ISSD TIGRAY Brief

ISSD Ethiopia

January 2017

Sustainability a function of LSB Profitability

Vision Statement of ISSD Ethiopia

Through a vibrant and pluralistic seed sector, quality seed of superior varieties are available and affordable to a large number of farmers; thereby contributing to agriculture for food security and economic development in Ethiopia.

Objective of ISSD Ethiopia

To strengthen the development of a vibrant, commercial and pluralistic seed sector in Ethiopia.

Contact Address:

Professor (Dr.) Fetien Abay
Scientific Coordinator ISSD Tigray
Cellphone: +251 (0) 914 31 35 44
E-mail: fetienabay@gmail.com

Gebre-Haweria Berhane
Knowledge Sharing & Communication expert
Cellphone: +251 (0) 914 00 90 66
E-mail: gebrehaweriajoko@yahoo.com
: haweriagb@gmail.com

P.O.Box: 231
Website: www.mu.edu.et/issd
Facebook: facebook.com/Mekelle-University-ISSD-Project
Twitter:@mu_issd

Financial viability emanates from organizational efficiency where SPCs present a platform of collective entrepreneurship. Promoting a growth model or a functional venture should guarantee a profitable business case in the face of complex institutional, infrastructural, as well as behavioral challenges. A flagship success of ISSD in Ethiopia resonates around the LSB model as well as subsequent system change. Should success model prevail and thrive, it necessitates whether SPCs are financially robust. Seed serves twofold purposes in the context of Ethiopia's smallholder agricultural production systems. Seed is both a commercial and social entity entailing that SPCs blend social and commercial entrepreneurship drives. This shows the uniquely complex trajectory of seed producer collective actions in Ethiopia.

The brief narrates the relevance of profitability of SPC for the sustainable growth of seed business. Institutionalization level of the LSB model is a function of financial viability of SPCs. The brief draws from case studies of SPCs in Tigray. Moreover, it sets requirements for a viable seed entrepreneurship. The challenges or major sources of SPC economic inefficiencies are also explored setting the agenda for future ISSD investments.

Topical issues outline . . .

- Context
- Economic viability of SPCs
- Profitability analysis:

↕ Relevance

- Determinants of profitability
- Challenges of SPC profitability
- Way forward

Context

Agricultural production in Tigray is populated by smallholder subsistence production. The agricultural sector is characterized by a complex of structural, institutional, environmental, and behavioral challenges. Though the sector is responsible for 85% of the economic mainstay of the rural majority, it is urgent that it has to thrive through transformational approach. One of the entry points is increased use of seed technologies which is generally responsible for over 40% productivity growth. Other agricultural inputs may then explain the remaining 60% agricultural productivity. As such this has always presented a proven business case that policy should preserve the highest attention towards robust seed sector growth. Agricultural growth models elsewhere also noted the center stage of seed technologies for accelerated smallholder transformation.

ISSD Ethiopia program is a lead implementing partner in the promotion of efficient seed system development in Ethiopia. It has supported LSB development since 2009 through the establishment of Seed Producer Cooperatives. Technical, market, organizational, and linkage are the four areas of efficiency ISSD has ever supported. A national survey of SPCs found that SPCs are successful especially in increasing access to quality seed for local user communities. Capitalizing from LSB learning, the model has been scaled up to reach greater number of communities and thereby enhance greater seed access for the needy. Currently, there are more than 50 SPCs in Tigray employing the ISSD model of LSB development. This shows there is high demand for and expectation from SPC in addressing the limited access to quality seed by millions of smallholder farmer enterprises. This is because the formal system serves as little as 5% seed demand in the country. Whereas creating increased access to quality seed is a loaded mandate of SCPs, their sustainability yet hangs on whether they are profitable or otherwise. To this end, it remains a hot button issue among the general members of SPCs cautiously seeking a guarantee that this new model is different from the old school cooperative ventures of the imperial and planned economic regimes.

. . . Strong sense of cooperative membership depends on the level of member services – smaller the services weak will be members' participation and commitment.

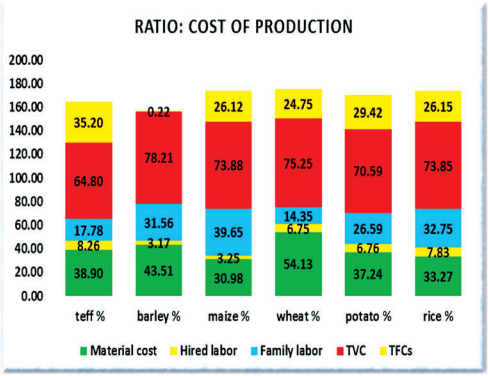
Economic Viability of SPCs

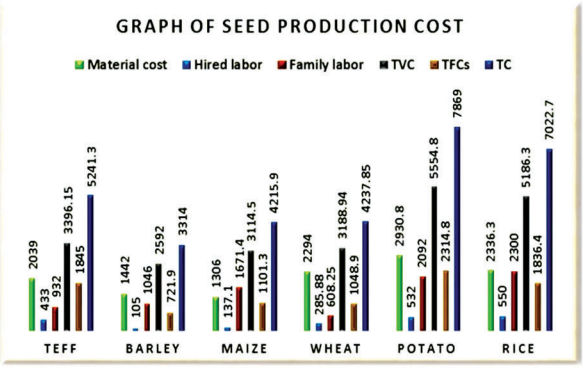
Collective action groups are established to fill in what cannot be achieved by individual entities. Collective actions enable (should) added value in terms of economies of scale and scope. The growth dynamics of cooperative movement in Ethiopia since its history showcases that economic viability is a precursor of ultimate collective growth. Member service gains are a precondition for strong cooperative societies. Service provision is not, however, exclusive of the financial performance of the societies. One critical issue of interest is mobilizing members' internal sources of financing. According to a recent survey of SPCs, the financial portfolio is found to be heavily from external grants while members' own contribution is found to be only shy of less than 30%. Low share prices, limited additional in member contributions, and low level of member shareholding are found to be the manifestations while the core gap is that cooperatives member services are very minimal. Minimal members' services are directly attributed to weaker financial positions of SPCs. The single largest contributor to low financial position is low level of profitability to a larger extent. Entrepreneurial leadership limitations of SPCs are also a factor. In fact, institutional limitation of the current cooperative model in Ethiopia (service orientation) is another major factor undermining the profit maximization rationales of collective action business models. The growth experience of SPCs in Tigray is one that represents variations in organizational performances of different SPC in Ethiopia. However, the financial performance of SPC is found to be by far better than other forms of cooperatives in the region. SPCs are specialized societies seeking a minimum entry skill and the whole model of seed production is driven by a business model. The business model of SPCs has endowed additional financial gains for the members and the SPCs. SPCs' growth pattern of the past 8 years may imply that SPCs are viable. However, whether the financial performance of SPCs is robust or not requires cautious examination of their internal organizational and operating efficiencies.

Need 4 Profitability Analyses

Analysis of profitability of SPCs is a proxy for the level of organizational and operational efficiencies. Knowledge of the sources of in/efficiency ultimately helps in forging effective intervention approaches by the seed value chain actors. Efficiency measures the relationship between inputs and the resulting output levels at a technical, operational, and organizational level. ISSD's support schemes happen to be addressing the key performance areas which can boost SPC efficiencies. While scaling up the LSB model to a larger outreach, it becomes a time demand to examine whether the operating model is sustainably for sell. In fact, institutionalization of the model cannot be effectual as long as the SPCs are less efficient or financially sound, at least from the members' perspective. Therefore, if the weakest links in the operating efficiencies of SPCs are systematically identified future interventions can be redirected towards those sources of weaknesses. A professional and entrepreneurial growth of SPCs is mainly determined by the financial management cultural practices of SPCs.

A survey of SPC profitability in Tigray has found that more than 70% of the cost structure is dominated by labor and oxen cost. The labor cost of seed production includes both family and hired labor costs. The following figures are the production cost structures of six crops. The labor cost is only for hired labor. Material cost (mainly fertilizer) is also a significant portion. As a result the total variable cost of seed production is more than 70% in 83% of the crops assessed. This shows that seed production activities are labor based and less on technological inputs such as tractors.





The survey also found that the SPCs and their members have severe limitations with regards to cost recording of their family labor. Moreover, the total number of labor man days were not properly recoded which makes it difficult to aggregate the total cost. Knowledge is also limited concerning opportunity cost of inputs used by the SPCs and their general members. There is also a tendency among survey participants undervaluing the labor cost involved. In general, the main source of disincentive for seed producer farmers is found to be high labour cost. We also found that farmers are largely sensitive with cash cost implying the relevance of access to credit. This is because farmers have critical cash shortages. High labour cost is, for one thing, directly correlated with traditional farming practices. For instance, the amount of seed used per unit of land could be higher than the standard recommendations hence higher costs of seed use.

Regardless of the challenges recording all costs in seed production, it is important that ISSD action planning should emphasize in injecting best cultural practices in seed production. This includes training in best practices of seed production, proper financial record keeping, and promotion of low cost technologies.

Profitability Case Study: Tigray

The rationale behind the sustainable survival of any commercial entity is its profitability. The six first generation SPCs were surveyed to examine whether they are pursuing a viable financial performance. According to the findings, all the SPCs were found to be profitable. Yet, differences in crop enterprises can causes variations in profitability performances of SPCs as shown in the table below.

Table 4. Average net farm income of each crop enterprise

	Crop type					
Description	**Teff**	**Barley**	**Maize**	**Wheat**	**Potato**	**Rice**
Average seed land use (ha.)	**0.438**	**0.194**	**0.3**	**0.27**	**0.5**	**0.5**
Seed sales	8622	4496	9341	6513	83633	21103
Straw	927	678	1181	1130	4875	1570
Revenue (TR)	**9520**	**5173**	**10521**	**7643**	**88508**	**22673**
Production cost						
Material cost	2039	1442	1306	2294	2930.8	2336
Hired labor	433	105	137.1	286	532	550
Family labor	932	1046	1671	608	2092	2300
TVC	3396	2592	3115	3189	5555	5186
TFCs	1845	722	1101	1049	2315	1836
TC	**5241**	**3314**	**4216**	**4238**	**7869**	**7023**
NFI (TR-TC)	**4279**	**1858**	**6305**	**3404**	**80639**	**15650**

The net farm income in the table above is just an aggregate of the accounting profits of the SPCs. Considering the economic profitability, we found that the profitability performances are much lower than indicated in the table.

Determinants of seed business profitability (all crops)

The following table presents the OLS regression results of seed business profitability determinants.

Table 24: determinants of seed business

Number of obs = 155
F(25, 129) = 38.38
Prob > F = 0.0000
R-squared = 0.8893
Root MSE = 6115.9

nfiseed	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
sex	660.3237	821.5664	0.80	0.423	-965.1655	2285.813
agehh	-76.98614	43.98959	-1.75	0.082*	-164.0206	10.04835
educationals	-170.2061	135.4422	-1.26	0.211	-438.1819	97.7697
familyeduc14	221.8286	1152.895	0.19	0.848	-2059.202	2502.86
familysize~i	-380.2092	286.1179	-1.33	0.186	-946.3004	185.882
landholdin~d	2953.049	1321.375	2.23	0.027**	338.6756	5567.423
seedlandts~d	66.00706	29.51703	2.24	0.027**	7.606891	124.4072
livestocktlu	-58.32802	38.03292	-1.53	0.128	-133.5771	16.92104
oxendrough~y	3036.557	1444.721	2.10	0.038**	178.1402	5894.973
fertilizer~g	217.2399	121.4162	1.79	0.076*	-22.98498	457.4649
seedqtyuse~k	123.5374	83.19713	1.48	0.140	-41.07019	288.145
freqweeseed	-569.8029	797.2212	-0.71	0.476	-2147.125	1007.519
freqlandpr~d	-328.4125	421.045	-0.78	0.437	-1161.46	504.6354
excontfres~d	-163.9816	139.5462	-1.18	0.242	-440.0771	112.1139
exclaboman~d	2.765542	5.695109	0.49	0.628	-8.502369	14.03345
costofseed	-10.25084	6.060806	-1.69	0.093*	-22.24229	1.740616
fertcostseed	-9.303431	5.083017	-1.83	0.070*	-19.3603	.7534414
oxenuseseed	-2.361483	3.145431	-0.75	0.454	-8.584795	3.86183
hired~d	2.772493	2.227525	1.24	0.216	-1.634721	7.179706
familylabo~d	2.085974	1.886109	1.11	0.271	-1.64574	5.817688
Teff	-3984.208	2278.184	-1.75	0.083*	-8491.65	523.2353
Barley	-3569.285	2080.439	-1.72	0.089*	-7685.484	546.9142
Maize	-4800.125	2594.546	-1.85	0.067*	-9933.498	333.2477
Wheat	(dropped)					
Potato	73493	14013.49	5.24	0.000***	45766.96	101219
Rice	-3491.104	4757.169	-0.73	0.464	-12903.28	5921.071
_cons	9551.005	5039.186	1.90	0.060	-419.1484	19521.16

Generally speaking, evidence is mixed with regards to the determinants of seed business profitability. In our case, age of the household head, land holding size, land used for seed production, drought oxen availability, fertilizer application in kg, cost of seed, cost of fertilizer used, and crop types are generally found to be significant determinants of farmer seed enterprises. In fact, the variables are also found to be important influencers of seed businesses elsewhere. On the contrary, sex, family size, size of livestock owned, quantity of seed used, and are found to be insignificant.

Age as well as age square can influence profitability in two ways. In fact, there is no specific age threshold which distinguishes profitable business undertaking. One line of argument is that as age increases, experience in seed business increases hence age affects net farm income positively. On the other hand, as age increases farmers get risk wary (risk averse) and hence may negatively affect profitability as farmers may give up on high return high risk seed production and marketing resorting to less profitable seed ventures. The average age of the sample farmers is 44. In our case, age negatively affects profitability at a 10% level of significance. This may be attributed to the fact that farmers lacking the drive for risk taking of high return seed (crop) enterprises. As per the FGDs held with sample farmers, it is revealed that Size of land both as a critical productive asset and as an input for seed production is found to be significant in affecting the profitability of the farm seed enterprises at a 5% level of significance. More land may mean more land for seed production and hence increased productivity leading to greater profitability potential, other things remain constant. Given proper management in seed production by producers, larger land size leads to increased seed production hence higher revenue/sales.

Availability of drought oxen power is one of the basic agricultural inputs for seed producer farmer enterprises. In contrast lack of oxen constrains the producers' ability to operate their farms properly or the transaction costs are higher undermining the farmers' willingness to aggressively engage in commercial seed production and marketing. Availability of drought oxen power is positively significant at a 5% level of significance in affecting seed profitability.

Besides to the use of fertilizer, the proper amount of fertilizer used (in kg) by farmer enterprises is also important contributor to seed profitability. Even if practices vary among farmers with regards to the appropriate fertilizer application, we found that the amount of fertilizer used in seed production has positive and significant contribution to seed business profitability at 10% level of significance. Proper use or application of fertilizer is a showcase of farmers' entrepreneurial character as technology adopters and it often is believed to boost seed or crop production. As a result, higher production levels of seed would mean increased seed sales revenue and hence higher net farm income.

Contributing to cost of seed production, the costs of seed and fertilizers used are found to be negatively significant determinants of seed business profitability at a 10% level of significance. Higher costs of seed and fertilizer are inversely related with net farm income of the seed producers.

The types of crops produced by the seed producers are also significant in affecting the level of profitability of the farm enterprises. A dummy of seed crops has been included into the model and it is found that variations in crop types are responsible for differences in profitability of seed producers.

We have also computed the marginal effects of each of the variables in affecting the level of net farm income generated by the seed producer farmers. The average net farm incomes of a seed producer will likely decline by about 76.98 birr as age of the household head increases by a unit (year). Moreover, an increase in the size of land and land used for seed production by a unit (hectare) would lead to an increase in net farm income by about 2953 and 66 birr respectively. A unit increase in drought oxen power availability contributes to net farm income by about 3036 birr while a unit increase in fertilizer application for seed production can result in 217 birr in profit.

A unit increase in the cost of seed and fertilizers would lead to a decline in the average net farm income by about 10 birr and 9 birr respectively.

Y = Fitted values (predict)

= 9502.88

Table 25. Marginal contribution of each variable to seed business profitability

Variable	dy/dx	Std. Err	z	P>|z|	[95% C.I.]		X
sex*	660.3237	821.57	0.80	0.422	-949.917	2270.56	.819355
agehh	-76.98614	43.99	-1.75	0.080	-163.204	9.23188	44.3742
educat~s	-170.2061	135.44	-1.26	0.209	-435.668	95.2558	3.33548
famil~14*	221.8286	1152.9	0.19	0.847	-2037.8	2481.46	.741935
family~i	-380.2092	286.12	-1.33	0.184	-940.99	180.571	5.74839
landho~d	2953.049	1321.4	2.23	0.025	363.201	5542.9	.746403
seedla~d	66.00706	29.517	2.24	0.025	8.15474	123.859	.647194
livest~u	-58.32802	38.033	-1.53	0.125	-132.871	16.2151	18.5484
oxendr~y*	3036.557	1444.7	2.10	0.036	204.955	5868.16	.903226
fertil~g	217.2399	121.42	1.79	0.074	-20.7314	455.211	64.1935
seedqt~k	123.5374	83.197	1.48	0.138	-39.526	286.601	21.6123
freqwe~d	-569.8029	797.22	-0.71	0.475	-2132.33	992.722	2.38065
freqla~d	-328.4125	421.05	-0.78	0.435	-1153.65	496.821	2.59355
excont~d	-163.9816	139.55	-1.18	0.240	-437.487	109.524	9.08387
exclab~d	2.765542	5.69511	0.49	0.627	-8.39667	13.9278	20.8516
costof~d	-10.25084	6.06081	-1.69	0.091	-22.1298	1.62812	372.568
fertco~d	-9.303431	5.08302	-1.83	0.067	-19.266	.659098	988.89
oxenus~d	-2.361483	3.14543	-0.75	0.453	-8.52641	3.80345	363.181
hiredl~d	2.772493	2.22753	1.24	0.213	-1.59338	7.13836	316.71
family~d	2.085974	1.88611	1.11	0.269	-1.61073	5.78268	1440.1
Teff*	-3984.208	2278.2	-1.75	0.080	-8449.37	480.951	.2
Barley*	-3569.285	2080.4	-1.72	0.086	-7646.87	508.3	.129032
Maize*	-4800.125	2594.5	-1.85	0.064	-9885.34	285.092	.270968
Wheat*	0	0	-	-	0	0	.141935
Potato*	73493	14013	5.24	0.000	46027.1	100959	.025806
Rice*	-3491.104	4757.2	-0.73	0.463	-12815	5832.78	.232258

(*) dy/dx is for discrete change of dummy variable from 0 to 1

We have computed the VIF to check for the risk of hetroskdasticity and the 6.67 VIF average shows that there is no problem of hetroskedasticity. Moreover we have run a correlation test (see correlation matrix below) to check for the risk of multicolliniarity and it shows that there is no problem of multicolliniarity. Therefore our model is robust and significant and explains about 88.9% of the variations in the average net farm incomes of the seed producer enterprises.

Challenges of SPC Profitability

The growth road map of SPCs in Tigray has not been spared of challenges. The challenges comprise individual, institutional, leadership, awareness, market, and infrastructural dimensions.

- Low intensity of commercial orientation of SPCs – the level of commercial orientation of SPCs is a precursor for entrepreneurial growth of SPCs. Yet, SPCs have to cross the line in fully demonstrating their market orientation. In fact, variations are common among SPCs as well as their members.
- Poor record keeping culture among SPC members – proper record keeping of the financial transactions in seed production and marketing is an indicator of a professional financial practice. Lack of cost records undermines the ability to track the profitability status of SPCs.
- Service loaded institutional frameworks - the cooperative proclamation is one of a defensive model where the formal system requires cooperatives for service maximization rather than profit. This has limited the profit seeking rationale of economic entities such as SPCs. In fact, the proclamation has been a common challenge across other forms of producer cooperatives, too.
- Low internal financial mobilization – largely embedded in the ill defined property law of the cooperative proclamation, most SPCs are constrained by financial capacity due to low members' own internal capitalization. This has led to low member service provision by SPCs as a payoff for limited infrastructural fulfillments. Low member contribution is associated with limited investment in infrastructures and hence limited profitability potentials.
- High costs of labor and material inputs – the labor intensive nature of smallholder agricultural production is found to be one of the contributors to the cost build up in seed production.

Way Forward

Enhancing access to high quality farmer preferred varieties for the regional community entailing social entrepreneurship while ensuring economically sustainable business growth trajectory should be the center stage of ISSD intervention. Engaging SPCs through aggressive capacity building towards robust commercial orientation should be a priority. In the same token, SPCs should be promoted as social entrepreneurs in an effort to diffuse best practices in agricultural production.

Encouraging members' internal financial capitalization should form an engagement action point for ISSD. This should contribute to SPCs investing in labor saving technologies thus lower their costs of production.

Promoting institutional regime change – ISSD should invest in introducing a system change within the cooperative law where the business maximization model should be recognized. This is because the cooperative experts at the grassroots level are challenging SPCs as mere service providers not as commercial entities.