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Assistance to Indonesian Sugarcane Farmers in Sleman Yogyakarta in Support of Increasing Crop Productivity and Strengthening Cooperatives

Anna Kusumawati[1*], Azhari Rizal[1], Dwi Aryani Suryaningrum[2], Luci Paonganan[2], Muhamad Mustangin[3], Yunaidi[3], Ratna Sri Harjanti[4]

[1] Department of Plantation Management, LPP Yogyakarta Polytechnic, Yogyakarta, Daerah Istimewa Yogyakarta, Indonesia
[2] Department of Accounting, LPP Yogyakarta Polytechnic, Yogyakarta, Daerah Istimewa Yogyakarta, Indonesia
[3] Plantation Industry Mechanical Engineering Technology, LPP Yogyakarta Polytechnic, Yogyakarta, Daerah Istimewa Yogyakarta, Indonesia
[4] Department of Chemical Technology, LPP Yogyakarta Polytechnic, Yogyakarta, Daerah Istimewa Yogyakarta, Indonesia
**Corresponding author*: kusumawatianna@gmail.com

ABSTRACT

One of the pillars that will support the sugar self-sufficiency program proclaimed by the Indonesian government is smallholder sugarcane farmers. The problems faced are not only on-farm problems such as land management and inaccurate pest control, but also sugarcane farmer cooperatives which have many obstacles. This causes productivity both in terms of cultivation to be less than optimal and the existing cooperatives to be unable to run as originally intended. The purpose of this community service is to provide assistance to people's sugarcane farmers by providing counseling on good sugarcane management, proper sugarcane control, and cooperative management. This activity was carried out with partners from smallholder sugarcane farmers in Sleman who are members of the Koperasi Petani Tebu Rakyat Sido Makmur Abadi which is located at Jl. Raya Selomartani Dayakan, Purwomartani, Sleman. In Yogyakarta. The activity phase that has been carried out is preceded by coordination to discuss the main problems of sugar cane farmers, then there is socialization regarding alternative solutions to farmer problems, and finally assistance in the form of counseling. The results of the activities showed an increase in knowledge regarding good sugarcane cultivation techniques and proper beetle larvae control by 41% and regarding cooperative management by 60%. It is hoped that this increased understanding will become the basis for improving cultivation activities in the 2023-2024 sugarcane planting year so that productivity increases and sugarcane farmer cooperatives are better managed.

Keywords: counseling; farmers; sugar; sugarcane

INTRODUCTION

The Indonesian government's efforts to meet domestic sugar demand are pursued with a sugar self-sufficiency programme. This programme can be realised not only in the off farm aspect but also on farm such as the existence of sugar raw materials, namely sugar cane. Maximum sugarcane productivity with good sugarcane quality (production and rendemen) is highly sought after in realising the programme (Yunitasari et al., 2015). High sugarcane productivity is supported by good sugarcane management by all parties, both by agro-industrial companies and also smallholder sugarcane farmers. Proper management will support the productivity of sugarcane plants (Imantho, 2022).

This accuracy is not only about good sugarcane cultivation standards, but also about accuracy in efforts to control sugarcane pests. One of the many sugarcane pests that attack the land of smallholder sugarcane farmers in Yogyakarta is beetle larvae. Sugarcane productivity on beetle larvae endemic land is

largely determined by the success in controlling beetle larvae (Subiyakto & Sunarto, 2018). Beetle larvae control can be done in several ways such as mechanical methods by picking up directly or using chemicals. However, there have also been many ways to control by biological means so as not to cause land destruction (Indrayani, 2017).

Farmer cooperatives are business entities with members of farmers or cooperative legal entities that carry out their activities based on cooperative principles and are family-based with the aim of prospering their members and the general public. Farmer cooperatives as cooperatives engaged in agribusiness play an important role in maintaining national food security. In addition, farmer cooperatives play an important role in supporting farming businesses and are able to prosper their members. (Saputra et al., 2017). However, the development of co-operatives today is less than satisfactory. The reality on the ground is that there are some farmer members of co-operatives who are still not prosperous and face various problems (Fauzy & Maula, 2022).

Some cooperative members eventually became inactive and even resigned. Farmer cooperatives also face issues such as difficulties in securing capital and marketing crops, lack of farmer empowerment and technological constraints. Masrukhin et al (2019) explained the weaknesses or challenges faced by the People's Sugar Cane Farmer Cooperative, including farmers' inability to create a network of cooperation, narrow land, limited capital, low bargaining position and administration that has not been managed optimally.

Cooperatives in the plantation agribusiness sector such as Sido Makmur Cooperative in Kalasan, Sleman, Yogyakarta which was established in 1998 experienced the same thing where cooperative members were less developed due to various problems above, especially in terms of cultivation, cooperative institutions and product marketing. Therefore, it is necessary to make an effort in handling these problems in order to increase the capacity of farmers in accessing information, science and technology as well as facilities, infrastructure, financing and processing and marketing of business results. In addition, efforts are also needed to increase the capacity of farmers in the management of farmer institutions to realise a strong farmer cooperative as an embryo of farmer corporations. Therefore, this community service activity aims to conduct a series of workshops, counselling and assistance to Sido Makmur Abadi Cooperative on farm management education and cooperative management to realise a modern farm management system and cooperative management.

METHOD

The implementation of activities starts from January 2023 to June 2023. Partners in community service activities are Sleman sugarcane farmers who are members of the Sido Makmur Abadi Sugarcane Farmers Cooperative. Methods in implementing community service are coordination, socialisation and assistance in the form of counselling. Coordination with sugarcane farmers was conducted in three coordination activities conducted in January, February and March 2023. The coordination was conducted at Sido Makmur Cooperative Office at Jl. Raya Selomartani Dayakan, Purwomartani, Sleman. D.I Yogyakarta. In this activity, coordination was carried out in an effort to find out the condition of Sleman sugarcane farmers, so that the assistance carried out was right on the problem. The most important problems found were about sugarcane management, beetle larvae pest eradication and cooperative institutional management.

Socialisation was conducted in May 2023 by providing socialisation to farmers at the cooperative office with a discussion of several alternative solutions to farmers' problems. The activity was also attended by the Yogyakarta Agriculture Office so that they can work together to help the problems of sugarcane farmers in Sleman. The last stage of community service is in the form of assistance. The assistance is packaged in the form of a workshop by presenting presenters from practitioners from companies and also from academics. The workshop was held on 23-24 June 2023 at the LPP Yogyakarta Polytechnic Campus. Evaluation and monitoring of assistance activities is carried out by filling out questionnaires that are divided into each theme.

RESULTS AND DISCUSSION

Profile of Assistance Activity Participants

The assistance activities were attended by 20 participants consisting of farmers and lecturers. Based on Table 1. that it can be seen that the participants of assistance activities are male

compared to female sugarcane farmers. The number of male sugarcane farmers is 65% with a total of 13 people while women are 35% with a total of 7 people. Gender can indicate a person's productivity where men have a higher level of productivity than women. This is influenced by several factors such as women's physical strength, in working tend to use feelings or biological factors. (Desanti & Ariusni, 2021).

Table 1. Identity of assistance participants

No	Gender	Quantity	Percentage (%)
1	Male	13	65
2	Female	7	35
Total		**20**	**100**

Table 2. Identity of assistance participants based on age

No	Age	Quantity	Percentage (%)
1	≤ 30 year	1	5
2	31-40 year	2	10
3	41-50 year	2	10
4	51-60 year	3	15
5	61- 70 year	6	30
6	71-80 year	4	20
7	81-90 year	2	10
Total		**20**	**100**

Based on Table 2, it can be seen that the age of the assistance participants is mostly at the age of 61-70 years as much as 30% with a total of 6 sugarcane farmers while the age of under 30 to 30 is the least only 1 person with a percentage of 5%. Age has an influence on the ability of farmers to do a job. Sugarcane farmers who are productive are sugarcane farmers who can work or carry out activities that have econemical value, that these activities can increase income and meet family needs. Sugarcane farmers with a relatively young age will have better physical abilities than older sugarcane farmers. An older sugarcane farmer will have experience that a young sugarcane farmer does not have. In human biology, the older a person gets, the more the immune system, the hormone system and the sensory, motor and neural nervous systems of a person will decline. (Kumbadewi et al., 2021). The age of sugarcane farmers in Sido Makmur Cooperative is included in unproductive sugarcane farmers because the age of sugarcane farmers is 61-70 years old.

Table 3. Identity of Respondents Based on the Last Level of Education

No	Education	Quantity	Percentage (%)
1	Elementary School	0	0
2	Junior High School	4	20
3	Senior High School	10	50
4	Diploma	3	15
5	Bachelor	2	10
6	Master	1	5
Total		**20**	**100**

Based on Table 3, the last education of participants is high school with a percentage of 50% with a total of 10 people and there are no cooperative members who only graduated from elementary school. There are 4 people with junior high school education, 3 people with diploma education and 2 people with S1 education and 1 person with S2 education. Education is quite important to determine the mindset of sugarcane farmers in carrying out the cultivation of their sugarcane plants. Quality human resources require education, because education is considered capable of producing a high-quality workforce, has a modern mindset and way of acting. (Febianti et al., 2023).

Table 4. Identity of Respondents Based on the Area of Sugarcane Cultivated

No	Land Size	Quantity	Percentage (%)
1	≤2 Ha	3	15
2	3-5 Ha	8	40
3	6-8 Ha	5	25
4	9-11 Ha	2	10
5	≥12 Ha	2	10
Total		**20**	**100**

The most dominant area of land owned and cultivated by participants is 3-5 ha (Table 4). The area of land cultivated or processed by sugarcane farmers will affect the results obtained by sugarcane farmers. Yield and productivity are very important for farmers because the profit sharing mechanism with farmers is based on the number of quintals and yield of sugar cane, so that the greater the amount of sugar cane production and yield, the more the farmer receives (Wibowo, 2013).

Sugarcane Land Management and Sugarcane Pest Control Assistance

Good sugarcane cultivation must be based on good sugarcane management, from the beginning of planting to harvesting. The assistance activity on the first day aims to refresh the participants, who are mostly sugarcane farmers, on good sugarcane management so that farmers can be reminded of how good cultivation techniques are. The resource person who gave the material was Ir.Slamet Wirawan, MMA. He is a practitioner who has worked in sugar industry companies. The material presented varied, ranging from seedling selection to slaughtering and loading and transporting. In sugarcane crop management, the plant growing environment and land type affect the agronomic growth of sugarcane plants (Fig. 1 and Fig. 2). The limiting factors on the land cause cultivation to become the basis for management procedures so that the hope is that the results can be maximised. (Ardiyansyah & Purwono, 2015).

Table 5. Questionnaire on Technical Assistance for Sugarcane Cultivation and Beetle Larvae Control

Question	Before	After
	Yes (%)	Yes (%)
Do you know the proper management of sugarcane fields?	65	95
Do you know how to manage sugarcane fields with precision?	60	100
Do you know about the quality of a good sugarcane crop?	75	100
Do you know the parameters that determine the quantity/production of sugarcane?	35	100
Do you know the importance of December and March estimation?	45	95
Do you know the importance of observing/analysing sugarcane maturity?	90	100
Do you know how to control beetle larvae using chemicals?	45	90
Do you know that beetle larvae control can be done at the beginning of planting?	45	100
Do you know how to control beetle larvae with nets?	50	100
Do you know how to control beetle larvae with light traps?	45	85
Do you know how to deal with beetle larvae biologically?	45	90
Average	**55**	**96**

Based on Table 5, it can be seen that there is a percentage of each question regarding the technical cultivation of sugarcane plants and beetle larvae control. Before the assistance was carried out, a questionnaire was filled in by members of the sugarcane farmers of the Sido Makmur Cooperative and a questionnaire was filled in after the assistance. There was a 30% increase in the knowledge of sugarcane farmers regarding the technical management of sugarcane cultivation, a 40% increase in farmers' knowledge in managing sugarcane land with precision, the knowledge of sugarcane farmers also increased by 25% regarding the quality of good sugarcane plants. Sugarcane farmers experienced a 65% increase in knowledge about the constituents of sugarcane crop quantity/production, a 50% increase in sugarcane farmers' understanding of December and March taxation, and a 10% increase in sugarcane farmers' understanding of observing/analysing sugarcane maturity. Table 5 shows that regarding beetle larvae pests, it can be seen that there is a 45% increase in farmers' understanding of how to deal with beetle larvae using chemicals, a 55% increase in how beetle larvae control can be done at the beginning of planting by sugarcane farmers who are members of the Sido Makmur Cooperative, a 50% increase in farmers' understanding of beetle larvae control with nets and a 40% increase in beetle larvae pest control with light traps. The use of light traps is also an alternative to collecting beetle larvae when in the flight phase so as not to cause damage (Voraphab et al., 2015). The understanding of sugarcane farmers in Sido Makmur Cooperative has increased by 45% regarding biological control of beetle larvae pests. Biological control of pests can be an alternative effort to suppress attacks by not causing damage due to chemicals to the environment (Indrayani, 2017).

Overall, it can be seen in Table 5 that the management of sugarcane cultivation has improved after the assistance, which is expected to help members of the Sido Makmur Cooperative sugarcane farmers to increase sugarcane production on their respective land. Beetle larvae pest control is also contained in Table 5 that previously sugarcane farmers of the Sido Makmur Cooperative did not know much about controlling beetle larvae pests on their respective fields, after assistance was carried out regarding beetle larvae pest control both chemically, biologically and mechanically by using hands by citing, nets and light traps, sugarcane farmers experienced increased knowledge and understanding of beetle larvae pests and controls that could be carried out on each farmer's land infested with beetle larvae pests (Fig. 3 and Fig. 4).

Based on Table 6, it can be seen that the understanding of all participants increased 100% from the previous understanding of the cooperative's articles of association and bylaws (AD/ART) of only 45%, cooperative organisational structure 60%, cooperative management functions 45%, aspects of cooperative management 30%, cooperative management operational standards 25%, cooperative human resource management development policies 40%, cooperative budgeting 40%, working capital management for cooperative operations 50%, how to determine the remaining results of operations cooperative 40%, how to analyse cooperative financial statements 30% and cooperative marketing management 25%.

Cooperative Management Assistance

Table 1. Cooperative Management Assistance Questionnaire

Question	Before	After
	Yes (%)	Yes (%)
Do you know about the cooperative's articles of association and by-laws?	45	100
Do you know the organisational structure of cooperatives?	60	100
Do you know the functions of co-operative management?	45	100
Do you know the aspects of co-operative management?	30	100
Do you know the operational standards of co-operative management?	25	100
Do you know the co-operative's human resource management development policy?	40	100
Do you know how to prepare a co-operative budget?	40	100
Do you know working capital management for co-operative operations?	50	100
Do you know how to determine the cooperative's profit sharing (SHU)?	40	100
Do you know about how to analyse a cooperative's financial statements?	30	100
Do you know about co-operative marketing management?	25	100
Average	**40**	**100**

When viewed from Table 6, it is known that the lowest understanding of the operational standards of cooperative management and cooperative marketing management. Cooperative management operational standards include policy guidelines related to institutional, business and financial cooperatives in order to realise excellent cooperative management and the welfare of its members. To be able to achieve this in addition to utilising the resources owned, it is also necessary to consider the limited number of human resources, educational background or limited time of the management as well as government policies/regulations. The understanding of the operational standards of cooperative management has increased significantly from the previous understanding of only 25% to 100%. In line with this, the understanding of cooperative marketing management has also increased from 25% to 100%. Marketing management in cooperatives needs to be managed properly to create demand for goods and services produced by cooperatives, including the quality of the products offered, which is closely related to a good cultivation process, an efficient distribution chain, pricing, promotion, and after-sales service. Marketing collateral significantly plays an important role in improving farmers' welfare. (Fauzy & Maula, 2022).

Fig 1. Presenters provide material on sugarcane cultivation management

Fig 2. Photo session with presenters (sugarcane cultivation management)

Fig 3. Assistance activities

Fig 1. Photos of participants and presenters

Fig 5.Presenters provide material on cooperative management

Fig 6. Photo session with presenters about cooperative management

The highest understanding of sugarcane farmers who are members of Sido Makmur Cooperative is about the organisational structure of the cooperative itself. The organisational structure of the cooperative consists of members' meetings, supervisors, administrators, business managers, section heads and section staff (Efendi et al., 2023). Each device contained in the organisational structure has duties and authority in accordance with its function. Overall, Table 6 regarding cooperative management has improved after the assistance. Assintance was held with Prof. Djamhari as the speaker (Fig. 5 and Fig. 6). The cooperative management training conducted is expected to be applied to improve the knowledge and skills of Sido Makmur Cooperative members in managing cooperatives starting from the legal basis and cooperative regulations regulated by law, as well as those contained in the bylaws to the planning, implementation and supervision processes that must be carried out to create an effective cooperative and prosper its members and can help sugarcane farmers in conducting capital, savings and loans for sugarcane cultivation on each farmer's land. Organising training on cooperatives, sugarcane cultivation and product processing to improve the skills of cooperative administrators and members is a SWOT-based strategy that can be used in

developing the People's Sugarcane Farmers Cooperative (Masrukhin et al., 2019). If Sido Makmur Cooperative is able to prosper its members then each sugarcane farmer can increase the production and product quality of the sugarcane crop sugarcane farmers can increase the production and quality of products from sugarcane plants that are cultivated properly in accordance with applicable standard operating procedures.

CONCLUSION

The conclusion obtained from this community service activity is an increase in the knowledge of activity participants, most of whom are sugarcane farmers who are members of the Sidomakmur Sugarcane Farmers Cooperative regarding sugarcane cultivation techniques and beetle larvae control by 41% and regarding cooperative management by 60%. All stages of the activity were carried out well. The participants were very interested in the themes given as seen from their activeness in discussions and the implementation of assistance. The material provided in the assistance is very helpful for sugarcane farmers in solving their very complex problems, starting from land management, beetle larvae control and also cooperative management so that it is hoped that after the assistance can be better prepared for the 2023-2024 planting year.

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