Certified and peasant seeds: which network for millet seed supply?
Antoine Doncieux, Frédérique Jankowski, Alexandre Gaudin, Adeline Barnaud

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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 cooperative1. However, in small-scale farming societies, farmers usually produce their seed on their own farm (range between 58-99%)2. Among the sources of supply, farmer-to-farmer seed circulation is the major channel2,3. 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 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 Kounghé Department (Senegal) from an ethnographic fieldwork carried out between March and June 2016 in three Muslim villages. A sociometric survey using a snowball-sampling technique was employed with 79 farmers. Initial sample of respondents came from COORDEC (Coopérative Rurale pour le Développement Concerté de Kounghé) database, a cooperative 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 a certified and/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 co-clustering (stochastic block model (SBM)) were performed to group structurally equivalent nodes4. Results from the network representation and the bi-clustering are interpreted and discussed in light of qualitative data.

III. Results & discussion

1. Seed origin shapes farmer seed networks

(A) Certified seed network

(B) Peasant seed network

2. After the harvest, seed origin doesn’t matter: pearl millet is pearl millet

After the harvest, pearl millet from certified seed circulates for the same reasons as peasant seed5. For instance, Zakat, which is a form of alms-giving, is a religious obligation for all Muslims. It consists to redistribute about 10% of the harvest to those who deserve it (i.e., poor, needy, old or sick person).

In rare cases (5% in our study), pearl millet received under zakat is used as seed6. However, no information relating to the origin of seeds is communicated through this practice7.

3. One variety hides another

Over time, certified seed changes status and loses its identity. The perception of the origin of the seed from which the variety is derived differs across the interlocutor for the same variety8,9. Varieties bred by research whose seeds have been certified (i.e., Thialack, Tossian) introduced into a community can be requalified as peasant or even traditional (i.e., Thialack, Tossian) by farmers if it has adapted well in the locality. As a result, certified seeds saved on-farm by farmers are regarded as peasant seeds for some of them.

IV. Conclusion

Pearl millet seed supply seems to be shaped by his certified or peasant origin, both in modalities and networks mobilized by farmers6.

Nonetheless, after the harvest, certified and peasant seed are commingled and embodied into an open and complex social network8.

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

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