Small-scale agricultural mechanization as a mechanism for the dissemination of improved sorghum, maize and bean varieties

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ABSTRACT
Multi-level diagnosis of agrosystems in Haiti underlined major constraints negatively impacting productivity and production. These constraints concern particularly the unavailability of agricultural labor and the tools for plowing and for weed management at critical times in the calendar of different cropping systems, the poor management of planting densities, the misuse of fertilizers, and finally the poor access to quality seeds with enhanced resistance to pests and diseases and well adapted to Haiti agro-climatic conditions.

However, small integrated changes in production systems can overcome these constraints and lead to substantial increases in labor productivity and output. In our latest studies on cereal like Zea mays, we are experimenting with the integration of small-scale mechanization as a mechanism for the dissemination of improved variety and quality seeds through demonstrations of results allowing a comparison of effect.

INTRODUCTION
The context in which agricultural production evolves in Haiti is very critical. It is supported by approximately 1,018,951 small farms whose average size per farm unit is around 0.72 tile (MARNDR, 2012). Production is mostly by manual equipment and meets only about 45% of the national food demand (USAID, 2019; FAO, 2016). Some studies explain this low production as due to poor control of seeding rate, poor fertilizer dosage, scarcity of labor, and high production costs (MARNDR, 2012). At the global level, elements of solutions have been proposed to address these problems at the production level, among which are harnessed and motorized agricultural machinery to carry out the various agricultural operations previously done only by manual force to best meet national food needs (Hoste et al., 2004).

METHODS

RESULTS

PERSPECTIVES

We have demonstrated that small-scale mechanization services including no till planting, fertilizing and weeding potentially have lower cost for farmers than traditional ones with reduction of up to 50%. We also hypothesized that mechanization no till planting services could also lower the time. We have obtained as a result a significant difference in the time consumed for the realization of the operations between the service and the traditional. Farmers expressed very high levels of appreciation for the service in general and for the integrated improved seed in particular. They have been also willing to pay for this type of service with an unconditional probability of 93%.

This experiment is being duplicated on different crops, in different seasons in different regions on sorghum, maize and beans varieties. By the end of the project, we intend to demonstrate whether small-scale mechanization is an appropriate strategy for improved variety dissemination along with improved management.

Bibliographic references


MARNDR. (2012). Étude-diagnostic des systèmes de culture de quatre zones de production du Morne des Commissaires (Savane Zombi, Gros Cheval, Beauc doux Chatte / Chapiton) (Programme de développement des filières rurales [DEFI]). MARNDR.


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