

ECOSYSTEM COMPONENTS AS INDICATORS TO FARMERS TO CONSERVE, MAINTAIN AND MANAGE LOCAL CROP DIVERSITY IN BURKINA FASO

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The ecosystem provides farmers with sources of knowledge that help determine appropriate management strategies that will support the sustainability of local crop genetic resources. Supporting these strategies requires an understanding of the amount of diversity maintained on farm and the perceptions that influence farmers to maintain and manage this diversity over time. To understand the role of components of the wider ecosystem in providing indicators to farmers on which varieties to plant, when to plant, and how they will manage and conserve these varieties over time, three contrasting regions in terms of rainfall amount and distribution and incidence of genetic erosion were selected in Burkina Faso: Ouahigouya, Tougouri, and Thiougou, and six target crops: sorghum, pearl millet, cowpea, groundnuts, okra, and frafra potatoes (*Solenostemom* sp.), were chosen. Farmer knowledge of seasons was collected, including information on the signs indicating the beginning of a season or time to plant, the signs indicating the end of a rainy season, the signs indicating that the season will be good, and the signs indicating that the season will be bad. Complementary information was collected on the types of soils, plant cultural practices, crop varieties, crop associations, crop preferences, crop products used, storage practices, preferences and selection of seeds and varieties, and genetic variability of the crops. Data were spatially analysed to map the distribution of farmers' varieties, map the factors that affect diversity, determine whether there are relationships between these factors and diversity in farmer varieties. Diversity was calculated by number of varieties of each crop using Shannon-weaver index. Information was analysed in order to determine the type of interventions and actions to be taken and in what priority order. A total of 24 plant species are used to predict the type of season across sites. Only two species are annual, the rest are perennial trees. Plant indicators include appearance of new leaves, yellowing of leaves, flowering, and ripening of fruit. Three species are most commonly used (with the highest frequency) in the three sites: in descending order of use *Lannea microcarpa* (Raisinier, Sabga), *Sclerocarya birrea* (Nobga) and *Butyrospermum paradoxum* (Karité, Taaga). Four species were used only in the northern site, Ouahigouya: *Borassus aethiopaum* (Rhonier, Koaga), *Tamarindus indica*, *Ficus gnaphalocarpa* (Figuier) and a tree known locally as "Sebeé. The rest of plant species are used at different frequencies in all sites. In addition, the appearance and or crying of certain birds, birds building their nests, insects such as lizards shedding skin, toads going from bush to ponds, star constellations, weather signs, and dates on the traditional lunar calendar were used to predict the type of season that will come and thus the variety to plant and management activity to perform. Criteria for predicting the beginning of the rainy season is extremely important as it determines sowing dates. Whether the rainy season will be good or bad determines the type of variety to grow, and

predicting the end of the rainy season influences the harvesting time and the seed storage methods to be used. These decision all depend on the continued existence of the wild plants and animals that surround the farmers' environment and implies that sustainable management of crop diversity in Burkina Faso will be ineffective without sustainable management of the surrounding ecosystem.