farmer Survey

Diversity in the market in Nepal Photo by G. Meldrum

Bioversity International

Summary

Almost all farmers interviewed in Bolivia, India, and Nepal (89%) had noticed a change in the weather

Changes noted were increased temperature and shifts in timing and amount of precipitation, resulting in increased incidence of drought in Nepal and India

Declining yields and food insecurity were a major impact in all three countries

Cochabamba, Bolivia
Photo by P. Bordoni

Summary

Farmers actions to cope with climate change often included planting new crops and varieties

Several NUS crops were noted by farmers to be resistant to changing climatic conditions. In particular, quinoa in Bolivia and minor millets in Nepal and India. Barley was also noted to be resistant to climate change by farmers in all three countries

Many farmers also recognized dominant crops (e.g. Potato and Rice) as resistant to climate change, including both modern and traditional varieties

Policy Implications

These are preliminary results and require some deeper reflection before making conclusive policy recommendations

However, it would be advisable to maintain intra-specific diversity in crops identified as resistant by the farmers to ensure that we have the material needed to realize the potential of these species. Policy makers should direct resources and attention to this effort!

Furthermore, we should Increase consultation and collaboration with local farmers in crop conservation and breeding as they are central actors in crop conservation and climate change adaptation

Future Directions

More fine-scale analysis, looking at regional differences within countries and the relation of results to socio-economic factors, especially gender

Will also be considering more closely the shift in the crop composition that comes with climate change in all three locations and the implications of this shift, particularly as it likely includes a loss of overall crop diversity

Women dry taro leaves in Nepal Photo by G. Meldrum

Many Thanks!

To the farmers who kindly gave us their time to answer our questions

To our partner organizations who carried out the surveys:

Fundación PROINPA

20 years LINKING SCIENCE AND SUSTAINABLE DEVELOPMENT MSSRF

LI-BIRD

To PAR, Paul Bordoni, and Ximena Cadima for the data from Cochabamba

PAR PLATFORM FOR AGROBIODIVERSITY RESEARCH

To Stefano Padulosi and others who designed the survey

To our funding partners:

IFAD Enabling poor rural people to overcome poverty

CGIAR RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security CCAFS

And all those whose photos were included in this talk

Bioversity International

Thank you

www.bioversityinternational.org

Bioversity International

CGIAR
Science for a food secure future