SDM: Case Report Psaltry International Ltd.

Service Delivery Model assessment: Short version

January 2018

Location:	Nigeria
Commodity:	Cassava
Services:	Training, input provision, land clearing and preparation, improved stems, transport, access to credit, e-monitoring, on-farm housing

idh the sustainable trade initiative

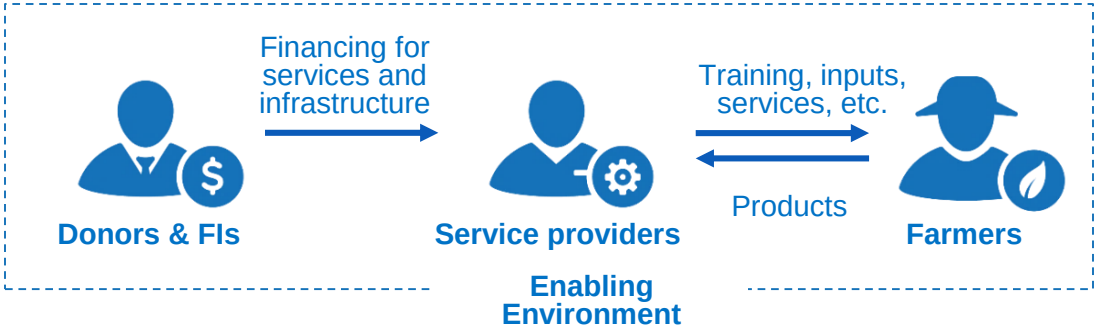
NewForesight

Psaltry INTERNATIONAL COMPANY LTD.

What are SDMs and why are we interested in analyzing them?

Service Delivery Models (SDMs) are supply chain structures which provide services such as training, access to inputs and finance to farmers. The aim is to improve farmers' performance, and ultimately their profitability and livelihoods.

A SDM consists of service providers, often supported by donors and financial institutions (FIs), and farmers receiving the services. All are set within a specific enabling environment.



By analyzing SDMs, we aim to support **efficient, cost-effective and economically sustainable SDMs at scale** through:

- Key drivers for success of SDMs benchmarking
- Innovation opportunities to support
- Cross-sector learning, learning community
- Convening at sector and national level

Analyzing SDMs brings a range of benefits

Farmers and farmer organizations

- **Enhanced services**, which lead to improved farmer income and resilience, through higher productivity and product quality
- **Improved SDM outcomes**, which lead to an improved social and environmental environment

SDM operator

- Better understanding of your **business case**
- Insights to **improve service delivery**
- Insights to develop **a cost-effective SDM**
- Identification of opportunities for **innovation** and **access to finance**
- **Comparison** with other public and private SDM operators operating across sectors/geographies
- Ability to communicate **stories of impact and success** at farmer level

Investors/FIs

- **Common language** to make better informed investment decisions
- Insights to achieve optimal **impact, efficiency and sustainability** with investments and partnerships in SDMs

The Allied Atlantic SDM and objectives

General SDM information:

Location:	Nigeria
Timing and analysis scope:	2017-2021
Scale (start of analysis):	850 farmers
Scale (end of analysis):	2,000 farmers
Funding:	Psaltry, co-funded by DFID and 2SCALE
SDM Archetype*:	Local trader / processor

Psaltry International Limited (PIL), established in 2005, sells cassava produce, mainly starch. Psaltry established its 20 MT /day starch factory in 2012 and installed an additional production line of 30 MT/day in 2015.

The company started with outgrower programs in 2012. PIL's supply chain involves up to 5,000 farm families, including over 2,000 registered and unregistered outgrower families, marketers, laborers, traders, transporters and retail input suppliers.

Psaltry aims to source cassava from 500 ha of own farmland and about 4,000 ha of outgrower community farmland to supply its 50 tons/day of installed capacity.

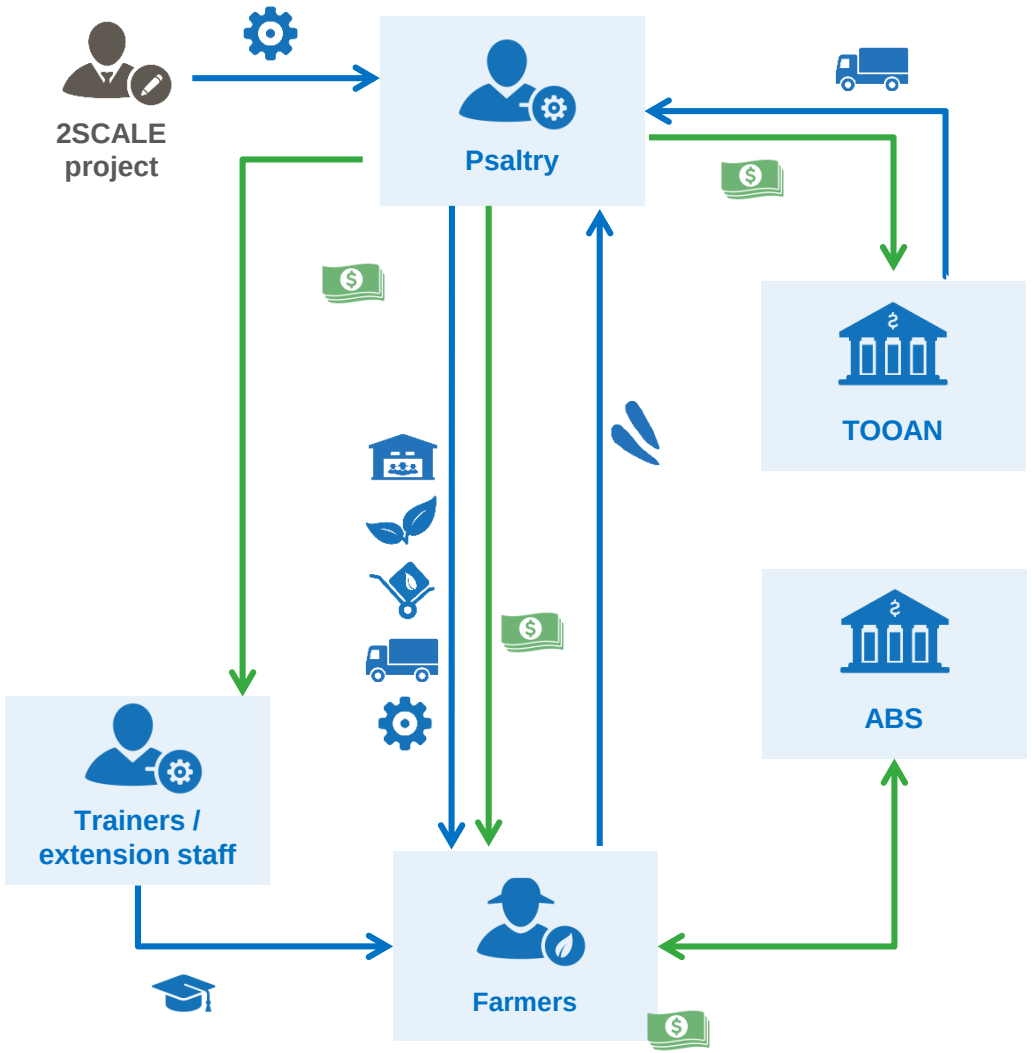
SDM objectives:

1. Increase farmers' productivity and access to land
2. Secure cassava supply
3. Improve cost-efficiency of current model

SDM rationale:

* For more info on SDM archetypes, see the IDH Smallholder Engagement Report

SDM and structure and enabling environment



- Psaltry sources cassava from farmers and directly provides several services. Access to credit is provides by the Anchor's Borrowing Scheme. The 2SCALE project provides an e-monitoring app. TOOAN delivers extra tractors.

Enabling environment

Farmers and Psaltry are impacted by several factors within their enabling environment. Most important are:

1. Infrastructure
Infrastructure and logistics may limit access to market for farmers.

2. Trading system
There is a large risk of side-selling of farmers and not respecting the terms of the contract.

3. Pricing & competitiveness
High and volatile market prices for cassava are driven by external factors such as exchange rates.

4. Social issues
Child labor is a risk in Nigeria.

5. Environmental issues
Deforestation is the main issue. Soil erosion and land degradation are also important issues.

Legend → Flow of goods and services → Cash flow

Services delivered and farmer segmentation

Training

- Psaltry provides both individual and group capacity training and demonstration plots
- Psaltry recently trained youth together with 2SCALE and Crop Life

E-monitoring

- Psaltry introduced an e-monitoring app called Farmforce (2SCALE project). This app helps to monitor all farm related activities, give forecasts, and give information.

Land preparation & clearing

- Land preparation including ploughing, harrowing and ridging are provided on credit
- Psaltry provides land clearing services as a one-off to farmers.

Input provision

- Psaltry provides herbicides to farmers on a cost-reimbursement basis
- Psaltry only provides fertilizer to a small section of farmers, but there are plans to scale up fertilizer supply

Improved stems

- Psaltry supplies farmers with improved varieties of cassava stems from its own farm. The improved stems are provided for free.

Access to credit

- Psaltry plans to arrange access to finance for the farmers through the Anchor Borrowers Scheme.

Transport

- Transport to and from the farms is arranged by Psaltry. Prices are subsidized, and fixed based on distance and tonnage.

On-farm housing

- For farmers included in the nucleus estates scheme, a farm house is provided for farmers who wish to remain at the farm for a few nights

Farmer segments

This SDM analysis focuses on farmers of Psaltry's nucleus estate. These farmers are segmented in the following way

Minimum criteria

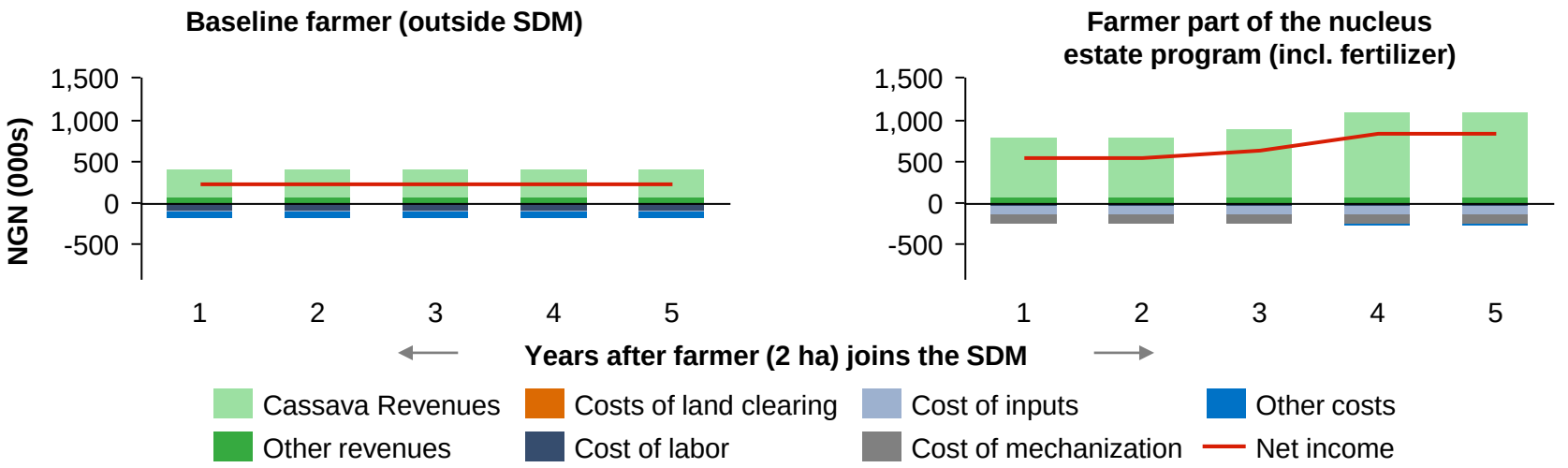
To enter the SDM, farmers must be vouched for by senior members of the community. Preference is given to indigenous youth and women. No experience is cassava farming is required.

Segments

Farmers are considered **segment 1** if they are beginning farmers, in need of training and capacity building.

Farmers are considered **segment 2** if they have been proven reliable, professional farmers with a good financial track record.

Overall SDM impact: Farmer P&L



Economic sustainability at farm level

Baseline farmers (productivity 9.5 MT / year) use no inputs and no improved stems, and do not apply GAP. Farmers that are part of the nucleus estate receive use high quality inputs, increasing their yield, and further increase their productivity in time through training (28 MT / ha in year 5). Under these assumptions, the net income of the farmers would increase by up ~350% within 5 years after joining the nucleus estate program.

Main revenue drivers

Production: An increase in productivity is directly linked to increasing revenues. In the SDM higher productivity is achieved. Quality (starch content) is difficult to influence.

Price: The price of cassava is highly volatile. For high cassava prices, service delivery becomes profitable much quicker. Low cassava prices decrease the returns of service delivery.

Main cost drivers

Inputs: Cassava stems are an important cost driver for the baseline farmer. Herbicides and fertilizer are the main cost drivers for farmers that are part of the SDM. Improved seeds are provided by Psaltry.

Mechanization: Mechanization costs are large, but have a large impact on productivity and reduces labor needs.

Labor: Farm labor is mainly done by family labor. In this model, hired labor needs are estimated to be 20% of total labor needs for a 2ha farm.

Note: Based on a combination of real data, assumptions and projections. Figures will be checked periodically against actual data

Specific service impact: sensitivity analyses

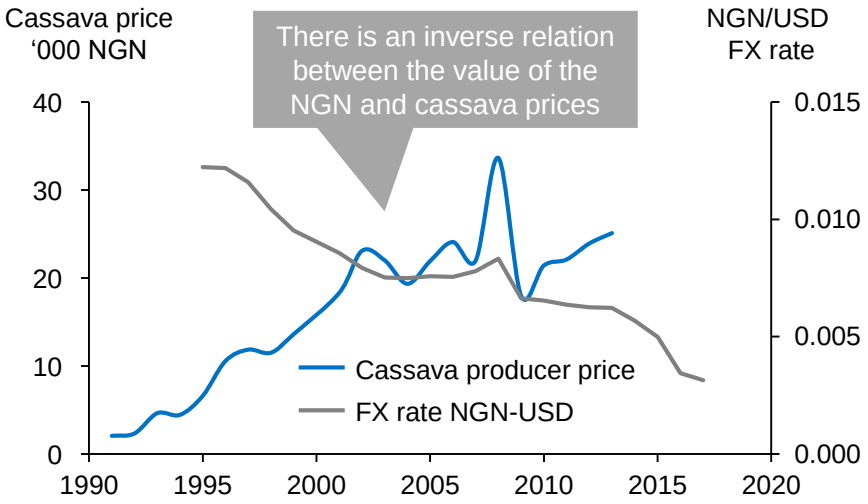
Securing cassava supply and producer prices

Increasing cassava prices can be linked to the decreasing value of the Naira to the Dollar and associated increase in import price of commodities. There are also large seasonal fluctuations in cassava supply and price. Competition for cassava produce is high. Securing a stable and affordable sourcing of cassava is the main challenge AADL faces.

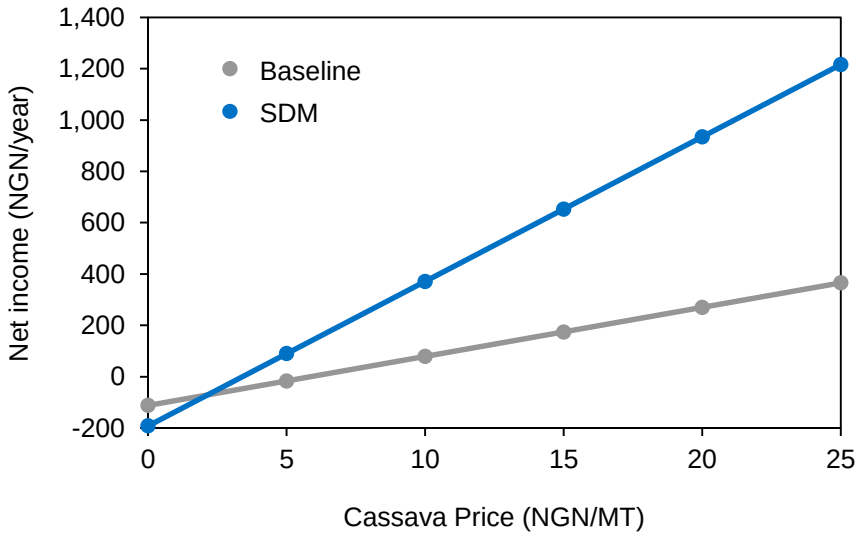
Farmer net income for fluctuating cassava prices

Cassava prices are highly volatile. It is therefore important to understand the profitability of the SDM program for farmers under different pricing scenarios. This analysis suggests that it is beneficial for a baseline farmer to join the SDM program for all realistic cassava market prices. Furthermore, the benefits for farmers increase as the price paid for cassava becomes higher.

Cassava producer price and NGN/USD FX rate

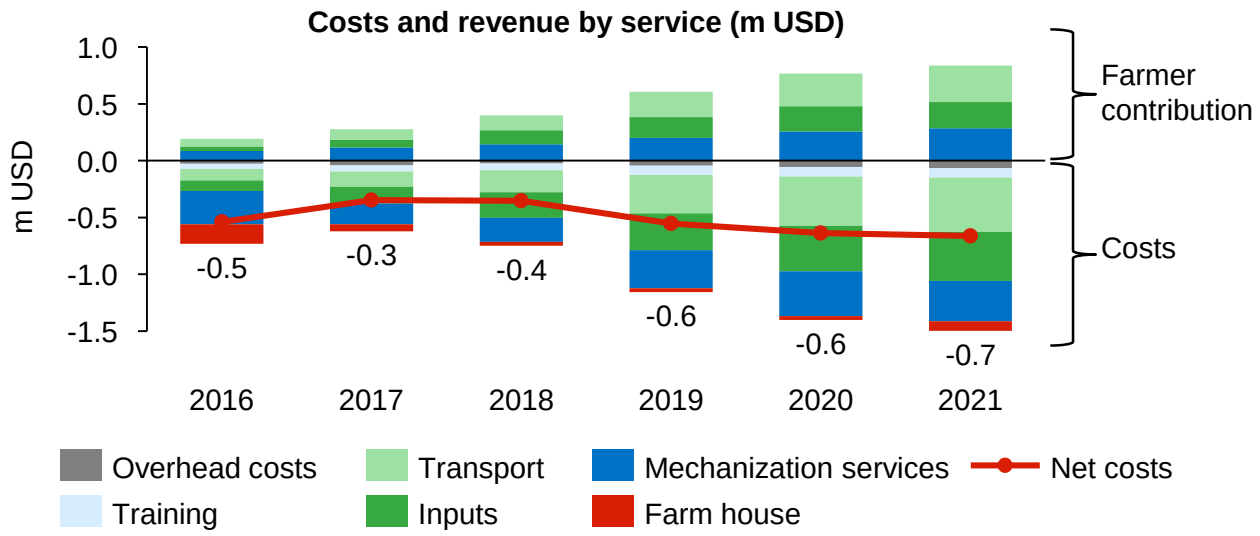


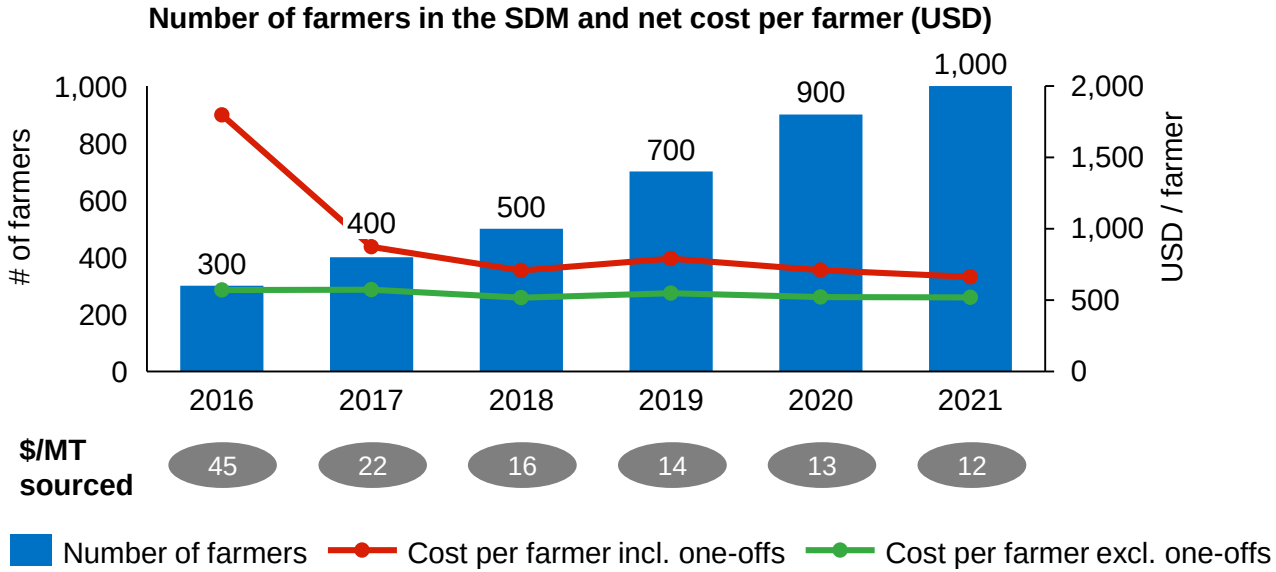
Farmer annual net income vs cassava price*



*Assuming a productivity of 9.5 MT/ha for baseline farmers, 28 MT / ha for farmers within the SDM. Furthermore, costs are constant under changing cassava market prices.

SDM P&L, scale and sustainability





Economic sustainability of the program

- Psaltry can earn back their investment in the SDM through commercial revenues.
- The largest components of the SDM are financed by the farmers. Herbicides, fertilizer, and mechanization services are all paid for when farmers sell their yield to Psaltry.
- A large fraction of the net costs are one-off investments in land clearing (included in mechanization) and construction of farm houses.
- Excluding these costs gives a better picture of the long-term economic sustainability of the program, and looks markedly better.

Main revenue drivers:

- Income from services (herbicides, fertilizer, and mechanization).
- Increased cassava sourcing and related commercial revenues.

Main cost drivers:

- Land clearing costs and construction of farm houses.
- Provision of improved stems to the farmers (for free)
- Overhead & training

SDM projected outcomes

These results do not represent an official assessment of SDM success or failure by IDH or NewForesight. An indication is given based on the analysis done in this forward-looking study and assumptions provided by the SDM operator(s). Actual assessment should be done during and after the SDM, using measured data

SDM objectives	Projected outcomes
1 **Increase farmers' productivity and access to land**	The nucleus estates program provides access to land to farmers and increases farmer productivity by ~350% compared to a baseline farmer.
2 **Secure cassava supply**	Based on projected costs and revenues, the nucleus estate program will provide a commercially viable and secure cassava supply to Psaltry, reducing exposure to volatile cassava prices.
3 **Improve cost-efficiency of current model**	The costs of the current program (scattered outgrowers) were not analyzed in this study. Assuming a similar cost structure and lower side-selling, the nucleus estate program is likely more efficient. Some opportunities to reduce costs remain.

Key insights

Key drivers of success

- A key factor in the success of Psaltry is their comprehensive vision for the development of their SDM. The services Psaltry aims to deliver to the farmers in the nucleus estates program are extensive and they provide guidance to the farmers throughout the entire process.
- The projections indicate that the SDM can be profitable for both the farmer and Psaltry (through commercial revenues). A stable and affordable supply of cassava is of key importance for Psaltry and this SDM program can help achieve this.
- Further, by organizing the farmers within the nucleus estates, they are able to increase the professionalism of the farmers and reduce side-selling to ~0%.

Key risks

- The costs for the SDM are high and if the expected returns are not realized this could result in a large financial burden for Psaltry.
- This study assumes a high productivity increase for SDM farmers compared to baseline production. Lower yields would directly impact farmer income and commercial revenues for Psaltry.
- This study assumes that Psaltry will be able to reduce side-selling to 0%. Higher side-selling would result in lower revenues for Psaltry.
- Psaltry is currently limited in its capacity to scale up the program, since the upfront investment needed is very high.
- There is a risk that farmers will feel compensated unfairly, and will for example leave or refuse to join the SDM program, if there is a large discrepancy between cassava market price and the price Psaltry offers.

Key factors in replication

- The SDM model of Psaltry requires large financial investments and commitment. Further, it requires commercial interests in securing supply of crops. These two factors limit the replicability, and scalability, of the model.

Opportunities for improvement

- To be able to scale up the current activities a key challenge will be access to funding. Outsourcing some of the funding to financing institutions would significantly reduce financial risk for Psaltry in running the SDM.
- There may be opportunities to reduce the costs of service delivery, e.g. reducing the costs of improved stems, fertilizer and/or herbicides for the farmers.
- Psaltry would benefit from a more ambitious approach to data management. By developing a more structured and standardized use of a system like Farmforce, farmer data could be used to track adoption and impact in a sophisticated way. This data could then be used to trial innovations, improve existing service delivery, and map farmer's financial credibility.
- Psaltry could consider measures to prevent or mitigate soil erosion. Farmers can markedly reduce soil losses by erosion using simple agronomic or soil conservation practices, such as minimum tillage, intercropping, contour ridging, closer plant spacing, fertilizer application, mulching and the planting of contour hedgerows of grasses, legumes or leguminous tree species.

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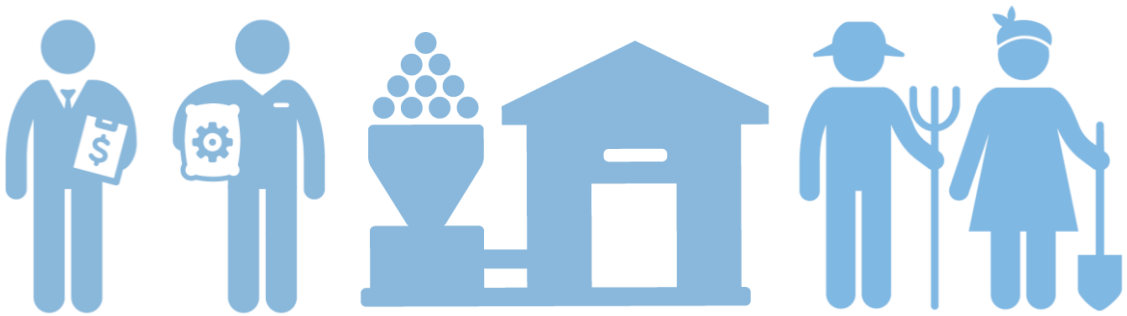

For more information, see the IDH Smallholder Engagement Report. This report, gathered by analyzing over 30 individual SDMs in 16 countries, provides insights into IDH's data-driven business analytics. The findings identify drivers of farmer resilience, cost reduction and financial sustainability in service models and the conditions needed for a supporting enabling environment.