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The Seedball Technology Also Enhances the Panicle Yield of Sorghum in the Sahel

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Abstract

Sorghum and pearl millet are the major staples often produced by the Sahelian small-holder farmers. Following the favourable experience of seedball technology in pearl millet production, transferring the seedball technology to sorghum was frequently requested by farmers. Therefore, the objective of this study was to test the optimised sorghum seedball on-site in the Sahel region. In 2020 planting season, 57 on-farm trials were conducted in over 20 villages of Maradi region in Niger. Conventionally sown and seedball-derived pearl millet crops were grown using “farmer-optimised” simple split plot designs with three treatments, mainly: (i) farmers’ practice as control i.e., conventional sowing and 3.0 cm diameter-sized seedballs (made from 80 g sand + 50 g loam + 25 ml water +0.9 g seeds as standard recipe), which contained either (ii) 4.5 g wood ash or (iii) 1.5 g mineral fertiliser (NPK) as effective nutrient compounds. Results showed that seedballs do not suppress seedling emergence in sorghum. Compared to control, NPK- (N = 21) and wood ash-amended (N = 36) seedballs increased panicle yield by 40 and 15 %, respectively. The yield effect was positive in several villages. However, there was a high variation in panicle yield ranging between 200 and 2730 kg ha⁻¹. Seedball technology appears suitable for sorghum production, and seems too have a high chance of adoption by the local farmers. However, in order to enable more precise recommendations for its application further on-farm trials are necessary that differentiate the effects of soil type, gender, post-emergence fertilisation, sowing time and other management practices.

Keywords: Maradi farmers, Sahel local farmers, sorghum seedball, sorghum yield, technology transfer