Certified and peasant seeds: which network for millet seed supply?
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I. Background

In West Africa, government policies have placed particular emphasis on strengthening the seed sector to enhance agricultural productivity, food security and rural well-being of 33 million smallholder farming households. Thus, they support quality-improved seed certified by national seed agencies and released it through private sector such as seed cooperative. However, in small-scale farming societies, farmers usually produce their seed on their own farm (range between 58-99%). Among the sources of supply, farmer-to-farmer seed circulation is the major channel. Once inserted, certified seed evolves among peasant seed, outcomes from ancestral crop populations maintained by farmers.

The aim of this study is to characterize farmer seed supply according to the certified or peasant origin of seed and to highlight coexistence modalities of seed supply.

Analyzing coexistence modalities of seed supply between certified and peasant seed through farmer seed networks is a key asset, for the development of an innovative governance of plant genetic resources.

II. Methods

Data collection: we investigated pearl millet (Pennisetum glaucum (L.) R.Br.) seed circulation networks, which is a major cereal for food security and scarred by a strong socio-cultural anchorage. Data were collected in Kounghel Department (Senegal) from an ethnographic fieldwork carried out between march and june 2018 in three Muslim villages. A sociometric survey using a snowball-sampling technique was employed with 79 farmers. Initial sample of respondents came from COORDEC (Cooperative Rurale pour le Développement Concerté de Kounghel) database, a cooperation specialized in certified seed production. After asking which pearl millet varieties they grow, farmers were asked for any seed lot sown between 2010 and 2017 1) from whom did they received it to know if it was certified and 2) or peasant seed lot, and 2) to whom did they gave a seed lot of their harvest.

Data analysis: pearl millet seed supply was represented using network formalism. Farmer seed networks were splitted according to the certified or peasant origin of the seed and back-clustering (stochastic block model (SBM)) were performed to group structurally equivalent nodes. Results from the network representation and the back-clustering are interpreted and discussed in light of qualitative data.

III. Results & discussion

In all, 229 seed acquisition events were recorded. Seed, whether certified or peasant origin, shapes farmer seed networks (Fig A and B) and modalities of acquisition (Fig C-1) are significantly different: On-farm protocol vary according to the certified (36%) or peasant (86%) origin of seed.

Pearl millet seed supply seems to be shaped by his certified or peasant origin, both in modalities and networks mobilized by farmers.

Nonetheless, after the harvest, certified and peasant seed are commingled and embedded into an open and complex social network.

IV. Conclusion

Our results provide a better understanding of farmer seed networks. This study highlights a gap between agricultural policies and local seed management by farmers, results that could feed into the reflection on the governance of plant genetic resources.