WEATHER CHANGES AND IMPACTS ON AGRICULTURE IN RURAL AREAS: MITIGATION AND ADAPTATION EFFORTS

Rachma Putri Dwi Amalia[1], Nur Suci Putri Solikati[2], Tegar Prasetyo Utomo[3], Rizqi Rakhmadhani Zahya[4], Istifarin Herdiana Fitrah[5]
[1,2,3,4,5]Faculty of Law, Universitas Muhammadiyah Surakarta, Indonesia
Email, C100210137@student.ums.ac.id[1]

Abstract

One of the biggest obstacles in rural farming is changes in weather. The impact of severe weather changes can include increasing temperatures, unpredictable rainfall, long dry seasons, and natural disasters that occur more frequently. This impact can be significant on agricultural productivity and prosperous farmers in rural areas. Therefore, there is a need for adaptation and mitigation efforts to overcome the impacts of weather changes. Adaptation can be achieved by improving farmers' skills in managing natural resources, using technology that is more environmentally friendly, and improving agricultural practices that are more sustainable for the future. Apart from that, mitigation can be done by implementing effective processing practices for agricultural waste.

Keywords: Weather Changes, Agriculture, Rural Areas, Adaptation, Mitigation.

INTRODUCTION

Weather or climate change is a global environmental problem that needs to be taken more seriously. The agricultural sector is one of the sectors that has a dominant impact on climate or weather change, one of which is in rural areas which has an important role in economic aspects and social life. Therefore, having an understanding of the impact of weather changes is important, especially in the agricultural sector in rural areas. To overcome these impacts, effective efforts are needed, namely adaptation and mitigation. Adaptation is an effort that can be made by developing farmers' skills in managing existing natural resources and using technology that is more environmentally friendly. Meanwhile, mitigation is an effort that can be done by processing waste or agricultural waste efficiently. (Masturi et al., 2021).

According to (Rijal & Rijal, 2019) there are several impacts of changes in weather or climate on agriculture in rural areas, as follows: a) Changes in rainfall patterns and unpredictable temperatures can disrupt the planting and harvest schedule of crops in rural areas, in addition to reducing the quality and productivity of plants planted; b) Increasing rainfall and irregular temperatures can have an impact on the amount of food and increase inequality in food distribution in rural communities; c) Extreme weather conditions, in the form of floods and long droughts, which are triggered by climate change, can endanger the security, safety and welfare of farmers in rural areas; d) Disruption to farmers' welfare and overall agricultural productivity, including the impact of climate change in the agricultural sector in rural areas, which needs to be taken into account.

Mitigation and adaptation efforts are one of the appropriate strategies for reducing the impact of climate change on the agricultural sector in rural areas. This strategy can be implemented by utilizing environmentally friendly agricultural technology in the form of a drip irrigation system and managing land sustainably for the future. Apart from that, it is necessary to provide training and education to farmers regarding how to practice sustainable agriculture and adapt to unpredictable climate changes. International level institutions and local governments should provide support to improve agricultural infrastructure and use of natural resources in rural areas. So the use of plant varieties that are resistant to climate change and plant diseases can also be done as a mitigation and adaptation effort. (Legionosuko et al., 2019).

RESEARCH METHODOLOGY

This research uses a field literature study method in several regions in Indonesia. Information or data was obtained by the creator by conducting research using the collection method by interviews. Until now, the meeting technique is often considered the best strategy for gathering important information in the field. This is considered feasible because the questioner can meet face to face with the source to obtain information about the source's ins and outs, existing and accessible reality (assessment) as well as the respondent's self-understanding and, surprisingly, the respondent's assessment and suggestions. It is hoped that the results of this research can provide education to improve adaptation and mitigation strategies in dealing with changes in weather and agricultural climate in rural areas.

RESULTS AND DISCUSSION

Agraria in Latin is ager which means field, village, territory and land belonging to the state. This means that studying agrarian matters is the same as discussing matters relating to land or agricultural land or land ownership in a broad sense. The history of the problem of existence, both regarding property and benefits, has reaped various problems and is not as simple as imagining the concept. .(M. Ahmadin, n.d.). Agrarian problems are related to economic, cultural, social and even legal issues that go hand in hand with sector dynamics. Thus, the agrarian scope is very broad regarding land and everything related to it.

Throughout human history, land has often been the cause of conflict between individuals and groups with different perspectives and interests. (R. R. Ahmadin, 2021). In fact, this applies to the history of life from ancient to modern times. In fact, in future life, it is

certain that agrarian conflict will revolve around two fundamental problems, namely differences in perception and individual interests. This study takes a picture of the agrarian sector in examining social and economic problems as a form of implication (M. Ahmadin, 2022).

In this discussion of modern life in the world, it can be seen that there are two things that often trigger problems between the authorities or government and the community regarding land ownership, including: a) Differences in points of view regarding the concept of control and use of land. On the one hand, the government, with its various development programs, believes that the earth or land, water and all the wealth contained therein are controlled by the state. In other cases, especially people who still have conventional views, consider that land is property rights and a means of production, so it is natural that they are willing to risk their lives to defend their land ownership; b) Concerns the differences in interests between the rulers (economic and political) and the people. The authorities or government believe that land is a place to achieve development goals. On the other hand, the people (or farmers) have the view that land is everything that is used for their livelihood. The life and death of their family is more or less determined by the land, so that the future of generations who continue their lives depends on the land they own.

The agricultural sector in rural areas has various obstacles and the impact of weather or climate changes, including something complex and of various types. In some cases, it is common to find plant productivity decreasing, harvesting and planting seasons experiencing changes in structure, as well as natural disasters in the form of floods and long droughts increasing in frequency. Apart from that, the spread of plant diseases and pests is a problem faced by farmers. Decreased plant productivity often occurs due to changes in temperature and changing rainy climate structures, so that the amount of water used by plants is not in accordance with needs. This has an impact on the development and reduction of crop yields. Meanwhile, changes in the structure of the planting season can affect the amount of water and harvest time, resulting in reduced agricultural productivity. Therefore, mitigation and adaptation efforts need to be implemented to overcome the impact of changes in weather or climate in the agricultural sector in rural areas. (Utami, 2019).

Natural disasters such as floods and droughts are negative impacts that often occur and are one of the impacts of weather changes in the agricultural sector in rural areas. Floods can damage soil and even plants, while drought can cause drought and reduce water supplies so that plants need water to grow. In addition, changes in temperature and humidity can

influence the spread of plant pests and diseases, which in the end can have a negative impact on agricultural productivity. This is an important effective mitigation and adaptation effort to overcome the impact of weather changes in the agricultural sector in rural areas. (Setyowati, 2019).

The right solution can be taken to overcome the impact of climate change in the rural farming sector, namely mitigation and adaptation efforts. Reduced greenhouse gas emissions and increased tree carbon absorption in soil and vegetation are mitigation efforts. The use of agricultural technology that is environmentally friendly is an example of mitigation efforts, such as processing agricultural waste and using organic fertilizer. The existence of educational actions and training regarding sustainable farming practices can also provide increased productivity and a resilient farming sector. Meanwhile, adaptation efforts aim to reduce the vulnerability of the agricultural sector to changes in weather.

Some forms of adaptation efforts that can be implemented include increasing the efficiency of irrigation systems, the resilience of plants that use varieties to changes in weather, and developing an early warning system for natural disasters. Encouragement from the Government and International Level Institutions is also needed to increase the resilience of the farming sector in villages to changes in weather and climate. By reducing the impact of weather or climate changes in the agricultural sector in rural areas, appropriate and correct adaptation and mitigation efforts are needed. Mitigation and adaptation must be implemented with integrity to strengthen the resilience of the agricultural sector and protect food supplies for rural residents. (Masturi et al., 2021).

Thus, adaptation efforts by strengthening advanced agricultural systems and increasing sustainable food can be carried out. Diversification of plants and livestock is one of the efforts to increase sustainable food, so it is not based on just one type of plant or livestock. Apart from that, the efficiency of developing agricultural technology and environmental friendliness can also develop sustainable food and strengthen agriculture with a sustainable system.

CONCLUSION

Weather or climate change is a serious challenge for the rural agricultural sector. The quality of agricultural productivity requires us to choose appropriate mitigation and adaptation measures to have a significant impact on production. Mitigation and adaptation efforts in the rural agricultural sector require simultaneous implementation, linking various

parties including farmers, government, international institutions and society. With effective efforts, it is hoped that the rural agricultural sector can better withstand the impact of weather changes and continue to contribute to improving the welfare of rural communities.

In implementing mitigation and adaptation efforts in the agricultural sector in rural areas, it is needed in an integrated manner by linking various aspects, such as efficient use of technology, use of new energy, good management of water, as well as a participatory approach with the community. Apart from that, government encouragement or support is needed to provide incentives and effective policies for farmers to carry out environmentally friendly agricultural practices. In this discussion, the role of activists, academics and research plays a very important role in facilitating efficient and effective efforts to overcome the impact of weather or climate changes in the rural farming sector. With good cooperation and collaboration between the parties concerned, it is hoped that we can create the right solution to face the challenges of changing weather or climate in the rural agricultural sector.

REFERENCE

Ahmadin, M. (n.d.). *Sejarah Agraria: Sebuah Pengantar. Ahmadin, M. (2022). Social Research Methods: Qualitative and Quantitative Approaches. Jurnal Kajian Sosial Dan Budaya: Tebar Science, 6(1), 104–113.*

Ahmadin, R. R. (2021*). Social Protest Of Women Farmers Regarding Agrarian Conflict. Journal of Legal, Ethical and Regulatory Issues, 24(4), 1–7.*

Ahmadin. (2013). *Sejarah Agraria: Sebuah Pengantar. Rayhan Intermedia*

Setyowati, D. L. (2019). *Pendidikan Kebencanaan. Universitas Negeri Semarang.*

Utami, D. N. (2019). *Kajian Dampak Perubahan Iklim Terhadap Degradasi Tanah Study Of The Impact Of Climate Change On Soil Degradation. Jurnal Alami (ISSN: 2548-8635), 3(2)*

Legionosuko, T., Madjid, M. A., Asmoro, N., & Samudro, E. G. (2019). *Posisi dan strategi indonesia dalam menghadapi perubahan iklim guna mendukung ketahanan nasional. Jurnal Ketahanan Nasional, 25(3), 295–312.*

Masturi, H., Hasanawi, A., & Hasanawi, A. (2021). *Sinergi dalam Pertanian Indonesia untuk Mitigasi dan Adaptasi Perubahan Iklim. Jurnal Inovasi Penelitian, 1(10), 2085–2094.*

Rijal, S., & Rijal, B. (2019). *Climate smart agriculture concept and adaptation in Nepal: An Overview. International Journal of Research & Review, 6(1), 47–56.*