



Farm Mechanization & Conservation Agriculture for Sustainable Intensification



Photo Credits: ©2015 Tanzania: a farmer sowing, the Mbulu community

Issue No 4: January—March 2015

Two Wheel Tractors using Private Sector based supply chains in Zimbabwe: discussion of options

Introduction

Farm power for field operations in the context of Zimbabwe's agriculture has historically been limited to manual, animal traction and four wheel tractor based systems. Two wheel tractors are a new form of on-farm power in the country. The FACASI project brings with it the concept of applying two wheel tractors to conservation agriculture using private sector based supply chains.

One of the primary tasks of the FACASI project in Zimbabwe is to demonstrate to farmers, potential contractors, private sector supply chain actors and policy makers that two wheel tractors are another option for farm power. Comparative costs between the Animal traction based conventional tillage systems and two wheel tractor CA based systems were analysed with farmers and some of the findings are discussed in the sections below

Timeliness of operation

The capacity of two wheel tractor based no till planting technology is at least 9 fold that of conventional tillage animal traction based crop establishment systems. The same two wheel technology is at least 50% higher as compared to animal traction based no till planting technologies on the market. Of interest is the fact that the two wheel tractor/two row Fiterrelli no till combination has a capacity of 40.7% than that of a 60HP no till planter despite having an initial cost of only 20% of the later.

*8 hrs for ploughing with draft animals is normally spread over three days as the daily duty cycle for oxen is 6 hrs.

*Available time is less than the 30 day planting period. Within the small holder farming sector in Zimbabwe, one day in a week is set aside as 'Chisi' day in which the local leadership does not allow people to work in the fields. The planting season begins with the rainy season which means of the remaining 6 days in a week you have a chance of interruption of field operations from the rains. Effectively you work with a 4-5day week equating to a 20 operational days for a month.

Two Wheel Tractors using Private Sector based supply chains in Zimbabwe... *continued from pg1*

*The duty cycle for two wheel and four wheel tractors is based on that of the diesel engine which is 24hrs per day. The two wheel tractor technology offers a significantly higher duty cycle than animal based systems. Daily output is therefore limited only by the management capabilities of the operators and not power source as in the case of animal traction based systems.

Labour productivity

The two wheel tractor/single and double row planter combinations offer significantly higher labour productivity levels as compared to both animal traction options and the four wheel tractor conventional tillage systems. The two wheel tractor/single row planter combination has a higher labour productivity level than the two wheel tractor/double row planter system.

*An animal traction team requires at least two people, one leading the animals to maintain straight lines and the second controlling the implement (plough or planter). The operational time for each animal traction based activity is therefore multiplied by 2 to derive the input for man hours for the same operation.

*A two wheel tractor/single row planting system requires one operator and therefore the operational time is the same as the required man hours.

*The two wheel/two row Fiterrelli planter combination requires at least two people with one operating and the second lifting and lowering the coulters at the headlands.

Energy Costs

Estimates of fuel consumption data indicate the two wheel tractor no till crop establishment combination uses 9.5% and 40% of diesel fuel per hectare than that of 4 wheel conventional and no till combinations respectively. There is a huge potential for reducing energy costs in crop establishment and consequently improvement on farmer margins.

The writer is the FACASI Project Country Coordinator for Zimbabwe and can be reached at nazare2003@gmail.com

FACASI holds its Second Planning and Mid-term Review meeting-in Hawassa, Ethiopia.

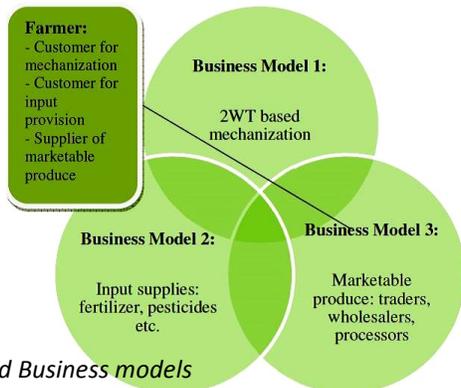


The FACASI project held its second review and planning meeting in February 2015 to deliberate on the progress, challenges and opportunities as the project goes into its third year. This meeting brought together all the participating countries, the Project steering committee and a team of reviewers.

The week long meeting also included site visits to a youth community project, a vocational youth training institution, government research centres and manufacturing plants. One of the objectives of field visits within the FACASI project is to learn and share experiences from ongoing practices of small scale agricultural machinery, specifically the two wheeled tractor within the different environments. Participants observe and draw learning lessons from the various models and the services that support small farm mechanization.

Discussions focused on the opportunities that two wheel tractors offer and how the FACASI project could take advantage of some of these opportunities which include decreasing farm sizes among smallholder farmers; the multiple use of the 2WT; the existence of experienced dealers who already operate the four-wheel tractors; new projects coming up and igniting the demand for the 2WTs could trigger the increase in imports and manufacture in Africa. Perhaps not too far in the future 2WTs could be a stepping stone to smallholder farm mechanization in Africa.

Guidelines for the design and Evaluation of Business models – A report



Interlinked Business models

This report gives guidelines on the design and evaluation of two– wheel tractor business models, explains what these models are and goes into detail on the three major drivers of input/technology business models.

Detailed report can be accessed @http://facasi.act-africa.org/file/20150202_guidelines_for_the_design_and_evaluation_of_bus



The Kenya FACASI team in land preparation at Nanyuki– Kenya



Upcoming Events

FACASI Monitoring & Evaluation / Knowledge Workshop

FACASI will be holding its M & E and KM workshop in Nairobi, Kenya. The objective of this workshop will be to review progress on the M & E on the different project deliverables as well as develop some knowledge products.

World Congress on Integrated Crop-Livestock-Forest Systems (WCCLF2015), Brasilia, July 12th to 17th 2015

Embrapa is pleased to invite you to participate on the World Congress on Integrated Crop-Livestock-Forest Systems (WCCLF) and the 3rd International Symposium on Integrat-



ed Crop-Livestock Systems (ICLS3) to be held in Brasilia, Brazil on July 12-17, 2015.

The 3rd Brazil in East Africa Expo 2015

Will be held from June 3rd to 5th 2015 at Safari Park Hotel, Nairobi– kenya. The event target over 150 Brazilian companies to display their innovative products, share solutions that have been tested and proved for many years in Brazilian and Latin America market

Theme: Joining Opportunities.

More Info: For further information for this could be access through the link: <http://www.tech360s.com/index.php>



To contribute Articles and more information about the FACASI project, please contact

Elias Berta |Project Manager, FACASI
 CIMMYT (International Maize & Wheat Improvement Center)
 P.O. Box 5689, Addis Ababa, Ethiopia| Tel: +251 (911) 374232
 Email: E.Berta@cgiar.org; Website: <http://facasi.act-africa.org>