

Participatory variety selection in Chad

Farmers' participation in choosing new genotypes adapted to their conditions and preferences

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Context

In Chad, the production level of the main staple crops (groundnut, maize, sorghum and millet) is quite low. Causes are: climate change, soil degradation, pests and diseases, as well as limited access to agricultural inputs. The Swiss Agency for Development and Cooperation (SDC) has launched a seed project in Chad in 2014. The objective is to enhance food security and income. The strategy is to improve access and availability for small-scale farmers to high quality seed varieties that are adapted to farmers' conditions.

Objectives

- To collaborate with farmers in testing and evaluating new cultivars.
- To find out if some of the new varieties are appreciated by farmers.
- To better understand farmers' criteria.

Figure 1: New sorghum variety 'Tieblé' in the South of Chad



Materials and methods

On-farm trials

- 30 new open-pollinated varieties of sorghum from neighbouring countries
- 2 checks : 1 local variety and 1 improved variety
- Trials in farmers' fields under their usual practices
- 8 villages in the South
- 1 replication per farmer

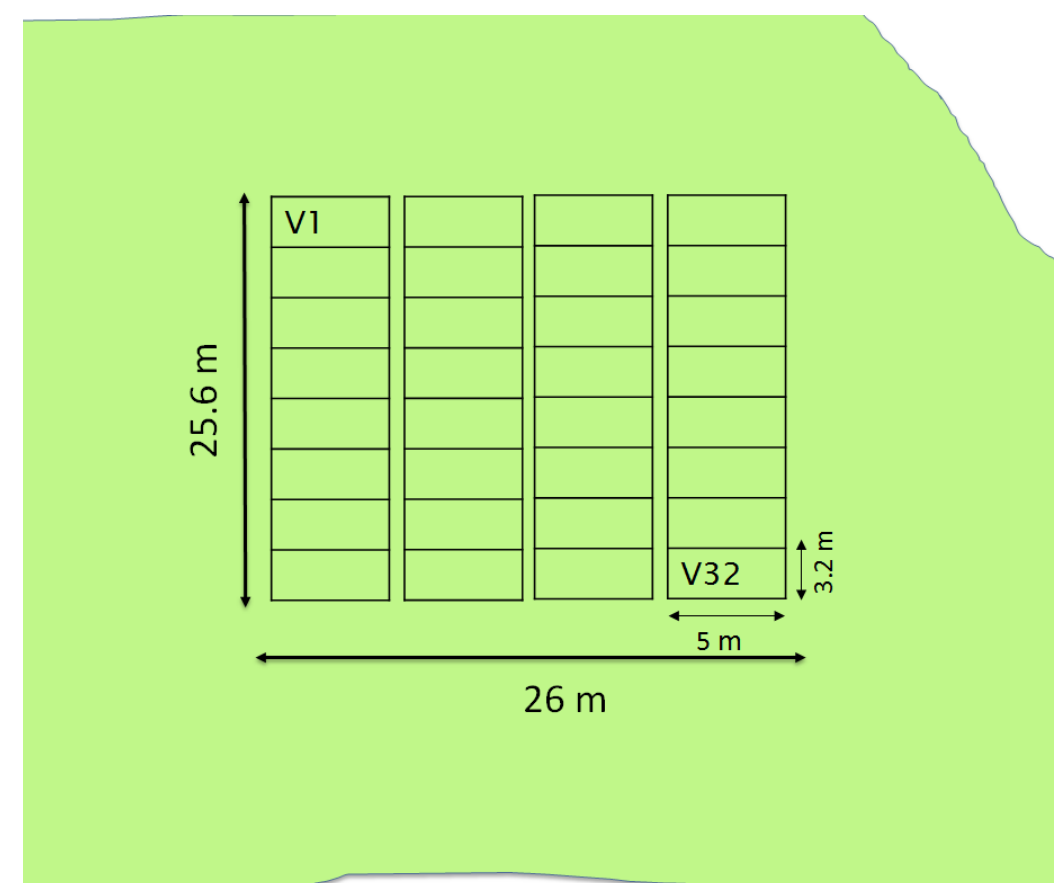


Figure 2: Trial plan

Farmers' evaluations

- 30 farmers per village evaluated the new varieties before harvesting
- Global appreciation of the varieties
- Content analysis



Figure 3: Farmers' evaluations

Results for sorghum

Farmers' preferences

- Four new sorghum varieties were significantly more appreciated than local varieties.
- Appreciation depended significantly on gender and location factors.
- Grain yield level was generally lower on-farm because conditions were less favourable.

Farmers appreciated varieties with high grain yield per panicle, hard and mealy grains, white and red, easy to remove from the glumes. Stems are used for animal feed, construction or human consumption.

BUT some varieties with lower grain yields were also appreciated because of other positive traits (i.e. sweet stems generate additional income).

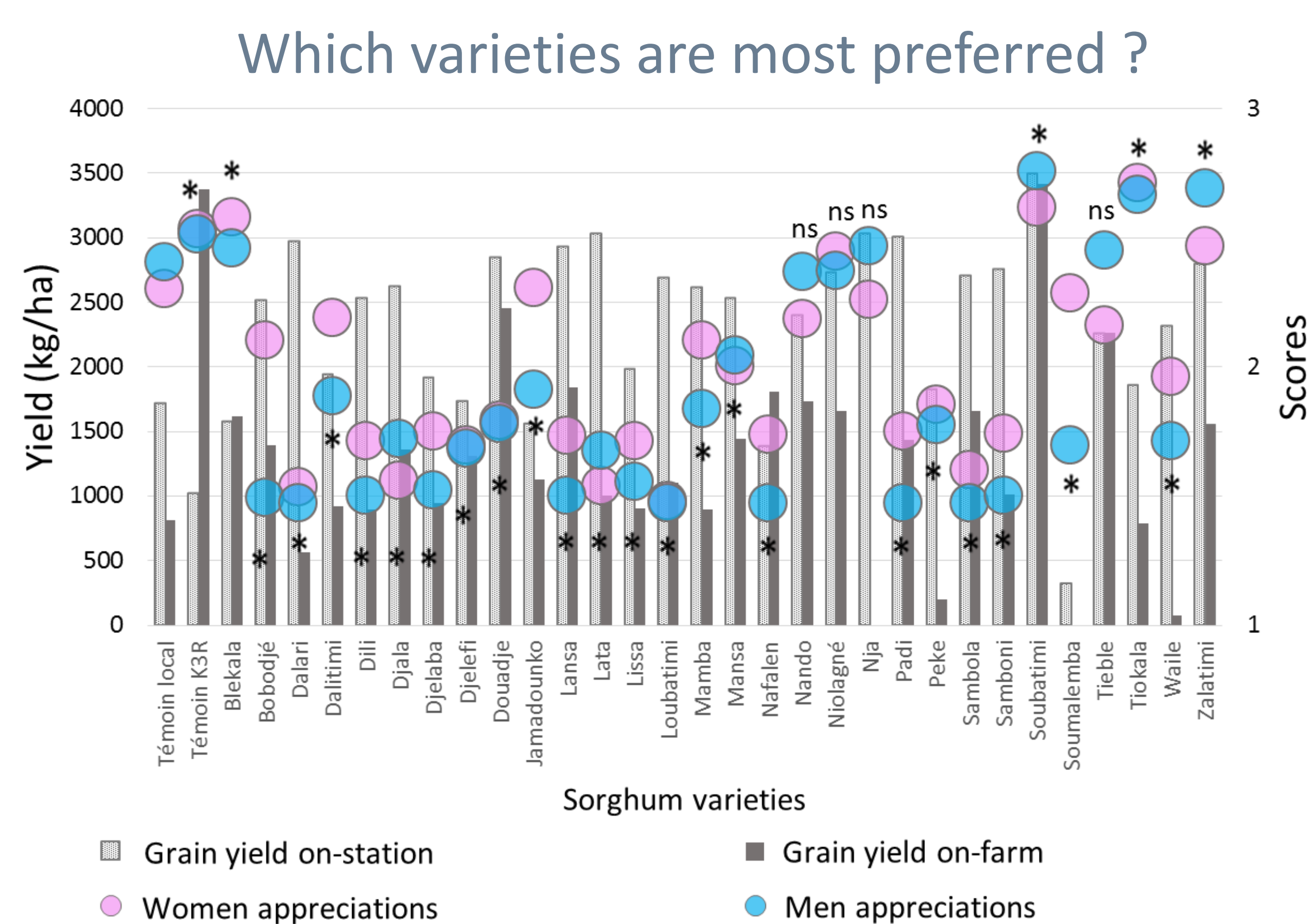


Figure 4: Farmers' appreciation in 4 villages (bubbles). Scores: 1=dislike; 2=doubts; 3=like. Grain yield kg/ha (bars) on-station and on-farm in 1 village

Farmers' criteria

- 8 criteria were mentioned by farmers (see fig.5)
- Women and men cited the same criteria but with different levels of importance
- The frequency of mention is influenced if a trait stands out amongst the tested varieties (i.e. sweet stems)

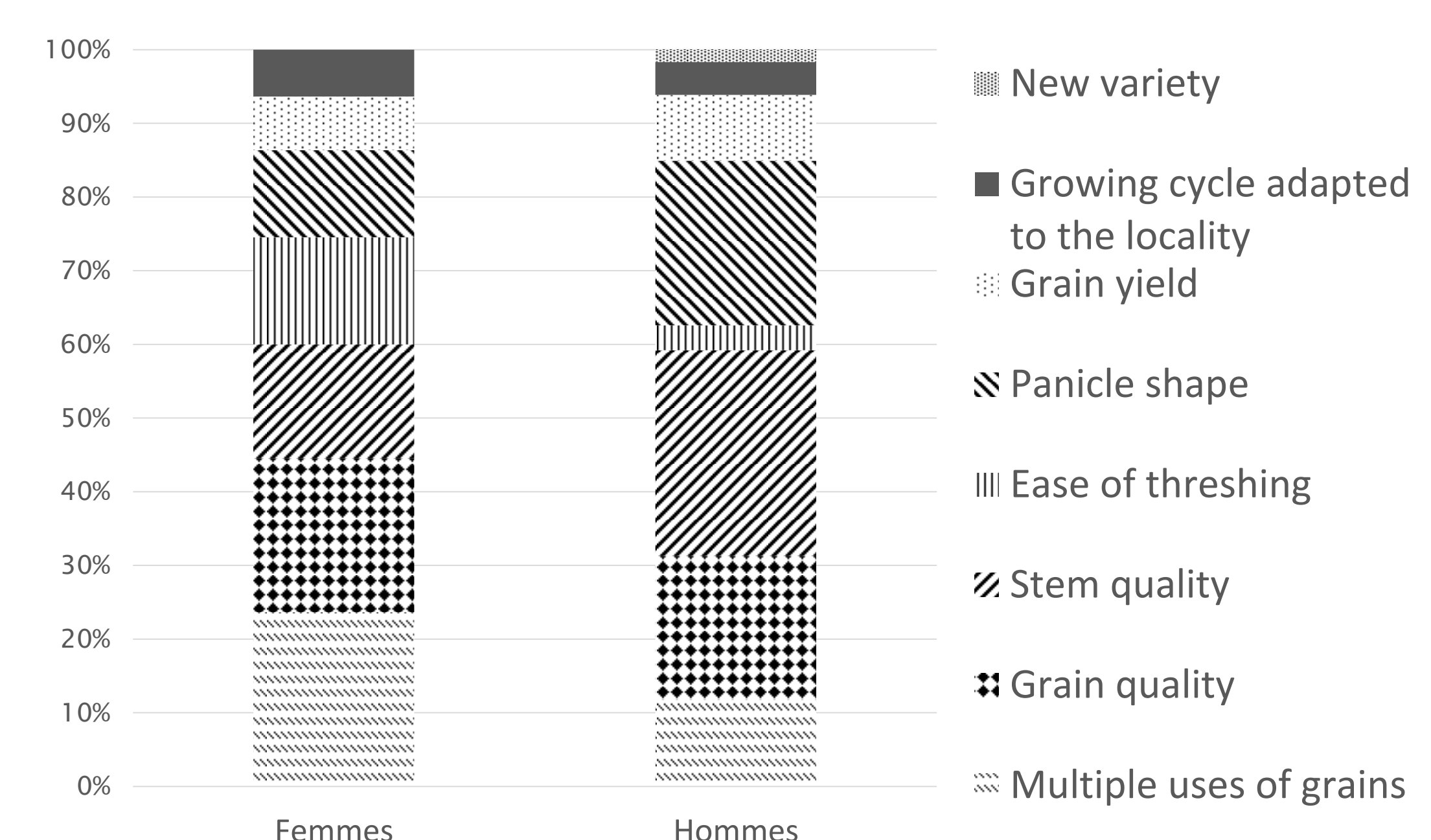


Figure 5: Relative frequency of mentioned criteria by 14 groups of farmers in 4 villages

Conclusions and recommendations

The most preferred sorghum varieties (9 of 30) were kept and their performance is being evaluated in multi-locational trials in 2017. At the same time the research institute is multiplying seeds for later diffusion.

The **collaboration of farmers is essential** for testing and choosing adapted varieties because of the manifold factors influencing their decisions; different socio-economic and agro-ecological conditions and different uses. Farmers take into account many criteria beside the yield, such as the ease of threshing and quality of grains. They evaluate the acceptable yield level depending on other advantages of the variety. Varietal diversity is needed to improve food security because of the diversity of practices, conditions and uses.