

Poster Abstract - C.03

ON-FARM CONSERVATION AND ENHANCEMENT OF LOCAL DURUM WHEAT GENETIC RESOURCES IN ETHIOPIA

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In Ethiopia, tetraploid wheat (*Triticum turgidum* L.), mainly represented by durum wheat (*Triticum turgidum* var. *durum*) has been under cultivation since ancient time. It is traditionally grown by smallholder farmers on heavy black clay soil of the highlands between 1,800 and 2,800 m a.s.l.

Using locally available durum wheat resources and their own knowledge and traditional practices, farmers have been developing a broad range of genetically diverse durum wheat landraces fitting the highly varied existing micro-environments for soil, water, temperature, altitude and slope characteristics. Multiple goals were motivating farmers' communities in their selection activities, such as maintenance of stable production systems of low-input agriculture in marginal environments, maximisation of output under adverse farming conditions, and meeting of the dynamically evolving market demands.

Despite the great advantages of using local adapted germplasm, durum wheat landraces diversity is presently subject to serious threat of genetic erosion and irreversible losses due to its replacement with new, exogenous, high-yielding genetically uniform cultivars of bread wheat. Moreover, no effective results have been achieved by the National Durum Wheat Improvement Programme which has mainly relied on the delivery of modern, high yielding durum wheat varieties selected from advanced breeding materials provided by international research programmes. As a result, the diffusion in the farmer community of these newly proposed materials has been limited, due to the unavailability of seeds, to the high cost of the required external inputs, and especially to the limited adaptability and stability of the new varieties to the adverse and varied farming conditions when compared to the locally adapted farmer varieties.

Together with the genetic material loss, there has been the dispersion of associated farmer's knowledge on management practices and traditional uses of the products, which lead to limiting farmers' capability to face adverse climatic conditions, as well as new challenges posed by quick evolving societies and markets. This is particularly true in marginal production areas where small-scale farmers and communities could be further more exposed to food insecurity and poverty.

In this contest, the Istituto Agronomico per l'Oltremare, technical and scientific body of the Italian Ministry of Foreign Affairs, is supporting the local NGO Ethio-Organic Seed Action (EOSA) in its programme of re-introduction and enhancement of local durum wheat farmer varieties in Ethiopia.

The aim of the programme is to restore a community-based management and improvement of durum wheat landraces, according to traditional and new market requirements, i.e. the growing national pasta making industry. A renewed partnership of farmers' communities with the agricultural research centres is

promoted, toward ensuring mutual understanding and strict cooperation for production increase and environmental conservation.

The poster describes the different phases implemented by the programme starting from the re-introduction of durum wheat accessions stored in the national genebank to the selection and multiplication in farmers' fields. Preliminary results on field performance and quality assessment of 10 promising improved landraces. are presented. Moreover, the genetic characterisation of durum wheat landraces by electrophoresis of gliadin is presented and implications discussed.