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# Empowering Teen Dropouts in Berkoh Village, Purwokerto Selatan Sub-District

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**Abstract. This activity aims to improve the ability and skill of teen dropouts in Berkoh Village by utilizing red ant nests around their yards as a productive business and by mastering the technology of the cultivation of red ants, as ant eggs producers. The approaches employed were classical lectures, discussions, training, direct practice of making demonstration plots, mentoring, coaching, and partnership with the teen dropouts. The empowerment of teen dropouts in Berkoh Village was conducted through several activities, i.e. training of how to make kumbung (red ant growing house) consisting of two houses (4x4x3 m3 with six shelves of 3x0.6x1.9 m), training of constructing red ant nests which yielded 225 jars of red ant nest, and training of harvesting which resulted 22.5-30 grams of ant eggs per five jars of nest. As the conclusion, there was an improvement of teen dropouts' ability and skill in utilizing red ant nests around their yards as a productive business.**

**Keywords: ant nests, red ants, ant eggs, skill**

## INTRODUCTION

Berkoh is one of seven villages in Purwokerto Selatan Sub-district, Banyumas Regency. Its area covers 18.57 ha consisting of 7 community units (RW) and 49 neighborhood units (RT) (The Monograph of Berkoh Village, 2013). The result of the preliminary survey indicates that the number of teen dropouts in RT 04 and 07 of RW 04 in Berkoh is high and tends to increase. In 2013, there were 33 and 24 teen dropouts in RT 04 and RT 07, respectively [1]. The number of teen dropouts is related to people's low economic status. If it is not solved immediately, this can cause social, economic, and security problems, such as the rise of unemployment, juvenile delinquency, and crime rate.

One effort to empower school teen dropouts through a productive business by utilizing the potential of nature is by managing red ant nests widely found in the yard. This productive effort is feasible as Berkoh Village has the potential areas planted with annual crops, e.g. jackfruit, mango, *rambutan*, *Albizia chinensis*, mahogany, and *Anthocephalus cadamba* as the sources of red ant nests [4].

Red ant nests produce eggs (*larvae and pupa*) as the fodders of songbirds which has high economic value [2]. The demand for ant eggs continues to increase in line with the increasing number of songbird fans. A survey indicates that the demand for ant eggs in Peksi Bacingah Bird Market Purwokerto in 2013 reached 125-175 kg per day, while the supply from producers was only about 45-65 kg per day. It shows that the cultivation of red ants is highly promising [3]. Unfortunately, this business opportunity has not been maximized.

This activity aims to improve the ability and skill of teen dropouts in Berkoh Village by utilizing red ant nests around their yards as a productive business and by mastering the technology of the cultivation of red ants, as ant eggs producers.

## METHOD

The methods are classical lectures, discussion, training, making demonstration plot, and evaluation.

a. **Stage 1**

Classical lectures and discussions cover several points, i.e. the technique of identifying red ant's characters, metamorphosis, and living environment, making the growing house, moving and rotating the nests (jars), identifying red ants' food and the way to feed them, and harvesting. The evaluation to measure the participants' behavior change was conducted at the end of the activity through pre-test and post-test.

**b. Stage 2**

It was conducted by making the demonstration plots of red ants cultivation which focused on the technique of making ant growing house (in the first until fourth week of the fourth month), moving and rotating the nests (in jars), identifying red ants' fodder and the way it was administered, and also harvesting the red ants. The evaluation was conducted from the fourth week of the first month until the fourth week of the ninth month.

**c. Stage 3**

Evaluating the overall activities.

## RESULT

### Classical Lectures and Discussion

Classical lectures and discussion began with a pre-test by delivering a test related to training materials. The results are a low attitude (60-80% of participants) and low knowledge (80-100% of participants) due to the partners had not been informed about the red ants' cultivation. Whereas to be able to develop red ants well, adequate attitude and knowledge are required.

The activity was continued by giving materials with classical lectures and discussions method comprising the technique of identifying red ant's characters, metamorphosis, and living environment, and making red ants house [4]. The presenter also offered an opportunity for participants to be involved in question-answer and discussion session with him and other attendees. This method could solve problems and difficulties encountered by partners. They were very enthusiastic in following the lecture and discussion activities seen from many questions asked.

Furthermore, post-test was conducted to measure the knowledge and understanding of the participants on the material presented in which the test given was the same as the pre-test. The results are high attitude (70-90% of participants) and high knowledge behavior (70-80% of participants) which indicated a significant increase of participants' attitude and knowledge toward the cultivation of red ants and there had been a transfer of knowledge and technology from the presenters to the participants.

## Making Demonstration Plots of Red Ants Cultivation

### 1. Making Ant Growing House Technique

The practice of making a kumbung (ant growing house) is implemented to transfer the knowledge and skills to partners which included the preparation and selection of materials, making the floor of the house, manufacturing the house, the setting of light and temperature inside the house, and manufacturing the shelf to install the nests [4].

The practice of making red ant growing house was attended by ten partners. They were involved in every stage of manufacturing the house and able to produce two asbestos-roofed bamboo growing houses with a woven bamboo wall measuring 4x4x3m and a three-story bamboo shelf measuring 3x0.5x1.9 m.

### 2. Moving Red Ant Nests Practice

The practice of moving red ants from the nests on trees into jars was conducted by 14 participants. The partners took red ant nests from the trees around their houses then put them into a large plastic bag. There were five red ant nests collected successfully. Ant nests in large plastic bags were transferred to the growing house and placed on a bamboo shelf in the first level (bottom). Plastic jars were put on the second and the third level of the bamboo shelf as artificial ant nests. The jars were arranged to be spread evenly over the bamboo shelf.

The fodder and drink of the ants were given two days after the nests were moved. They were placed on plastic plates and arranged in order to be easily reached by red ants. Red ants succeeded in moving the nests after 5-6 days from harvesting from the tree or when all the leaves of the nests were withered. Red ants passed the critical or stressful time to move to the artificial nests when they were willing to eat and drink. Five natural nests only resulted in six nests in the jar.

The results of the practice showed that partners were able to move the red ant nests from the tree to the jar/growing house. The development of red ant colonies in the house was slow as there were only five nests only as the sources. To accelerate the development of red ant colonies, 200 jar nests were brought from the cultivators of red ants.

The adaptation of red ant colonies from a tree to jar nests was done to make sure that both colonies did not attack each other that could lead to mass death. The addition of nest jars significantly affected the rapid increase of red ant colonies.

### 3. Red Ants Adaptation Practice

The practice of red ants' adaptation with different colonies was conducted by 12 participants. Partners facilitated the adaptation process by installing a bridge between the shelf where the red ant nests from the tree were placed and the jars of red ant nests owned by the cultivators positioned. The bamboo bridge allowed the red ants to cross and interact with one another. When a red ant crossing the bridge was attacked by other red ants, the bridge should be taken immediately since this indicated that the adaptation process had not succeeded. Water was sprayed to calm the two colonies.

The next step of adaptation was to bring the two bamboo shelves together. When the two red ant colonies gathered at both ends of the adjacent bamboo shelves, it means the two colonies began to recognize each other through the scent of pheromone acid released by both colonies. A further adaptation conducted by resetting the bridge connecting the two ant nests. When the red ants from both colonies crossed and did not attack each other, the adaptation was considered successful that the two red ant nests could be put together in the same shelf.

The results of red ants' adaptation practice showed that partners could make both colonies of red ants adapt well, indicated by red ants' low mortality rate.

### 4. Rotating Jar Nests Practice

The partners rotated the nest by replacing the jars filled with red ants with the ones left by the ants. The jars full of red ants were on the top level of the bamboo shelf, while the ones left by red ants were on the lowest level. Thus, the exchange took place between the jars on the top level and on the lowest level.

The nest jars were rotated regularly every three days as the red ants' nature to constantly move to the higher ground. Therefore, the red ant colonies on the bottom jar would move toward the highest level jar.

In addition, the partners also added three empty jars on the top level every 10 days [4]. Empty jars would become new ant nests to accommodate additional red ant colonies.

The observation revealed that the partner could perform the rotation technique properly and correctly, indicated by the increasing number of nest jars of 225 nests after 2.5 months.

**5. Identifying Red Ants' Feeds and How to Feed the Ants Practice**

The practice of identifying red ant's feeds and how to feed the ants was conducted by 14 participants by introducing the fodder (food and drink) then the partners identified and recorded the types of fodder provided by the community service team, i.e. crickets, grasshoppers, Hong Kong caterpillars, banana leaf caterpillars, wet meat, fresh fish, and some insects. Meanwhile, the drinks were consisted of a sugar solution, syrup, and honey at 25% concentration.

The feeding of red ants was done by providing a thick plastic container arranged around the jar nests with the density corresponded to the number of nests, once in three days. The amount of fodder given should be adjusted to the population. The partner also cleaned both the fodder and feeding places every three days to ensure the sanitation of the cage. The results revealed that the partners were able to perform the technique of identifying and feeding red ants properly and correctly indicated by the increasing activity of red ants in searching for feeding sources.

**6. Harvesting Practice**

Harvesting practice was conducted by 14 participants which began by introducing harvesting equipment: rubber gloves, tapioca flour, three baskets, and a wooden stick [4]. This practice was guided by red ant practitioners. Harvesting was started by smearing equipment with tapioca flour. The process of harvesting was held by perforating the labyrinth or ant net in the jar by using a wooden stick. Then, the jars were tapped repeatedly so ant eggs fell and were stored inside the jar lid. The lid was moved to the first bucket. This step was performed repeatedly until all eggs in the jar nests were totally harvested.

The second stage was separating the eggs with red ants in the buckets by shaking the buckets repeatedly until the red ants felt stressed and left the eggs. They were accommodated on the second bucket to be returned to the shelves, while the eggs were moved to the third bucket, ready to be packed and sold.

The results showed that both partners were able to harvest well and correctly. This was indicated by no casualties found on the red ants, the harvester was not bitten by the ants, the yields were high, and the ant colonies remain active. Harvesting five jar nests resulted in 22.5-30 grams of ant eggs.

Based on the evaluation of the training and practice of making demonstration plots of red ant cultivation, it can be concluded that there had been an improvement of participants' behavior as follows: the number of skilled dropouts using the technology of red ant cultivation producing ant eggs increased by an average of 90%

**7. Evaluation**

The whole community service activities were evaluated after all the stages completed. In the evaluation, the indicators that had been agreed were employed with the results that 3 indicators were achieved well, i.e. the ability to produce a house for red ants independently, to cultivate red ant, and the knowledge of cultivation of red ants increased.

The indicators of the enhancement of knowledge and skill of cultivating red ant farming technique were achieved well, and the indicator for the partners to be able to identify red ants' characteristics, metamorphosis, and living environment is increased. The indicator for the partners to be able to produce ant eggs regularly had not been measured as the new harvest period of one month after the target is happened after 6 months.

The indicator of being able to produce ant eggs regularly had not been measured as the new harvest period is happened in one month while the target is observed after 6 months.

## CONCLUSION

There had been an increase in the ability and skill of teen dropouts in Berkoh Village by utilizing red ant nests around their yards as a productive effort through the cultivation of red ants. In addition, there had been an increase in knowledge and entrepreneurship skills about red ant cultivation.

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