

Agrodiversity for *in situ* Conservation of Thailand's Native Rice Germplasm

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ABSTRACT

The spread of modern crop varieties has led to a concern about genetic erosion and decline in local crop genetic diversity. To preserve genetic resources it is now generally accepted that in situ conservation is required along side with ex situ conservation. Conservation of natural species of plants and animals may be achieved by conserving their natural habitats. Agricultural environment, however, is influenced by rapidly evolving social and economic forces and continuously emerging technological innovations. The same principles for conserving natural species cannot be applied to in situ conservation of crop diversity. Genetic systems of crop species are also highly dynamic, subject to selection pressure driven by increasingly precise tools for genetic management, including modern biotechnology, changing human needs and preferences. It is unrealistic and unjust to expect farmers to keep their traditional crop varieties in a state of suspended animation. Sustainable and equitable conservation of crop genetic diversity on farm requires two basic sets of understanding. The first is related to the structure and dynamics of the genetic system. This will help to determine (i) what may not be worth the cost of saving and what may worth conserving almost at any cost, and (ii) in what direction future changes may be expected in the germplasm so that management strategies may be adjusted accordingly. The second is related to how farmers manage and make use of local crop varieties. Biophysical differences and the many changing ways in which farmers manage diverse genetic resources and natural variability and their practices in dynamic social and economic context characterize the agricultural environment, or niche, in which crop diversity is to be conserved. Variation in both the genetic system and the niche need to be considered at various organizational levels, from the broadest global level to regional, national, down to local village, farm, field and individual plants. This paper presents the idea of "agrodiversity", as a means to analyze and understand Thai rice farmers' innovation and management of their cropping systems and crop genetic resources. Through agrodiversity analysis, which focuses on the dynamic variation in cropping systems, output, and management practice that occurs within and between agroecosystems, niches for diversity in the local rice genetic resources may be identified and enhanced on farm.

IN SITU CONSERVATION OF LOCAL CROP GENETIC RESOURCES

Widespread adoption of modern high yielding crop varieties has led to a concern about erosion in local crop genetic resources and loss of diversity. Replacement of older varieties by modern improved varieties has accelerated in the past 50 years in what is now commonly