

# **IN SITU MANAGEMENT OF PLANT GENETIC RESOURCES: EVOLUTION OF PHENOTYPIC DIVERSITY OF AN INTERSPECIFIC CROSS OF MILLET (*Pennisetum glaucum* L BR) AFTER TWO SUCCESSIVE CYCLES OF CROSS POLLINATION**

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The present study is a demonstration of the value of wild forms of millet in the *in situ* conservation of plant genetic resources. Initially a broad genetic base population was created by crossing diallele F1 hybrids of cultivated millet from Burkina Faso and four wild relatives of millet (*Pennisetum violaceum*) from Burkina Faso, Mauritania, Nigeria and Senegal. The resulting population then underwent two successive cycles of cross-pollination in 1997 and 1998 according to the Irish Method in order to maximize the introgression of wild genes into the cultivated millet genome. Each cycle of cross-pollination comprised approximately 1 500 plants from which a sample of 250 female plants of the cultivated phenotype were retained for the following cross-pollination cycle.

Eleven morphological variables were observed on the sampled plants, including 3 qualitative characters related to domestication. The data analysis made it possible to account for the levels of variability of the F2 and F3 populations in cultivated, wild and intermediate phenotypes. This work is in fact a simulation of what one observes in nature between the wild and the cultivated forms of millet in Burkina Faso which evolve/move sympatrically in certain cropping systems in Burkina Faso

We are certain that the intermediate forms of millet that are common in farmers fields across Burkina Faso are crosses between the cultivated millet and the wild form *Pennisetum glaucum* L Br. The presence of intermediate forms in cultivated fields or close by is tolerated or in some cases favoured by farmers. They have several uses and are particularly preferred as ceremonial foods at weddings in certain zones.

The non-elimination of the intermediate forms by farmers is a form of management of variability, which differs from the modern method of pure line selection. This management, which can be conscious or unconscious, makes it possible to maintain gene flow between the intermediate and cultivated forms and is a source of allelic richness to the cultivated populations.