

Alliance



Good Practices for Agrobiodiversity Management

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3. Diversity Rich Solutions

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A. Introduction

Every household is diverse and diversity can be observed within household in terms of crops, varieties and landraces, soil type, food preferences and preparation methods, knowledge and practices related with production management of agrobiodiversity and other genetic resources. Farmers are practicing agricultural practices that promotes the use of diversity such as growing mixture of landraces, composting, fertigation. Modern agriculture focuses on developing large scale uniform technology eg use of urea, mono-genotype variety. Such system puts pressure and disturbs the ecological balance causing high risk for crop failure and genetic erosion. Any technological option with greater diversity is less risky, more sustainable and higher adaptability in agriculture. Diversity rich solution is any technology or problem associated solution that considers diversity as an option and address problems with inter and intra level diversity as well as combinations of different components. it also includes multiple technology for a single problem. Some examples are broad genetic base variety, cultivar mixtures, compost (made from different species), biopesticide (made from different species), etc. Diversity rich solution is in practice since 2014 in Nepal with the objective of conserving agrobiodiversity, promoting ecologically oriented sustainable agriculture that also enhances ecosystem services.



B. Objectives

- To collect, test and screen different types of solutions, technologies for site, crop, problem, household;
- To develop diversity rich technology for biodiversity rich sustainable agriculture;
- To make farmers access to diversity rich solution;
- To make aware on importance of diversity at every steps of agriculture practices

C. Methods and Process

Diversity rich solutions are identified through participatory action research and detailed field surveys. Traditional knowledge on using diversity is documented through household survey, focus group discussion and literature review. After prioritizing the problem, various types of researches are conducted in research stations and farmers fields (Figure 1). Among the potential list of practices, technologies and methods, assessment was done to identify

diversity rich solutions. Technology, practices and methods with diversity are then selected, which are called diversity rich solutions. Different technologies and practices can also be identified for a single problem. These technologies and practices are disseminated to farmers from different approaches, eg diversity field schools, participatory varietal selection, diversity kits, agricultural exhibitions. Focus is given to have diversity within each solution eg for developing variety, we look on broad genetic base, heterogeneous populations, cultivar mixtures, multilines and composites.

Some examples of diversity rich agricultural technologies are given in **Figure 2**. Such diversity rich solutions are listed, developed and implemented for each household. Diversity may be at species level, varietal level, genotype level, gene/ trait level in case of crop variety. In case of compost, it may be at crop species, animal species, micro-organisms and different parts and component levels.

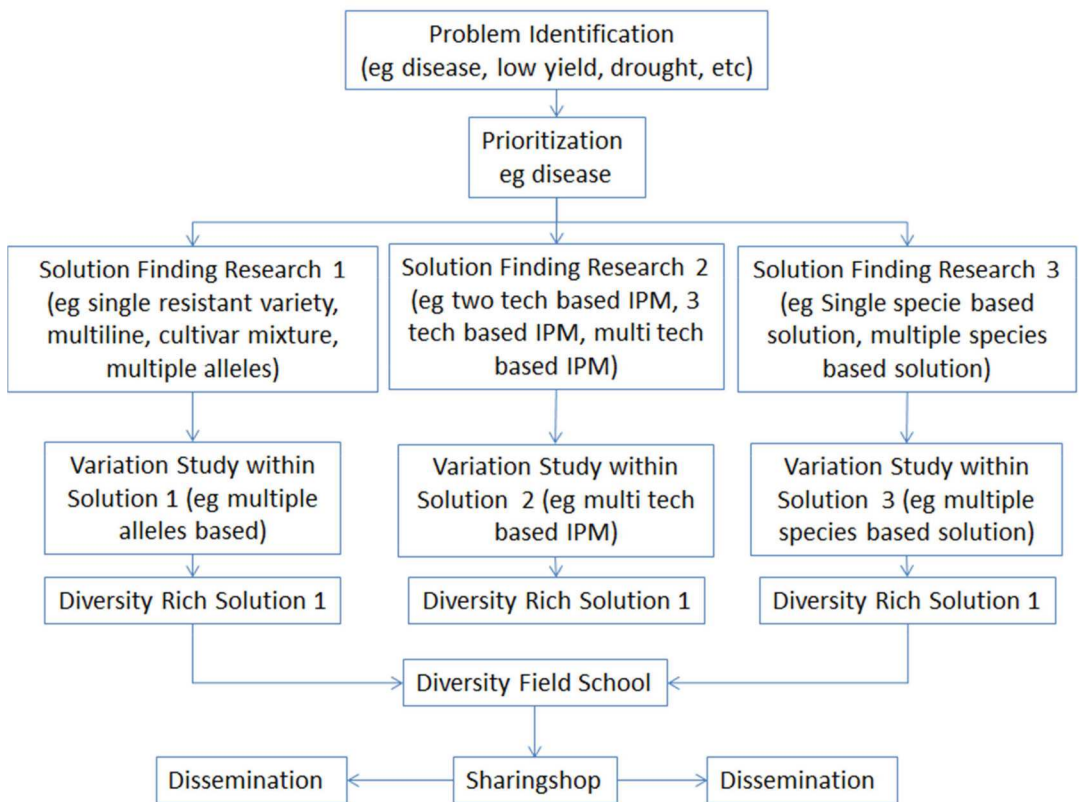


Figure 1. Steps of identifying diversity rich solution in agriculture.

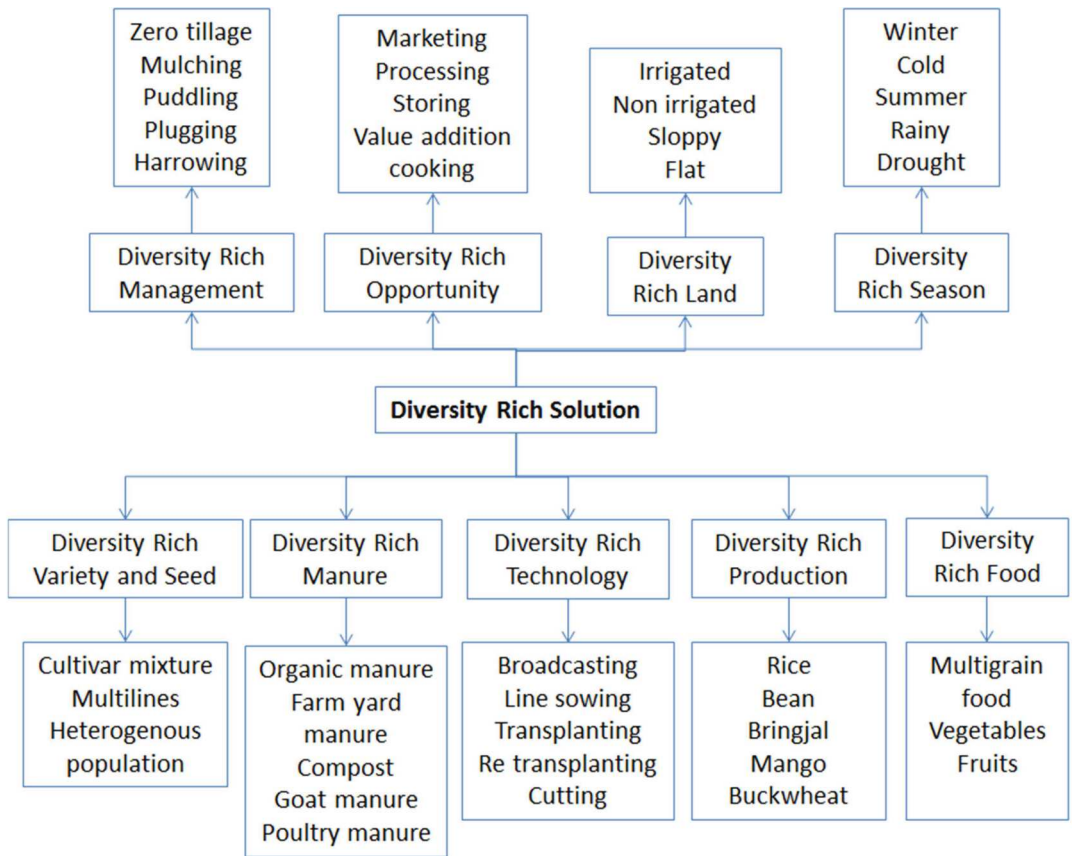


Figure 1. Diversity rich agricultural solutions.

D. Advantages and Disadvantages

Advantages

- Help to minimize the risk associated with agriculture production and practicing ecological and sustainable agriculture
- Support for maintaining and enhancing ecosystem functions and services
- This is sustainable method and simple in operation
- High adaptation in diverse conditions including changing climate and market needs
- Supports in the promotion and conservation of agrobiodiversity

Disadvantages

- May be difficulty on mechanization in diverse crop cultivation and using high-tech production and post-harvest technology
- Difficult for farmers and stakeholders to easily accept diversity rich solutions
- There is need of favorable policy to promote diversity rich solutions

- It is some time costly on developing diversity-based technologies for a single problem
- May be difficult to find out the diversity rich solution for all kinds of problem

E. Success Cases

Cultivar mixtures of rice, bean, naked barley, common buckwheat have been successful and in practice in many areas in Nepal. Twelve different food items have been prepared and recipe documented from traditional underutilized mountain crop such as proso millet. Diversity at intra varietal level have proved important for managing unpredictability factors, to increase seed set, to improve the ecological services, to produce better and nutritious production. Many technology for different crop species have been in practice for particular work eg broadcasting, line sowing, hand transplanting, machine transplanting, are available for rice seeding.



F. References

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