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Early Training on Risk Mitigation of Economic Losses Due to Natural Disasters in the Agricultural Business Sector in Tasikmalaya Regency

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Abstract

Natural disasters are unexpected events caused by nature, including earthquakes, tsunamis, hurricanes, droughts, floods, volcanic eruptions, landslides and hurricanes. From the several examples of natural disasters above, of course there are a lot of losses in various fields, one of which is in agriculture, with the negative impacts that exist, there needs to be countermeasures to anticipate these negative impacts. One of the steps we can take after a natural disaster occurs to reduce these losses is to mitigate risks. Risk mitigation itself is breaking down (diversifying) into smaller risk parts, and forming an investment portfolio. At training this time, we as a team will provide counseling to MI Cipicung students entitled "Training in Mitigating the Risk of Economic Loss through Diversification and Insurance in the Agricultural Business Sector of Tasikmalaya Regency".

Keywords: Natural disasters, Risk mitigation, Agriculture

1. Introduction

Indonesia is an area prone to various disasters. Disaster is an event that can cause loss of life, damage to infrastructure, and loss of property. Disasters are divided into two, namely natural disasters and non-natural disasters. One of the disasters that can be found in Indonesia every year. Natural disasters become a problem both in big cities and in villages. Natural disasters that occur can have a large impact on human life, in the form of damage to settlements, loss of life and socio-economic impacts (Marin and Modica, 2017; Kalfin et al., 2021). In the village area, especially in Cibitung Village, it is one of the areas that feels the direct impact of natural disasters that occur such as floods, earthquakes, tornadoes. As a result of natural disasters experienced by local communities, it creates new problems in society, one of which is in the agricultural sector.

To minimize the impact of natural disasters, it is necessary to provide understanding from the government and local communities regarding disaster mitigation and management (Hidayat et al., 2021). Disaster management can be carried out from pre-disaster such as when no disaster occurs with disaster risk reduction activities, disaster management planning, prevention, education and training. In a situation where there is a potential for disaster, the activities carried out include early warning, mitigation and disaster preparedness, then during a disaster or disaster preparedness such as emergency response or evacuation for flood victims and emergency assistance. Finally, after a disaster, such as carrying out reconstruction and rehabilitation (Kahn and Mattheuw, 2005).

Therefore, we as academics intend to socialize disaster mitigation and management through the training program. Materials that will be provided at training activities are related to disaster mitigation and management. This material will be given in workshop sessions both to MI Cipicung students.

2. Literature Review

2.1 Agriculture Sector

Agriculture is a major economic sector in Developing Countries. The role or contribution of the agricultural sector in the economic development of a country occupies a very important position. This is partly due to several factors (Hyun and David, 2017). First, the agricultural sector is a source of supplies of food and raw materials needed by a country.

2.2 Natural Disaster Mitigation

Natural disaster mitigation is an effort or action to minimize the negative impact of a natural disaster. Disaster mitigation is very important in carrying out activities before a disaster occurs which is expected to reduce the impact or risk of a disaster. Mitigation efforts will run well if the stages in disaster management run effectively. The stages in disaster mitigation efforts are as follows (Smith, 2001; Kalfin et al., 2022):

a) Countermeasures before a disaster occurs. These activities include providing information and making maps of disaster-prone areas, building earthquake-resistant buildings, planting mangrove trees, reforesting forests, as well as providing counseling and raising awareness of people living in disaster-prone areas.
b) Preparedness is planning on how to respond to disaster events. Planning is made based on disasters that have occurred and other disasters that may occur. The aim is to minimize casualties and damage to public service facilities and infrastructure which includes efforts to reduce the level of risk, manage community resources, and train residents in disaster-prone areas.
c) Response is an effort to minimize the harm caused by the disaster. This stage takes place immediately after a disaster occurs. Disaster management plans are implemented with a focus on relief efforts for disaster victims and anticipation of damage caused by disasters.
d) Recovery is an effort to restore the condition of society to its original state. At this stage, the focus is on providing temporary shelter for victims and rebuilding damaged facilities and infrastructure. In addition, an evaluation of the disaster management measures undertaken is carried out.

3. Materials and Methods

3.1. Materials

Training was carried out in Cibitung village, Parungponten sub-district, Tasikmalaya Regency, West Java, as well as providing special materials to MI Cipicung students. The data obtained in the analysis were obtained from students through a given questionnaire. From the questionnaire, an analysis was carried out to determine the level of development of students' understanding of the material provided.

3.2. Methods

The method used in training is a Practical Qualitative method, which means that the results of intra-campus research can be applied directly to the community in a practical way. The understanding given is more of a qualitative approach such as discussion, consultation, and joint evaluation. Even so, the discussion session at MI gave a little quantitative explanation regarding disaster mitigation and management. Implementation of workshop activities to minimize the impact of disasters, carried out face-to-face, with the following stages of activity:

a) Conduct field observations
b) Arrange for permits to the sub-district office and related MI in Parungponteng District, Tasikmalaya Regency as well as requests to involve students in carrying out activities.
c) Implementation of activities by providing workshop/training materials:
    - Factors causing disasters, both originating from nature and human activities
    - Impact of natural disasters that occur from a socio-economic perspective
    - Effective disaster management strategy
    - Evaluation of discussion results

4. Results and Discussion

4.1 Process of Community Service Activities

The training was carried out on July 20 2022 in Cibitung village, Parungponten sub-district, Tasikmalaya Regency, West Java. The topic that will be discussed at training this time is entitled "Training on Mitigating the Risk of Economic Loss through Diversification and Insurance in the Agricultural Business Sector of Tasikmalaya Regency", which was started with the first meeting at the Mathematics Department Building Floor 2 on May 27 2020 by the Field Supervisor (DPL) Prof. Dr. Sukono, MM., M.Sc.

At the first meeting it was discussed about the debriefing by the DPL regarding the explanation of training, as well as a rough description of the training to be implemented. Then it is followed by a discussion to determine the organizational structure for management and the timeline to be carried out. Groups hold joint discussions about the material that will be presented and make files that will be presented later. Then conducted a location survey for the first time on July 20 2020 to request permission to carry out socialization to MI Cipicung in Parongponteng District. After the survey, on July 16 2022 continued discussions with DPL to plan outreach activities to be carried out.

4.2 Value Data

The data that we use is data from the results of the pretest scores that we give before the socialization activities and the post-test that we give after the socialization activities. Value data before and after socialization using power point media can be seen in the following table:

Table 1. Data on the results of the pre-test and post-test questionnaires for students

No.	Name	*pre test*			*post test*		
		Right	Wrong	Score	Right	Wrong	Score
1	ALYKHA REYSTU HALISHA	8	2	80	8	2	80
2	AZKA NAJRIL ABDILAH	7	3	70	7	3	70
3	AZMI HANAN HABIBAH	7	3	70	8	2	80
4	BUNGA AYU LESTARI	5	5	50	8	2	80
5	NAZKHIA AULIA PRATAMA	6	4	60	6	4	60
6	NAZZLA PUTRI RAMADANI	8	2	80	8	2	80
7	NEISYA BILA AGUSTIN	8	2	80	8	2	80
8	NEYSYA ARTI KHALIFAH	7	3	70	8	2	80
9	NAZKHIA AULIA PRATAMA	7	3	70	7	3	70
10	FAJAR IKHSAN AKBAR	7	3	70	8	2	80
11	FARIZ SANI NOVADJULHIJA	9	1	90	9	1	90
12	FELISHA AYUDIA	7	3	70	7	3	70
13	FRISTA AULIA PUSPITA SARI	5	5	50	5	5	50
14	HANNA SYAHIDAH	7	3	70	7	3	70
15	ILHAM MOHAMMAD YUSUF	8	2	80	8	2	80
16	ILMIRA FILZA ASHYIFA	8	2	80	8	2	80
17	INDRIANI	6	4	60	6	4	60
18	INTAN NURASSYFA HIDAYAT	7	3	70	7	3	70
19	JENI ALFA AULIYA	8	2	80	8	2	80
20	KEYZA PUTRI RAMADANI	7	3	70	8	2	80
21	M RIZAL H	7	3	70	8	2	80
22	FARIZ SANI NOVADJULHIJA	7	3	70	8	2	80
23	NURIZQI SUMARNI	8	2	80	9	1	90
24	RAHMA ANGGELIA	5	5	50	7	3	70
25	MUHAMMAD HAFIDZ FIRDAUS	7	3	70	7	3	70
26	MUHAMMAD KALIYANDRA	5	5	50	7	3	70
27	MUHAMMAD RAFLIE ADHA	7	3	70	8	2	80
28	MUHAMMAD RIDWAN	7	3	70	7	3	70

29	NAFISYA MEITY NURELDA	8	2	80	8	2	80
30	NISRINA ALFIA NAVISAH	8	2	80	8	2	80
31	RAISYA NUR ALIF	8	2	80	9	1	90
32	REIFA APRILIASYA	8	2	80	9	1	90
33	REZKY FASHA A HENDRA	8	2	80	8	2	80
34	RIFA APRILYA SUKMAWATI	8	2	80	8	2	80
35	RIFKI DURATUL HIKMAH	8	2	80	8	2	80
36	SONI NOVIANSYAH	7	3	70	8	2	80
37	SYAMSUL FABIO TAUFIK	7	3	70	7	3	70
38	SYAUKI AZKIA UTAMA	7	3	70	7	3	70
39	TAUFIK JAMIL	8	2	80	8	2	80
40	TRISHA ALIFVIA ZAHRA	6	4	60	6	4	60
41	DWI ARTANTI AVRIANI	9	1	90	9	1	90
42	INE TRISNA SOPIAH	7	3	70	8	2	80
43	INTAN WULANDARI	4	6	40	6	4	60
44	JUNISA SEPTIANY	7	3	70	7	3	70
45	KHANSA AGUSTINA	8	2	80	8	2	80
46	FERISA REZA RISANTI	8	2	80	9	1	90
47	RISTRY ATRIANTI SAGITA	7	3	70	7	3	70
48	TIARA AQILA ZAHRA	6	4	60	6	4	60
49	MAURA FASHA KHAIRUNNISA	9	1	90	8	2	80
50	CINTAMI	8	2	80	8	2	80
51	NENG JIHAN	7	3	70	8	2	80
52	SAVIRA PRAZENDIE	7	3	70	8	2	80
53	ARYA PUTRA PRIBADI	8	2	80	8	2	80
54	FARAH DIVA	8	2	80	8	2	80
55	ROVI W MAHAWARDHANI	7	3	70	8	2	80
56	ADLI ALGHIFARI	8	2	80	8	2	80
57	HESTI RAMANDHANI	8	2	80	8	2	80
58	NENG JIHAN FERTIA SOMANTRI	7	3	70	7	3	70
59	SENIA MAULIDYA RAHAYU	8	2	80	8	2	80
60	JOVINCA T	7	3	70	7	3	70
61	GISHELLA FELICIA	6	4	60	6	4	60
62	ANGGA SAPUTRA	7	3	70	8	2	80
63	KHAIRU HILAL A	7	3	70	8	2	80
64	SRI SITI PATIMAH	8	2	80	9	1	90
65	M ZALDI ADENIA	5	5	50	7	3	70
66	RONI	7	3	70	7	3	70
67	DICKY DWI DARMAWAN	5	5	50	7	3	70
68	SILVANI RAHAYU	7	3	70	8	2	80
69	NISRINA ALFIA NAVISAH	7	3	70	7	3	70
70	RAISYA NUR ALIF	8	2	80	8	2	80
71	REIFA APRILIASYA	8	2	80	8	2	80
72	REZKY FASHA A HENDRA	8	2	80	9	1	90
73	SAKTI WIRANATA KUSUMAH	6	4	60	6	4	60
74	SINDY RUSMIATI PRATAMA	7	3	70	7	3	70
75	TIKA ERLITA	7	3	70	8	2	80
76	UZWATUL HUSNA RAMADANI	4	6	40	6	4	60

77	SAKTI WIRANATA KUSUMAH	9	1	90	9	1	70

4.3. Average Knowledge Sample Score

The average distribution of students' knowledge about natural disaster mitigation both before and after being given exposure using power point media can be seen in the following Table 2.

Table 2. Average pre-test and post-test questionnaire results for students

Average	***Pretest***	***Post test***
	71	76

4.4. Knowledge Level

The frequency distribution of students' knowledge about disaster mitigation both before and after being given exposure using power point media can be seen in the following Table 3:

Table 3. Frequency Distribution of Sample Knowledge Before and After Socialization Using Power Point Media

Knowledge	***Pretest***		***Post test***	
	N	%	N	%
Good	67	87%	76	98%
Not good	10	13%	1	2%
Amount	77	100%	77	100%

The results of this study can be categorized as good if the sample has a value greater than or equal to 60 and not good if the sample has a value less than 60. Based on the calculation of the results of the pretest, before socialization there were 67 or about 87% had good knowledge and 10 or about 13% have poor knowledge. However, after the socialization was carried out, according to the calculation of the post-test results, those who had good knowledge increased to 76 or around 98%, while those who had poor knowledge became as much as 1 or around 2%.

In the natural disaster mitigation socialization program since MI Cipicung, Parungponteng District, Tasikmalaya Regency, West Java, activity implementers who are members of research work groups and together with field supervisors carry out outreach using power point media. This activity is expected to have a positive impact on MI Cipicung students both in the short and long term.

This program is one of the efforts to increase knowledge about natural disaster mitigation. This program is carried out in one time activity which is divided into several stages. These stages are as follows:

a) Pretest: before the presentation is given, MI Cipicung students are given a pretest to find out what they know about natural disasters.
b) Socialization: this socialization is carried out by presenting material through power point media provided by students. The material provided is about understanding mitigation in general, the causes of natural disasters, the impact of natural disasters, things to do when natural disasters come, things to do after natural disasters and how to minimize losses. This activity was interspersed with ice breaking so the students would not get bored which was then followed up with questions and answers.
c) Games: after the presentation of the material given the students were directed to play games. Games that are made are applications of material that has been made which aims to make students better understand the material that has been given.
d) Post-test: a post-test is carried out after the presentation of the material and games which aims to measure students' understanding after the presentation of the material and application games is carried out. Basically, the post-test questions are the same as the pre-test questions.
e) After the activities were carried out, there was the distribution of mementos and books to MI Cipicung, Parungponteng District, Tasikmalaya Regency, West Java as the final agenda in this outreach program.

Achievements in this program can be seen quantitatively, namely based on differences in pretest and post-test.

- Activity Name: Socialization on Natural Disaster Mitigation from an early age at MI Cipicung, Parungponteng District, Tasikmalaya Regency, West Java.
- Type of Activity: Presentation of material on flood disaster mitigation using power point media

- Activity Purpose: The purpose of this activity is to gain knowledge from an early age on Mi Cipicung students about natural disaster mitigation which is expected to be applied in their daily activities.
- Benefits of the activity: With this socialization activity students can understand the importance of protecting the surrounding environment by behaving in a disciplined manner
- Activity target: MI Cipicung students
- Implementation time: Wednesday, 20 July 2022
- Number of participants: 77 people
- Teaching Materials: Media power point, pretest, post-test, and games.
- Obstacle: During the game, activities exceed the allotted time because there is a lot of explanation regarding how to play
- Solution: Games that are made should not be too long in terms of duration.
- Results: Prior to socialization, from the pretest results, 67 out of 77 or around 87% of students had good knowledge. After socializing and playing games according to the post-test results, those who have good knowledge increased to 76 out of 77 or around 98% of students.
- Executor's Role: The research working group provides outreach
- Community Role: Participant in socialization

5. Conclusion

Based on the exposure of the results of the activities with the indicated indicators, it is expected that students can understand disaster management and know the stages of disaster mitigation and management. Thus, for the future students are ready to respond to disasters and the impact of disasters can be minimized and appropriate disaster management can be solved. In addition, it is hoped that it can be used as a model for other regions in an effort to minimize the impact of natural disasters.

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