

Heading style and color

Title: cap for key words, 14 font, green

Extensive Characterization and Evaluation

Heading 1: All caps, 11 font, blue

EXTRACTION COLLECTION

There is a need of extensive characterization, evaluation and tagging of economically important

Heading 2: Cap key words, bold, orange ascent 6 darker 25%

Extraction Collection, 11 font

There is a need of extensive characterization, evaluation and tagging of economically important

Heading 3: *Italics, cap key words, bold separate line, 10 font, red ascent 2, darker 25%*

Extraction Collection

There is a need of extensive characterization, evaluation and tagging of economically important

Heading 4: Sentence case bold, colon on same para, 10 font, black

Extraction collection: There is a need of extensive characterization, evaluation and tagging of economically important traits to facilitate and utilize the APGRs. Duplicates identification mechanism should be developed and should strengthened. Documents related to their form on landraces.

Header and footer color: Orange, ascent, darker 50%

General

- Language: British or American with minimum letters, egcolor, not colour; analog, not analogue
- Six pt size space after heading 1 and one line space before heading and sub headings
- Table and figure should fit the page. If not keep in box in right side with text in left side
- **Email, url, and other link all are in blue color without underline, no underline for any links**

Left Justification

- Title
- All headings and sub headings
- Table and figure captions
- Table column with text
- Author names and address
- Figures
- References list
- Annex captions
- Bulleted points

Notes

- Capitalized first word after colon
- Under line figure if there is no clear marking just before figure caption
- Right justify last column (in case of table. Left justify table contents for text and right or center for numerical contents
- For multiple photos, keep in table cell

Agrobiodiversity: Conservation Strategies, Methods and Action Plans

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Abstract

Agricultural plant genetic resources (APGRs) are the main component of agrobiodiversity. It includes 1506 plant species consisting of 484 cultivated crops, 93 introduced species, 35 semi-domesticated plants, 224 crop wild relatives and 670 wild edible plant species in Nepal. APGRs are of three types, agronomical, horticultural and forages species. Among the 484 crop species, 64 are agronomical, 145 are horticultural and 275 are forages species. Four strategies for conserving these APGRs are ex-situ, on-farm, in-situ and breeding, under which, 20 different conservation methods are in practice in Nepal. National Genebank has suggested twenty action plans to manage agrobiodiversity and all stakeholders need collaborate for implementation of these action plans. One of them is to rescue germplasm regularly and to assess the status of crop landraces through grouping them under common, vulnerable, endangered, extinct and not evaluated.

Keywords: Agrobiodiversity, Action plan, Conservation, Species, Strategy

Agrobiodiversity

Agrobiodiversity is the most economically important component of biodiversity in the universe. It includes different forms of living organisms and broadly they can be grouped in four categories, ie plant and crop genetic resources (agricultural plant genetic resources, APGRs), animal genetic resources, aqua genetic resources and associated genetic resources (Figure 1, MoAD 2017, Genebank 2016, MoFSC 2014). Species of these groups may be domesticated, wild or semi-domesticated (Joshi et al 2017).

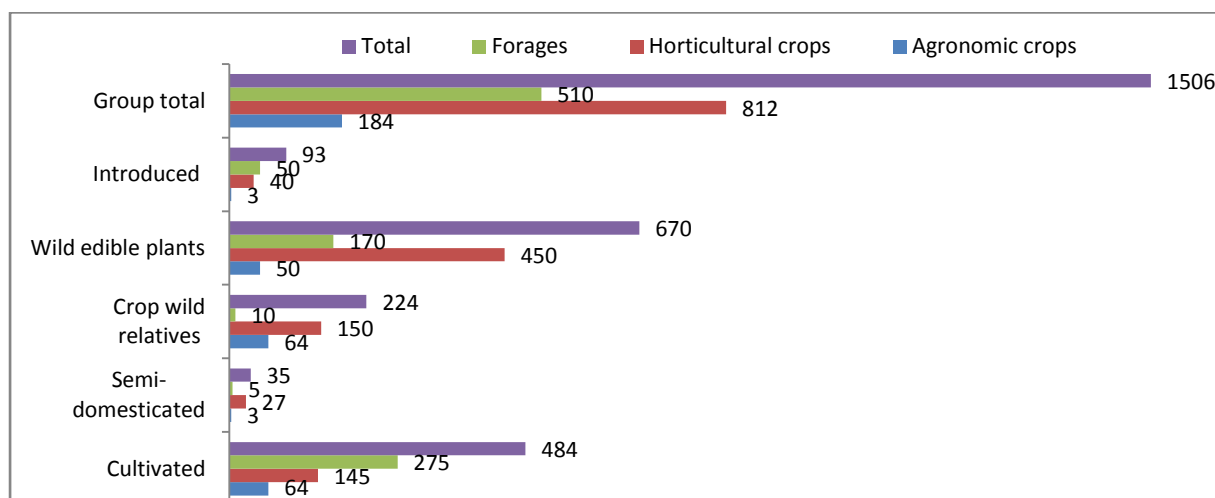


Figure 2. Total species of agricultural plant genetic resources in Nepal.

Source: Joshi 2017

Conservation Strategy

Strategies adopted for APGRs conservation are ex-situ, in-situ, on-farm and use for breeding in Nepal. Comparative differences among three strategies are given in Table 1. In general, on-farm strategy is mostly applicable for farming areas and in-situ strategy for natural forest areas. In recent years, plant breeding strategy has been integrated in agriculture R&D for conservation through use. Some activities under the breeding strategy are landrace enhancement, evolutionary plant breeding, development of site specific varieties (focus group varieties), broad genetic base and cultivars mixture (Figure 5).

Table 1. Comparative analysis of conservation strategies

SN	Feature	Ex-situ	In-situ	On-farm
1.	Origin of collections	Other than storage site	Same place (at least one allele should be evolved)	Other than cultivation site. Traits/landraces not evolved but continue cultivation of landraces in farm

SN	Feature	Ex-situ	In-situ	On-farm
2.	Site for plant life cycle	Mostly kept in dormant condition, field and store	Whole (active and dormant) period in same place	Active period in field and dormant period in nearby field ie farm store (household)

Source: Joshi and Upadhyaya 2017

Followings are the action plans (for details see Joshi et al 2016) that need to be initiated at local, regional and national levels for conservation of APGRs by relevant stakeholders.

1. Listing of local crops and cultivars and development of landraces catalogue
2. Identification of rare and unique landraces and potential landraces for large scale
3. Deploying diversity through distribution of diversity kits of rare crops and landraces to farmers and local community, and repatriation
4. Establishment of on-farm conservation village
5. Organization of diversity field school for the management and promotion of
6. Establishing crop specific parks of local crops and cultivars
7. Establishment and strengthening community gene banks (community seed bank and community field genebank) and local seed networks

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