

Technology Application of Biopore for Reduce Run Off at SDN 2 Sungai Besar Banjarbaru

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ABSTRACT

Biopores are holes in the soil formed as a result of organism activity to increase water absorption, reduce the risk of runoff, and preserve the environment. Making biopore infiltration holes is advantageous because it is practical, economical, and environmentally friendly. This community service activity aims to provide educational counseling and technical training to civitas of SDN 2 Sungai Besar Banjarbaru through the installation of biopore infiltration holes to prevent and overcome run off particularly during the rainy season. This community service activity follows a three-stage methodology: survey and observation, socialization and technical training, and practice creating biopore infiltration holes. Based on the outcomes of the activities, participation and collaboration with the residents went well and cooperatively, and the application of biopore infiltration holes was made in two locations throughout the garden. Thus, this community service activity benefited and was shared with the civitas of SDN 2 Sungai Besar Banjarbaru, particularly in terms of knowledge and skill transfer through the creation of biopore infiltration holes to prevent and overcome run off independently and sustainably.

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INTRODUCTION

The city of Banjarbaru's high rainfall and a lack of public awareness regarding environmental conservation has resulted in a decline in ecological function, including a lack of community participation and contributions to maintaining and preserving the surrounding environment (Annisa *et al.*, 2021). Thus, when it comes to utilizing natural resources such as land and water to avoid runoff and environmental damage (Annisa *et al.*, 2016; Prasetya *et al.*, 2018), it is critical to plan and manage them properly through the use of a biopore infiltration hole management system. Biopore is a term that refers to a chamber or pores in the soil created by living organisms such as land fauna and plant roots. The biopore shape is similar to that of a small tunnel with branches that effectively channel water and air through the soil. The hole in the biopore is generated as plant roots grow and develop in the ground and as land fauna such as earthworms, termites, and ants investigate the burrow in the soil (Bagnall & Morgan, 2021; Huang *et al.*, 2020; Landl *et al.*, 2019; Or *et al.*, 2021; Petzoldt *et al.*, 2020; Prameswari *et al.*, 2020; Setiawan & Rohmat, 2019; Syahrudin *et al.*, 2019).

One of the primary goals of biopore management is to restore the environment's balance, which is lacking in the perceptual area. Biopore is an efficient application, and the solution is implemented in schools with critical and ineffective land conditions for the running drainage system. On this basis, socialization and technical training activities involving the construction of biopore recharge holes are conducted in low-water residential areas with low water infiltration capacity and high runoff intensity, which frequently occur during the rainy season (Huang *et al.*, 2020; Prameswari *et al.*, 2020; Setiawan & Rohmat, 2019; Syahrudin *et al.*, 2019). Implementing community service activities is one of the most effective and cost-effective methods of preventing and resolving runoff and preserving the surrounding environment, given the number of community participation activities designed to address the issues that arise to increase awareness and concern civitas SDN 2 Sungai Besar. Independently and sustainably maintain and preserve the environment surrounding housing while cultivating a participatory spirit and pioneering environmental love movements through the application of biopore recharge holes as a solution for preventing, dealing with, and overcoming runoff, which remains a critical environmental issue in the Banjarbaru city.

SDN 2 Sungai Besar, as one of the country's schools, aspires to become an eco-school. At SDN 2 Sungai Besar, one of the phenomena is the existence of massive school development. As a result, a significant amount of open land is developed. The implication is that because the infiltration area is smaller, the amount of water that seeps into the soil is reduced. Biopore is one solution to this problem. A biopore is a cavity or pore formed in the soil by living organisms such as soil fauna and plant roots. Biopores are circular holes drilled into the soil that range in diameter from ten to thirty centimetres. Biopore is the material of choice for many people to create and use. However, settlements and a lack of environmental awareness can affect biopore (Prameswari *et al.*, 2020; Setiawan & Rohmat, 2019; Syahrudin *et al.*, 2019).

Additionally, because biopore's effectiveness varies, it is necessary to continue testing its activities. This study aimed to demonstrate the efficacy of biopore technology in reducing runoff at SDN 2 Sungai Besar Banjarbaru. The findings are expected to serve as a guide for the development of future eco-schools.

METHODS

The community service activities will take place over five months (May - September 2021), beginning with the preparation of proposals, the creation of biopores, the implementation of socialization, and the design of activity reports. Dissemination to partners takes place online (in the network/online), whereas the simulation of biopore formation takes place offline/face to face with the civitas of SDN 2 Sungai Besar Banjarbaru. This community service activity follows a three-stage methodology: survey and observation, socialization and technical training, and practice creating biopore infiltration holes.

RESULT AND DISCUSSION

In general, the community service activities that were completed went well and smoothly. Participation, cooperation, and assistance from all parties, internal and external, are handled professionally and cooperatively. The results of community service activities are prepared and adjusted according to the stages of implementation, which include: (a) survey activities, observation, and observation of the service location; (b) socialization activities and technical training for manufacturing biopore infiltration holes; and (c) manufacturing and installation.

The second stage of this community service activity is to conduct socialization activities via google meet (Figure 1) and provide technical training on constructing biopore infiltration holes in the SDN 2 Sungai Besar area. This socialization and technical guidance activity involved both internal (implementation teams and field assistants) and external parties (civitas SDN 2 Sungai Besar). Biopore infiltration holes and how to create them. The activities of socialization and technical guidance went well and cooperatively. The implementation team and activity participants established a harmonious relationship, and during this second stage, the installation point for the biopore infiltration hole pipe media was also determined.



Figure 1. Socialization Activities Via Google Meet.

The third stage of the community service activities is constructing biopore recharge holes at previously designated and marked locations. This third stage activity was conducted in collaboration with the implementing team and the activity participants (Figure 2). The advantages of biopore infiltration holes include the reduction of surface runoff, the production of manure, the fertilization of the soil, the reduction of waste piles, and the conservation of groundwater (Landl *et al.*, 2019; Petzoldt *et al.*, 2020; Syahrudin *et al.*, 2019).



Figure 2. Technology Application of Biopore at SDN 2 Sungai Besar Banjarbaru.

Generally, implementing this community service activity goes smoothly, successful and cooperative communication, coordination, and cooperation with all parties involved. In the survey, observation, and observation of the activity's location, in this case in SDN 2 Sungai Besar, the criteria and suitability of the issue of activities raised were met, indicating that the place of the selected action is appropriate and within the scope. While socialization and technical guidance activities are ongoing, the biopore recharge hole is also running smoothly. The participation and involvement of the civitas school were cooperative, and the activity process increased participants' knowledge and skills. The primary method of this community service activity is creating biopore recharge holes at a puddle point. This activity proceeds successfully, and biopore is designed to function as a porous rainwater medium.

Indeed, the planning, preparation, and implementation of these community service activities will encounter numerous obstacles and challenges. However, specific barriers and challenges faced during activity implementation can be resolved relatively quickly at implementation time. The following are some of the difficulties and challenges that may arise while conducting activities: 1) Biopore drill tools in small quantities; 2) Land characteristics at the location of many activities include rocks; and 3) there is still a high prevalence of Pandemic Covid 19 during activity implementation, necessitating the use of strict health protocols.

CONCLUSION

The outcome of this community service activity is the planting of biopore infiltration holes across the SDN 2 Sungai Besar school environment. These biopore infiltration holes operate as a water trapping media, preventing and dealing with runoffs that frequently occur in the school environment. Sustainability recommendations that need to be established in the future include the necessity to sustain other similar program activities at the activity's location, such as creating a rain garden.

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