

Population dynamics of domesticated plant: an integrative multidisciplinary approach for sorghum diversity study in Northern Cameroon. (Oral Presentation)

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Introduction

Crop diversity results from the evolutionary process of domestication, which in traditional agricultural systems is still ongoing. Social organisation and cultural traits of farmers, environmental factors, and intrinsic traits of plants interact to shape crop genetic diversity. Agronomists and geneticists emphasize adaptation to environment and gene flow as variables generating and maintaining crop diversity; anthropologists underline the importance of folk biology and traditional management practices in explaining crop diversity.

Objective

Attempts to study all of these factors, and their interactions, are rare. We are engaged in a multidisciplinary study of diversity in sorghum landraces in a village of Duupa farmer in Northern Cameroon.

Methods

Sorghum is an important element of the social organisation. It is the principal component of the diet, and drinking of sorghum beer accompanies all collective work. When one farmer's harvest is collectively threshed, each participant can freely take seed for his own sowing, leading to seed flow between fields. Seeds are sown as a mixture of landraces in a field (12 landraces per field on average), giving the potential for extensive pollen flow. Ninety named taxa are distinguished by Duupa farmers; morphological traits allowed the identification of forty-six landraces among these taxa. Interviews, free listing exercises and observations were conducted to assess folk knowledge. Phenotypic diversity was studied in a complete random block design. Fourteen microsatellites markers were used to analyse the pattern of genetic diversity.

Results

Folk taxonomy is consistent with landrace morphology, suggesting morphologically different landraces. The 21 landraces analyzed by microsatellites are structured in four major genetic clusters, which are linked to history of domestication, variation in the reproductive system, and farmers' practices. Based on these results, we discuss the role played by farmers in maintaining the characteristics of many landraces.

Conclusion

Understanding the dynamics of landrace diversity aids in deciphering evolutionary forces under domestication and has application in the conservation of genetic resources and their use in breeding programs.

Selected References

None

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