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 56-99%). 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 Kourounghe Department (Senegal) for an ethnic group with local seed production 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 (Cooperative Rurale pour le Developpement Concerte de Kourounghe) database, a cooperative specialized in certified seed production. After asking which peasant variety 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 split according to the certified or peasant origin of the seed and co-clustering (stochastic block model (SBM)) were performed to group structurally equivalent nodes. Results from the network representation and the co-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 and C-3) are significantly different: On-farm primary network vary according to the certified (36%) or peasant (86%) origin of seed.

1. Seed origin shapes farmer seed networks

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 seed.

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 seed. However, no information relating to the origin of seeds is communicated through this practise.

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 according to the interlocutor for the same variety. Varieties bred by research whose seeds have been certified (i.e.Thialack, Tissoua) introduced into a community can be requalified as peasant or even traditional (i.e. Thialack, Tissoua) 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 farmers.

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

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

V. Acknowledgements

Certified and peasant seeds: a coexistence life circuit coming from the harvest. Adapted from Almekinders and Louwara (1999)

The reasons for the spread of pearl millet (n=350). Circles are proportional to the spread of percentages of exchanges


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1 Peasant nodes

2 The high quality of the seeds (purity, germination, etc.)

3 Certified and peasant networks. Actors are nodes and edges represent seed flows. Networks are directed, i.e. each directed link corresponds to at least one acquisition event from a seed provider to a seed recipient according to the interviewed declaration, (unreported farmers are circles, triangles are seed cooperative (one node for each village-based structure). The others are the nodes represent SBM result. The size of the node is proportional to the number of the connection between the nodes. The ethnographic represent the percentage of seed acquisition events (n=229) according to C-2 location (C-2) nature and C-3) social ties between transaction partners.

4 Thialack 2

5 Time

6 Certified and peasant seeds: a coexistence life circuit coming from the harvest. Adapted from Almekinders and Louwara (1999)