Contribution of Indigenous Plants Collected from Uncultivated Lands and Forests in Nepalese Diet

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Presentation Outline

1. Country Background
2. Underutilized Indigenous Minor Food Crops
3. Congenial Environment for Biodiversity
4. Biodiversity as a Strong Tool for Coping with Disasters
5. Erosion in Biodiversity

1. Country Background

- **Nepal is a South Asian country sandwiched between China & India**
- **Location: 26°22' to 30°27' north latitude and 80°4' to 88°12' east longitude**
- **Total area of the country: 147,181 km^2**

1. Country Background …

Physiographic Features

- **Elevation:** 64 to 8,848 m from mean sea level
- **Mountain:** >2,000 m altitude
  Area: 51,817 km^2
- **Hill:** 330-2,000 m altitude
  Area: 61,345 km^2
- **Terai:** <330 m altitude
  Area: 34,019 km^2

1. Country Background …

1. Country Background …

Climatic Features

- Climate: Sub-tropical to alpine within a short distance due to tremendous variation in topography, altitude & aspects of Hills & Mountains
- Mean annual precipitation: 250 to 6,000 mm
- Total number of rainy days: 24 to 181 days

1. Country Background …

Climatic Features …

- **Annual sunshine hours vary between 922 to 2,820 hours.**
- **Mean annual precipitation: 250 to 6,000 mm**
- **Max. temp. during summer varies 25°C to 46°C and during winter -26°C to nearly freezing point in the crop growing areas**

1. Country Background ...

Climatic Features ...

Traditionally 6 Seasons:

i. Basant (March 16 - May 15);

ii. Grishma (May 16 - July 15);

iii. Barsha (July 16 - Sept. 15);

iv. Sharad (Sept. 16 - Nov. 15);

v. Shishir (Nov. 16 - Jan. 15);

vi. Hemant (Jan. 15 - March 15)

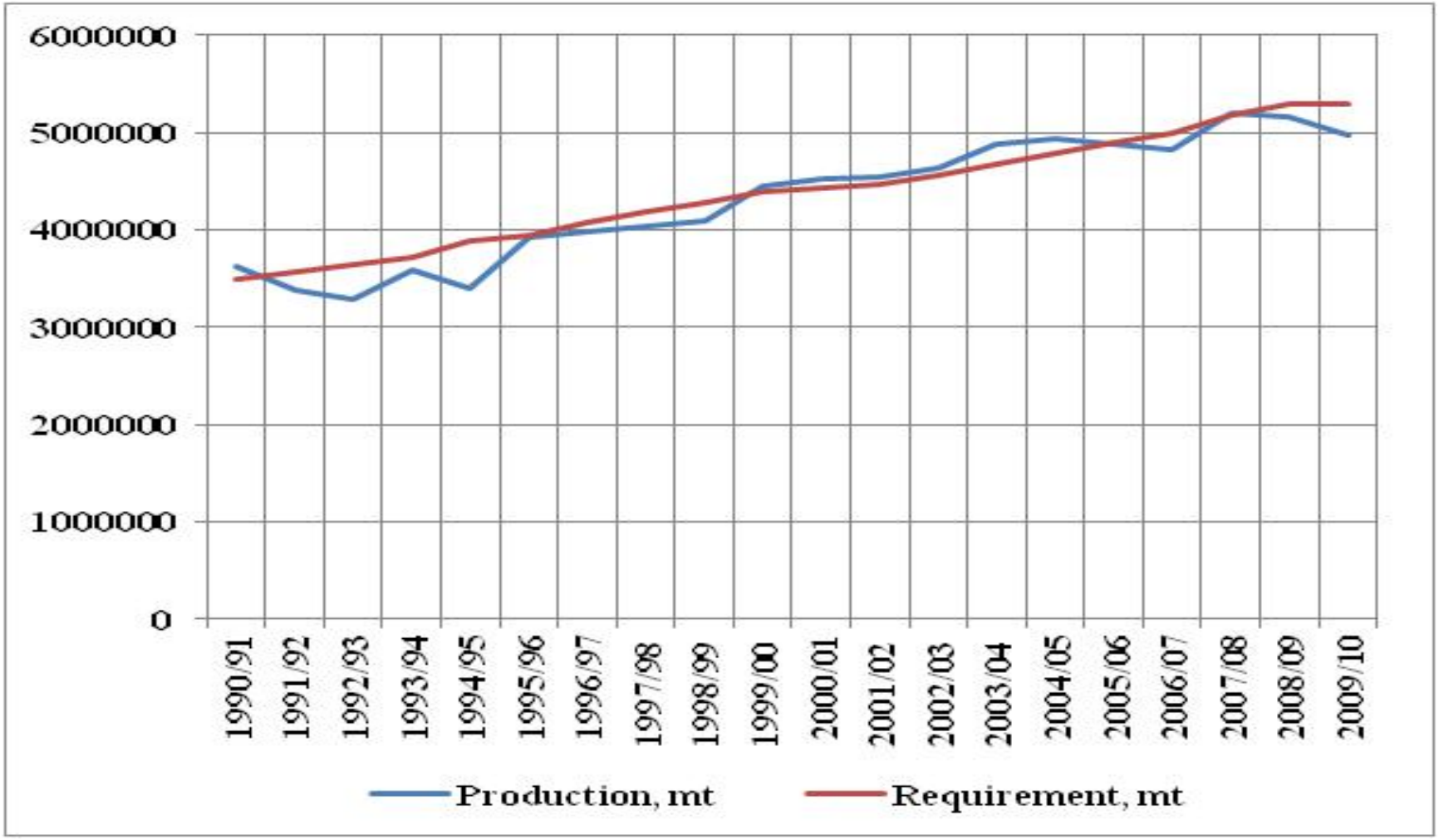
1. Country Background ...

Land Use Categories

- **Forest:** **42%**
- **Agriculture (including non-cultivated)** **29%**
- **Grassland** **12%**
- **Others** **17%**

1. Country Background …

Food Production Situation



2. Underutilized Indigenous Minor Food Crops of Nepal

- Underutilized minor crop species are grown all over Nepal
- Most underutilized minor crops are indigenous type
- Diversity exists in variety and species levels
- Such crops contribute substantially in the Nepalese diet

2. Underutilized Indigenous Minor Food Crops of Nepal …

- Out of 60 reported species of amaranth in the world 11 species have been reported with cultivated types for grain, green vegetables, wild and weedy types in Nepal
- Nepal harbors numerous wild relatives of cultivated agricultural crop plants like rice, wheat, barley, buckwheat, citrus and other fruit crops, several vegetable crops, etc.

2. Underutilized Indigenous Minor Food Crops of Nepal …

- Nepal has 83 wild relatives of 46 genera under 18 families of 36 agricultural crops
- Several crop varieties have been improved through the use of plant genetic resources in Nepal.
- 230 improved varieties of 45 crops have been released representing cereals, legumes, oilseeds, potato, vegetables, industrial and forage crops

2. Underutilized Indigenous Minor Food Crops of Nepal …

- **Historically, Nepalese farmers had been growing several species of food crops including many varieties of millet, barley and buckwheat.**
- **Generally, underutilized indigenous food crops are sold mostly in the local markets owing to their small volume of production**

2. Underutilized Indigenous Minor Food Crops of Nepal …

- **Indigenous cultivars are in vulnerable state and are near to extinct owing to the introduction of high yielding and short duration varieties of crops**
- **Despite low yield and relatively longer duration, the underutilized indigenous cultivars have good tastes and are resistant to pests and diseases, and tolerant to drought and natural hazards**

2. Underutilized Indigenous Minor Food Crops of Nepal …

- **Underutilized minor crop species are still major source of nutrition for many indigenous communities in Nepal.**
- **Thus, food and nutrition security of the poor and marginal rural people is possible through the conservation and promotion of indigenous crop species which contain a huge amount of nutrition**

Varieties of indigenous food items on sale in the foot path of Kailali district of Nepal

3. Congenial Environment for Biodiversity

- Variations in temporal, altitudinal, topographical and aspects of hill or mountain have created suitable environment for the growth and survival of numerous indigenous food crop species in Nepal
- Thus, different types of climatic conditions prevail at one point of time.
- This allows not only diversified crop species but also different kinds of insects continue their activities as pollinators in one or other areas of the country. Therefore, Nepal is richly endowed with biodiversity.

4. Biodiversity as a Strong Tool for Coping with Disasters

- **Nepal has almost all types of world climate and a wide range of biodiversity.**
- **Hence, Nepal is a safe heaven on earth for many plant and crop species even in the events of disasters of global warming in this planet**

4. Biodiversity as a Strong Tool for Coping with Disasters …

- **Cultivation practices, gathering from the forests, rivers and streams, food habits and consumption, and migration varies not only by ecological belts, hamlets and ethnicity but it varies with the events of disasters**
- **Hence, people found to have invented and adopted socioeconomic, consumption and cultivation practices for coping with such adversities**

4. Biodiversity as a Strong Tool for Coping with Disasters …

- Cultivation Most mountain and hill districts are food deficit but they all are surviving due to availability of uncultivated indigenous foods in the forests, streams and rivers
- However, no studies have been conducted to analyze this situation.

4. Biodiversity as a Strong Tool for Coping with Disasters …

- **Studies on uncultivated indigenous foods would be highly beneficial not only to analyze such situation but also to acquire knowledge on the richness of biodiversity, their importance in the Nepalese diet and measures to be adopted for their conservation and utilization**
- **Conservation of such invaluable indigenous food crop species will benefit the entire human being in the long run**

4. Biodiversity as a Strong Tool for Coping with Disasters …

- **Forests, streams and rivers have been important safeguards in the events of natural calamities**
- **Gathering from the forest is positively related with the intensity of natural calamities**
- **Gathering of uncultivated indigenous food species from the forest is more when the natural calamities are severe**

4. Biodiversity as a Strong Tool for Coping with Disasters …

- **During disasters people gather *Githa, Vyakur, wild yam, Tama* (bamboo shoot), *Kurilo, Sisnoo,* wild colocasia, amaranthus, chenopodum, allum, ipomoea, mentha, mushroom, *Tejpat, Timur,* wild fruits such as *Bedu, Bayer, Bhalayo, Khanayo* or wild fig, *Khajura, Damaru, Amatta, Ghangaroo, Guyelee, Kafal, Chutro, Aishelu, Guyelee, Ganyaulee,* wild prunus species, wild banana, mulberry etc**
- **During disasters people go for catching fish and crab from the rivers and streams and hunting some wild animals and birds from the forest**

4. Biodiversity as a Strong Tool for Coping with Disasters …

- **Traditional irrigation systems developed by the farming communities have facilitated growing of indigenous crops even in bunds**
- **Moisture regime developed due to irrigation has made crop cultivation possible not only in field bunds but also in canal and channel bunds**
- **Irrigation facility offered new opportunity for farm households to harvest *Ghungi* (a kind of snail) from their irrigated fields in Terai**

4. Biodiversity as a Strong Tool for Coping with Disasters …

- **Nepalese farmers prefer to grow several kinds of food items to cope with natural calamities**
- **Hence, looking only at the production of food crops is fallacious for analyzing food sufficiency of the Nepalese people**

5. Erosion in Biodiversity

- Nepal's rich biodiversity is getting eroded fast
- Accelerated erosion is mainly due to increasing encroachment in forest areas and failure to recognize the importance of conservation, management and use of available biodiversities
- Indigenous crop species are also getting vanished fast due to introduction of modern varieties particularly the hybrids

5. Erosion in Biodiversity …

- **Farmers have visible benefits of adopting modern varieties over landraces due to low grain yields, lodging problem, less economic profitability, low yield potential and low response to chemical fertilizers of landraces**
- **Hence, due attention is needed for the identification, collection, documentation, evaluation, maintenance, multiplication, preservation and utilization of such wild genetic resources as well as cultivated underutilized indigenous crop species**

5. Erosion in Biodiversity …

- **Landraces and wild relatives of fruit plants and crops are the building blocks of new varieties**
- **The selection of promising clones from these existing wild relatives through systematic evaluation and selection can be done**

Thank You