Contributions of NUS to addressing hunger and malnutrition in mountainous areas

Abid Hussain, PhD
Food Security Economist
Abid.Hussain@icimod.org
abidwaqas670@hotmail.com

International Centre for Integrated Mountain Development

Kathmandu, Nepal

ICIMOD

FOR MOUNTAINS AND PEOPLE

Nutrition security in mountains

ICIMOD

FOR MOUNTAINS AND PEOPLE

- Nutrition security is building block to achieve several development objectives related to safe water, health, gender equity, education, agriculture & poverty alleviation in mountains.
- Nutrition insecurity in mountains is comparatively high

  Examples:

  - In Nepal, stunting in children (<5 Yr.) is 41%; in mountains 53%
  - In Pakistan, stunting in children (<5 Yr.) is 44%; in mountains 48%

Highly nutrition insecure areas in the HKH countries

ICIMOD
FOR MOUNTAINS AND PEOPLE

Country	Region/state/ province	*Stunting (%)	**Wasting (%)	***Underweight (%)
Afghanistan [a]	National	40.9	9.5	25.0
	East	52.6	18.0	41.3
India [b]	National	48.0	19.8	42.5
	Meghalaya	55.1	30.7	48.8
Nepal [c]	National	40.5	10.9	28.8
	Western mountains	59.5	13.2	42.0
	Far-western hills	57.5	13.7	39.7
Myanmar [d]	National	28.6	7.7	28.8
	Chin	51.8	8.2	35.8
Pakistan [e]	National	44.4	10.7	29.4
	Balochistan	81.9	13.2	37.4

*Height-for-age: children under age 5 < -2 SD from the international reference median value
**Weight-for-height: children under age 5 < -2 SD from the international reference median value
***Weight-for-age: children under age 5 < -2 SD from the international reference median value

Source: [a] AMS 2010; [b] NFHS 2006; [c] NDHS 2011; [d] MICS, 2011; [e]DHS 2013

Why neglected and underutilized Species (NUSs)?

ICIMOD
FOR MOUNTAINS AND PEOPLE

- Highly rich in micronutrients
- More resilient to climate induced stresses
- Less inputs requirements
- Less vulnerable to market shocks

Energy& micronutrients	Pearl millet	Rice (milled)	Wheat flour
	(content/100g		
Energy (Kcal.)	361	345	346
Protein (g)	11.6	6.8	12.1
Fat (g)	5	0.4	1.7
Calcium (mg)	42	10	48
Iron (mg)	8	3.2	4.9
Zinc (mg)	3.1	1.4	2.2
Thiamine (mg)	0.33	0.06	0.49
Riboflavin (mg)	0.25	0.06	0.17
Folic acid (mg)	45.5	8	36.6
Fibre (g)	1.2	0.2	1.2

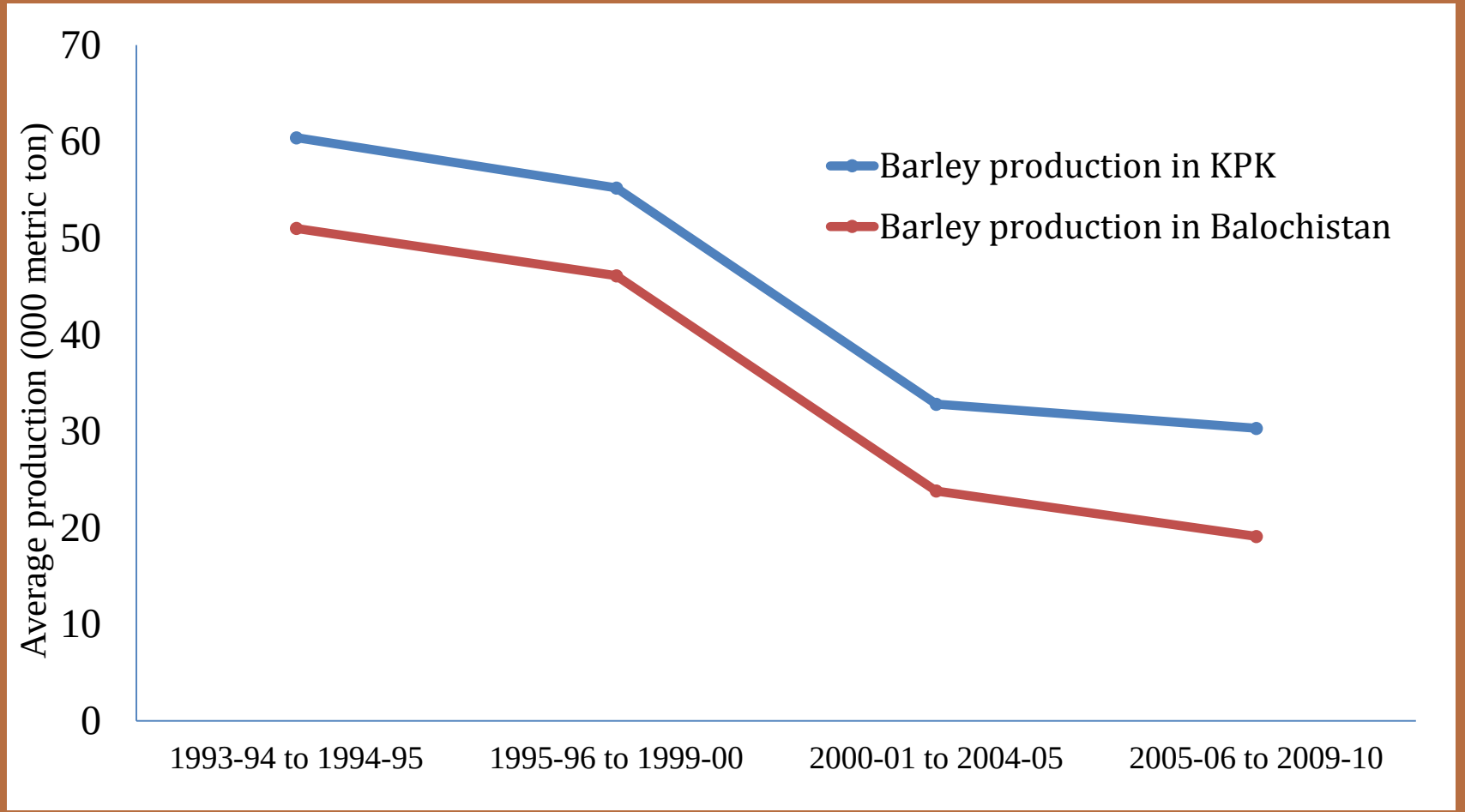
Source: Gopalan et al. 1989

Declining production of NUSs

ICIMOD
FOR MOUNTAINS AND PEOPLE

- Despite being highly rich in micronutrients, climate-resilient and less vulnerable, area under cultivation and production are declining

Figure Trends in barley production in KPK and Balochistan, Pakistan

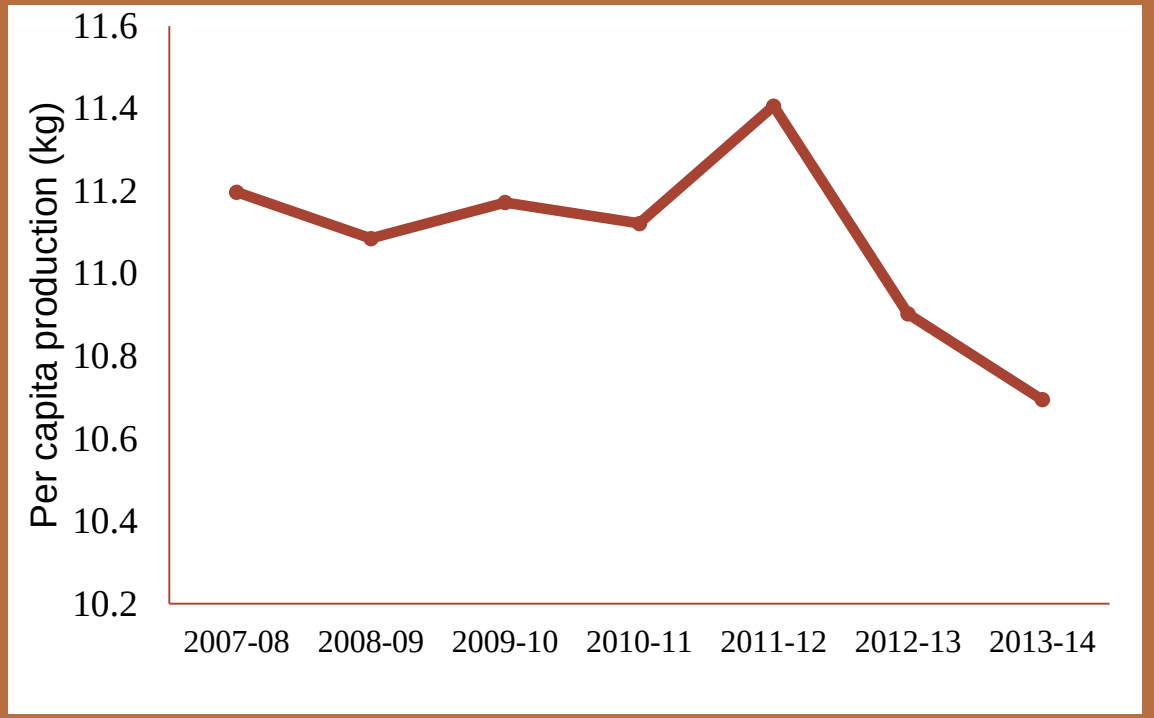


Declining production of NUSs

ICIMOD
FOR MOUNTAINS AND PEOPLE

Figure Trends in black gram production (per capita) in Nepal

Figure Trends in millets production (per capita) in Nepal



Factors of declining NUSs in mountains

ICIMOD

FOR MOUNTAINS AND PEOPLE

- **Switching to high yielding crops** = f{Low market demand of NUSs, Low market value/incentives of NUSs, growing food demand (Population pressure), climate change impacts}

- **Changing food habits** = f{Changing life style, increased income levels* , subsidies on advance food products}

  *NUSs are now being treated as ‘food of the poor’

- **Lack of knowledge** = f{disappearing IK* on production tech. of NUSs, f{disappearing IK on processing of NUSs , lack of knowledge on nutrition value of NUSs}

- * Indigenous knowledge

Factors of declining NUSs in mountains

ICIMOD

FOR MOUNTAINS AND PEOPLE

- The protection and promotion of traditional crops is not among the priorities of the governments
- No market incentives for NUSs
- Trade and market policies rarely reflect nutritional and ecological values of crops

Policy constraint is cross cutting reason which influence other three complex factors

ICIMOD

FOR MOUNTAINS AND PEOPLE

Enabling environment for NUSs and nutrition security: pathways

Creating enabling environment (needed policy steps)	Suggested option	Contribution of NUFCs to strengthen food security dimensions and health		Contribution to nutrition security	Auxiliary benefits
▪ Supportive national and sub-national polices & programmes (perspective of and priorities to promote NUFCs) ▪ Promoting the utilization of existing indigenous knowledge on NUFCs cultivation and utilization ▪ Ensuring the availability of germplasm ▪ Enhancing interest of farmers through incentives ▪ strengthening institutional mechanism (market facilities, extension services, credit & ICT use) ▪ Creating awareness among people about the nutritional values of NUFCs (favorable to resume prior food habits) ▪ Supporting local food value chains and establishing local food processing industry for NUFCs ▪ Linking NUFCs with tourism (local hotels/resorts in mountains may be guided to customize their food menus to promote food recipes prepared from NUFCs. ▪ Linking NUFCs with school nutrition programmes	Integrating NUFCs in local food systems	Food availability	▪ Locally increased supply of food ▪ Improved diversity in available food	▪ Reduced chances of growth problems in children (aged <5 years), e.g. stunting, wasting & underweight ▪ Low chances of prevalence of micronutrients deficiency and anemia in children and women ▪ Low chances of the prevalence of underweight women (aged 15-49 years) ▪ Expected reduction in the number of individuals with low body mass index	▪ Improved biodiversity in mountains ▪ Reduced agricultural investments ▪ Increased employment opportunities in mountains may lead to reduced outmigration rate ▪ Increased opportunities for ecotourism ▪ Improved odds of export of food products (prepared from NUFCs) from mountains to other areas, leading to improved income of mountain regions.
		Food accessibility	▪ Improved income of farmers ▪ Improved local income opportunities if local food processing industry is established ▪ Improved physical access to food due to local production of diverse foods		
		Food utilization & health	▪ Diversity in food intake ▪ Improved intake of micronutrients, conducive to better health ▪ Reduced health hazards (NUFCs require less use of chemical fertilizers & pesticides)		
		Risks & uncertainties	▪ High climate resilience of NUFCs ▪ No risks of supply-cut due to natural hazards and economic factors because NUFCs are locally produced		

ICIMOD

FOR MOUNTAINS AND PEOPLE

*NUFCs means Neglected and underutilized food crops

Adhikari, Rasul & Hussain, 2017 (forthcoming)

ICIMOD

FOR MOUNTAINS AND PEOPLE

Encouraging Examples

NUSs in Gatlang, Rasuwa district, Nepal

ICIMOD

FOR MOUNTAINS AND PEOPLE

- Only a few areas are found in the HKH where still NUSs are main contributor to household consumption and income.
- In Rasuwa district of Nepal, households still highly depend on NUSs for their food & income. They sell NUSs to local resorts & hotels.

Products of NUSs produced in Rasuwa available in Kathmandu markets (Nepal)

ICIMOD

FOR MOUNTAINS AND PEOPLE

Thank you