

## IMPROVING ENVIRONMENTAL SANITATION KNOWLEDGE OF SUGARCANE PROCESSING FARMERS GROUP IN NAGARI BATUBULEK, TANAH DATAR REGENCY

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### Abstract

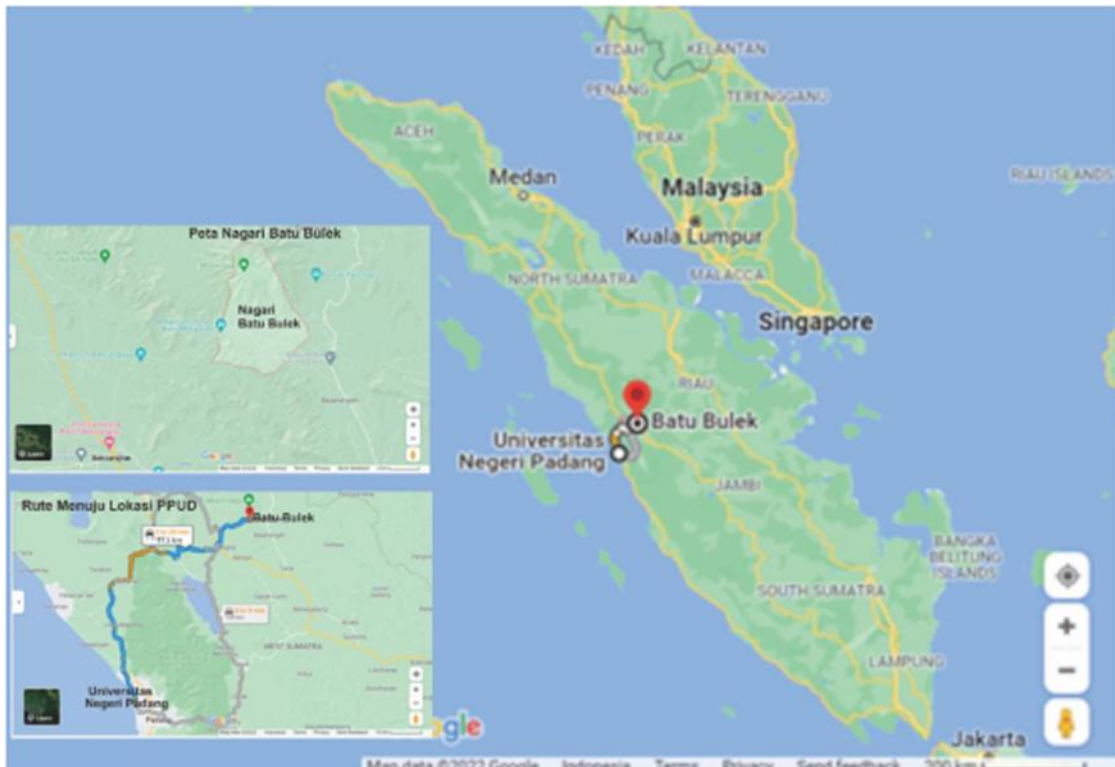
*Nagari Batubulek* is one of the sugarcane plantation areas in Tanah Datar regency, West Sumatra province, Indonesia. In *nagari Batubulek* itself, the “Marapalam Indah” farmer group processes sugar cane using a pressing machine and has 10 stoves to cook the cane into cane sugar. Every day this farmer group processes 750 kg of sugarcane into approximately 75 kg of cane sugar and 250 kg of bagasse. Currently, the bagasse produced is burned, as a result the smoke from the burning disturbs workers and pollutes the surrounding environment. Based on the results of interviews with the heads of farmer groups and several visits to the location of the kitchen for making sugar cane, it was found that the partner's problem was that farmers' knowledge in environmental sanitation were still low. The solution offered is to increase the knowledge and skills of partner communities to process bagasse into useful materials and to improve the sanitation of a clean kitchen environment through ongoing training and assistance. After the training and counseling, it was seen that the knowledge of environmental sanitation from the farmer groups had increased.

**Keywords:** Environmental Sanitation, Farmers Group, Nagari Batubulek, Sugar Cane.

### INTRODUCTION

Nagari Batubulek, Lintau Buo Utara sub-district, Tanah Datar Regency, West Sumatra Province is located at coordinates 0.20' 21" – 0.28' 07" S and 100.43' 42" – 100.50' 24" E. Nagari Batu Bulek, Lintau Buo Utara district, has been designated as “Nagari Agro Wisata”, with sugarcane and coffee as a superior crop (MinangkabauNews, 2022).

Nearly half of Nagari Batu Bulek is planted with sugarcane. The traditional cane sugar industry has been occupied by the people of Jorong Pato Nagari Batu Bulek since the Dutch colonial era. Currently, brown sugar cane products are one of the superior products of the Tanah Datar regency. Figure 1 shows a map of the location of the community service activities that have been carried out.



**Figure 1. Map of the location of community service activities in Nagari Batu Bulek**

Source: google map

According to data from the Central Bureau of Statistics for Tanah Datar regency (BPS, 2022), the harvested area and production of sugar cane in Lintau Buo Utara sub-district, Tanah Datar Regency in 2021 are 3,079 ha and 4,223 tons respectively with an average production of 1.37 tons/ha. One of the areas in Lintau Buo Utara sub-district as a sugar cane producer is Jorong Pato.

The sugar cane processing industry in Jorong Pato has not developed well. However, the process of squeezing sugarcane juice which used to be done in a factory using buffalo power, now uses a diesel press machine. The process of cooking cane sugar is still carried out using wood fuel.

Community service partner farmer groups process sugar cane into cane sugar using a pressing machine and have 10 stoves to cook sugar cane into cane sugar. Every day, they process 750 kg of sugarcane into approximately 75 kg of cane sugar and produce 250 kg of bagasse.

Based on the results of interviews with the community farmer groups and several visits to the location of the cane sugar processing kitchen, several problems were found in the farmer groups. The kitchen does not meet environmental sanitation requirements. The kitchen floor looked unclean some of the bagasse rotted because it was exposed to rain, some was burnt beside the kitchen. The combustion products enter the kitchen building, causing vision and respiratory problems.

The solution given to farmer groups is to increase the community's knowledge and skills through sharing and discussion regarding environmental sanitation in the workplace. Providing insight into the community of farmer groups about the application of science and technology in

processing bagasse into biogas, compost and liquid fertilizer. Processing bagasse into useful materials is predicted to be able to solve the problem of cleaning the kitchen environment from solid waste and smoke. This community service activity aims to increase the knowledge and practice of community farmer groups regarding environmental sanitation in sugarcane processing factories. Environmental sanitation behavior refers to the involvement of residents in the provision, use, and maintenance of environmental sanitation facilities and services (Gusti & Sari, 2020; Cameron, Chase & Suarez, 2021).

## **IMPLEMENTATION METHOD**

The implementation methods of community service activities are surveys, guidance and counseling in providing environmental sanitation knowledge and skills to farmer groups. The community service scheme that has been implemented is the regional superior product development program (PPPUD) which consists of counseling activities, and assistance in order to increase the knowledge and skills of sugar cane processing farmer groups in environmental sanitation of sugar cane factories.

The first stage is observing the cane sugar factory which is managed by farmer groups as well as conducting outreach to farmer groups regarding the community service program that will be implemented. Furthermore, interviews were conducted regarding the environmental conditions of the sugarcane processing factory kitchen.

The next stage is holding outreach to farmer groups through workshops to increase the knowledge and skills of partner communities regarding work environment sanitation and bagasse processing into organic fertilizer. This activity was carried out for 3 meetings, after which a questionnaire was given to the farmer group community to find out the extent of the farmer group community's knowledge and skills in environmental sanitation practices. Questionnaires were given to all 20 members of the farmer group. Questionnaires were distributed 2 times, before and after the training. Assistance is provided so that this activity continues.

## RESULTS AND DISCUSSION

### Guidance and counseling activities

The survey stage was carried out at the location of the sugar cane processing kitchen and found that the condition of the kitchen was dirty and bagasse had piled up beside the kitchen. Figure 2 shows the condition of the kitchen floor and bagasse being burned.



**Figure 2. (a). The kitchen floor looked unclean, (b). Bagasse is burned**

Source: Personal documentation

Through ongoing assistance, the knowledge of the partner community is provided on how to process bagasse into useful materials and create a clean kitchen environment that meets environmental sanitation. Figure 3 shows the activity of providing training materials and transfer of bagasse chopping tools to farmer groups so that they can be used later for compost and biogas production.



**Figure 3. (a). Providing of training materials, (b). Transfer of bagasse chopping machine, (c). Testing of biogas reactor**

Source: Personal documentation

### Impact of guidance and counseling activities

Based on the results of the questionnaire before the mentoring activity, information was obtained that the farmer groups did not yet have knowledge about environmental sanitation. They are familiar with the slum environment and work in a smoke-filled environment.

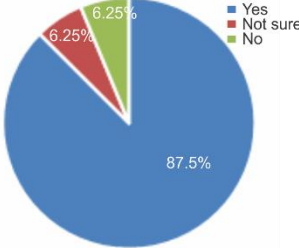
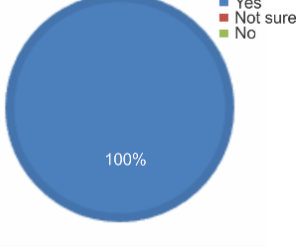
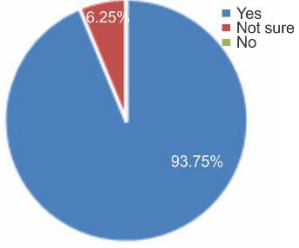
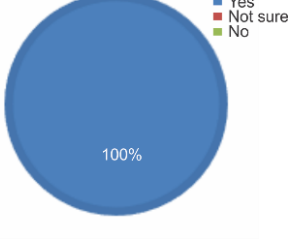
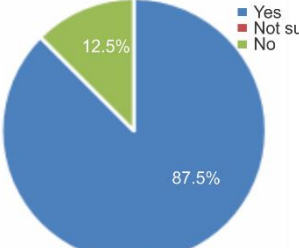
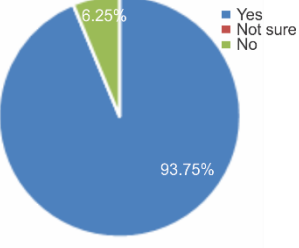
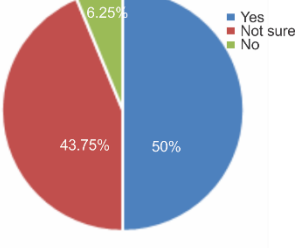
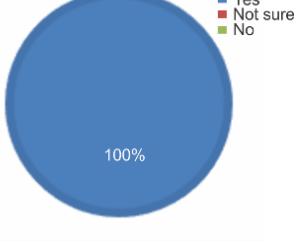
Based on the questionnaire, information was also obtained that partners expressed a desire to receive assistance regarding their problems. After receiving counseling from the community service team, they already understand that maintaining environmental sanitation is important for the safety and health of workers, as well as affecting the quality of the cane sugar products produced.

Before and after the community service activities, the sugarcane farmer groups were

given counseling about environmental sanitation knowledge and practices. After the activity, community environmental sanitation knowledge and practices were measured through questionnaires. Table 1 are presenting the results of the knowledge level of respondents about environmental sanitation.

**Table 1. Results on knowledge of respondents about environmental sanitation**

No	Statement	Before counseling	After counseling
1	Unused items such as paper, plastic bags, metal scraps, used cans, wood scraps, bagasse are waste.		
2	Throwing garbage into gutters, on the road and around the environment causes stagnant water.		
3	Garbage burning is not the best way to dispose of waste and has an impact on the environment.		
4	Burying garbage in the backyard is not the most appropriate way to dispose of trash.		
5	Washing hands with water without soap after using the toilet is not a good practice.		

6 Defecating in bushes/fields and backyards has a negative effect on people living in those areas	 <p>87.5% 6.25% 6.25%</p>	 <p>100%</p>
7 Storing garbage in bins that don't have a lid is bad practice	 <p>93.75% 6.25%</p>	 <p>100%</p>
8 Covering the trash/waste receptacle is a good sanitation and hygiene practice.	 <p>87.5% 12.5%</p>	 <p>93.75% 6.25%</p>
9 Waste can be turned into biogas and manure by scientists/experts.	 <p>50% 43.75% 6.25%</p>	 <p>100%</p>

Based on Table 1, before being given counseling the number of respondents (87.5%) answered "Yes" to the statement " Unused items such as paper, plastic bags, metal scraps, used cans, wood scraps, bagasse are waste.", in general higher than the respondents (6.25%) who answered "Not Sure" and "No". However, after being given counseling, all respondents (100%) answered "Yes" to the same statement.

A considerable increase is seen in item statement number 9. Before counseling, half of the respondents (50%) know that waste can be turned into manure by scientists or experts, while some of the respondents answered no (6.25%) and not sure (43.75%). After counseling, all respondents answered "Yes" to this statement. In general, the results of the questionnaire showed that there was an increase in the knowledge of farmer groups after attending counseling.

In general, the results of the questionnaire showed an increase in the knowledge of farmer groups after attending counseling. This increase occurred because after attending the training, farmer group participants already know about good ways of processing bagasse waste, how to

process bagasse into compost and biogas.

## **CONCLUSION**

Sugarcane processing farmer groups in Nagari Batubulek have gained knowledge by participating in a series of counseling and mentoring on environmental sanitation. During the assistance phase, the partner's cane sugar production kitchen becomes more hygienic. After participating in counseling and mentoring, the respondents' knowledge of environmental sanitation has increased.

## **Acknowledgments**

The author would like to thank LP2M Universitas Negeri Padang for funding this community service with contract number: 1322/UN35.13/PM/2022. Thank you also to the farmer group "Marapalam Indah" Nagari Batubulek, for their participation.

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