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Reviving Seed Sharing for Biodiversity Conservation Food Security and Ground Water Recharge

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Abstract

Ground water protection and recharge is a major concern in West Africa, since water demand is likely to double in next thirty years with the growing population. Climate projections indicate that West Africa will be subjected to increased variability combined with a decline in rainfall. The GIZ Water Program ProSEHA investigated how ground water recharge can be improved alongside improvements of food security.

ProSEHA decided to test the improvement of rice production by increasing rice biodiversity and by encouraging site specific cultivation of old traditional rice varieties. ProSEHA collected a total of 25 varieties with different local names and the farmer-led testing and genetic tests validated 15 well distinguished varieties. Among these varieties were some with very good abilities to grow in deeper water and varieties with very low water needs for upland cultivation. Due to this wider adoption range, farmers were able to cultivate a larger proportion of their traditional watersheds. This increase in production area, helped that less land in the watershed banks remains idle, and thus prone to erosion, and consequently water recharge is enhanced.

167 farmer managed rice testing plots were evaluated. In the first year the plots were very small (<100 sqm) and increased over time as more seeds become available to plot sizes of up to 1 ha. All farmers tested various old varieties against a modern variety (mainly IR841). Farmers were invited to rate the relative performance of cultivars by observation and in addition precise yield measurements were taken. The trials were done without chemical fertilisers or other chemical plant protection measures.

The 4-years results showed local varieties performed at least equal (22%) or even better (52%) than modern varieties. Average yield for local rice varieties was 2.35 t ha⁻¹ against 1.94 t ha⁻¹ for modern varieties (+21%). Farmer observation revealed that the local varieties offer a broader variation in crop cycle length, flooding and drought and pest resistance. Information and seed were diffused by annual seed sharing fares. The encouraging results led to an increase in participating farmers from below 20 in 2016 to 538 in 2019.

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