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**Implementing Sugarcane Block Farming
for Increased Farm Income
and Productivity**

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List of Acronyms

AES	agricultural extension service
ARB	agrarian reform beneficiary
ARBO	agrarian reform beneficiary organization
ARCESS	Agrarian Reform Community Connectivity and Economic Support Services
AVAs	agribusiness venture arrangements
CARP	Comprehensive Agrarian Reform Program
CLOA	Certificate of Land Ownership Award
CSF	common service facility
DA	Department of Agriculture
DAR	Department of Agrarian Reform
EO	Executive Order
GVC	global value chain
ha	hectares
KII	key informant interview
LBP	Land Bank of the Philippines
MPC	multipurpose cooperative
PHILSUCOR	Philippine Sugar Corporation
PSA	Philippine Statistics Authority
SBF	sugarcane block farming
SRA	Sugar Regulatory Administration
US	United States

Abstract

This study assesses the performance of the sugarcane block farming (SBF) as a land consolidation model for increasing farm productivity and income of the sugarcane farmers' sector. As such, a framework identifying factors needed for a successful SBF implementation was formulated considering the supply chain, the policy environment, and the global market. Using a case study approach, block farms, both cooperative managed and individually managed, were examined.

The study notes several issues on production, marketing, and pricing that affect the implementation of SBF. It recommends that SBF arrangements should be encouraged but the government has to provide a policy environment for Philippine export crops to be competitive. Agrarian reform beneficiaries and their associations should also be supported through capacity-building activities.

Introduction

Sugar is one of the Philippines' export commodities. In 2016 alone, it contributed more than 5 percent to the country's total agricultural export, ranking fifth among such commodities (Philippine Statistics Authority [PSA] n.d.). It generated a freight on board of about PHP 2.654 billion in 2016—226 percent higher compared to 2015—thereby incurring the highest percentage increase among other agricultural exports. However, the gross value added (GVA) of sugarcane declined continuously from 2011 to 2015, except in 2014 where it exhibited a rise of nearly 2 percent. Despite the declining GVA, the Sugar Regulatory Administration (SRA) recognized opportunities to improve the Philippine sugarcane industry such as (1) farm productivity growth, (2) bioethanol production, (3) power cogeneration, (4) increased farm mechanization due to labor supply shortage, and (5) sustained domestic requirement and world quota on exports (SRA 2012).

With sugarcane farm productivity hardly improving and GVA decreasing, the Sugarcane Block Farming (SBF) program was implemented in 2012 to increase the productivity of the sugarcane farms owned/operated by members of agrarian reform beneficiary organizations (ARBOs), including cooperatives and farmers' associations under the Agrarian Reform Community Connectivity Economic and Support Services (ARCESS). A national convergence initiative of the Department of Agriculture (DA), Department of Agrarian Reform (DAR), and SRA, SBF aims to enhance the skills of the ARBOs in managing agribusiness enterprises. It has three expected results: (1) reduce cost of production; (2) increase farm productivity from 60 to 75 tons cane per hectare (ha); and (3) establish at least one agribusiness activity per block farm.

The SBF follows a land consolidation concept aimed at bringing about economies of scale among small sugarcane farmers given the mechanization and input requirement of the crop. This scheme was supposed to be implemented in farms that are contiguous. To increase farmers' income and productivity, support services, such as extension services, were provided, new technologies were introduced, and credit was extended. These support services were channeled through the cooperatives tasked to manage and operate the required farm machinery.

After five years of SBF implementation and two production cycles covered from the start of the first phase, how are these farms performing

in terms of productivity and profitability? What framework can be used to identify the factors needed to ensure that adoption of SBF will lead to increased farm income and productivity? This study attempted to provide a framework that addresses these concerns.

Generally, the study aims to assess the performance of the SBF as a land consolidation model that will improve productivity and sustainability of the agrarian sector. Specifically, it aims to (1) review select cases of SBF arrangements; (2) devise a framework that identifies the factors critical to a successful SBF implementation; (3) assess the viability of select SBF arrangements in the Philippines and measure the productivity and profitability of lands covered; (4) examine the institutional/regulatory environment of SBF in the country; and (5) provide policy recommendations to improve SBF implementation.

Review of Literature

Block farming for sugar farms

The SBF program has been implemented since 2012 in sugarcane farms. However, since the program started, there had been no study on its effect on farm income and productivity—most literature merely provides descriptions and data.

Land consolidation in other countries

In other countries such as South Korea, Taiwan, and Japan, implementation of land consolidation followed after lands were distributed to the beneficiaries of the land reform program. Land consolidation plans included physical reallocation of parcels, joint farming through land exchanges and sale, temporary quasi-land acquisition, and land renovation. In the Philippines, land consolidation was not implemented as a national program. Nevertheless, the DAR pursued the implementation of the SBF, as well as the agribusiness venture arrangements (AVAs) which follow the land consolidation concept. They were implemented to improve farm productivity and income. Given that the SBF adopts a land consolidation model, it is worthwhile to review implementation of land consolidation in other countries. How have they fared compared to the SBF? What were the arrangements they adopted? Did land consolidation in other countries increase

farmers' productivity and income? Did it bring about changes in the agricultural sector?

Vitikainen (2004) mentioned that land consolidation started from the need to readjust unfavorable land division and promote appropriate use of real property without changing the status of ownership. Vitikainen further stated that "there are differences in the objectives and procedures of land consolidation depending on the country, as the development of the procedure has been influenced by the historical trends, culture, tradition, and legislation in each of the countries" (Vitikainen 2004, p.1).

Japan, Taiwan, and South Korea have been successful in carrying out land reform, resulting in agricultural growth, which eventually led to the development and industrialization of the urban sector. The land reform programs in these countries fragmented farm lands, resulting in low-average farm areas. However, with the advent of agricultural mechanization and modern inputs, these economies switched to land consolidation. Chen (2016) cited that small-scale farming, multiple mode of inheritance, and land transfer restrictions were changed through farmland consolidation in these countries with the intent of improving irrigation facilities, transportation conditions, and farm machinery adoption. Hence, farmers and farmer associations were encouraged to realize joint farming through land exchanges and sale. The government also implemented preferential policies including temporary quasi-land acquisition, land renovation, and repurchase or lease of land tenure by the original owners. Efforts were made to determine the cost-sharing entities, according to the cost types, and divide the legislative and planning powers at the national, local, and grassroots-level organizations. Relevant measures were also adopted to improve the efficiency of agricultural land production, save labor input, and increase the return of funds, which was through sorting out the "new land" without changing land ownership.

Other countries, particularly in Asia and Europe, also carried out land consolidation to stimulate rural development. Zhou (2017) mentioned that, in Japan, rural land consolidation was adopted to make rice farming more viable. This strategy enabled farmers to use large machinery and save on labor costs, while other farm production costs were reduced and returns to scale were increased.

Land consolidation in other Asian countries such as Indonesia and India was also done. In Indonesia, the land consolidation projects, which were subsidized largely by the government, were concentrated

in urban areas rather than in rural areas—where agricultural lands are concentrated. A study by Archer (1992) in one of the land consolidation projects in Indonesia, the PB Salayang Project, showed that it failed to develop rural lands, which was one of the intentions of land consolidation in Indonesia. Nevertheless, it created a planned layout of roadways and public facility sites and reshaped land parcels. Moreover, government was able to acquire land without incurring any costs and was able to give landowners their registered titles. However, lands covered by the land consolidation projects remained unusable because of the absence of roads into the sites.

Land consolidation in India, specifically in Uttar Pradesh, is again state initiated. Identified beneficiaries are informed that they had been recognized as project recipients. But, in areas where there is strong opposition to land consolidation, this was not done due to expectation of failure (Oldenburg 1990). Unlike Indonesia and Taiwan, land consolidation in India is not linked to public works program of land levelling, medium-size drainage and irrigation development, or road building. Individual farmers interviewed in Uttar Pradesh, however, mentioned that the benefits they receive are ease of labor supervision, provision of road right-of-way, and access to irrigation water. Through land consolidation, field boundaries were straightened and the provision of holdings, as much as possible, was reshaped in rectangular form. This improved ease of cultivation, particularly plowing, and lessened disputes due to unclear demarcations and encroachments. Another advantage was that unnecessary field boundaries were eliminated through the consolidation. Thus, the area of land worked on increased and farmers saved time previously spent in traveling from one field to the other. Oldenburg (1990) pointed out further that land consolidation succeeded in achieving goals set in India's land reform program. These include increasing the number of economically viable farmers thereby empowering them and reducing the "degree of exploitation of small and marginal farmers and to a certain degree, land consolidation was also able to decrease share tenancy arrangements and the number of absentee owners" (Oldenburg 1990, p. 191).

In Europe, several countries, such as Germany, the Netherlands, France, Belgium, Luxembourg, Austria, Switzerland, Finland, Norway, and Sweden, also implemented land consolidation (Vitikainen 2004). This occurred at a time when the number of farmers was declining

as these countries start to become industrialized. Vitikainen (2004) discussed the similarities and differences in procedures of the land consolidation models in the aforementioned European countries but did not analyze the effects on the agriculture sector. Van den Noort (1987), on the other hand, analyzed the rate of return of land consolidation to the government of the Netherlands and found that it ranged from 7 to 9 percent. However, he did not examine the effects of land consolidation from the point of view of the farmers or beneficiaries.

Moldova in Eastern Europe also implemented land consolidation to address problems caused by fragmentation in its agriculture sector (Cimpoieş and Baltag 2004). Land leasing is the common scheme of land consolidation in Moldova where nearly 51 percent of total land owned by peasants was leased out. Registration of agreements between landowners and lessees is required, which was abided by majority of farmers. Lease payment can be made in cash, in-kind, and in mixed forms—although in-kind payment is the predominant mode of payment (around 84%). While the study implied that more agricultural lands were cultivated with the implementation of land consolidation in Moldova, its effect on farm productivity was not mentioned.

Conceptual Framework of Elements for a Successful SBF Implementation

Export crops contribute largely to the development and growth of the Philippines' agriculture sector. One of the country's biggest export crops include sugarcane, which has been covered under the Comprehensive Agrarian Reform Program (CARP). Unlike other commercial crops covered by the AVAs, such as banana and pineapple, sugarcane is placed under another modality—the stock distribution option. However, in 2012, DAR launched another scheme for sugarcane agrarian reform beneficiaries (ARBs)—the SBF program—to increase farm income and productivity of farmers owning or operating farms that are 10 ha or less. Sugarcane farmers were encouraged to bond themselves as cooperatives or organizations so that farm operations, which include land preparation, planting, fertilizer and chemical application, weeding, and harvesting, could be integrated or consolidated to attain economies of scale.

The SBF is a land consolidation modality where farms may be owned individually or collectively but farm operations are done

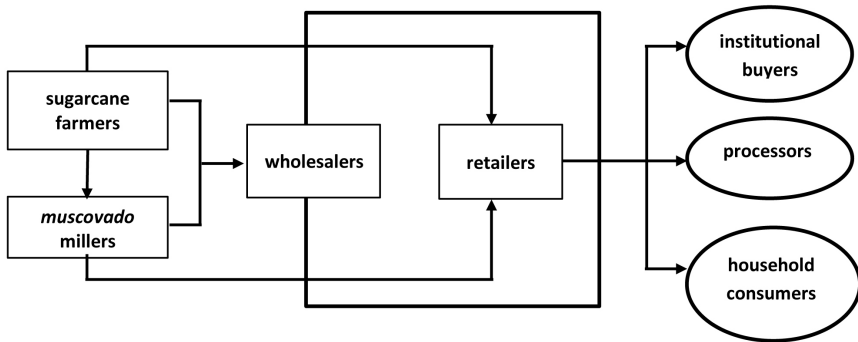
collectively through a cooperative or ARBOs. The SBF has three modalities: (1) collective Certificate of Land Ownership Award (CLOA), collective management; (2) individual CLOA, collective management; and (3) individual CLOA, individual management.

This study formulated a conceptual framework identifying factors or elements essential in a successful SBF implementation. The recommended framework considered the different stages in the supply chain—from production to marketing and postproduction activities. With this, it is best to understand the product flows of sugarcane, as well as the key players involved in the supply chain.

According to the *Sugarcane Roadmap 2020* (SRA 2016), sugarcane farm management and operations involve a series of activities and inputs such as financing, new sugarcane technology, land preparation, irrigation, input supply, labor, hauling, and farm roads maintenance. The harvested sugarcane is transported to the sugar mills or refineries, bioethanol fuel distilleries, and *muscovado* mills. Sugar bioethanol fuel is one of the major products of processing sugarcane. Production of bioethanol is encouraged as mandated by the Renewable Energy Act of 2008. Raw sugar may be directly used by industrial users and refined sugar can be used for industrial, commercial, institutional, and household use. SRA requires domestic and international sugar traders to register with them before entering into any sugar business transaction. Wholesale- and retail-level sugar traders, however, are not required. Sugar is, instead, traded in sugar mills that conduct weekly bidding of sugar *quedans*. Quedan is a warehouse receipt issued by a sugar mill to the farmer as soon as the cane is processed into sugar. It represents his/her share of the sugar and is classified into: “A” (for US quota); “B” (for domestic consumption); and “D” (for exports to the world market).

In terms of muscovado trading, all muscovado traders are required to register with SRA and all shipments should have secured shipping permits with the agency, as well as imports and exports clearances. In terms of bioethanol trading, oil companies buy bioethanol directly from bioethanol producers. No bioethanol traders are allowed in the local bioethanol production per the current policy of the Department of Energy. Traders are only allowed in the trading of imported bioethanol.

Lizada and Tan (2015) analyzed the supply chain of the muscovado sugar industry and identified the marketing channels of muscovado trade (Figure 1). Sugarcane farmers sell raw materials to muscovado

Figure 1. Marketing channels for muscovado in Antique, Philippines

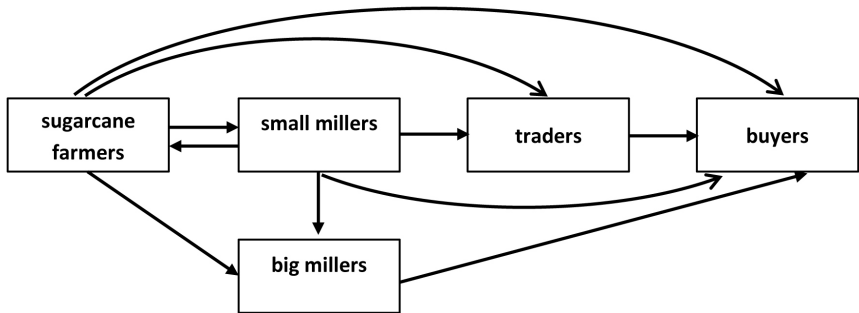
Source: Lizada and Tan (2015)

millers, wholesalers, and retailers. Meanwhile, muscovado millers—mainly responsible for processing the sugarcane—sell their produce to the wholesalers and retailers as well. The wholesaler sells the product to retailers, institutional buyers, processors, and household consumers. Lastly, retailers sell the sugar to institutional buyers, processors, and household consumers. The study also found out that 78 percent of the traders practiced open market transactions while only 22 percent employed the *suki* system. Suki system, also referred to as buddy system, is essentially a marketing relationship where a customer who often buys certain products from a particular seller is, in turn, offered discounts and other perks for such exclusivity. In addition, millers and buyers of muscovado mostly met through friend referrals and text messages.

In another study by the DA-Philippine Rural Development Project (n.d.) on the muscovado supply chain in Antique, Iloilo, and Negros Occidental, there was a slight difference in the marketing channels presented. Sugarcane farmers avail of milling services from small and big millers. Small millers sold to big millers, traders, and end-consumers. Millers process the sugarcane into sugar, which are then sold to traders and buyers. Small farmers also sold muscovado to traders and buyers (Figure 2).

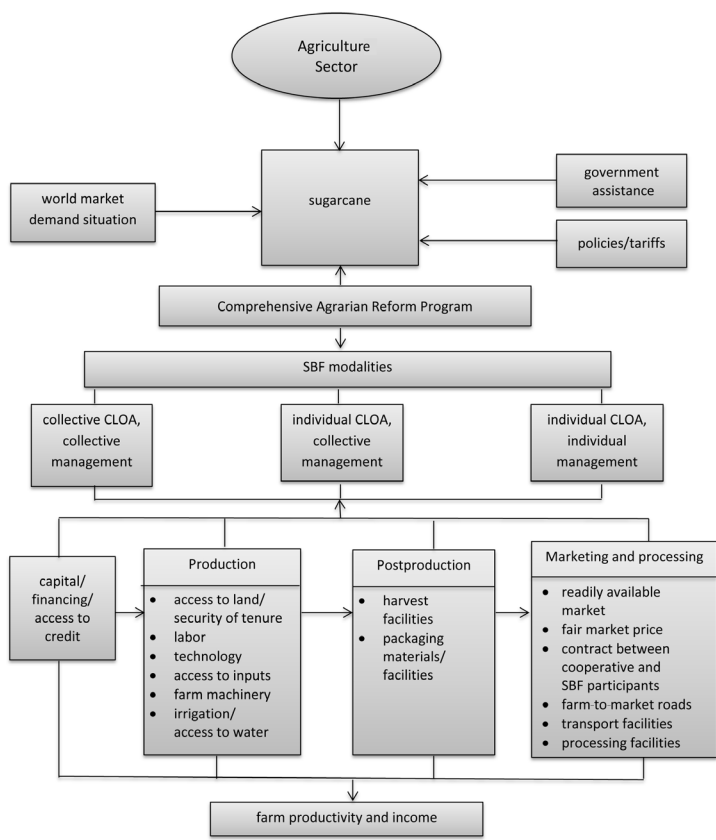
Figure 3 presents the recommended framework for assessing the implementation of different SBF models. Farms that adopted the SBF should have the necessary prerequisites to be successful. First, it needs to have capital at the onset to support production as well as postproduction and marketing activities. For production, access to land is critical and,

Figure 2. Marketing channels for *muscovado* in the provinces of Antique, Iloilo, and Negros Occidental, Philippines



Source: Department of Agriculture - Philippine Rural Development Project (n.d.)

Figure 3. Conceptual framework of factors for a successful implementation of sugarcane block farming (SBF)



CLOA = Certificate of Land Ownership Award

Source: Authors' representation

under the CARP, lands are distributed to provide security of tenure. To attain high yields, farmers must have knowledge on the latest and appropriate technology and have access to recommended inputs, farm machinery, and irrigation water. For the postproduction activities, farmers should have facilities that they will use for harvesting, processing, storage, and packaging. Another critical factor in the supply chain is the market. Those under SBF should readily have markets, agreements of which should be protected by contracts that are reviewed by lawyers regularly (e.g., at least every two years) to ensure farmers receive reasonable prices based on sound economic viability study. Farm-to-market roads are also essential as well as transport facilities.

Nonetheless, the world market prices or demand also affect the sugarcane market. Other factors—also critical to the success of the SBF—are world market demand situation, provision of government assistance, and the policy environment particularly on tariffs and quotas. The interplay of the cited elements eventually affects farm productivity and income as well as decision of investors to continue with investing in said crops and arrangements.

Methodology

The case study approach was used for this study. Two types of data, primary and secondary, were gathered. Primary data were collected through key informant interviews (KIIs) of key officers/staff of the DAR Provincial Office of Batangas and focus group discussions and/or KIIs of officers of the cooperatives. Meanwhile, secondary data were gathered from the cooperatives. These include the 2015 and 2016 financial statements, records on the production, and income and expense of cooperative members (if available). Likewise, secondary data were collected from the PSA and the Philippines Statistical Research and Training Institute.

The province of Batangas was chosen because 4 of the 6 organizations identified for SBF coverage in 2012 are located in Batangas. Moreover, different modalities of SBF were adopted in this province. Two SBF situations examined were the following:

- (1) The cooperative is directly managing the operations of the SBF participants.

- (2) The SBF participants are directly managing their farms while the cooperative provides needed support services only.

Table 1 indicates the list of respondents covered in the study.

Table 1. List of cooperative-respondents and their location

Cooperative	Location of Cooperative/ARBOs
KAMAHARI Agri-Based MPC officials and members	Camp Abejar, Lumbangan, Nasugbu, Batangas
Taludtod MPC officials and members	Brgy. Taludtod, Balayan, Batangas
Lucban MPC officials and members	Brgy. Lucban, Balayan, Batangas

ARBOs= agrarian reform beneficiary organizations; Brgy = barangay;
MPC = multipurpose cooperative
Source: Authors' compilation

Results and Discussion

Sugarcane block farming

The block farming scheme entails consolidation of small contiguous farms into 30–50 ha lands to take advantage of plantation-scale production or economies of scale. SBF participants, mostly ARBs with landholdings of less than 2 ha, are encouraged to group their production areas into integrated farm blocks, with small farms being at least 2 kilometers apart. The ARBs retain ownership of the lands and, depending on the arrangement entered into with the ARBOs, they may even be hired as farm hands. For at least two cropping seasons, the participants will undergo coaching sessions and will be provided with guidance on farm management practices. The profit-sharing arrangement will depend on the agreement of the officers and members of the ARBO, SBF participants, and financiers, if any. The financing scheme, which may be through partnership, joint venture, contract growing, foreign funding, or loans, among others, will depend on the decision of ARBO officers and members.

The DAR has been tasked to identify and/or organize the ARBOs. It is supposed to provide the operating expenses in implementing the SBF as well as monitor its implementation and fund utilization. It is

also expected to extend at least one farm equipment or common service facility (CSF) to the ARBO to help increase sugarcane productivity as well as provide the ARBO with opportunity of having an enterprise by renting out the CSF.

Meanwhile, the DA is expected to provide necessary irrigation systems and farm-to-market roads. It is also tasked to give starter inputs for the diversification of agricultural production facilities. The SRA, which is an attached agency of DA, will assist DAR in identifying and validating the SBF participants. It will also provide technical assistance and extension and capacity-building programs. It is likewise expected to provide financing for farm operations, production facilities, processing technologies, and market linkage in the case of muscovado. Part of the role of the SRA is to manage the fund released by DAR for operationalizing and monitoring the block farms. Based on the agreement among the agencies, SRA prepares the block farm operations manual/business plan and CSF operations manual. However, most often, DAR had been hiring business development service providers to handle these functions.

In the original plan, 16 sugarcane block farms are to be identified during Phase I, which was supposed to be implemented in 2012–8 in the Visayas and 7 in Luzon (Table 2). Phase II was targeted to be implemented in 2013, to cover 29 farms, 18 of which are in the Visayas while 8 are in Mindanao. Most of the block farms are in Visayas, being a sugarcane-producing region, particularly in the provinces of Negros Occidental and Negros Oriental. Participants in Phase II of the SBF scheme had been given access to credit from the Agrarian Production Credit Program, a credit program implemented by the DA, DAR, and state-owned Land Bank of the Philippines (LBP) for CARP beneficiaries. However, as of 2014, only 28 farms were operational.

Initially, the SBF was supposed to follow a collective management approach where the cooperative was supposed to manage the operations of the farms of the SBF participants under two SBF modalities: collective landownership (if collective CLOAs were issued) with collective management and individual ownership (for individual CLOAs) with collective management. However, some farmers resisted these arrangements. Hence, some farms that were distributed individually were managed by the farmers following a modality of individual ownership with individual management. In this case, the cooperative acts merely as a consolidator of inputs, other support services, and the produce.

SBF for Increased Farm Income and Productivity

Table 2. List of Phase I and Phase II operational sugarcane block farms, as of 2014

	Year	Location	Name of Organization
Phase I - 2012	1	Magalang, Pampanga	Binhi ni Abraham
	2	Balayan, Batangas	Lucban MPC
	3	Nasugbu, Batangas	Kamahari
	4	Nasugbu, Batangas	Damba
	5	Lian, Batangas	Prenza
	6	Pontevedra, Negros Occidental	Kauswagan and General Malvar
Phase II - 2013	7	Magalang, Pampanga	PASAMA
	8	Pili, Camarines Sur	Had. Salamat
	9	Tampalon, Kabankalan City, Negros Occidental	Minaba MPC
	10	Capiz, Iloilo	Vizcaya ARB MPC and Lantagan ARB, MPC
	11	Sta. Catalina, Negros Oriental	Manggolod Farmers MPC
	12	Canlaon City, Negros Occidental	Ramrod Agricultural MPC (RAMPUCO)
	13	Caputatan, Medellin, Cebu	ANARBA
	14	Ormoc, Kananga, Leyte	Boroc Agricultural Producers MPC
	15	Quezon, Bukidnon	J.A. Agro Employees Farmers Beneficiaries Livelihood Association
	16	Paniqui, Moncada, Ramos, Anao, Gerona, Tarlac	Northern Cluster Producers Coop
	17	Lauan, Patnongon, and Bugasong, Antique	GMJ ARB Coop and ASSMMSA
	18	Passi, San Enrique, Iloilo	JAGUIMITAN-JARBEMCO and MAPILI-CATUBAY
	19	Escalante, Negros Occidental	Don Esteban ARB and Had. Bongco Farmers Association
	20	Cadiz City, Negros Occidental	PARAISO Food Workers ARB
	21	Cadiz City	Hacienda Bernardita
	22	Talisay City, Negros Occidental	CASA MPC
	23	La Carlota, Negros Occidental	NARC
	24	Manjuyod, Negros Occidental	SYCIP Plantation Farm Workers
	25	Tanjay, Negros Oriental	San Julio Farm Workers MPC
	26	Mabinay, Negros Oriental	SAMAC (SUFARMFUCO)
	27	Bais City, Negros Occidental	KASFARBECO
	28	Bayawan, Negros Oriental	LAPAY (LARBEMCO)

MPC = multipurpose cooperative; ARB = agrarian reform beneficiary

Source: Department of Agrarian Reform (n.d.)

Modality of SBF adopted by sample respondents

Table 3 shows the type of ownership and management of the respondents. The ARBs of KAMAHARI Multipurpose Cooperative (MPC) and Lucban MPC were issued collective CLOAs under the collective management scheme. Meanwhile, members of Taludtod MPC were issued individual CLOAs and decided to manage their farms individually since farmers are used to this kind of arrangement

KAMAHARI and Lucban MPC are two of the four cooperatives in Batangas that were initially covered when the SBF started in 2012. Meanwhile, Taludtod MPC was only covered under Phase II of the SBF in 2016 even if it was initially listed under Phase I.

DAR was the key player in informing the farmers about the SBF. As attested by the three cooperatives, it was DAR that explained the process involved in the implementation of SBF and also convinced the cooperatives to take part in it.

Table 3. Type of Certificate of Land Ownership Award and type of management, by cooperative

Name of Cooperative	Type of CLOA	Type of Management
KAMAHARI Agri-Based MPC	collective	collective management
Taludtod MPC	individual	individual management
Lucban MPC	collective CLOA initially given; have started issuing individual CLOAs	collective management

CLOA = Certificate of Land Ownership Award; MPC = multipurpose cooperative

Source: Authors' compilation

Income and productivity

Based on the records of the cooperatives interviewed, yield per ha of sugarcane rose after SBF (Table 4). Moreover, compared to the national average, productivity of farms covered under the study was greater compared to national statistics. Data showed that the program's intent of increasing productivity was attained.

The participants cannot remember exactly the income per enrollee before SBF but most often, they incurred losses since they were unable to apply the recommended inputs due to lack of capital. The average income received by the participants during SBF is about PHP 42,100/annum.

Table 4. Comparative yield of sugarcane before and after SBF implementation

Data Source	Yield Per Hectare (MT/ha)
Cooperative records	
Before SBF	43
During SBF	60–70
Philippine Statistics Authority data (2015)	54.41

SBF = sugarcane block farming

Source: Authors' compilation

Factors for a successful SBF implementation

Capital/financing

Financing is a major consideration in going into the production of sugarcane due to large capital outlay requirement amounting to PHP 65,000–75,000.

The lack of capital was the main reason cited why the ARBs decided to enter into SBF. For financing, loans secured from the Philippine Sugar Corporation (PHILSUCOR) and the LBP are extended to the farmers through the cooperatives (Table 5).

Production

Among the elements under production are access to land, security of tenure, labor, technology, access to inputs, farm machinery, and irrigation/ access to water. The study revealed that ARBS have no problem in terms of access to land or security of tenure although a few ARBs complained that they have not received their CLOAs even if they are actually occupying land parcels that have been awarded individually.

Due to the financing provided either by the LBP or the PHILSUCOR, with the ARBOs or cooperatives as conduits, access to production inputs is not a big problem. Further, those who opted for collective management have no problem securing inputs, including labor, which is getting scarce given the urbanization of Batangas and its proximity to Metro Manila and other key cities that provide more lucrative nonfarm jobs to the younger generation. Cooperatives handle the labor needs of ARBs.

Know-how of SBF participants on the latest technology is enhanced through the agricultural extension service (AES) providers

Table 5. Source of financing by cooperative

Cooperative	Source of Loan
KAMAHARI Agri-Based MPC officials and members	Philippine Sugar Corporation
Taludtod MPC officials and members	Land Bank of the Philippines
Lucban MPC officials and members	Philippine Sugar Corporation

MPC = multipurpose cooperative

Source: Authors' compilation

that are contracted by DAR. AES providers conducted training on latest technologies as well as farm demonstration while farm machinery for production (e.g., tractors) and irrigation needs (irrigation pumps) were provided to the farmers through the ARCESS. Inputs were provided by the cooperatives.

Farmers noted that, previously, irrigation was not a problem even if irrigation facilities are absent. However, farmers are now experiencing droughts due to climate change.

Postproduction and marketing

During harvesting, KAMAHARI and Lucban MPCs hire farm laborers. However, hiring harvesters in Batangas has become a problem since labor has become scarce. This is attributed to the province's urbanization and the preference of the younger generation to work in nonfarm jobs. Data also showed that children of most farmers who are expected to take over the farm work chose to pursue nonagricultural fields and become professionals instead of working in the farms. The SBF participants, however, have the option to hire people on their own.

Transport of goods was also not a problem because the cooperatives shouldered the trucking services. All costs incurred were deducted from the proceeds of the sales. However, SBF participants of Taludtod MPC, who were expected to harvest in December 2017, performed all farm operations individually. Hence, it is expected that they will also individually shoulder the harvesting and transporting of their produce—although with financial support from PHILSUCOR. Farm-to-market roads have already been built, hence, there is no problem bringing their produce to the sugar mills.

The SBF participants also have readily available markets that are either the cooperative (if under a cooperative-managed modality) or the sugar mill (if under an individually managed SBF modality). However, a fair market price cannot be agreed upon at the onset because sugarcane prices are highly dependent on world market situation. While participants under a cooperative-managed modality enter into contracts with their respective cooperative, a specific price cannot be set.

Government assistance, policies, taxes, and tariffs

To boost the sugarcane industry, government assistance is expected. Two government agencies, namely, PHILSUCOR and SRA, were established to provide assistance to the sugarcane industry. The PHILSUCOR, established on November 4, 1983 by virtue of Presidential Decree 1890, has the main function of extending assistance to sugar mills for the restructuring of their loans from the original creditor—the Philippine National Bank. Eventually, it was tasked to provide assistance for the rehabilitation of sugar mills/refineries and to provide lending/financing to farmers for sugarcane production. Under the SBF scheme, PHILSUCOR was tapped to provide financial assistance to the SBF through its cooperative.

The SRA, meanwhile, was created on May 28, 1986 through Executive Order (EO) 18 in accordance to the policy of the state to “promote the growth and development of the sugar industry of the Philippines through greater participation of the private sector and to improve the working conditions of the laborers” (EO 18, 1986, p. 1). Originally designed to be under the Office of the President, it is currently an attached agency of the DA. It is worth noting that one of the tasks of SRA is to conduct research and development of new technologies and also to conduct extension activities to promote newly developed technologies to farmers.

On March 27, 2015, Republic Act 10659 or the Sugarcane Industry Development Act of 2015 was promulgated. The law states that government should promote the competitiveness of the sugarcane industry, maximize the utilization of sugarcane resources, and improve the incomes of farmers and farmworkers through improved productivity, product diversification, job generation, and increased efficiency of sugar mills. In conjunction with increasing sugarcane productivity, the act supports the SBF.

DAR was responsible for convincing the cooperatives and the farmers to participate in the SBF program. DAR personnel also served as coordinators of the various activities undertaken in the SBF-covered areas. Hence, it can be surmised that government has been supportive of the sugarcane industry.

However, recent developments have also deterred the sugarcane sector. One major issue that has beset the sugar industry lately is the importation of sugar substitute, specifically corn syrup, used by soft drinks and beverage manufacturers. No quota was imposed for the importation of corn syrup because it has not been identified as sugar substitute when quotas were set. Moreover, small sugarcane planters, defined as those receiving a gross receipt of less than PHP 300,000/annum had also been required by the Bureau of Internal Revenue to pay taxes.

Issues

Several issues arise from the interviews conducted during the study. These issues fall under two main concerns—production and market and pricing.

Production

Access to capital, technology, needed inputs, and labor is important in increasing the productivity and income of ARBs. While capital, technology, and inputs are provided, labor has become scarce due to the rapid urbanization in Batangas and the ageing of farmers. Second-generation agricultural workers are hard to find and wage rates have also risen due to the proliferation of commercial and industrial jobs in the province. For SBF arrangements where the cooperative manages the farm of the ARB, the problem of hiring farm laborers are borne by the ARBO.

Another production-related issue is the availability of irrigation water. This is critical to sugarcane production during the land preparation stage. There are neither irrigation facilities in the area nor sources of water for irrigation pumps. Farmers claimed that this was not a problem before because rain often occurred during the expected time. However, with climate change, rainfall patterns have changed.

Market and pricing

As revealed by the cooperative members, sugarcane farmers are concerned about corn syrup, a sugar substitute normally imported from China. Corn syrup was identified as a sugar substitute only this year, thus, no importation quota has been set yet. This resulted in decreased demand for sugar by soft drink and beverage companies, which eventually led to a decline in sugar prices. The contract of the soft drink companies with China for the importation of corn syrup is until 2018, thus, farmers expect the slack to continue until said year.

Conclusions and Recommendations

The different cases of SBF arrangements showed that land consolidation can be successful if the elements of the whole supply chain are present. Initially, there should be capital to ensure that appropriate production inputs are applied at the right amount and time. Land, which is a factor of production, is also necessary together with security of tenure. Labor, farm machinery, and irrigation should also be available and accessible. Postproduction/processing facilities should also be provided. In addition to a sure market, a stable and optimal price is also essential to ensure profitability. Market facilities and infrastructure are likewise prerequisites. Further, government assistance should be extended to SBF participants while policy environment should also be supportive of the program. To strengthen SBF implementation, several recommendations are formulated to address some issues.

Issuance of individual titles

Some SBF participants under the individually managed modality expressed that their CLOAs have not been issued yet even though they have long been occupying and tilling the lands. DAR should address this issue with urgency.

Provision of credit and access to inputs

Credit is being extended to farmers under the SBF. However, there is no assurance that PHILSUCOR and LBP will still extend credit once the SBF is terminated. Besides credit, DAR should ensure that other support services given to the ARBOs are sustained after SBF

implementation. Otherwise, the SBF will fail eventually and its initial gains will be wasted.

Markets, pricing, and policy support

The government does not have control on the prices of sugarcane, being an export crop, but it can provide the necessary policy support. Government intervention is needed to impose higher tariffs on sugar substitutes such as corn syrup. Moreover, government should also be able to lobby for the imposition of a quota on corn syrup after 2018 to ensure that local demand for sugar will increase.

Capacity building of cooperatives

Although the cooperatives covered in the study are stable and generating income, capacities of some cooperatives to manage businesses properly need to be strengthened. Thus, DAR needs to coordinate with the Cooperative Development Authority, as well as other service providers, and seek their assistance to strengthen managerial, financial, and marketing abilities of cooperatives' officers and staff. Values formation is also important to avoid incidents like pole vaulting, which affects sugarcane prices.

With the price fluctuations in sugarcane, cooperatives should also look for other income-generating projects that are not dependent on said product. Their capacities to identify and engage in other businesses related to agriculture should be strengthened. Related to this, training on project proposal preparation and conduct of feasibility and market studies can also be extended to cooperatives.

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This study assesses the performance of sugarcane block farming (SBF) as a land consolidation model for increasing farm productivity and income of the sugarcane farmers' sector. As such, a framework identifying factors needed for a successful SBF implementation was formulated considering the supply chain, the policy environment, and the global market. Using a case study approach, block farms, both cooperative managed and individually managed, were examined.

The study notes several issues on production, marketing, and pricing that affect the implementation of SBF. The study recommends that SBF arrangements should be encouraged but the government has to provide a policy environment for Philippine export crops to be competitive. Agrarian reform beneficiaries and their associations should also be supported through capacity-building activities.